

A DEPENDENT NATION:

How Federal
Oil and Natural
Gas Policy
is Eroding
America's
Economic
Independence

GOVERNOR TONY KNOWLES
STATE OF ALASKA
IOGCC CHAIRMAN



INTERSTATE OIL AND GAS
COMPACT COMMISSION

PREFACE

Federal policy makers have done it again. Once again, the danger of relying heavily on imported oil has been ignored until consumers felt the pinch in their wallets. Now that we've spent the past year watching the price of crude oil rise from devastating and historic lows to highs not experienced in recent memory, some have attempted to take action.

Unfortunately, the direction of their efforts falls considerably short of what this nation needs to ensure its continued economic growth—a national energy policy.

The governors of oil and natural gas producing states, through the Interstate Oil and Gas Compact Commission, developed a comprehensive energy policy for the nation. This document defines the true cost of imported oil, promotes the expansion of research and development efforts, urges a re-examination of oil and natural gas development policies and encourages the conservation of the nation's petroleum resources.

We salute Alaska Gov. Tony Knowles, IOGCC chairman, for his leadership in ensuring this valuable document was once again updated and brought to the attention of the public and leaders in Washington, D.C.

We hope that federal policy makers can put aside their personal agendas and focus on what needs to be done to ensure the United States' energy security. The time for a rational discussion is at hand and we invite citizens and leaders at all levels of government to join us.

Governor Frank Keating	Governor Ed Schafer
Oklahoma	North Dakota
1997 IOGCC Chairman	1995 IOGCC Chairman

BACKGROUND

After many months of low oil prices, the country has been re-awakened to the volatile nature of the world's oil supply — demand and price. With heating oil and gasoline costs hitting consumers in the pocketbook, there is growing pressure on elected officials to act. It is an unfortunate fact that oil is taken for granted in this country, and thoughts of national energy policy only surface in response to perceived crises.

Also looming on the horizon is the potential for a tightening market for natural gas as the fuel gains a greater role in new electric generation facilities. The need to examine current policies relating to natural gas exploration and production, deliverability, incentives, and research and development has never been greater. The National Petroleum Council (NPA) has issued an important report that identifies challenges to meeting growing consumption with domestic production.²⁶

Taken together — foreign oil dependence and barriers to increasing domestic natural

gas production — have captured the attention of governors of oil and gas consuming and producing states.

Represented by the Interstate Oil and Gas Compact Commission (IOGCC), governors have been calling for state and federal action on energy policy for decades. Now, as the debate about the country's energy future grows, the governors again have emerged as

leaders in the evolution and execution of America's energy policy.

Before 1973, the governors of the producing states virtually directed the nation's energy policy because, among other reasons, a policy-making vacuum existed at the federal level — particularly relating to oil and natural gas. The energy policies of the United States prior to 1973 went largely unnoticed by the public and the federal government as long as the states were able to provide cheap oil and natural gas in abundance.

Cooperative efforts at oil and natural gas conservation between the states began with the organization of the IOGCC in 1935. By

GOVERNORS AGAIN HAVE EMERGED AS
LEADERS IN THE EVOLUTION AND EXECUTION
OF AMERICA'S ENERGY POLICY.

BACKGROUND CONTINUED

virtue of its charter, the IOGCC is dedicated to conserving domestic oil and natural gas through orderly development and maximization of efficient production while protecting human health and the environment. Due to efforts by the IOGCC to encourage the application of secondary waterflooding, the expectation of maximum efficient production from domestic

oil fields increased from about 10 percent in 1935 to about 30 percent by the mid-1960s.

By early 1973, surging domestic and world demand for oil and natural gas, caused by a combination of economic expansion and the maturation and decline of many of our domestic oil fields, brought the United States to an energy turning point. America no longer possessed excess production capacity; that is, it could no longer turn the spigot of oil on or off to meet the nation's cyclical needs.

Rather, swings in demand or production declines would be offset by imports from foreign nations, which, since the 1940s,

America had been assisting to develop their own petroleum resources. It is no coincidence that a few years earlier, foreign producing nations took two steps in their own best interest:

1. They wrested control of their resources

from the mostly American corporations that had developed the reserves; in the conversion, those corporations became

FOREIGN PRODUCING NATIONS WRESTED CONTROL OF THEIR RESOURCES FROM THE MOSTLY AMERICAN CORPORATIONS THAT HAD DEVELOPED THE RESERVES AND CREATED AN THE ALLIANCE WE KNOW AS OPEC.

managers of production, not owners.

2. The key nations created an alliance and named it the Organization of Petroleum Exporting Countries (OPEC).

What happened next shocked the average American. However, it was no surprise to the governors of the larger oil and gas producing states who, under the auspices of the IOGCC and other state leaders, had been sending unheeded warnings for years. OPEC flexed its muscles and showed its enormous political and economic strength with the Arab embargo of late 1973. The price of crude oil went from an average of \$9.70 per barrel in 1972 to

BACKGROUND CONTINUED

more than \$14.80 per barrel in 1974 (Figure 1). During succeeding price and supply shocks initiated by OPEC, crude oil has reached prices that exceeded \$36 per barrel.

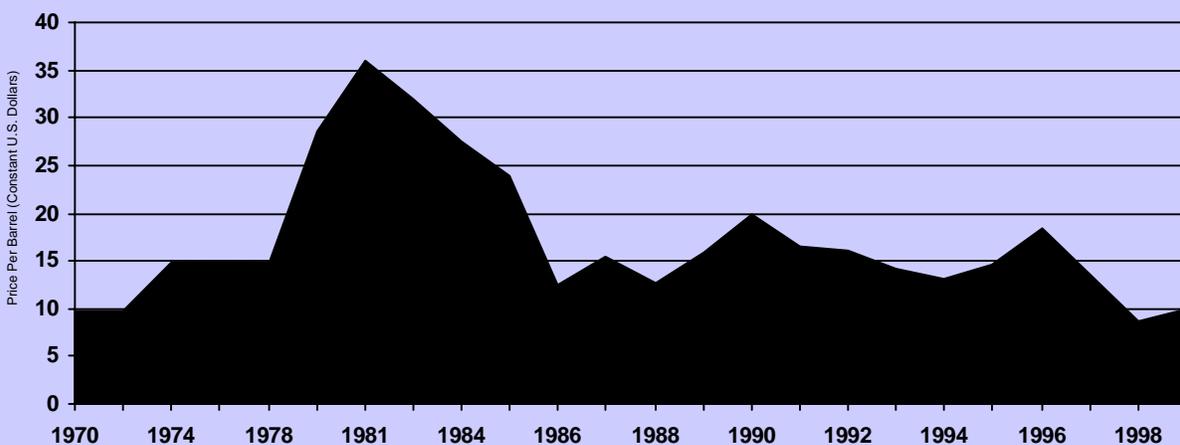
Although the states remained active and concerned, the direction of energy policy and regulation shifted to the federal government, which has made several attempts to write, control and direct a national energy policy. Since the inception of the Department of Energy in 1977, no less than six plans have been enacted. Some of the results have been productive — increasing fuel efficiency in automobiles, for example. However, others, such as the Windfall Profits Tax and price controls on crude oil — when an increase in

price would have curbed demand — have been counterproductive.

Similarly ill-advised price controls on natural gas, with complicated pricing tiers and definitions, created confusion in the marketplace and skewed the focus of E&P efforts. The price controls have been blamed for manipulating the market to the point of creating artificial shortages. See Figure 2 on the next page.

