



**STRATEGY
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IMPROVING THE NATIONAL ENERGY STRATEGY

BY

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ABSTRACT

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TITLE: Improving the National Energy Strategy

FORMAT: Strategy Research Project

DATE: 1 April 1995 PAGES: 24 CLASSIFICATION: Unclassified

Just as it has a National Security Strategy and a National Military Strategy, so too does the US have a National Energy Strategy. Designed to be produced by the President and reviewed by the Congress every two years, it is supposed to provide us with a focused approach to attaining energy security. The National Energy Strategy recognizes the linkage between energy, economics and national security. The operative energy strategy at present, developed by the Clinton Administration, is in need of improvements. This research project explores how the present energy can be made more effective in the areas of its linkage to the National Security Strategy, its future vision, its priorities, and its resources. The approach is to use the methodology of ends, ways, and means discussed in the Strategy block at the Army War College.

IMPROVING THE NATIONAL ENERGY STRATEGY

Introduction: The Dilemma

Americans have an insatiable appetite for energy. In 1994, we consumed a new record of 88 quadrillion BTU's. A significant portion of our demand has to be satisfied by imported energy; 18 quadrillion BTU's or 20.4 % came from abroad to fuel the engines of our economy, our cars, and our houses.¹ We need 18 million barrels of oil a day(mbd), and again we depend greatly on imports with 8 mbd or 44% coming from beyond our borders. Of special note, Arab OPEC countries furnish nearly 2 mbd for a total of 24%.² We thus have a tremendous reliance on an asset which comes from an unstable part of the world. Additionally, as a fossil fuel, oil is a finite asset; one day it will be gone.

Such a dependency can have grave consequences. Indeed, we have been victimized by three "oil shocks" from the Middle East in the past 23 years.³ The first occurred in October, 1973 after the Yom Kippur War and the infamous Arab oil embargo, specifically designed to punish the US and its allies for aiding Israel. The second took place in 1979-80 with the fall of the Shah of Iran, and the third happened in 1990-91 with the seizure of Kuwait by Iraq. In each case, the American economy went into recession and people lost jobs. In the first two shocks we had long gas lines and a disruption of our way of life here in the "land of plenty." We threatened to fight after the second shock, as evidenced by the Carter doctrine. We did fight after the third shock, committing a substantial part of our military and spending billions of dollars. Yet the "grandfather of all oil shocks" is still to come—when the world finally exhausts its oil. Clearly

access to oil will be vital to our economic well-being for many years to come. We have a distinct vulnerability, constantly growing, which other nations can and have exploited.

Nations develop strategies with ends, ways, and means to reduce vulnerabilities and protect their interests.⁴ Vital interests are essential to our survival as a nation and are ones over which we would fight if required. The US has developed strategies which use the elements of power to achieve its ends. We have an overall National Security Strategy(NSS), which is the capstone document for the other strategies. We have a National Military Strategy for our armed forces which flows from and supports the NSS. Unbeknownst to most Americans, we also have a National Energy Strategy(NES), the requirement for which became a public law in 1977 in the Department of Energy Organization Act.⁵ In recognizing that energy is a critical aspect of national security, our government hoped to prevent future oil shocks and provide the country with a secure economic future.

By law, the President must submit the NES to Congress every 2 years. President Bush published the first in 1991. President Clinton's Sustainable Energy Strategy came out in July 1995, more than halfway through his term. Clinton's NES has room for significant improvement in both its short and long term approaches to our energy dilemma if it is to be a truly effective strategy. For the short term, it must take a more global approach which will link it in more tightly with the NSS and cushion us from oil shocks. To do so, it must establish policies which will address increased world demand without resulting in destabilizing price increases. It must address the economic and political stability problems of Arab OPEC, and it must build up our Strategic Petroleum Reserve. For the long term, the Clinton NES must develop a vision for the future that will ultimately free us from a dwindling natural resource. Such a strategy must set goals and priorities that are designed to wean us away from oil. It must come to terms with

nuclear power and other sources of energy. Finally, it must include an information component designed to show the American public where we are headed and why—it must literally sell the program and energize a broad base of support for it. If the NES succeeds in doing so, it should provide future generations with energy self-reliance, something we have not had since 1948, the year our imports of petroleum exceeded our exports.⁶

