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PIRINC has prepared the enclosed report entitled, *Directions Towards A Balanced Energy Policy.*

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This report discusses some guidelines that the new Administration and the Congress should consider as they begin to grapple with the directions of future U.S. energy policy. First and foremost, there is no single policy action, or any single fuel, that can resolve all US energy concerns. A balanced mix of policies is required. A further consideration is that, especially in the case of energy, modest gains in supply can have disproportionately large effects, not least in avoiding local price spikes. Finally, the California electricity crisis highlights the critical importance of regulatory and market flexibility, and the high cost to be paid when they are absent.

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Directions Towards A Balanced Energy Policy

SUMMARY

The past year has brought the sharpest reminders in a generation of the importance of stable supplies of energy for maintaining living standards and supporting economic growth. The energy disruptions of 1973-74, 1979-80 and 1990-91, all the result of curtailments in world oil supplies, were major contributors to the recessions that followed. The most recent energy supply problems impacting the U.S. differ in key aspects from those earlier disruptions since they highlight natural gas and electricity in addition to oil concerns. The U.S. economy has become far more efficient in its overall use of energy over the past two decades. Since 1980, U.S. GDP has increased 90% while energy use has grown only 25%, implying a reduction in the energy-intensiveness of the economy by 35%. However, while the U.S. is more insulated from energy price shocks, it is not immune. The latest round of energy supply problems have had, and continue to have, negative economic impacts, with the most visible effects on particular regions and specific industries.

While tight world oil supply conditions for much of last year produced sharply higher crude oil prices, local supply problems were at least as important in their impact on consumers---and were not confined to oil. There have been natural gas supply shortfalls and price spikes, electricity supply shortfalls and spiraling costs in California, as well as price spikes in Northeast heating oil and Midwest reformulated gasoline that went far beyond changes in crude prices. In light of these developments, any discussion of energy policy must go beyond global oil considerations and focus as well on measures to ease what have proved to be very painful domestic, local energy bottlenecks and minimize prospects of their recurrence.

This report discusses some guidelines that the new Administration and the Congress should consider as they begin to grapple with the directions of future U.S. energy policy. First and foremost, there is no single policy action, or any single fuel, that can resolve all US energy concerns. Thus any sound energy policy must incorporate two principles, balance and diversity. A balanced mix of policies must be considered, addressing both the supply side, which was a low priority for the prior Administration, as well as the demand side. A balanced approach would include a review of the previous Administration's treatment of the "orphan" of recent energy policy, coal, and the "stepchild," nuclear. A further consideration is that, especially in the case of energy, modest gains in supply can have disproportionately large effects, not least in avoiding local price spikes. Finally, the California electricity crisis highlights the critical importance of regulatory and market flexibility, and the high cost to be paid when they are absent.

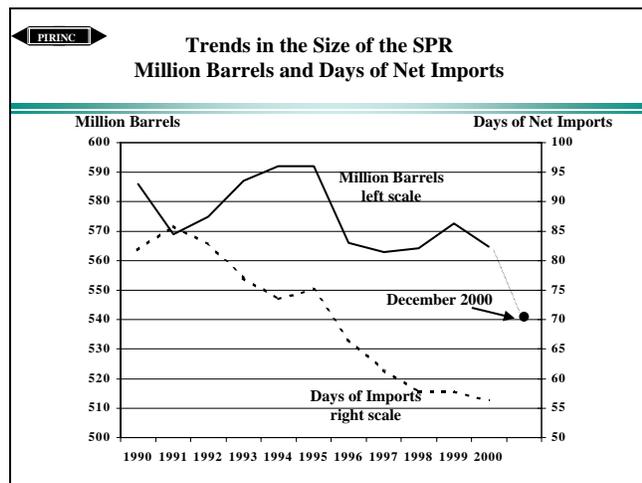
POLICIES FOR OIL

Under any realistic energy scenario, it is inevitable and unavoidable that the US will continue to meet a substantial share, currently over 50%, of its oil requirements through imports. Import dependence per se should not be viewed as undesirable. Availability of imports, even at current prices, keeps energy costs to the US economy far lower than they would be otherwise.