During this tumultuous period, many important facts regarding the domestic oil and natural gas industry were lost in the rhetoric. For example, the oil and natural gas that producing states have delivered made it possible for America to become an industrial

FIGURE 1 — OIL PRICE FLUCTUATIONS (1970–1999)



Source: American Petroleum Institute

BACKGROUND CONTINUED

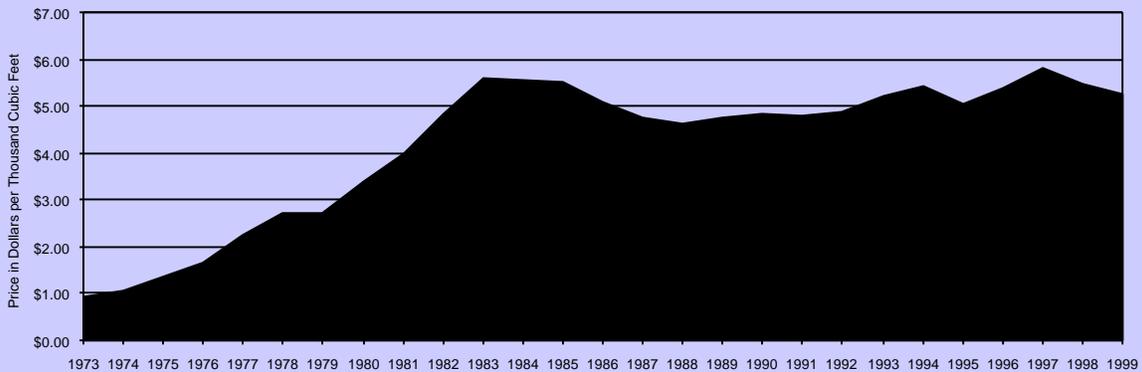
power with a competitive position in the world marketplace due to low energy costs. These resources also provided Americans with by far the highest ratio of motor vehicles per citizen in the world and the means to fuel them. They have fueled a thriving and expanding airline industry, which has helped break down barriers to travel, communications and domestic and international commerce. These fuels have provided the means to warm and light millions of homes.

At the same time, American capital and know-how were applied around the world as developing oil provinces were identified. Many other nations benefited from the expertise and education supplied by the U.S.

petroleum industry.

The domestic industry maintained the distinction as the world's most efficient conservator of oil and natural gas. The United States is the only country that captures significant quantities of oil and natural gas from marginally economic wells. Through efficient operating practices and the application of advanced technologies, marginal wells accounted for nearly 316 million barrels of oil and one trillion cubic feet of natural gas in 1998, according to the IOGCC's survey of such wells, *Marginal Oil and Gas: Fuel for Economic Growth*.¹ Some 419,000 of the more than 550,000 domestic oil wells produce at an average of two barrels per well per day in the

FIGURE 2 — NATURAL GAS PRICE FLUCTUATIONS (1973–1999)



Source: U.S. Energy Information Administration

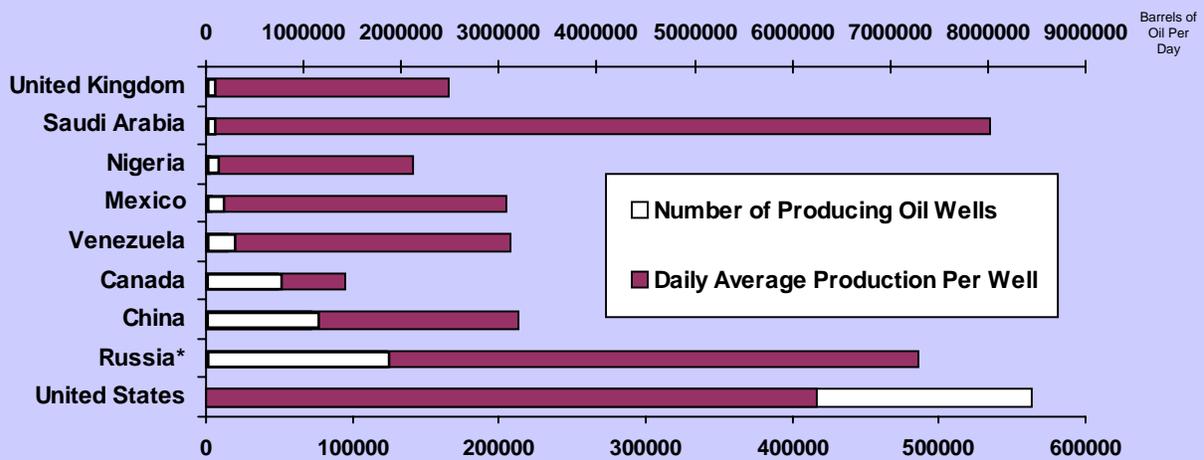
BACKGROUND CONTINUED

United States . The total resource produced in the United States averages slightly more than 6 million barrels of oil per day. This contrasts sharply with a daily average production of 8 million barrels of oil per day in Saudi Arabia (Figure 3). It is a wonder U.S. producers can compete at all, for nowhere else in the world can operators maintain economic production from a well producing only two barrels per day. That America has been able to continue to produce its maturing resource at such rates is a testimony not only to the oil industry's hard work and ingenuity, but also to the untiring efforts of groups such as the IOGCC.

Events in the Middle East have continued to drive oil prices. In the 1990s, the U.S. was called upon to defend Kuwaiti oil fields (Figure 4). Operation Desert Storm underscored the nation's reliance on Middle East oil and the political instability that characterizes the region. The U.S. began to move toward other sources of foreign crude, notably Latin American countries. But OPEC continues to exert market control. Gasoline price increases spurred the U.S. House of Representatives to consider legislation to enable the president to investigate price fixing by OPEC members.²

Price aside, the country faces a serious

FIGURE 3 — NUMBER OF PRODUCING WELLS AND DAILY AVERAGE PRODUCTION (SELECTED COUNTRIES)



Source: Oil and Gas Journal *Russia includes all countries formerly part of the Soviet Union

BACKGROUND CONTINUED

threat to national energy security. In 1994, the U.S. Commerce Department concluded that oil imports were a threat to national security. A recent Commerce Department study, reaching a similar conclusion, was delivered to President Clinton in November 1999.²

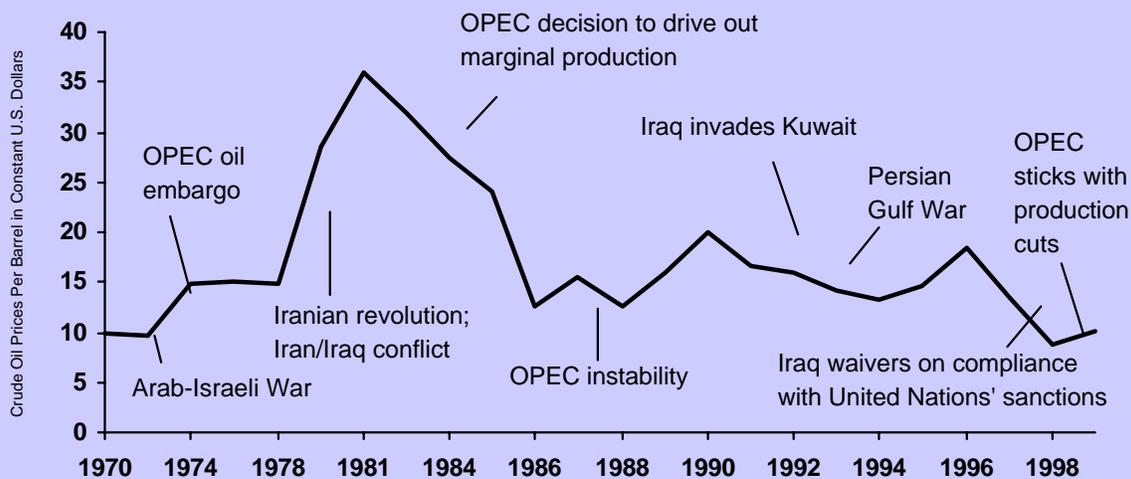
The White House waited to respond until March 18, 2000. In his response, President Clinton called for the creation of a home heating oil reserve similar to the Strategic Petroleum Reserve and tax incentives for both the domestic oil and natural gas industry and renewable energy sources.³

Oil imports are at record levels. U.S.

petroleum demand is expected to reach 19.32 million barrels per day in 2000, according to the Energy Information Administration (EIA) of the U.S. Department of Energy.⁴ Additional demand for transportation fuel, which accounts for two-thirds of U.S. petroleum consumption, is largely responsible for the increase. Oil imports of 10.15 million barrels per day forecast for 2000 would supply more than half — 52.5 percent — of U.S. demand.