NSS Linkage and a Global Outlook

The NES does provide a modicum of linkage to the NSS; however, it is too domestically oriented and needs more of a global focus. The NSS clearly establishes that one of our vital interests in the Mid East is to maintain “the free flow of oil at reasonable prices.”⁷ It acknowledges that we have become increasingly dependent on Gulf oil and that “an interruption of oil supplies can have a significant impact on the US and its allies.”⁸ In its section entitled “Integrated Regional Approaches” it discusses the need to contain the external threats of Iran and Iraq. The NES ties in clearly with the NSS in its assertion that energy is vital to our national security and that energy policy “can help reduce the economic and national security risks of relying on oil produced in unstable regions of the world.”⁹ The NES, as is the case with the NSS, recognizes the international dynamics in acknowledging that by 2010 “two thirds of the oil traded on the international market will originate in the Persian Gulf, an area that has experienced conflict in recent years.”¹⁰ The NES goes on to advocate an economic policy of engagement with regard to Arab OPEC countries and the rest of the world; engagement is one of the cornerstones of the NSS. The NES therefore does not deviate from the underpinnings of the NSS; however it is far too shallow in its consideration of the international realm.

The NES has one chapter dedicated to the international environment entitled “Engaging the International Market.” However, this is a very general chapter and it does not get into specifics about the international energy market, growth projections, and prices—all of which are important considerations in energy strategy. We live in an inter-connected world where the US, unfortunately, does not determine the price of oil, although our huge demand is certainly a contributing factor. The international market determines oil prices, which are presently very low—less than \$20.00 a barrel. However, demand is growing dramatically, especially in the developing economies. Currently there is not a problem with supply; consequently the prices are low. Likewise, there is no problem with reserves, especially with regard to Gulf oil, so there is no threat of near term depletion. Proven reserves today total 1005 billion barrels, with a likelihood of 500 to 1000 billion barrels still to be discovered. This constitutes roughly 85 years, and probably more, of supply. Of note, more than 50% of these proven reserves are to be found in just four Arab OPEC countries: Saudi Arabia, Iraq, Kuwait, and Iran. Two are of course rogue states which have fought against each other; one of them, Iraq, seized Kuwait and briefly controlled over 20% of the world’s reserves touching off another war.¹¹

It is the increase in demand and its potentially destabilizing impact on prices that the NES fails to assess. Presently the developed nations, also known as the Organization for Economic Development and Cooperation(OECD), consume well over half the world’s energy while having only some 5% of the world’s proven reserves.¹² Within OECD demand has essentially stabilized or else is very gradual. However in the developing or non-OECD nations, the growth in demand has been very dramatic and will continue to expand at a far faster rate than within OECD. It is estimated that by the end of this decade, the non-OECD nations will require more oil than OECD; in other words, they will consume more than 50% of the total.¹³

Determining the impact of these dynamics does not require a degree in economics—prices will go up. The Clinton NES acknowledges this by recognizing that if world growth and usage rates continue at the present pace, “world energy supplies could become tight within the next decade.”¹⁴ Unfortunately, the NES does not discuss what that will do to prices or the US deficit in the future, or how to fix the problem.

Our trade deficit was 151 billion dollars in 1994 with 50.5 billion going to energy imports.¹⁵ The Department of Energy predicts that by 2010, the cost per barrel of oil will reach \$30.00, driving our annual deficit to 130 billion dollars, over double of the present amount.¹⁶ Increasing the trade deficit significantly is harmful to the US economy. It causes the loss of jobs at home, it lowers our standard of living because less dollars are available for our use, and it can, if severe enough, cause the economy to go into a recession. Clearly, spending more money on oil imports is detrimental to our economic security.

Complicating the issue even more is that Arab OPEC countries do not have an unlimited capacity to increase production rapidly. The Persian Gulf is the only part of the world where we have a potential for a “large, substantial increase in oil production.”¹⁷ However strange as it may seem, Arab OPEC nations are not without their own economic woes, notwithstanding the huge oil reserves on hand. Out of the Gulf Cooperation Council(GCC) countries of Saudi Arabia, Kuwait, Bahrain, Qatar, Oman, and the UAE, all but the UAE have depleted their cash reserves and have had to borrow money.¹⁸ They are all basically one product economies, that product being oil. Drilling oil fields and installing all the infrastructure that goes along with them requires capital and expertise that these countries do not have in abundance. Yes, the oil reserves are present in tremendous quantities, but the real issue is whether or not they can be tapped

sufficiently in a timely fashion to meet rapidly increasing demand. If not, this will put a further strain on prices.