Moreover, major oil producers, including key OPEC producers, view the US market, the largest in the world, as critical for their own economies and have acted to deepen their ties to it.¹

Import dependence should not be confused with vulnerability to disruption in world oil supplies. As long as the US participates in the world oil market, a supply disruption anywhere will impact us through its effects on worldwide oil prices. Thus while diversity of supply should remain a cornerstone of energy policy, it does not reduce the need for a large viable SPR. The best insurance against disruptions is a large stock of prompt barrels of replacement oil. This already exists in the form of the SPR and a top priority for the new Administration should be to review the adequacy of its current level and funding as well as its use. The SPR was designed to minimize economic dislocation during clear-cut supply interruptions and not as a tool to dampen price run-ups, as has recently been the case. In October of last year, the prior Administration used the SPR in an attempt to lower crude prices through the so-called swap of 30 million barrels of oil. The effects proved fleeting and the precedent unfortunate. The new Administration should ensure that the SPR returns exclusively to its original purpose.

The SPR has declined relative to our import requirements and consideration should be given to raising the amounts in storage over a period of time with due allowance for market conditions. The SPR has declined in absolute volume from an average of 592 million barrels in 1994-95 to an average of 565 million barrels last year. As a result of the release under the swap arrangement by the prior Administration late last year, the amount in storage as of December was down to 541 million barrels, lower than any year since 1987, although the volume should move back up as the swap volumes are repaid. The decline in the SPR has been even sharper when measured in terms of import coverage, or days supply of net imports of crude and products accounted for by SPR oil. Last year, the SPR averaged 56 days of net oil imports, down sharply from early 1990s levels in excess of 80 days. Moreover, if the SPR remains at about 570 million barrels, its current level adjusted for repayment of swapped oil, and imports rise in line with the Department of Energy's latest projections, coverage will fall to 46 days by 2005.² Given the large amount of spare storage capacity in place, there would be minimal expense to the government beyond acquisition costs of crude of adding to the SPR and, at the very least, ending this downward trend.



¹ In a world oil market, and excluding the impact of policies such as sanctions, the specific sources of U.S. oil imports are mainly a matter of logistics and price competitiveness---reasons why Mexico, Canada and Venezuela are such prominent supply sources. For consuming countries overall, the OPEC countries, and specifically those in the Persian Gulf, are the prime sources of incremental oil supplies. The US, as well as other consuming countries, has a strong interest in promoting stable, growing supplies from this region.

² The Reference Case Forecast of the 2001 Annual Energy Outlook released by the Energy Information Administration on December 22, 2000 calls for net imports of crude and products to reach 12.15 million barrels/day in 2005.

A high level of import dependency means the US will have a continuing interest in the timely development of diverse sources of supply. There is one particular aspect of US policy, unilateral sanctions, that contradicts this interest in promoting supply diversity.³ Unilateral sanctions generally have been an ineffective policy tool that often does more harm to U.S. entities and its allies than to the targeted country. As a result of prior Presidential Proclamations authorized under the International Emergency Economic Powers Act of 1977, the US currently has in place prohibitions on investment in, and oil imports from, two oil-rich countries, Libya and Iran. Under the Iran Libya Sanctions Act (ILSA) of 1996, the US attempted to restrict investment by foreign companies in these two countries, an effort that has proved unsuccessful. Relationships with both countries have been difficult, at times hostile, and there appears little prospect of early normalization. But tentative steps toward normalization have already been taken and further steps should be considered. A useful next step would be to allow ILSA to expire this August. It would remove a source of contention between the US and its allies and could encourage the two countries to move further toward normalization of relations. The same reasoning does not apply to the sanctions imposed on Iraq. These are international, not unilateral sanctions, and are imposed on a country still in defiance of UN Resolutions. Although Iraq contains the world's largest oil reserves after Saudi Arabia, removal of sanctions must await a change in Iraqi policies that permit a return to normal international relations.