While great advances have been made in the techniques of finding, producing and transporting natural gas, there are challenges ahead if the U.S. is to supply its gas demand that is expected to increase from 22 trillion

FIGURE 4 — IMPACT OF MIDDLE EAST EVENTS ON OIL PRICES (1970–1999)



Sources: American Petroleum Institute, *Oil & Gas Journal*, *World Book Encyclopedia*

BACKGROUND CONTINUED

cubic feet (Tcf) in 1998 to 29 Tcf in 2010.²⁷

Canadian imports are expected to grow from 3 Tcf to 4 Tcf by 2010, and will continue to represent 13 to 14 percent of U.S. demand.²⁷ It is therefore clear that new supplies must come from domestic resources. The NPC concludes that for domestic production

to satisfy demand, the issues of access to resources, technological advancement, financing for infrastructure and exploration, availability of skilled

workers and drilling rigs, long lead times for production and changing customer needs must be addressed in a comprehensive way.²⁷

In recent years, state legislatures, chief executives and the public have become increasingly concerned that the energy policy of the United States is adrift, assuming there is any policy at all.

There is perhaps no larger contributor to the high quality of life in the United States

than energy, the largest sources of which are oil and natural gas. Yet the nation lacks a comprehensive policy to guide oil and natural gas producers, regulators or consumers, which would ensure that these vital energy forms continue to contribute to the nation's economic growth and security.

As a result, the leadership role in developing energy policy again has fallen to the states.

Throughout its more than 65 years, the IOGCC, with

30 member states and seven associate states, has steadfastly supported the development of a national oil and natural gas policy to minimize the loss of domestic resources, protect the environment, enhance economic development, safeguard national security and lessen dependence on foreign sources of petroleum. These are the building blocks for a more secure energy future.

THE BUILDING BLOCKS FOR A MORE SECURE ENERGY FUTURE ARE A NATIONAL OIL AND NATURAL GAS POLICY DESIGNED TO MINIMIZE THE LOSS OF DOMESTIC RESOURCES, PROTECT THE ENVIRONMENT, ENHANCE ECONOMIC DEVELOPMENT, SAFEGUARD NATIONAL SECURITY AND LESSEN DEPENDENCE ON FOREIGN SOURCES OF PETROLEUM.

RECOMMENDATIONS

1. Determine the true consequences to the American public of imported oil.

Americans pay only a fraction of the true cost of imported oil at the gasoline pump. Their tax dollars in effect subsidize the economies of foreign countries by ensuring shipping lanes remain open and safe, oil fields are protected and capital is available to improve deteriorating infrastructure. Meanwhile, Americans and all the citizens of the world will share in future costs of massive environmental remediation that will occur in foreign countries with lax or nonexistent oil and natural gas regulation.

The economies of states and the nation have been hard hit as well, with the loss of royalties and taxes associated with domestic production, the elimination of 529,000 high-quality jobs in the petroleum industry (according to data compiled by the U.S.

Bureau of Labor Statistics and the IOGCC), and the loss of billions of dollars in economic impact. Stripper (low-volume) wells alone are important contributors to the nation's economy. In 1998, stripper wells were responsible for \$1.2 billion in employment earnings, \$9.3 billion in economic activity and \$280 million in state severance taxes.¹

To create meaningful energy policy, the

American public must first be allowed to evaluate the true cost and consequences of imported oil

THE COST TO THE U.S. ECONOMY OF IMPORTED OIL SHOULD BE ESTABLISHED SO POLICY MAKERS HAVE A CLEAR BASIS FOR DECISION MAKING.

and natural gas and consider cost-effective options to stimulate domestic production.

While determining a precise dollar figure of the cost of a barrel of imported oil is a difficult challenge — especially considering the massive world environmental costs associated with poor production practices in countries other than the United States and Canada — a range of cost estimates could be developed. More importantly, the cost to the U.S. economy of imported oil should be established so policy makers have a clear

RECOMMENDATIONS CONTINUED

basis for decision making.

The arguments for including U.S. military costs are clear and logical — our Middle East presence is oil-based. The U.S. military has not moved into many of the other trouble spots in the world to protect threatened human rights because those countries don't have oil. Labeling the U.S. oil guardianship as something more noble has created another difficult-to-measure cost to the country: our world credibility.

A December 1996 study by the

U.S. General Accounting Office (GAO) has underscored the importance of understanding the hidden costs. The GAO reached a shocking conclusion: the economic benefits of imported oil outweigh the costs of supply disruptions. The report admits that some hidden costs of imported oil were not included, such as those cited in this recommendation. The report leaves the unwritten impression that all U.S. oil needs should be filled by imported crude.

The highly questionable methodology used

by the GAO in reaching its conclusions is indicative of the problems encountered in establishing domestic oil and natural gas policy. Petroleum is often used as leverage in international relations, so discussions of domestic policy are clouded by the potential use of petroleum as a diplomatic or political weapon.

An equally inappropriate use of oil for

political posturing involves the use of the Strategic Petroleum Reserve (SPR) for short-term

concerns, such as a temporary increase in gasoline costs driven by market demand. The entire cost of building, stocking and maintaining the SPR is a factor that must be considered as we assess the cost to the U.S. economy of imported oil. The interest on that investment, as well as the operating cost, tops \$1 billion each year.

Another cost to be assessed is that to develop alternate energy sources. Since the 1973 oil embargo, taxpayers have poured tens of billions of dollars into developing

LABELING THE U.S. OIL GUARDIANSHIP AS SOMETHING NOBLE HAS CREATED ANOTHER DIFFICULT-TO-MEASURE COST TO THE COUNTRY: OUR WORLD CREDIBILITY.

RECOMMENDATIONS CONTINUED

alternate sources. In addition, the state and federal governments poured tens of billions of dollars into energy conservation measures in buildings, which has little or nothing to do with the real issue — imported oil used to fuel transportation.

As we have increasingly turned to imported oil, we have encouraged the loss of domestic infrastructure and decreased domestic areas available for exploration and production — other consequences to be considered when evaluating the cost of imported oil to the U.S. economy.

Additional, unmeasured costs to the economy result from the impact of imports on the U.S. trade deficit.

As noted by authors Donald P. Hodel and Robert Deitz in their book *Crisis in the Oil Patch*, “Our purchases of foreign oil have contributed more to the growth of the trade deficit than any other single commodity. In fact, over the past twenty-plus years we have imported more oil than the net difference

between our purchases and sales of automobiles, electronics equipment and other finished goods.”⁵

In the past 20 years, costs for imported oil have amounted to more than 60 percent of the U.S. trade deficit. U.S. Department of Energy statistics reveal that “between 1980 and 1992, the United States paid \$742 billion (1987 dollars) to other countries to purchase imported crude oil and petroleum products. In comparison, over the same period Americans paid \$498 billion for imported automobiles.”⁶

The implications of the massive transfer of private sector wealth from the U.S. to foreign countries have not been fully examined. The IOGCC advocates the creation of a special commission to study these impacts.