The Clinton NES with its strategy of engagement does not provide an adequate solution to the above problem. It posits that trade and involvement with the US and its economy will provide sufficient impetus for price stability. Although engagement will contribute to that, the approach is not comprehensive enough. The NES should encourage World Bank and International Monetary Fund loans to the GCC with the stipulation that these funds be used to improve capacity. One analyst urges a cooperative agreement between the oil exporting and oil importing countries to guarantee the ability to expand production on a short notice.¹⁹ The NES could encourage US businesses with additional tax benefits so that they would be willing to invest more in the GCC oil industry infrastructure. We must also develop an economic policy that encourages development of other resources and industries besides oil production so that these countries will not feel compelled at some point to start conserving their oil, rationing it out so that they will always have something of value. Also, once their oil reserves are exhausted in the future, they will need viable economies to remain as stable and productive states. The above mentioned approaches will help foster the necessary growth.

The external threats posed by Iran and Iraq are the ones most often considered in the development of national security strategy, in particular military strategy. However, the greatest risk to the GCC nations might not necessarily be external, but instead be internal or domestic in nature. We have begun to see the “slow and sure decay of the economic and political structures of the US’s key regional allies—the GCC.”²⁰ In the oil boom of the 70’s the GCC nations were able to improve their standard of living greatly. In fact, most rulers assumed the role of benevolent providers to their people, creating in essence welfare states and raising the

expectations of the people. Now that most of the GCC has entered the realm of deficit spending, it will be hard for them to maintain the status quo of the welfare state—breaking away from it will conflict with the people's rising expectations, especially in light of the opulent life styles of the ruling families. On the one hand, many people, far better educated than in the 60's and 70's, want a greater hand in the governing process. On the other hand are the Islamic fundamentalists who eschew any involvement with the West and any breach with traditional Muslim ways. Thus there is an underlying tension in much of the GCC which has the potential to bring down a government, as the Shah discovered. The NES can ill afford to ignore this internal problem, yet it has chosen to do so. David Hodel, former Secretary of Energy under Reagan, states that our tendency in our policy is "to go merrily on our way as if there is no potential problem until it is too late."²¹ Another Mid East analyst states that if the Saudis do not reform over the next few years, "you will see more often the types of riots and civil unrest partly caused by economic concerns and the rise of more Islamic movements."²² Turmoil is imminent if change does not take place.

The NES must break out of its stove pipe approach and recommend a policy of loans, educational exchanges, and other activities that will foster internal stability and growth in the GCC. We must work closely with the ruling families, urging them towards providing their people with more say in the governing process. We must tie the NES in more tightly with the NSS and NMS in recommending aid for internal development and defense. Yet, we must discover the knack of doing the above without appearing overbearing or intrusive, which means that we have got to foster a better understanding of the Arab world. If the NES develops these types of approaches, then its policy will be much more global in scope and far more effective in solving our short term energy dilemma.

The Strategic Petroleum Reserve

After the '73 Arab-Israeli War, one of the steps the US took to reduce its strategic vulnerability on Arab oil was to create a large cache of oil stashed away in salt domes below the ground in Texas and Louisiana. This emergency supply is called the Strategic Petroleum Reserve, and we intend to use it to offset the loss of a single major supplier or a region, which is what occurred when the entire OPEC imposed its embargo. We do not want the American economy held hostage again by the use of the Arab "oil weapon."

Over the years, beginning in 1977, we steadily built up the stock of oil in the SPR. By 1985, we reached an all-time high of 115 days of supply. However, at the time, since our demand was smaller than at present, the 115 days of supply consisted of only 493 million barrels of oil.²³ By 1990, the number of days of supply stood at 82, but we had a peak of nearly 586 million barrels. President Bush became the first to use the SPR to offset the loss of Iraqi and Kuwaiti oil because of the invasion of Kuwait; he authorized the sale of 1.1 million barrels a day for up to 30 days.²⁴ Ultimately, our suppliers, primarily the Saudis, were able to increase their production. At the present time, we only have 74 days on hand, and this represents a total of nearly 592 million barrels. Thus, although we acquired an aggregate of nearly 6 million barrels in between 1992, when purchases resumed after the Gulf War, and 1994, we have lost days of supply because our population and economy have grown at a much greater rate than the SPR purchases.