The national interest in timely development of supply should apply within our borders as well as elsewhere in the world. After all, from a strategic perspective (and balance of payments), what can be more secure than market-justified enhancements to domestic supply? In this regard, access to acreage must be yet another cornerstone of a sound energy policy. The most immediate access issue is ANWR, generally conceded to be the most prospective area for significant new supplies of domestic oil. A decision to allow exploration and development in ANWR should rest on a rational analysis of whether industry practices, and regulatory oversight mechanisms, are sufficiently developed to allow operations in ANWR in a manner that would minimize risks in what is an environmentally sensitive area. Unfortunately, the issue has taken on ideological baggage that so far has prevented any moves toward compromise. It should be kept in mind that a similar state of affairs delayed the development of Alaska North Slope oil in the early 1970s. Only after the oil crisis of 1973-74 did Congress finally break the logjam and permit development to proceed. The North Slope continues to be the country's most prolific source of domestic oil. Even so, production, as anticipated, has declined significantly from peak levels. This decline is projected to continue, although investment efforts by companies involved in the North Slope are moderating the rate. This process of decline, however, has created spare capacity in the existing pipeline and related logistics systems. As a result, the infrastructure requirements associated with bringing potentially large new volumes of oil from ANWR to market would be much lower than otherwise. In addition, the U.S. Department of the Interior Minerals Management Service (MMS) has just completed a report assessing the undiscovered conventionally recoverable oil and natural gas resources located outside known oil and gas fields on the Outer Continental Shelf (OCS). The mean estimate is 75 billion barrels of undiscovered conventional recoverable oil and 362 trillion cubic feet of gas. Approximately 1/2 of each is

³ Currently, the US has unilateral sanctions of one kind or another against about 70 countries. In addition to the well-known cases of Iran, Libya and Sudan, countries subject to sanctions include such surprising entries as Canada, Italy, Japan, Nigeria, Venezuela and Mexico for a host of reasons ranging from environmental concerns related to fishing practices to enforcement issues concerning drugs.

estimated to be located in the Gulf of Mexico. This would strongly suggest that the U.S. is still a viable source for oil and gas.

While the SPR protects against global supply disruption, the US faced specific, local supply disruptions and price spikes that must be addressed less through any new policy initiatives than through greater caution in applying existing policies. The flare-up in Mid-West gasoline prices this past summer, and the periodic flare-ups in California gasoline prices were directly the result of environmental regulatory actions that effectively restricted alternative sources of supply when local supply capabilities faltered. More broadly, prices of Phase 2 reformulated gasoline were pushed up to a certain extent because of lack of capability of traditional foreign suppliers to meet the new specifications in line with the timetable set by regulators. There is a need to review pending regulatory actions, notably regarding the timing of the MTBE phase out and low-sulfur diesel, to insure that requirements don't yet again get ahead of industry ability to supply.

A growing share of U.S. imports requirements will come in the form of finished products, principally transportation fuels. Thus changes in U.S. product specifications must increasingly be sensitive to the global market's ability to respond in a timely fashion. The increasing "boutiqueness" of U.S. product markets heightens the probability of periodic, short-lived, price spikes over and beyond any increases in crude oil prices.⁴

NATURAL GAS

Gas has been the unqualified favorite fuel of policy-makers. It is clean, capable of very high-efficiency power generation, and comes almost entirely from domestic and Canadian sources. Until recently, gas has also been cheap, with wellhead prices during the 1990s averaging less than \$2/MCF (less than \$11/barrel oil equivalent). As a result of these attributes, gas has become the fuel of choice for nearly all, new, power generating capacity. More than 90% of the growth in electricity requirements is projected to be met by natural gas. A policy that promotes natural gas use must be accompanied by a complementary policy that encourages access to acreage and the development of infrastructure to deliver and store the gas.

