



History

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You are here: [EPA Home](#) [History](#) [Topics](#) [Energy Crisis](#) EPA's Position on the Energy Crisis

EPA's Position on the Energy Crisis

[EPA position paper - January 1974]

The environmental movement has been accused of having major responsibility for the nation's energy crisis. This paper is intended to discuss the causes of the difficult energy situation we face, the effect of the nation's environmental program on energy supplies, the action EPA has taken to deal with the crisis, and EPA's stance on pertinent energy/environmental issues.

It is important to realize that the nation's environmental protection program is not a primary cause of the energy shortage. EPA has been taking positive steps to deal with energy problems during the last year and is now taking emergency action to reduce the severity of the shortage caused by the Arab oil embargo. Concurrently, we have sought to minimize the environmental damage that may result.

A similar balancing of environmental and energy factors is essential for determining policies to meet the demands of the crisis. The nation cannot afford to disregard the environmental effects of alternative means of solving its energy problems any more than it should ignore energy needs in solving environmental problems. Hasty measures taken now to solve short term energy shortages may lead to environmental problems that will haunt us for a long time to come.

Ultimately the goals of protecting our environment and of having adequate energy supplies to meet our needs are compatible. Both involve a transition from current ways of thinking about how we live and how we use our resources. Environmental protection means finding cleaner ways of doing things. Energy self-sufficiency means reducing wasted energy and switching from traditional to newer sources of energy. In the short run, while these changes are taking place, there will be dislocations; but in general, energy conservation, higher efficiencies, and use of new clean fuels are all in line with environmental objectives.

Roots of the Problem

Although it is true that environmental regulations have caused some increased energy demand and have restricted supply to some extent, it is important to recognize that other factors have been considerably more significant. These include rapidly escalating demand for energy, energy pricing policies, oil import quotas, lack of incentives to invest in domestic energy facilities, and depletion of domestic oil and gas reserves.

What Caused the Problem

Demand for energy has surged in recent years at an average rate of 4.3 percent. Per capita demand is growing at 3.5%. Both rates are significantly higher than historical averages. In

1971-72, 69% of the total increase in demand for energy was supplied by oil. Consumption of oil has been increasing since 1970 at an annual rate of more than a million barrels per day each year. Domestic production of oil and production by our traditional suppliers - Canada and Venezuela - has stabilized. The result is that not only has the incremental supply of oil come from imports, but it has also come from new sources in the Eastern Hemisphere.

Our susceptibility to an embargo has therefore increased dramatically in recent years. Between August 1972 and August 1973, we increased our crude oil imports direct from Arab nations from .38 million barrels per day to 1.1 million barrels per day. In addition, we increased our imports of refined products which originated from Arab crude by about half a million barrels per day. When the embargo came, we were vulnerable. The primary causes of the shortage therefore are those factors which allowed our demand for energy to exceed traditional supply by a dramatic margin in a comparatively short period of time.

Demand Problems

The surge in demand was caused primarily by energy pricing policies. Through subsidies (such as the depletion allowance) and price controls, the effective prices for petroleum and natural gas were held at artificially low levels. Consumption patterns gradually evolved toward the use of energy intensive systems; and over time a misallocation of resources resulted.

- A shift in demand occurred toward electrical power because of convenience, despite the fact that electricity is generally the least efficient form of energy.
- Use of energy by automobiles has increased rapidly (6.3% in 1972), yet automobiles and aircraft are the least efficient methods of transporting either personnel or cargo.

Supply Problems

Although demand for energy has been growing rapidly during the recent years, supply has not kept pace because of economics, facility siting difficulties, resource depletion of oil and gas, and environmental constraints.

As was true on the demand side, economic factors have been at the root of the problems with supply.

- The oil import quota system constrained crude oil imports and provided a disincentive to construct domestic refineries and petroleum facilities until the system was discontinued in April 1973. Since that time construction of over a million barrels per day of new refinery capacity has been announced by the industry, though the current international situation has caused some of these plans to be held in abeyance.
- Natural gas price regulations have kept prices far below their free market value. This means that the industry has had a low incentive to explore for or produce natural gas for interstate markets.
- Return on investment by the petroleum industry has been greater in Europe and Japan than in the U.S. The industry's return on investment was 9-10 percent in Europe and about 6 percent in the U.S. in 1972.