Clinton's NES discusses the SPR as a strategic tool, but it does not establish a plan for continued replenishment of the stocks. The days of supply will continue to dwindle unless we make significant purchases, which we have not done since the end of the war. The problem will be magnified as the number of barrels required from OPEC continues to rise. If we continue to

let the days of supply go down, we lessen the strategic value of the SPR and we leave our economy increasingly vulnerable to oil disruptions.

As a start, the Clinton NES should establish the SPR as a budget priority and get it back to the level of 115 days, for a minimum. What is the ideal level for the SPR in terms of days of supply? Obviously more is better, but in the era of budget frugality, we cannot look to an inexhaustible source of money. The crisis with Iraq lasted over 180 days, although our other suppliers were able to take up the slack. To get a more accurate appraisal, the planners of the respective Departments of Energy, Commerce, State, and Defense need to war game a worse case scenario in terms of disruption and lost days of supply. Experts must analyze threats and likely courses of action. Only at this point will we arrive at a truly meaningful determination of the size of the SPR.

To continue the present trend with the SPR, the approach of the current NES, is not sufficient for our energy security and thus our national security. The NES must reevaluate the current needs of our society in terms of days of supply and assess the threat of interruptions. Once it determines the realistic requirements, only then can it allocate the dollars to purchase the oil.

Long Term Strategic Vision

The aforementioned fixes to the Clinton NES are only short to mid-term ones. They will help ensure continued access to Gulf oil, but they do nothing to break our dependency on it. In actuality, they help perpetuate the use by guaranteeing the supply remains intact, and that the pain to the American public is minimized. In short, they maintain the status quo. However, continued reliance on oil is not in the best security or economic interests of the US.

First, oil is a dwindling natural resource; we will ultimately exhaust all supplies of it in the same manner as the exhaustion of all the crude oil reserves of Pennsylvania and many other parts of the US. Yes, we may have 85 years, and possibly a century, of supplies remaining, but we will one day consume all of it. Second, there is an environmental price we pay for burning oil, just as there is one for burning all types of fossil fuels. That price is greatly debated but it is nevertheless widely accepted that burning oil pollutes the air and contributes to global warming. Furthermore, as the developing nations modernize and as their populations acquire more motor vehicles, these problems will only be compounded. In fact, one can envision a day when we decline using oil even if it is available because our physical survival will depend on it.

What the US truly needs is a future vision with an accompanying long range strategy that will totally free us from the shackles of oil and eventually all fossil fuels. We must break the paradigm and eliminate oil as a source of energy. This is bitter medicine, given our love affair with the internal combustion engine and our cars, but it is necessary for our health in the economic, environmental, and security areas. Developing such a long range vision will not be easy, and it is not a task which can fall back on quick, easy fixes. Americans are historically very complacent and do not like planning for the long haul. US corporations, for instance, are far more interested in the next quarter than in the next quarter century, a tendency which has gotten us into much trouble in the energy realm. Our energy policies to date have been erratic; we implement strong procedures only when confronted with a crisis and we are quick to eliminate them once the storm abates. After the first oil shock in '73, we reduced total oil use from 17.4 mbd to a low of 15.5 mbd in 1985.²⁵ However, 10 years later, we established a record of 18 mbd of oil consumption. The Department of Energy(DOE) predicts even greater use of oil in the future. In between 1995 and 2010 the US consumption is expected to increase at an annual rate

of 1.2%. This means we will require 21.3 mbd in 2010.²⁶ According to DOE, approximately 2/3 of that amount will come from the Persian Gulf—over 14mbd.²⁷ Clearly, we are headed down the wrong path, one which leads us to even greater reliance on the unstable Gulf region.