The sharp escalation in natural gas prices over the past several months offer a clear warning against excessive reliance on a single energy source regardless of its inherent attractiveness. A particular feature of gas, the strong seasonal peaks in its use by residential and commercial customers, adds to the need for caution. In the winter months gas use by residential and commercial customers moves sharply, especially customers in the coldest sections of the country---who are also furthest away from the major US producing areas. To meet this peak demand in an economic fashion, the industry relies on a combination of storage and interruptible contracts with customers, most notably power generators, who, in exchange for lower prices, agree to give up supplies when required to meet demands of firm customers. When gas supplies are ample, weather conditions mild, and storage high, interruptions can be minimal. But these conditions have not applied to last winter or this one. As a result, interruptible (and spot gas

⁴ Carb gasoline in California is a case in point. Since the program's implementation of unique product specifications in 1996, gasoline price spikes and volatility have become the norm rather than the exception on the West Coast.

customers) have been pushed into the market for alternatives, mainly oil, with disruptive impacts on the market for heating oil in the Northeast last winter.

As gas increases its penetration of the US energy market, it is critical to recognize the risks associated with such strong seasonal peaks. Some action has already been taken at the state level. New York and New Jersey have already imposed requirements that interruptible customers have either in place a certain number of days supply of alternative fuels at the beginning of the heating season, or hold contracts for equivalent amounts from secure suppliers. Currently, the US has minimal information on interruptible customer holdings of alternative fuels, or even on the extent of interruptions and fuel switching. At the very least, the gathering of such information should be a top Administration priority in order to have a solid basis to formulate policies to mitigate the possibilities and consequences of local gas supply interruptions.

Among the lessons to be learned from the California experience is the importance of maintaining a balanced, diversified portfolio of energy sources for power generation. In this regard, new gas units (and existing units) should be encouraged to maintain, and invest in, alternative fuel backup capability. More generally, the national interest in supply balance in the power sector should promote a rethinking of policies regarding coal and nuclear.

THE “ORPHAN” AND THE “STEPCHILD,” COAL AND NUCLEAR

Coal and nuclear have been the least favored fuels by policy-makers and the general public. Coal is inherently a much dirtier fuel than gas, and in most cases even oil, while nuclear is viewed as inherently dangerous in terms of worst-case scenario nuclear accidents and in terms of long-term problems of decommissioning and spent fuel storage. Yet both fuels are playing key roles in preventing difficult electric power supply situations from becoming much worse and neither can be ignored in any realistic energy policy.

Unlike gas and oil, coal prices continue to be low and stable, with costs to utilities on an MMBTU basis currently running at about one-fourth of oil costs and less than one-fifth of gas costs. Coal generating units provided just over half of all US electricity generation last year (data for the first 10 months). With about 90% of projected long-term growth in electricity requirements expected to be met by gas-generated power, this share is clearly going to decline. Government policy can constructively influence future fuel choices in a manner that could mitigate the decline in use of the country's most abundant fuel. The Administration should continue and expand research on clean-coal technologies to insure that coal is not handicapped by inadequate technology options to meet environmental concerns.

Nuclear accounted for about 20% of total power generation last year but nearly a third of the growth. The performance of nuclear plants has improved dramatically, with the average capacity factor approaching 88% in the first 10 months of last year, up from 84% in the comparable 1999 period and far higher than the 74% average for the 1990s. Nuclear has thus become an increasingly reliable, low-cost provider of base load electricity. The Administration should try to maintain this capacity as long as it can be operated efficiently, economically and safely.

While the market is the best determinant as to what new power plants should be built---and to date the market has said no to new coal and nuclear plants, a sound energy policy should ensure that the regulatory regime does not force premature losses of existing capability. In the case of coal, the current wide fuel price differentials should make it easier for environmental regulators and operators of coal generating units to reach compromises that promote orderly installation of clean-burning technologies. Policy should be designed to encourage early resolution of outstanding conflicts without conceding any long-term environmental objectives. It should be kept in mind that from a Greenhouse perspective, there are important, favorable externalities associated with carbon-free nuclear power. In the case of nuclear, policy should be oriented toward early decisions regarding extensions of the operating licenses of existing plants. Operators need time to plan and implement investments that would effectively extend the useful life of nuclear units. It should be kept in mind that decommissioning is a costly, very long-term, complex process that also requires a substantial lead-time.

POLICY LESSONS FROM THE CALIFORNIA ELECTRICITY CRISIS

The California electricity crisis and its agonizingly slow, painful, path to resolution offer a number of important policy lessons. However, the fact that state policy-makers, environmentalists and industry participants made wrong guesses about electricity demand and supply conditions in designing the California deregulation program is not one of them. The lessons instead come from just why the system could not adjust to changing realities without falling into crisis.