The energy industry has been stalled in its development of new facilities for economic, social and environmental reasons. Requirements for new energy facilities have been increasing

exponentially and resistance to them has been increasing as well.

- The industry was reluctant to commit investment pending a policy determination whether the government would stimulate domestic energy development or would encourage dependence on imports.
- The advent of environmental awareness was coupled with a social attitude of "put it anywhere but here." This attitude was caused in part by the companies' inaccurate perception of public concerns.
- Nuclear facilities, refineries, and steam-electric power plants required complex permit certification.
- It has now been demonstrated that it is easy for a local interest to stall facility construction by litigation or by causing delays in permit certification.
- A large number of construction delays for power plants have been caused by late delivery of essential components.

Impact of Environmental Regulations on Energy

Demand

The environmental movement shares some of the responsibility for the recent surge in energy demand. Some of the EPA regulations and policies require industry to increase its use of energy in a variety of ways, though most of these have not yet taken effect. These energy penalties include:

- Auto Emission Standards - Emission controls account for an average fuel penalty of 10% in 1973 and 1974 cars compared with uncontrolled cars. 1973 and 1974 vehicles in the lighter weight categories (up to 3,500 lbs) show slightly better fuel economy than uncontrolled cars, but vehicles in the heavier categories (4,000 lbs and above) have demonstrated significant penalties, as much as 18% for the heaviest weight class. The estimated improvement in fuel economy for all 1975 cars over 1973-74 models is 7-8%, predominantly due to the use of a catalyst on the majority of 1975 model year cars. For new cars without a catalyst, 1975 efficiency will be equivalent to or less than that of 1974 cars.
- Control of thermal pollution by power plants (penalty of about 1% for those plants that need cooling towers, resulting from running towers with an average 3% penalty roughly one-third of the year; limited impact has been felt to date).
- Oil desulfurization (penalty negligible due to recovery of heat inputs)
- Stack gas cleaning (penalty of 3-6% for those plants that require it; negligible impact to date)
- Lead removal from gasoline (negligible energy penalty; no impact to date).

To say that the environment has some responsibility for the demand surge is one thing, but to place sole responsibility on it is quite another. For example, of the total increase in demand for gasoline in the past 5 years, over two-thirds is attributable to additional automobiles being on the road. Twenty-three percent is due to more miles being driven per

car; and the remaining 9% is due to fuel economy losses, chiefly the penalty associated with pollution control equipment. Over a longer period of time increased weight and use of accessories have significantly reduced auto fuel economy. Clearly automotive design, consumer choice, and consumer driving habits have much more to do with gasoline consumption than emission controls.

Supply

The primary impact of the environmental movement on energy supplies has been to contribute to delays in new energy projects. Local interests can stall construction of new facilities by administrative action. Their reasons can be described as environmental, if the word is defined to include a wide spectrum of social values. Although EPA programs and policies may have been contributing factors, the primary reasons for project delays have usually been local factors such as zoning or esthetics rather than pollution per se.

Because we now have a serious shortage, suggestions have been made that environmental constraints on energy supply and use should be relaxed. However, relaxation of constraints will not release substantial energy, especially in the short-term. Further, it must be remembered that environmental constraints have an important purpose. Relaxing them would effect a cost to public health significantly higher than the benefits of the marginal increase in energy supply. We believe that analysis will show that some temporary relaxations will be necessary where other alternatives simply are not available in time, but we expect most suggested changes will not be warranted.

Aside from the effects of the Mid-East oil embargo, it is obvious that national energy policy has been unclear in the past and that pricing and import policies have been largely at fault. In addition, necessary legislative decisions have been delayed because of lack of political agreement. Compared with these factors, we feel that the negative role of EPA and the environmental movement in general has been greatly exaggerated.

EPA is Acting to Reduce the Energy Problem

Although environmental regulations are but a small factor in the current energy situation, EPA has acted recently to reduce the adverse impacts on energy of its programs. These actions are consistent with a long-run approach of balancing energy considerations against the need for environmental protection.