Taken together, these estimates of the true cost and consequences of imported oil will permit the American public to evaluate cost-effective options for encouraging domestic production.

RECOMMENDATIONS CONTINUED

2. Promote the expansion of research to recover domestic oil and gas resources.

This far-reaching recommendation encompasses a number of initiatives designed to ensure the nation's reserves are fully developed. First, to make informed decisions regarding the nation's energy future, the public must have definitive information on the actual domestic petroleum resource.

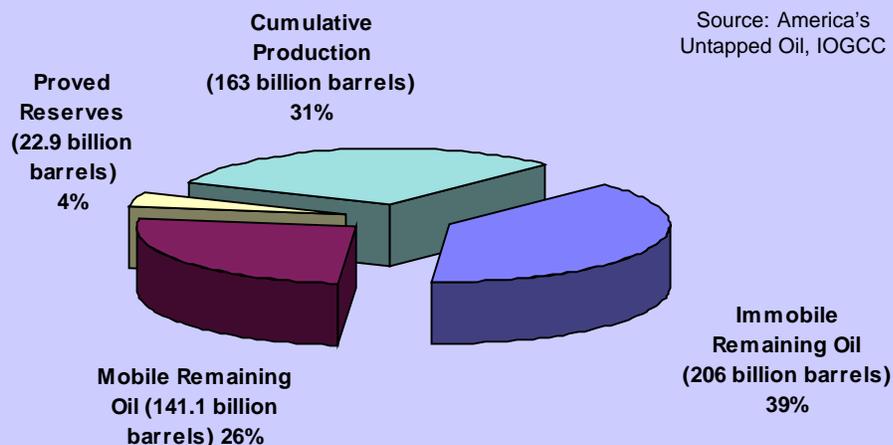
For example, there are vast known reserves of oil in the United States. The IOGCC estimates that 351 billion barrels will

remain in the ground after conventional recovery technologies have been applied (Figure 5).

In addition, there are oil and natural gas reserves located on private and public lands and offshore that have not been analyzed or catalogued. Some of these reserves may exist in environmentally sensitive areas or in difficult-to-access locations that would require extraordinary exploration and production measures or advanced research to develop. Therefore, in addition to identifying the entire oil and gas resource base of the country, research should include estimates of the time required to bring these resources

FIGURE 5 — ESTIMATED U.S. OIL RESOURCE (1999)

Total Original Oil-in-Place: 533 billion barrels



RECOMMENDATIONS CONTINUED

into production.

Defining these resources is only a first step. As an advocate for oil and natural gas research, the IOGCC also strongly supports programs that create technology to improve recovery rates and lower finding and production costs. Such research and development (R&D) is an investment in the country's future and its energy security. Technological advance might be the

most important factor in ensuring America's nonrenewable resources are fully developed.

As noted by the Task Force on Strategic Energy Research and Development, "There is growing evidence of a brewing 'R&D crisis' in the United States — the result of cutbacks and refocusing in private-sector R&D and reductions in federal R&D. Support for research and development is indeed being simultaneously reduced in the private and public sectors. R&D cannot be turned on and off like a water tap. The acquisition of new knowledge and the embodiment of new

knowledge in new products and services for the economy is a cumulative process that requires continuous effort to sustain. The accumulation of cutbacks in public and private R&D could be setting the stage for a major shortfall and setbacks in R&D in the United States — characterized by the lack of

consistent attention to longer-term needs and problems, a shrinking population of scientists and engineers available to

perform high-quality R&D, and a loss of incentives and opportunities for new generations of technologists."⁷

A 1997 report commissioned by the IOGCC confirmed the declining trend in oil and gas research and development. "When private R&D is compared to federal expenditures, the outlook is more bleak. Private spending is substantiated. . . but federal spending remains disproportionately small compared to the relative importance of oil and gas to U.S. energy requirements."⁸

THERE IS GROWING EVIDENCE OF A BREWING R&D CRISIS IN THE UNITED STATES — THE RESULT OF CUTBACKS AND REFOCUSING IN PRIVATE-SECTOR R&D AND REDUCTIONS IN FEDERAL R&D.

RECOMMENDATIONS CONTINUED

Enrollment in petroleum-related majors at America's colleges and universities has shrunk as well. At the University of Texas at Austin, home of one of the largest petroleum engineering programs in the nation, undergraduate enrollment in the Department of Petroleum and Geosystems Engineering has plummeted more than 80 percent from a high of 1,200 in 1982 to 222 in 1999.⁹ About 1,300 students currently are enrolled in undergraduate petroleum engineering programs in the U.S., down sharply from more than 11,000 in 1983.

A 1997 study published by the IOGCC expressed alarm at the loss of experienced and entry-level technical personnel, noting "there is a 5- to 7-year gap between decisions to increase exploration budgets and resulting new oil production, even when experienced technical staff are available. However, few have considered the long-term effects of the 1986 petroleum jobs massacre (in which 500,000 jobs were lost) and how the events of

10 years ago will influence future energy policy and supplies . . . Any crisis in oil supply causing increases in domestic activity will be constrained by lack of qualified staff."¹⁰

The federal government could fulfill a vital leadership role in reversing the trend. The country's network of national laboratories, for

example, seems ideally suited for the mission of energy research.

In addition, the IOGCC

supports a reallocation of U.S. Department of Energy resources to provide additional research and development funding for oil and natural gas. The DOE's budget request totals \$18.9 billion for fiscal year 2001. For fossil energy research and development, DOE is requesting \$376 million, less than 2 percent of the budget. About \$160 million is requested for oil and natural gas research. This represents slightly more than one-half of one percent of the DOE budget request — for fuels that deliver more than 85 percent of the

ENROLLMENT IN PETROLEUM-RELATED MAJORS AT AMERICA'S COLLEGES AND UNIVERSITIES IS SHRINKING AND EXPERIENCED PERSONNEL ARE LEAVING THE INDUSTRY FOR MORE STABLE EMPLOYMENT.

RECOMMENDATIONS CONTINUED

country's energy.

The DOE's Office of Fossil Energy highlights the importance of R&D. "Looking forward, the domestic oil and gas industry will be challenged to continue extending the frontiers of technology. Ongoing advances in E&P productivity are essential if producers are to keep pace with steadily growing demand for oil and gas, both in the United States and world wide."²⁸

The NPC notes "producers are turning to the service sectors to develop new technology for specific applications. Industry consortia have been formed to address critical technology challenges such as deep water development. While many of these changes improve the efficiency with which research and

development dollars are spent, concerns have been widely expressed that basic and long-term research are not being adequately addressed."²⁹

Meanwhile, solar and renewables technologies, which provide less than 10 percent of U.S. energy, would receive more than \$457 million. The 28 percent increase in funding (\$99 million) for 2001 represents more than the total request for oil and natural gas research.

Reality dictates that additional funding for oil and natural gas research and development is unlikely. However, the IOGCC supports a drastic shift in how available tax dollars are spent. In the early years of the DOE, large and expensive demonstration projects

FIGURE 5 — COMPARISON OF U.S. DEPARTMENT OF ENERGY RESEARCH AND DEVELOPMENT BUDGET REQUEST (FISCAL YEARS 1998 AND 2001)

Basic and Applied Research and Development (Millions of Dollars)

	FY 1998	FY 2001
Coal and Power Systems	\$100	\$193
Electrical Energy Systems and Storage	45	45
Fusion Energy	225	218
Natural Gas	102	107
Nuclear Technology	108	109
Oil	52	52
Renewable Energy	343	345

Source: U.S. Department of Energy

RECOMMENDATIONS CONTINUED

dominated R&D spending. “That early emphasis on demonstration projects, reflecting the turmoil of the late 1970s, was, in retrospect, misplaced.”¹¹

Despite billions of dollars spent on renewable energy R&D during the period of 1990–1999, there has been little impact by renewables on the nation’s total energy consumption pattern (Figure 6). In fact, in 1999, renewables supplied a nearly identical percentage of the nation’s total energy consumption as in 1990.