As others have highlighted, the descent into outright crisis has much to do with the caps on electricity prices for retail customers and the prohibition imposed on the utilities against entering into long-term supply contracts. Where prices are free to respond to supply short-falls, as happens frequently in the California gasoline market, and happened last year in the Midwest gasoline market and the Northeast heating oil market, the result is a temporary surge in prices which in turn is moderated over time as supply responds to the higher price signals and demand is reduced. In each of these cases, consumers were upset by the price spikes and in some cases suffered hardship---but there were no outright shortages or need for rationing. A government program already in place to relieve hardship among home heating customers, LIHEAP, was expanded to meet increased needs.⁵ In California, the price caps have inhibited the demand response to the shortfall in supplies and balance has required an unprecedented level of service interruptions and institution at times of rolling blackouts. The compulsory, full exposure of the utilities to the higher spot market prices combined with inability to recover the higher costs as a result of the price caps imposed unsustainable financial losses on the utilities. The disconnect between prices that can be charged, and prices paid for supply has led to the collapse of the keystone of the deregulation program, the open market for electricity. The California Power Exchange has ceased operations and most power is being purchased from generators on an Out of Market Basis. The financial extremis of the major utilities in California has forced the State itself to become a major purchaser of electricity (and to spend its own money making up the

⁵ The Administration should consider raising the funding for LIHEAP and possibly broadening eligibility to help minimize hardships that may arise if and when California allows the necessary price increases to take place.

difference between the negotiated prices it pays and prices that can be charged to consumers). All this is taking place when normal electricity requirements are well below summer peaks.

Gradually, the various State and local regulatory authorities are addressing other important contributors to the crisis. The governor has issued emergency orders to expedite the process of licensing new power plants and to require air quality management districts to modify emissions limits that are limiting the ability of power plants to operate. The State is also planning to establish an emissions reduction credit bank to insure that new peaking units can acquire the emissions offset credits they need in order to operate. The Southern California Air Quality Management District (SCAQMD) is proposing to freeze emissions allowance requirements for power generators and provide a means for them to acquire additional allowances at a fixed price. These actions do not represent a retreat from environmental objectives. Instead, they are an attempt to introduce flexibility into a system which to date had virtually none. Now that the State is a major purchaser of electricity, it appreciates the need move away from excessive reliance on the spot market and is itself attempting to negotiate long-term supply arrangements. Of course, if greater flexibility had been in place to begin with, the extent of the current crisis would have been greatly diminished

The overriding policy lesson from the California experience is that regulatory and market flexibility are critical elements in preventing supply shortfalls from becoming crises. California is also demonstrating the extremely high costs of waiting until after the fact to introduce them.

DEMAND

Although this report focuses mainly on supply, a balanced energy policy must also of course address demand. The most critical policy is to allow market forces the lead role in determining demand for energy, and demand for particular fuels. By and large, we have all learned from the earlier unhappy experiences of price controls on oil and gas, and for the past 20 years, the government has generally favored staying out, of energy markets.

Government nonetheless has significant influences on demand through its regulatory policies. Here there is room for adjustments to remove distortions and to promote market flexibility. In the case of CAFÉ (and emission) standards, we support the current move to treat minivans, SUV's and other vehicles currently classified as trucks but used primarily as passenger vehicles the same as cars. Other actions by government such as alternative fuel vehicle requirements for fleets under the Energy Policy Conservation Act are proving to be expensive, ineffective, and on occasion embarrassing, as indicated by the widespread use of dual-fueled ethanol cars to fulfill the mandate--and the minimal actual use of the fuel.

Government clearly has a role in promoting basic research into alternative fuels and advanced technologies that promote long-term energy efficiency and achievement of environmental objectives. Technological advances allow us to use less energy, and more environmentally benign energy sources, while sustaining economic growth for the long term. The main concern is that the government resist the temptation to "pick winners," a practice which in the past has led to very expensive mistakes.