In the immediate future EPA will seek to alleviate pressing energy problems if the resulting environmental damages are not severe. We also want to encourage use of those energy sources and those forms of energy consumption which are least environmentally damaging. Since nearly all energy systems involve some environmental damages, we seek to reduce substantially total energy use projected for the future - a goal which is beneficial to both energy and environmental needs.

Actions Which Reduce Energy Requirements of Environmental Regulations

A number of EPA decisions, some made explicitly in response to energy problems and some made for other reasons, have reduced or will reduce the impact of environmental regulations on energy. Examples of these actions include:

- The "Clean Fuels Policy" on coal combustion

- The variance policy on oil combustion
- Emergency switching from oil to coal
- Recommended change of the Nitrogen Oxides (No_x) auto emission standard.

Clean Fuels Policy on Coal Combustion

In the fall of 1972 EPA determined that imposition of State sulfur regulations under the Clean Air Act would jeopardize the production of more than 100 million tons of U.S. coal. By delaying or modifying regulations more stringent than those needed to meet primary (health-related) standards, this coal could be utilized. Accordingly, for the past year EPA has been encouraging the States to change those regulations to the level needed to meet health standards. This action would save domestic coal production and limit demand for imported low sulfur oil resulting from coal-to-oil switching.

Variance on Oil Combustion

Last winter and again this winter, EPA has enunciated a policy of granting temporary variances from sulfur regulations on oil combustion where low sulfur oil cannot be obtained. This ensures that adequate fuel is available, even though emissions standards and air quality standards may be violated. Seven variances were granted last winter on an emergency basis. This year EPA has encouraged the states and regions to formulate contingency plans under which emergency requests for variances can be considered, so that sulfur standards will not preclude use of any oil that becomes available during the shortage.

Emergency Switching From Oil to Coal

EPA has supported the emergency energy legislation proposed in the Congress this year which would allow the President to order power plants to switch from oil to coal combustion, even though it would result in increased sulfur emissions from those plants. Since coal production can only be increased by limited amounts in a short time, EPA has sought to insure that the limited amount of switching that can be done occurs where environmental damages are minimal. These decisions should be made only after a case-by-case review.

Recommended Change of the No_x Emissions Standard

EPA recently determined that a change in the measurement technique for No_x was necessary. Using the revised technique to assess ambient concentrations of No_x and analyzing the impact of auto emissions on urban concentrations of No_x, EPA determined that the Congressionally mandated 90% reduction of No_x auto emissions was not needed to protect health. EPA requested that Congress increase the 1977 No_x auto emissions standard five-fold until 1982. This change has the added benefit of significantly improving fuel economy of cars meeting the standard.

Action To Reduce Energy Consumption

A number of EPA programs would reduce energy consumption. Obviously, reduction of energy use not only reduces the energy problem, but also limits environmental damages. Hence, there is agreement between environmental and energy interests on the need for conservation. Areas of EPA interest that will lead to reduced energy demand include:

- Development of an energy conservation program
- Transportation control plans
- Mass transit
- Resource recovery programs
- Fuel economy labeling program
- Land use programs
- Development of more efficient auto propulsion systems

National Energy Conservation Program

In late 1972, EPA prepared a major study on energy conservation. The most promising measures include:

- Increase the population of small autos
- Increase aircraft passenger load factor
- Apply improved insulation and glass standards to new commercial buildings

The EPA study estimates that about 20% of the predicted 1990 demand for energy could be saved if economic conservation policies are implemented as soon as practicable.

The Agency is now actively supporting the Office of Energy Conservation (which will be part of the new Federal Energy Administration) in developing a program based on measures such as these.

Transportation Control Plans

Transportation control plans for certain urban areas have been necessary to reduce pollution to levels needed to protect public health. Some of these plans require reductions in vehicle miles traveled, which also imply reductions in gasoline consumption. EPA estimates that in 1977 these plans would yield savings of 5.2 million gallons per day, or about 2.5% of current national automobile gasoline consumption. These savings estimates are expected to result solely from measures designed to reduce vehicle miles traveled in limited areas. Additional fuel savings will be achieved through the inspection and maintenance programs and gasoline vapor recovery measures which are also required by the plans.