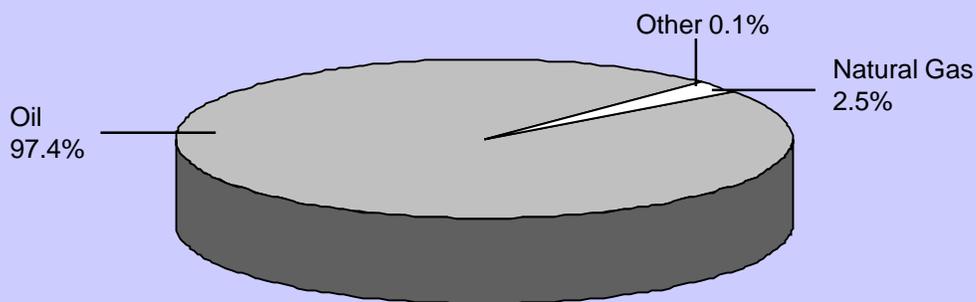
According to Hodel and Deitz, “however important alternative sources eventually may be, our best estimate is that we will continue to meet our energy needs with oil and gas for at least the remainder of this and the next generation of Americans, and very possibly

several succeeding ones as well. Without some kind of energy breakthrough or aggressive government mandates, oil and gas appear certain to be our predominant fuels for the next 40 to 100 years.”¹²

A broad range of parties assembled by the National Petroleum Council to assess the future of the oil and gas industry expressed “...surprisingly broad agreement...” on the outlook for the next 25 years, including, “The United States and the world will still be using large amounts of oil and gas in 2020, not significantly different from the more than 60 percent share of world energy consumption these fuels represent today.”¹³

The case for redirecting R&D dollars to where they would prove more effective is especially important as government considers

FIGURE 6 — U.S. TRANSPORTATION ENERGY SOURCES (1999)



Source: Energy Information Administration

RECOMMENDATIONS CONTINUED

budget freezes and cutbacks. Past successes, including three-dimensional seismic, polycrystalline diamond drill bits and horizontal drilling, which have helped lower costs and improve recovery, should be built upon.

To ensure that these limited resources are spent wisely, the IOGCC recommends the budgets for energy research and development be considered by the same congressional subcommittees. Current congressional structure requires fossil fuel and renewables research budgets to be evaluated in separate budget bills handled by separate subcommittees of the House and Senate Appropriations Committees. As a result, side-by-side comparisons of expenditures and impacts are

difficult, and there is a lack of flexibility in allocating finite resources.

The NPC notes “in the past three decades, the petroleum business has transformed itself into a high-technology industry...Looking forward, the domestic oil and gas industry will be challenged to continue extending the frontiers of technology. Ongoing advances in E&P productivity are essential if producers are to keep pace with steadily growing demand for oil and gas, both in the United States and world wide. Continuing innovation will also be needed to sustain the industry’s leadership in the intensely competitive international arena, and to retain high-paying oil and gas industry jobs at home.”¹⁴

RECOMMENDATIONS CONTINUED

3. Re-examine federal and state policies as they relate to oil and natural gas development in consideration of new incentives for exploration and production.

In recent years, nearly every discussion of the status of the domestic oil exploration and production industry includes the description of the United States as a “...mature producing region. As a result, the nation is increasingly depending on imports from areas with more readily accessible oil.”¹⁵

To assume that foreign oil is more accessible than domestic oil seems

fundamentally flawed and contrary to ensuring the nation’s energy security. This assumption has led to ambivalence about the tens of thousands of small-volume wells in the United States that maximize recovery from known reservoirs.

Incentives in this area have been extremely effective, including tax credits for the application of enhanced recovery techniques, which can produce as much as 20 percent additional petroleum. An incentive package for marginal wells in Texas is credited with prolonging production and generating significant tax dollars and recovering natural resources that would otherwise be lost.

Incentives led to commercialization of coalbed methane and other “nonconventional” sources, such as tight gas sands and shale gas, as sources of energy. Special provisions for heavy oil production

also have yielded crude which in other circumstances would be abandoned.

The oil and natural gas producing

states have attempted to assist the industry in reaching its fullest potential. The 1999 IOGCC study *Investments in Energy Security: State Incentives to Maximize Oil and Gas Recovery* found an array of state programs created to address current issues. States’

THE OIL AND NATURAL GAS PRODUCING STATES HAVE ATTEMPTED TO ASSIST THE INDUSTRY IN REACHING ITS FULLEST POTENTIAL BUT THE FEDERAL GOVERNMENT HAS DONE LITTLE TO STIMULATE GROWTH.

RECOMMENDATIONS CONTINUED

responses to the needs of the petroleum industry are varied, but the most successful included common elements that ensured simplicity and highly targeted impact.

However, the federal government has eliminated many of its incentives for domestic production, and incentives for exploration

have virtually disappeared.

Accordingly,

major oil

companies,

recognizing

that the

federal

government

seems willing

to write off domestic resources, are choosing to spend billions of dollars overseas on exploration and production.

Hodel and Deitz say “the fact remains: public policy today works to the detriment of the domestic oil and gas industry.”¹⁶

During consideration of the legislation that became the Tax Reform Act of 1986, many of the tax incentives for exploration and production that the oil and natural gas industry had utilized in its search for new resources were either eliminated or scaled

back. Coupled with the collapse of oil prices that year, the loss of these tax incentives has helped to depress activity in the United States so severely that the rig count reached its lowest level since the end of World War II.

The combination of low prices and lost

incentives caused cessation, postponement or

cancellation of

many current

or planned

enhanced oil

recovery

projects.

Thousands of

stripper oil

wells have

been shut in

MAJOR OIL COMPANIES, RECOGNIZING THAT THE FEDERAL GOVERNMENT SEEMS WILLING TO WRITE OFF DOMESTIC RESOURCES, ARE CHOOSING TO SPEND BILLIONS OF DOLLARS OVERSEAS ON EXPLORATION AND PRODUCTION.

because the cost of production outweighed the price received for the oil produced. Other