Sadly, the Clinton NES does not provide us with a future vision that breaks the paradigm of oil consumption. The Clinton strategy does not paint the picture of a future world where oil runs out. It does not envision a world where we still have sufficient energy because we have developed alternatives to oil, ones which cause far less pollution and do not create risk to the national security. This future world would probably entail giving up the love affair with the car as we currently know it. The Clinton NES needs this type of future vision if it is to develop a truly meaningful long range strategy. To arrive at this future vision, the Administration needs to convene the finest minds in the country from industry, academia, and the government. Using analytical models, they must first establish an approximate window for the exhaustion of the world's oil reserves, taking into account demographics and projected usage rates. The world community should be tapped for this vision as well. Using knowledge of existing technology as a base and projecting it forward, this group should next piece together a view of what is possible in terms of alternatives to oil, and what a technologically advanced society will look like. Such a thought process could not be pure fantasy, but must be grounded in the reality of what we know at present and believe to be reasonably possible. Many people will undoubtedly scoff at such a vision, deeming it worthless. People of similar outlooks believed that oil would never supplant coal as the primary energy source. Similar characters also preached that the first two oil shocks were contrivances by the oil companies to drive up profits. The counter argument to these individuals is that if we fail to develop such a vision and pursue it in our long range strategy, we ultimately doom ourselves by putting our economic well-being in constant peril.

Strategic Goals

The Clinton NES provides strategic goals, but they are not prioritized and are vaguely stated. They are as follows: “maximize energy productivity to strengthen our economy and improve living standards;” “prevent pollution;” and “keep America secure by reducing our vulnerability to global energy shocks.”²⁸ No goal is ranked above the others in terms of importance. In fact the NES states that the lack of priorities was deliberate because “actions that further one goal at the expense of others can increase the economic, environmental, or security risks borne by future generations.”²⁹ Since the NSS considers access to energy to be a vital interest, and given that we have fought a war over oil in 1991, it is only fitting for the NES to establish as its first priority the third goal concerning the nation’s security. After all, we have yet to fight a war over pollution. Furthermore, the national security goal needs to be worded in a much more forceful and specific fashion, one which will line it up with the future vision of an oil free energy system. A better goal would be “to eliminate oil as an energy source by the time frame 2095-2100 through a gradual reduction process which first stops total annual growth in consumption, and then incrementally replaces oil with alternative sources.” Such a goal would provide much greater focus to the overall strategy. However, as with the vision, the wording of all three goals and the time frame for energy freedom is best left to the same analytical process by government, industry, and academia as the creation of the future vision. Regardless, the Clinton NES will benefit significantly from greater specificity and prioritizing of its strategic goals.

Strategic Components

The goals of a strategy are its desired ends. To reach its ends, the NES requires ways or concepts which provide the road map to the final destination of freedom from oil. The NES

refers to these concepts as “strategic components;” they are as follows: “increase the efficiency of energy use;” “develop a balanced domestic energy resource portfolio;” “invest in science and technology advances;” “reinvent environmental protection;” “and “engage the international market.”³⁰ Each concept has one chapter in the NES dedicated to it. Within each chapter, specific policies are established in support of the strategic component.

Planners who must allocate resources or submit budget requests do not receive much help from the strategic components. As listed, they are all apparently of the equal importance. The first two components are short to mid-term in focus as they imply continued reliance on oil. “Reinventing environmental protection,” a vaguely stated concept, receives the same weight as “invest in science and technology advances,” which is an absolutely crucial concept to developing alternative energy sources to replace oil and bringing on line more energy efficient equipment. The last component, “engage the international environment,” is important only insofar as it contributes to price stability for oil and the exchange of technology to achieve greater efficiency, cut pollution, and develop energy alternatives. In other words, it is a sub-component of each major component and should be included in each chapter with the specific contribution it makes to that particular component.

The concept of conservation is noticeably missing from the strategic components and must be included in the revision of the NES. Americans once excelled at conservation; one only has to think back to the ‘70’s and ‘80’s when we built numerous earth houses, engaged in massive insulation projects, and changed our driving habits. Everyone was conscious of the need to conserve, but this has become a lost art. Now supporters of the NES may very well argue that energy efficiency includes conservation as a sub-element. In fact, a review of Chapter 3, “Increasing Energy Efficiency,” reveals a gas guzzler tax, increases to the corporate average fuel

economy (CAFE) standards for new motor vehicles, and a handful of programs to reduce the demand for travel. These are all conservation measures, but they do not go far enough to create the right frame of mind in the public.