Mass Transit

EPA has supported construction of mass transit systems because they provide a low-pollution, energy-efficient alternative to automobile travel. Increased use of mass transit is a key element of EPA's transportation control plans and energy conservation strategies. Measures such as increased bus fleets, bus/carpool lanes, and commuter-carpool programs will immediately reduce energy consumption and will encourage development of total transportation systems for the future. By reducing our reliance on low-occupancy automobile use the transportation control program will result in significant long-run energy savings.

Resource Recovery Programs

For many materials, the energy required to mine the ore, refine it, and produce a finished product is much larger than that needed to reclaim the materials from wastes. In one case, recycling aluminum rather than extracting it from raw ore saved about 97% of the energy involved. The energy savings of recycling steel and paper are about 52% and 70% respectively. The potential savings from recycling steel, aluminum, and paper is equivalent to about 190,000 barrels of oil per day.

Beside reducing energy demand for manufacturing, resource recovery also provides a benefit for energy supply, since residential and commercial refuse can be used as fuels. The total potential of resource recovery programs equals the equivalent of about 550 thousand barrels of oil per day, or about 1 percent of forecasted national demand for energy in 1980.

EPA has provided funds for the demonstration of energy recovery systems. For example, in St. Louis, the Union Electric Company burns mixed refuse in one of its boilers, providing 3 percent of all the electric power for that city. This project was supported with EPA funds.

Fuel Economy Labeling

EPA recently announced a program asking auto manufacturers to post fuel economy information on new cars. EPA also publishes fuel economy data for most vehicle models sold in the U.S. The intent of this program is to educate consumers as to the importance of fuel economy differences in lifetime costs of cars and to provide them with data with which to make fuel-saving decisions. Knowledge of this information is expected to have an immediate effect in accelerating the current trend to smaller, more efficient cars.

Land Use Planning

Land use can effect substantial transportation fuel savings through design of systems where less automotive transport is necessary and where mass transit is convenient. Energy savings in transportation of up to 30% can be accomplished with comprehensive planning.

Another energy benefit of land use planning is the ability to reuse waste heat from various sources if communities are designed appropriately. Use of central heating for apartment structures and siting of construction according to meteorological conditions and solar exposure can also provide substantial savings.

Development of Efficient Auto Propulsion Systems

EPA is encouraging development of more efficient automotive power systems in several ways. Through the Advanced Automotive Power Systems program, direct financial support is given to development of new propulsion systems through research funding. Development of alternative technologies by industry has been stimulated by the mobile source standards. These requirements have certainly hastened development of the stratified-charge engine for U.S. cars.

Actions to Increase Energy Production

EPA realizes that even with strong energy conservation measures energy supply must continue to increase for the foreseeable future. The Agency is seeking to determine the environmental impacts of new and existing energy systems, to promote utilization of those

which have the least environmental impact, and to insure that all reasonable environmental safeguards are utilized.

Legislation

EPA efforts in this direction include support for the following legislation.

- **Natural Gas Deregulation** - EPA believes that the current shortage of natural gas is due in large measure to the fact that natural gas is underpriced relative to other energy sources. Underpricing creates incentives for excessive consumption, while discouraging exploration for and production of natural gas. Resulting natural gas shortages lead to increased use of coal and oil, which cause considerably more environmental damages. Consequently, EPA has strongly supported legislation to deregulate new natural gas prices.
- **Regulation of Coal Mining** - EPA is concerned about environmental damages from coal mining, but believes that a large portion of U.S. coal reserves can be mined if strict environmental safeguards are applied. Uncertainty about eventual mining and reclamation standards has deterred production of coal. EPA favors immediate passage of legislation to regulate coal mining and enforcement of strict mining and reclamation standards under it.
- **Deepwater Port Legislation** - We will continue to require some imported crude oil from some nations for the foreseeable future. A percentage of the oil will continue to be imported by ship. In that case, deepwater ports can be a positive factor for economic, energy, and environmental reasons. The primary environmental problems are adequately handled by the Administration's proposed bill, since oil spills would be reduced and on-shore impacts would be controlled by state land use programs.
- **Power Plant Siting** - EPA feels that new legislation should provide a systematic method of certifying new power plants with a preconstruction review of all costs and benefits - environmental and otherwise. The public benefit of the bill would be that needed facilities would be sited as quickly as possible after an adequate review.