wells have been abandoned instead of

plugged because the cost of plugging re-

mained less than the costs of operation. Such

marginal wells, producing 10 barrels or less

per day, provide 14 percent of U.S. produc-

tion and form a hedge against even greater

dependence upon foreign crude oil imports

(Figure 7). In its 2000 study, *Produce or Plug:*

The Dilemma Over the Nation’s Idle Oil and

Gas Wells, the IOGCC reported that 343,030

RECOMMENDATIONS CONTINUED

wells were idle in the United States in 1999.¹⁷

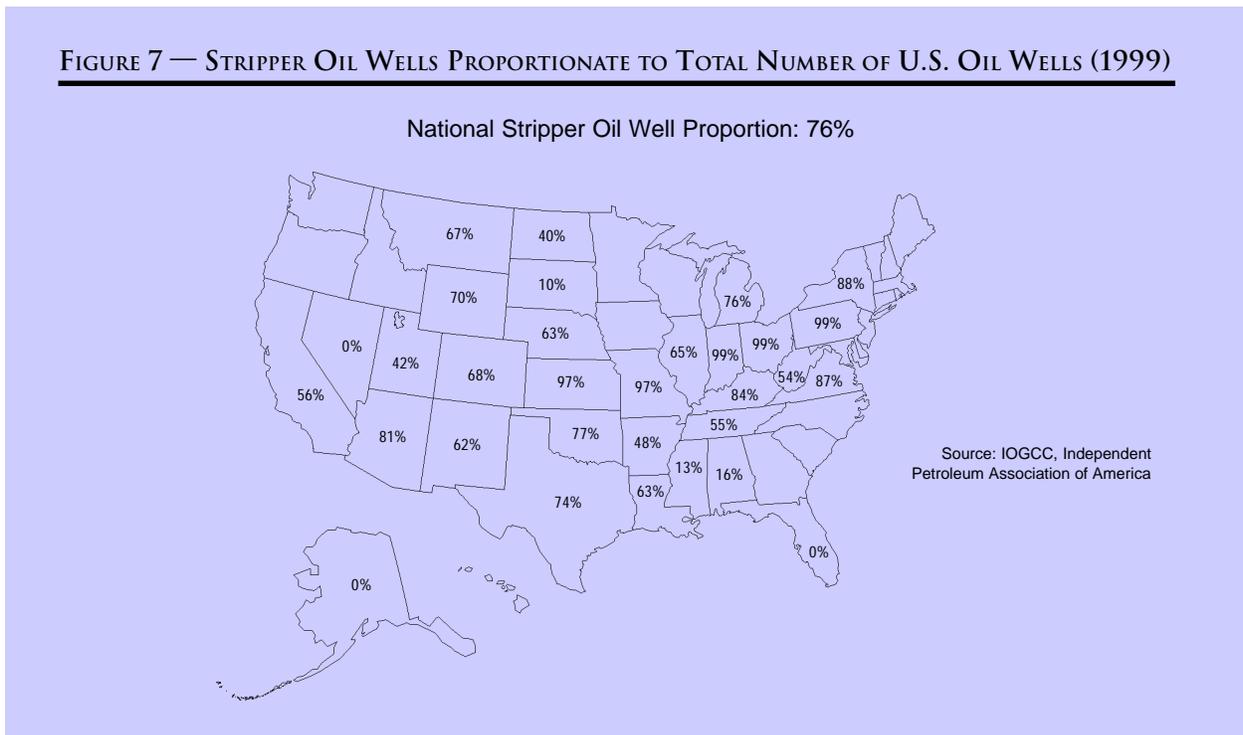
Without quick action by state and federal regulators who have permitted temporary idling of marginal wells or prolonged plugging deadlines, perhaps thousands more of these stripper wells would have been abandoned. Once abandoned, these wells, the reservoirs and remaining oil resources they contact, and access they can provide for advanced recovery technologies are, in effect, permanently lost to production or other service. With few exceptions, it is financially impossible to re-drill a three- or four-barrel-a-day well and expect it to make up its

development costs. It also is economically infeasible to re-drill these wells for future enhanced recovery purposes if the pool or field is already marginal.

Ironically, this is oil that already has been discovered and reservoirs that already have been characterized. The known oil resources are enormous.

A 1995 IOGCC report, *America's Untapped Oil*, estimated the total oil-in-place (known oil reserve) in the United States at 533 billion barrels. Only 152 billion barrels are considered salvageable under existing economic conditions. This leaves about 381 billion

FIGURE 7 — STRIPPER OIL WELLS PROPORTIONATE TO TOTAL NUMBER OF U.S. OIL WELLS (1999)



RECOMMENDATIONS CONTINUED

barrels as a target for new extraction technologies, according to the IOGCC. (See Figure 5).

It is estimated that as much as 225 billion barrels are present in discovered and undiscovered oil reserves (enough to supply all U.S. oil needs for decades at the current rate of

consumption).

In addition, an

estimated

1,800 trillion

cubic feet of

natural gas

(enough to

supply U.S. needs for hundreds of years at current consumption rates) have yet to be produced.

Incentives that should be considered for either enactment or revival by the federal government include:

- Allowing the deduction of no more than 50 percent of a taxpayer's income for certain oil and gas exploration and production expenses.

- An investment tax credit for exploration and development expenditures, stripper well operations and enhanced recovery project expenditures.

- Allowing the choice of expensing or capitalizing geological and geophysical costs.

- Providing certain tax incentives for marginal wells and some limited tax credits for new domestic production.

The states have explored alternatives for maintenance of marginal well operations and

the encourage-

ment of new or

continued

enhanced

recovery

operations.

The states also

have enacted a

FROM A \$2.8 BILLION INVESTMENT, STATES
GENERATED \$75 BILLION IN HYDROCARBON
PRODUCTION AND EXPENDITURES TO
PARTICIPATE IN THE INCENTIVES.

variety of exploration and production incentives, including reductions in severance or income taxes and initiatives that reduce administrative costs of oil and gas operations.

In a landmark 1999 study, *Against the Wind: The Economic Impact of Incentives during the Oil Price Collapse*, the IOGCC proved that incentives work to increase production and to generate substantial economic benefits. For an investment of \$2.8 billion in reduced tax collections, states generated \$75 billion in hydrocarbon production and expenditures to participate in the incentives. States benefited directly from

RECOMMENDATIONS CONTINUED

\$9 million in state and local tax and royalty collections.

According to the study, “while it remains impossible to calculate how much of these economic effects is caused by the incentive programs, they still appear to remain ‘profitable’ for the legislatures investing the money. In a larger sense, the tax revenue stream pales in

comparison to the beneficial effects on the economy. The \$113.2 billion in economic effects creates

\$14.8 billion in salaries, which in turn yields 630,000 jobs (meaning years of employment). About 1/3 of these would be direct jobs in the oil and gas industry, while 2/3 would represent years of employment in other sectors of the state economy.”¹⁸

Additional incentives for fully finding and developing the nation’s reserves are possible as public policy recognizes that “mature” production and the nation’s remaining oil producing regions should not be abandoned in favor of foreign sources.

Although incentives will prove helpful to

preventing the waste of domestic resources, governments have recognized the need to increase the productivity and competitiveness of the domestic gas and oil industry without compromising environmental protection.

In response, federal agencies have pledged to “...enhance the efficiency and effectiveness of state and federal regulatory

programs and reduce undue burdens on the domestic natural gas and oil industry by improving

coordination among regulatory agencies, eliminating redundant or unnecessary regulation, and avoiding duplication in state and federal regulatory programs.”¹⁹

IOGCC member states are cooperating in these efforts to eliminate needless paperwork, redundant reporting, permits, hearings and inspections. For example, California, Colorado, New Mexico and Wyoming have worked together to develop standardized forms that pertain to common elements of their regulatory programs.

As a matter of policy, the IOGCC supports

CALIFORNIA, COLORADO, NEW MEXICO AND WYOMING HAVE WORKED TOGETHER TO DEVELOP STANDARDIZED FORMS FOR COMMON ELEMENTS OF THEIR REGULATORY PROGRAMS.

RECOMMENDATIONS CONTINUED

oil and natural gas regulation by the states, where differences in geology, climate and economic factors can be adequately considered. The “one-size-fits-all” nature of federal laws and regulations cannot efficiently deal with diversities in individual states and actually discourages domestic production.

Examples of costly regulatory burdens include Superfund joint liability provisions, the financial requirements imposed by the Oil Pollution Act of 1990, the Risk Management Program of the Clean Air Act Amendments, and Enhanced Air Monitoring proposed by the Environmental Protection Agency (EPA).²⁰

In addition, EPA is continuing to look at

regulatory expansions into areas already well-regulated by the states.

U.S. oil and gas operators are required to comply with these and many other regulations unique to the United States. Yet U.S. tax dollars are spent or used to guarantee loans to foreign countries — most with inadequate regulatory mechanisms in place — to develop oil fields and to repair deteriorating petroleum infrastructure. The IOGCC is on record in support of a national policy that prohibits the expenditure of tax dollars for petroleum-related projects in foreign countries where regulation is less stringent than in the United States.