Americans today are not interested in conservation. Witness the elimination of the 55 mile per hour speed limit and also the recent decline in CAFE since 1988 from 25.9 miles per gallon(mpg) to 25 mpg in 1994 as the demand rose for four wheel drives and heavier autos with bigger engines.³¹ We need to have a renaissance in conservation again, especially since our domestic oil reserves are declining rapidly and our reliance on imports is increasing.

Daniel Yergin, a noted energy policy analyst, believes that because of its connotation, we must refer to conservation “to remind us of the reality—that conservation is no less an energy alternative than oil, gas, coal, or nuclear power.”³² He is convinced that for the near term, “conservation could do more than any of the conventional sources to help the country deal with the energy problem it has.”³³ He believes that the US could consume 30-40% less energy than it does now without major technological breakthroughs or massive negative changes to our lifestyles by developing policies to emphasize conservation. The attainment of such a reduction would eliminate most of the requirement for imports, and could eliminate the need for Gulf oil. To do so, we must change our mindset about conservation. As a start in that direction, we must include conservation as a strategic component.

A recommended revamping of the strategic components to bring them in line with the overall strategic goal of eliminating oil as an energy source would include the following:

1. Our first priority is to increase our efforts at conservation and use existing technology to cut the growth in oil consumption from 1.2%

to 0% (no growth) in the period 1996-2005. Our second priority during this period is to develop new technology focused first on replacement energy sources such as nuclear, solar, wind, hydroelectric, and biomass fuels and second on creating more energy efficient devices for society's use.

2. As third priority during 1996-2005, we will stabilize oil prices world-wide through economic and political measures directed primarily at Arab OPEC.
3. In 2005, science and technology become the first priority, with conservation second. In 10 year increments, reduce the baseline amount of oil consumed by 12% each 10 year period (1.2% a year).
4. To allow for continued economic growth, alternate fuels will replace oil to the same extent oil is being supplanted (1.2%) plus the projected increase oil would have had (1.2%), for a total of 2.4%.
5. As the last priority, reductions of emissions caused by burning oil will be reduced 12% every 10 years. This should occur naturally with the reduction of oil consumption but can be enhanced even further by technological advances in controlling pollution.

The above proposal is a layman's approach, but provides more of a focus to our efforts. It replaces oil gradually, and allows science and technology to develop sound, well-reasoned solutions, not crash fixes. It should not be excessively painful to the American public. Once again, the final solution should be developed by an energy forum composed of experts, the same one that proposes the strategic goals. Whatever plan they develop must align with the future vision of an oil free society, and provide the road map to get there.

Resources

Resources provide the means to achieve the strategy. To implement the NES, many of the resources are monetary in nature and come from the US government. These can take the form of direct governmental investments in science and technology, positive tax incentives offered to industries and the public to conserve or invest in energy, and negative incentives in the form of taxes on certain types of energy consumption.

Unfortunately, there are significant problems looming on the horizon for the funding of the NES. Given the present mood in Congress, dollars are in all likelihood going to get increasingly scarce for the Department of Energy. Funding for energy is discretionary, and consequently falls under close scrutiny of those desiring to balance the budget. The discretionary budget for DOE will decline rapidly over the next 5 years. In 1994, DOE had 17.2 billion dollars. In 1995, it had 15.5 billion, and by 2000, it will only have 14.0 billion dollars.³⁴ The amount for energy conservation will decline from 773 million dollars in 1995 to 621 million dollars in 2000. The budget for 1996 is 15.4 billion dollars, which is 1.2 billion less than requested³⁵. Of note for 1996, Congress totally eliminated funding for the gas turbine modular helium reactor which was a crucial technological advancement for nuclear power.³⁶ Spending for research and development has gone from a high of 4.2 billion in 1985 to 3 billion in 1996.³⁷ After spending millions on a fusion research project in Texas, Congress suddenly withdrew funding in 1993—now all that remains is a huge hole in the ground. Ironically, the energy budget is declining at the same time as the defense budget. Thus, as our energy deficit increases, and as our energy security worsens, we spend far less money on those elements that could provide that security. The flawed logic of these cuts has yet to make an imprint on our key political leaders.

One recommendation for the NES to improve its resources is to impose an energy tax on gasoline. Americans historically have paid extremely low prices for gas, much lower than most of the other industrialized nations. In 1994, the average price at the pump was \$1.17 with an average tax of only \$.37.³⁸ In 1991, Americans used 83 billion gallons of gas in nearly 85 million motor vehicles traveling 1,602 billion miles.³⁹ A modest energy tax of \$.15 a gallon will produce 12.4 billion dollars that could be used for energy research and development as well as incentives for conservation and energy efficiency. Currently we are headed in the wrong direction with our energy funding. If we are to have a viable energy strategy, we need to improve the resources. Such a tax could go a long way toward providing the funds. However, it must be sold to the American public, which generally has a distaste for increased taxes. Yet, if convinced that in the future there is a pending "train wreck," and that we might have to send sons and daughters to the Persian Gulf again, that public would support such a tax.

Solving the Nuclear Dilemma

Presently the US is at an impasse concerning nuclear power. This is truly unfortunate as one promising means of eliminating oil as a source of energy is to produce electrical cars. Indeed the transportation sector is the predominant consumer of oil for gasoline.⁴⁰ Electricity for the batteries of cars can be produced in a variety of power plants. Many of these run on some type of fossil fuel—oil, natural gas, or coal. However, we do get 20% of our electrical power from nuclear plants.⁴¹ The potential is there to up that percentage significantly if we can only break the impasse. The two major aspects of the controversy are the safe operations of plants and the disposal of waste fuels.⁴² Unfortunately much of the problem centers around perception rather than reality.

Because of the controversy, and the endless regulatory statutes, utility companies do not find nuclear plants to be cost effective in comparison with other types of power plants. Consequently the number of nuclear plants has declined from a high of 111 in 1991 to 109 today. Furthermore, only seven new construction permits have been granted, and there are no new requests pending.⁴³ As many of the older plants surpass the 40 year limit on their licensing it is highly doubtful that utility companies will ask for renewal because of the low costs of other types of fuel and the concerns the public has for safety. Utility companies are businesses and must show a profit; because of costs and frustrations, they are turning away from nuclear power in ever- increasing numbers.

The NES does take a few steps at solving the problem, but must do more. Acknowledging the problem with spent fuel, it is looking into a waste storage facility in Nevada at Yucca Mountain.⁴⁴ However, this is only one site and will not be completed until 2010. This process must be stepped up and additional sites examined as well. Even though our reactors are the safest in the world, the NES acknowledges the public's concern for safety through its program with industry to design better light water reactors and its program to increase the operational safety at existing plants.

However, the NES can do much better. First and foremost, it must design and implement an information campaign to educate the public on the benefits of nuclear power. Next, it must develop a strategy concerning the expansion of nuclear power. Trying to avoid the controversy of nuclear power, it has opted to take the easy way out with regard to the construction of new reactors. The NES seeks only to maintain the status quo in its policy to "preserve the option to construct the next generation of nuclear energy plants."⁴⁵ To connect in with its pollution reduction goals, and to reduce foreign dependence, the NES should establish a program to

expand the number of plants, first to replace all plants which use oil by 2005 and then to replace all plants which use fossil fuels by 2095-2100.

Conclusion

The US has become increasingly dependent upon oil ever since we imported our first barrels back in 1948. Our addiction to oil, especially Gulf oil, has cost us dearly over the years. Experts figure that we have spent well over a trillion dollars abroad in the years 1974-1992 supporting our habit—dollars we could have utilized to create jobs, and improve the overall quality of our lives.⁴⁶ We have also paid a price with the lives of Americans, and we are likely to have to do so again. The Gulf is an unstable part of the world and it will remain that way for a long time.