RECOMMENDATIONS CONTINUED

4. Encourage conservation of the fossil fuel resource by the public and efficient production technologies.

An area in which the efforts of local, state and federal governments have been successful in the past is the encouragement of conservation by the public of the fossil fuel resource. Fuel efficiency in automobiles has increased

considerably since the 1973 oil embargo, due, in large part, to federal Corporate

Average Fuel Efficiency (CAFE) standards. Advances have been made in building heating and cooling efficiency, and individual home use of energy has been made more efficient by utility-sponsored research through the Electric Power Research Institute and the Gas Research Institute.

Continuation of these efforts must be encouraged to avoid complacency on the part of the American public when fossil fuel prices are low. Particular vigilance is

essential in the conservation of liquid transportation fuels, which account for about 70 percent of the use of petroleum products.

A key in consumer conservation is energy education. For example, the direct conversion of natural gas to energy, such as for home heating, appliances and as compressed natural gas for vehicles, is far more efficient than the conversion of gas to electricity.

Compressed natural gas (CNG) has

numerous advantages as a transportation fuel source: it is clean burning, efficient and readily

A KEY IN CONSUMER CONSERVATION IS ENERGY EDUCATION THAT ENABLES CONSUMERS TO MAKE CHOICES BASED ON THE WISE USE OF RESOURCES.

available domestically. Consumers should be made aware that the nation's dependency on foreign petroleum could be significantly reduced with increased use of CNG- or dual-fueled vehicles. The automotive industry's efforts to provide cost-competitive CNG-fueled vehicles and the refueling infrastructure have not yet reached the level necessary to attract sufficient numbers of consumers. However, CNG is a growing fuel of choice for local fleets such as school buses and commer-

RECOMMENDATIONS CONTINUED

cial delivery vehicles.

The IOGCC supports energy education that permits consumers to make choices based on conservation and the wise use of resources.

Barriers to the expanded use of natural gas identified by the IOGCC in 1992 included physical and regulatory.²¹ Among physical barriers were the inadequacy of existing pipelines, the lack of natural gas infrastructure (especially for natural gas vehicles), low capacity electric generation economics, a lack of necessary gas-flow information, lack of storage to meet peak demands, and a lack of adequate supply and market pooling points.

Regulatory barriers included uncertainty shared by producers, pipeline owners, marketers, local distribution companies and end users. Market barriers also exist in perceptions toward the physical properties and use of natural gas.

While these barriers are slowly coming down, the processes are slow and uncoordi-

nated. As a result, natural gas is under-utilized as an appropriate fuel, and imports fill this need.

The IOGCC notes “because of the fundamental advantages that natural gas enjoys over other sources of energy, in terms of price, environmental attributes and domestic security of supply, natural gas is poised to achieve its rightful role as the nation’s

dominant fuel. This vision, however, cannot be achieved in the near term if current

trends are simply projected into the future. To realize stable deliverable supplies of natural gas, adequate transportation and expanded demand, existing barriers to the use of natural gas must be understood and overcome.”²²

No discussion of domestic energy security is complete without considering government policy that prohibits exploration and production on public properties. It makes no sense to allow valuable oil and natural gas reserves to remain untapped based solely on the perception that drilling and production technologies are inherently damaging to the

NATURAL GAS IS UNDER-UTILIZED AS AN APPROPRIATE FUEL BECAUSE OF PHYSICAL AND REGULATORY BARRIERS.

RECOMMENDATIONS CONTINUED

environment. Thanks to proactive state regulatory programs, this is not the case.

Oil spills capture news headlines are primarily a result of the bulk transportation of oil, not the process of exploration and production.

Foreign oil imports arriving by supertankers represent a far greater risk to the environment than offshore drilling and production —

even in environmentally sensitive areas.

Progressive state programs have proven that oil exploration and production and sound

environmental protection can coexist. Efforts in Alaska, for example, have shown successful large-scale production can have minimal impact even on sensitive onshore locations.

Alaska's successful regulatory track record

supports the views of many residents and leading political figures that part of the Alaska National Wildlife Refuge — with billions

ALASKA'S SUCCESSFUL REGULATORY TRACK RECORD SUPPORTS THE VIEWS OF MANY RESIDENTS AND LEADING POLITICAL FIGURES THAT PART OF THE ALASKA NATIONAL WILDLIFE REFUGE — WITH BILLIONS OF BARRELS OF POTENTIAL RESERVES — SHOULD BE OPENED TO PETROLEUM EXPLORATION.

of barrels of potential reserves — should be opened to petroleum exploration.

CONCLUSION

Crucial to the implementation of a national policy for oil and natural gas is the realization that increases in crude oil imports are expected to continue for the foreseeable future. Foreign oil is expected to provide 56 percent of U.S. consumption by the end of 2000. The United States is no longer in the enviable position it enjoyed a half century ago, when it produced more than half of the world's oil.

Due to its high percentage of imports, the United States grows increasingly vulnerable to market manipulations by foreign producers who use oil not only as a source of economic wealth, but as a political weapon. The Middle East has 10 times the known reserves of the United States.

The 1973 oil embargo reduced worldwide supplies by about seven percent of pre-embargo consumption; prices increased dramatically (see Figure 2). A similar

shortage that occurred after the Iranian revolution caused prices to triple; the surplus that occurred when OPEC decided to increase its market share in 1985 and 1986 drove prices back down to near the \$12 level. In 1999, OPEC market manipulation drove the price below \$10. The concentration of

production and reserves among Middle East countries again raises the specter of price gyrations and supply disruptions should certain

DUE TO ITS HIGH PERCENTAGE OF IMPORTS, THE UNITED STATES GROWS INCREASINGLY VULNERABLE TO MARKET MANIPULATIONS BY FOREIGN PRODUCERS WHO USE OIL NOT ONLY AS A SOURCE OF ECONOMIC WEALTH, BUT AS A POLITICAL WEAPON.

nations choose to use oil as a tool for political gain.

In addition, the country has committed to a future that relies on increasing the production of domestic natural gas. The many issues identified by the NPC — particularly access to resources and an emphasis on R&D — should provide a focus for policy makers who acknowledge the country's growing dependence on natural gas.

OPEC provides fresh reminders of its

CONCLUSION CONTINUED

ability to manipulate markets. Spiking oil costs in early 2000 have federal lawmakers desperately looking for quick fixes.

However, as Ruth Sheldon Knowles noted in her book “America’s Energy Famine: Its Cause and Cure,” there are no quick fixes.

“We Americans are so psychologically geared to the idea of doing things quickly in a big way that it hardly seems possible that we cannot have a crash program to get us out of our predicament. In our bewilderment

over our dramatically rapid change from an abundance of cheap energy to shortages of expensive energy, we have found it hard to accept the fact that there are no easy, quick answers.”²³

Not one of the proposals this report contains can be expected by itself to provide the stability necessary to maintain domestic production and a growing economy. However, taken together, they could minimize Ameri-

can dependence upon foreign crude oil and products by stressing domestic oil and natural gas exploration, development and conservation. The United States can not afford to sit back and allow its future to be determined by other nations; the health of the economy and the ability for assured national

defense cannot be maintained while crude oil prices fluctuate wildly. The solutions to the real energy shortage,

THE UNITED STATES CAN NOT AFFORD TO SIT BACK AND ALLOW ITS FUTURE TO BE DETERMINED BY OTHER NATIONS; THE HEALTH OF THE ECONOMY AND THE ABILITY FOR ASSURED NATIONAL DEFENSE CANNOT BE MAINTAINED WHILE CRUDE OIL PRICES FLUCTUATE WILDLY.

that of liquid transportation fuels, are years away. Renewable energy sources that hold promise will have only a minor impact in satisfying this growing demand (Figure 6).