Fortunately for the US, we had some visionary leaders who saw that energy and security were intertwined and that the only way to preclude being victimized by foreign powers and spending American lives was to create a long range strategy for energy. The mechanism is in place in the form of the National Energy Strategy. Clinton's Sustainable Energy Strategy is our capstone document, and it is a step in the right direction. However, it has room for significant improvements if it is to be a truly effective strategy. It must develop policies to stabilize prices for oil and to improve capacity to produce oil. It must address the problem of domestic instability within Arab OPEC. It must reenergize the Strategic Petroleum Reserve. For the long term, it must develop a program that totally frees us from oil. By creating a future vision, stating its strategic goals more clearly, and prioritizing its strategic components, it will make the allocation of resources more efficient. It must develop a plan to expand its resources during a time of increasing frugality. One such measure would be a tax on gasoline consumption. It must solve the riddle on nuclear power. Above all else, through an aggressive information campaign,

it must mobilize the tremendous talents of the American people by convincing them that we do have a critical energy problem that we must fix for future generations. As a strategy, if it succeeds in achieving the above, it will provide the road map to freedom from oil and prevent us from suffering “the grandfather of all oil shocks.”

NOTES

1. Department of Energy. Annual Energy Review 1994. (Washington, D.C.: Energy Information Agency, 1995). xix.
2. Ibid., xxi.
3. The concept of the two oil shocks is discussed in Daniel Yergin's Energy Future. (New York: Ballantine Books, 1979). 1-2. Calling the 1990-91 seizure of Kuwait the third oil shock is my own personal assessment of that event.
4. The concept of strategy with ends, ways, and means comes from Arthur F. Lykke's "Toward an Understanding of Military Strategy." Military Strategy: Theory and Application. (Carlisle, Pennsylvania : US Army War College, 1993). 3.
5. Judy A England et al., Energy Policy: Evolution of Department of Energy's Process for Developing a National Energy Strategy. (Washington, D.C.: GPO, 1991). 3.
6. Daniel Yergin, The Prize: The Epic Quest for Oil, Money, and Power. (New York: Simon and Schuster, 1991). 410.
7. William J. Clinton, President of the United States, A National Security Strategy of Engagement and Enlargement. (Washington, D.C.: GPO, 1995). 30.
8. Ibid., 21.
9. William J. Clinton, President of the United States, Sustainable Energy Strategy (Washington, D.C.: GPO, 1995). ix.
10. Ibid., 3.
11. The information on proven oil supplies and years of supply contained in this paragraph comes from Energy in Profile. (London: The Shell Briefing Service, 1995). 1-2.
12. Ibid., 2.
13. The trends for oil consumption within OECD can be found in the International Energy Agency's Global Energy: The Changing Outlook. (Paris: Publication Service for OECD, 1992). 17-20.

14. Clinton, National Energy Strategy. 14.
15. Ibid., 9.
16. Howard Geller et al., "Twenty Years After the Oil Embargo," Energy Policy. June, 1994, 472-473.
17. Ferdinand Banks, "Paper Oil, Real Oil, and the Price of Oil," Energy Policy. July, 1991, 524.
18. Vahan Zanoian, "After the Oil Boom," Foreign Affairs. Nov-Dec 1995, 2-8.
19. Banks, 525.
20. The information about decay in the GCC and the approach their rulers took to the improvement of the standard of living, in essence creating a welfare state, comes from Zanoian, 2-8.
21. Agis Salpuka, "Odds of Another Oil Crisis," New York Times, 30 Jan 1996, Section D, p.6.
22. Zanoian, 2-8.
23. The information on the number of barrels in the SPR comes from Annual Energy Review, 169.
24. Banks, 525.
25. Geller et al., 474.
26. Department of Energy, Annual Energy Outlook 1994 with Projections to 2010 (Washington, D.C.: 1995). 30,55.
27. Clinton, NES, 3.
28. Ibid., ix.
29. Ibid.
30. Ibid. x.
31. The information concerning the recent decline in the CAFE standards comes from Gellar et al., 477.
32. Yergin, Energy Future, 167.

33. Ibid.

34. The information on the projected decline of DOE's budget comes from Tables 5.1 and 5.2 in Budget of the US Government, FY1996: Historical Tables. (Washington, D.C.: GPO, 1995). 69,78.

35. Anne Laurent, "The Cutting Edge," Government Executive, March, 1996, p. 12.

36. Ibid.

37. Budget of the US Government, 139-140.

38. Clinton, NES, 19.

39. Annual Energy Review, 65.

40. Clinton, NES, 19-20.

41. Ibid., 48.

42. Ibid., 48-50.

43. Annual Energy Review, 257.

44. Clinton, NES, 50.

45. Ibid., 48.

46. Gellar et al., 472.

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