The petroleum industry remains one of this country’s most important, comprising from 3 to 5 percent of the economy. The industry provides 3 percent of private, nonresidential domestic investment (1987), 4.3 percent of all federal state and local taxes

CONCLUSION CONTINUED

(1991), 84.4 percent of federal mineral lease royalties (1993), 1.4 percent of U.S. employment (1993), 20.8 percent of U.S. spending on pollution abatement in manufacturing (1992) and wages 14.2 percent higher than the U.S. average (1993).²⁴ Its health and the products it delivers are vital to the high quality of life expected by the public.

However, the federal government has been unable to deliver an integrated energy policy that centers on domestic production, energy security, economic development, environmental protection and conservation. “Perhaps the most consistent element in U.S. oil policy is economic inefficiency.”²⁵

The federal mandate that deliberately constrains domestic resource development in areas such as the Outer Continental Shelf of California “is poor energy policy which artificially inflates U.S. imports (\$56 billion for petroleum in 1994). It is poor government fiscal policy which abandons the stewardship role of maximizing the value of federal lands. It is poor economic and trade policy which discourages capital investments in the U.S.

and the jobs and other benefits they create. It is poor environmental policy insofar as it moves production to areas of the world with less stringent standards of environmental performance.”³⁰

There is no indication that the federal government will act effectively to address energy issues. For example, the recent, temporary increase in gasoline prices fueled “crisis mentality” rhetoric that ranged from the proposed repeal of various taxes on gasoline to selling crude oil from the Strategic Petroleum Reserve to allocating hundreds of millions more for alternative energy research (aimed at electricity, not vehicle fuels).

The energy future for America is too important to be shaped by purely political gain. The states, acting through the offices of their governors, will lead the debate and push for the enactment of a National Oil and Gas Policy based on economic development, maximizing domestic production, increasing access to potential reserves, promoting research and development and prolonging production from marginal wells.

ENDNOTES/CREDITS

1. Interstate Oil and Gas Compact Commission, *Marginal Oil and Gas: Fuel for Economic Growth*, 1999.
2. *Oil Daily*, March 23, 2000.
3. The White House, press release, March 18, 2000.
4. Energy Information Administration, “Short Term Energy Outlook,” October 1999.
5. Hodel, Donald P., and Deitz, Robert, *Crisis in the Oil Patch*, 1994, page 98.
6. U.S. Department of Energy, *The Domestic Natural Gas and Oil Initiative*, December 1993, page 3.
7. Secretary of Energy Advisory Board, U.S. Department of Energy, *Energy R&D: Shaping Our Nation’s Future in a Competitive World, Final Report of the Task Force on Strategic Energy Research and Development*, June 1995, page 3.
8. Coopers & Lybrand, L.L.P., *American Petroleum: A Crisis Worth Managing*, April 1997, page 11.
9. Abramson, David, “Huge Drop in Ranks of Young Oil Engineers Challenges Industry,” *The Oil Daily*, November 4, 1996.
10. Gerhard, Lee, Sorensen, Janice, and Hathaway, Melanie, *National Geoscience and Engineering Manpower Issues for the Petroleum Industry*, May 1997.
11. Secretary of Energy Advisory Board report, op. cit., page 6.
12. Hodel and Deitz, op. cit., page xii.
13. National Petroleum Council, *Future Issues — A View of U.S. Oil and Natural Gas to 2020*, August 1995, page 4.
14. National Petroleum Council, *Meeting the Challenges of the Nation’s Growing Natural Gas Demand*, December 15, 1999.
15. Department of Energy, *The Domestic Natural Gas and Oil Initiative*, page 2.
16. Hodel and Deitz, op. cit., page 10.
17. Interstate Oil and Gas Compact Commission, *Produce or Plug: The Dilemma Over the Nation’s Idle Oil and Gas Wells*, December 1996, page 1.
18. Interstate Oil and Gas Compact Commission, *Investments in Energy Security: State Incentives to Maximize Oil and Gas Recovery*. Includes *Against the Wind: The Economic Impact of Incentives during the Oil Price Collapse*. December 1999, page 81.
19. Department of Energy, *The Domestic Natural Gas and Oil Initiative*, page 25.
20. National Petroleum Council, op. cit., page 25.
21. Interstate Oil and Gas Compact Commission, *Barriers to the Expanded Use of Natural Gas Resources*, June 1992.
22. *Ibid.*, page 7.
23. Knowles, Ruth Sheldon. *America’s Energy Famine: Its Cause and Cure*. 1980, page 328.
24. National Petroleum Council, *Future Issues*, page 10.
25. Mitchell, Edward J., *Perspectives on U.S. Energy Policy — A Critique of Regulation*, 1976, page 53.
26. National Petroleum Council, *Meeting the Challenges*, page 1.
27. *Ibid.*, page 1.
28. U.S. Department of Energy, Office of Fossil Energy, *Environmental Benefits of Advanced Oil and Gas Exploration and Production Technology*, October 1999, page 13.
29. National Petroleum Council, op. cit., page 24.
30. United States Energy Association, *U.S. Energy 1995: Energy and a Changing World, 9th Annual Assessment of United States Energy Policy*, October 1995, page 4.

ABOUT THE INTERSTATE OIL AND GAS COMPACT COMMISSION

The Interstate Oil and Gas Compact Commission (IOGCC) represents the governors of 37 states — 30 member and seven associate states — that produce virtually all the domestic oil and natural gas in the United States. Five international affiliates have been accepted into the IOGCC in recent years.

The organization's mission is to promote the conservation and efficient recovery of domestic oil and natural gas resources, while protecting health, safety and the environment.

Since its creation in 1935, the IOGCC has assisted states in balancing a multitude of interests — maximizing domestic oil and natural gas production, minimizing the waste of irreplaceable natural resources, and protecting human and environmental health — through sound regulatory practices. The IOGCC plays an active role in Washington, D.C., serving as the voice of the states on oil and natural gas issues and advocating states' rights to govern the resources found within their borders.

For more information about the IOGCC, please call 405/525-3556, visit its World Wide Web site at www.iogcc.state.ok.us, or send electronic mail to iogcc@iogcc.state.ok.us.

Member States

Alabama (1945)
Alaska (1957)
Arizona (1955)
Arkansas (1941)
California (1974)
Colorado (1935)
Florida (1945)
Illinois (1935)
Indiana (1947)
Kansas (1935)
Kentucky (1942)
Louisiana (1941)
Maryland (1959)
Michigan (1939)
Mississippi (1948)
Montana (1945)
Nebraska (1953)
Nevada (1955)
New Mexico (1935)
New York (1941)
North Dakota (1953)
Ohio (1943)
Oklahoma (1935)
Pennsylvania (1941)
South Dakota (1955)
Texas (1935)
Utah (1957)
Virginia (1982)
West Virginia (1945)
Wyoming (1955)

ASSOCIATE STATES

Georgia (1946)
Idaho (1960)
Missouri (1995)
North Carolina (1971)
Oregon (1954)
South Carolina (1972)
Washington (1967)

INTERNATIONAL AFFILIATES

Alberta (1996)
Egypt (1999)
Newfoundland and Labrador (1997)
Nova Scotia (1997)
Venezuela (1997)



Interstate Oil and Gas Compact Commission

900 N.E. 23rd Street, Oklahoma City, Oklahoma 73105

P.O. Box 53127, Oklahoma City, Oklahoma 73152-3127

Phone 405/525-3556 Fax 405/525-3592 E-mail iogcc@iogcc.state.ok.us

World Wide Web <http://www.iogcc.state.ok.us>