Task Forces on Energy Supplies

EPA is also participating in several efforts to determine whether alternative energy sources can be utilized in an environmentally acceptable manner. We have joined inter-agency task forces which have been, and are now, weighing costs and benefits of new energy sources and technologies, so that the nation can reap the benefit of the energy at a price the environment can afford. These include:

- **Atlantic/Gulf of Alaska OCS Study** - The purpose of this study coordinated by the Council on Environmental Quality (CEQ) is to determine whether and under what conditions leases should be sold for oil exploration in the Atlantic Ocean and the Gulf of Alaska.
- **Off-shore Nuclear Power Plants** - This CEQ-led effort is to determine how and with what precautions permits should be granted to locate nuclear generators in floating stations off our coasts.
- **Strip Mining** - This study, also coordinated by CEQ, analyzed the types, amounts and locations of coal which would be affected by slope limitations on strip mining. It also

assessed the regional impacts which would result from slope limitations and measured the costs and benefits of alternative methods of contour restoration.

- Northern Great Plains Resources Study - This study will evaluate a number of development options for energy resources and power in the Northern Great Plains states. It will assess a full range of environmental and social effects, including air and water quality, land use, water requirements, and population growth.

Summary and Implications

Environmental Policies Did Not Create the Energy Problem

Many factors have combined to cause energy supply inflexibilities on the one hand, while at the same time demand for energy is surging. Environmental regulations have played a relatively small role in these developments. The embargo by the Arab nations has brought the problem to a head and is making this nation begin to realize that it cannot continue increasing its demands for energy at recent rates, that it must not allow artificially low energy prices to spur demand and suppress supply, and that it must adopt a comprehensive long-range energy policy.

EPA Is Acting To Reduce the Problem

Many of our key programs will provide substantial reductions in energy use in the future. Transportation controls, recycling, and land use planning conserve energy. In addition, those programs which require energy supply for pollution abatement are being administered in a flexible manner so as to be responsive to our national energy and economic needs.

Energy and Environmental Policies Have Many Common Objectives

In the long run, a reasonable conservation strategy will provide benefits for both energy and environment. As growth in energy demand is reduced, supply problems become less acute and more manageable. Economic disruptions from energy shortages, dependency on foreign energy sources, and pollution problems from energy supply and use decrease as energy growth is reduced. As the rate of extraction of resources slows, we retain more options for future use of those resources. Future technology will undoubtedly be able to increase ultimate recovery of resources and be able to provide additional safeguards for the environment.

A second objective is development of new sources of energy, which offer the possibility of providing energy with minimal environmental impact.

A third objective is to provide adequate land use and siting controls to assure orderly and equitable procedures for locating and constructing new energy facilities. These procedures can result in more rapid construction of needed facilities and minimization of environmental impacts.

And finally, both the energy and environmental interests must be concerned with maintaining a healthy and stable economy. We must ensure that our policies are made after consideration of economic effects, as well as energy and environmental impacts.

Environmental Values Must Be Considered

Just as the environment did not cause the energy crisis, it must not bear the brunt of the

solution. Generally the benefit of an environmental regulation will be considerably greater than the energy benefits which would result if the regulation were relaxed or suspended. We must strive to protect public health, making temporary exceptions for energy considerations in emergency situations; and we must insure that those regulations eased because of pressing energy needs are restored as quickly as possible. As we turn as a nation to much greater reliance on our coal reserves, it is critical that we integrate into our planning at the same time a deep concern for preservation of our air, land, and water resources.

The Shortage Will Induce Some Lifestyle Changes

In the future, energy will be sold at a higher cost and we should become more sparing in our use of it. Energy conservation will be a continuing objective, and energy will not be used with the abandon of recent years. Homes and offices will not be heated or cooled to the extent that they have been, and better construction and insulation will further reduce energy use. Transportation will be more expensive, and Americans will adopt different travel customs and even different living patterns as a result.

Many commuters will find it less expensive and more convenient to use forms of mass transit. Gradually institutions will evolve to accommodate alternative forms of transportation such as walking, biking, or taxi-buses, so that their use is more convenient, more enjoyable, and less dangerous than it is today. Some streets will probably be returned to pedestrians. And the inner cities might enjoy a commercial revival if workers discover that it is more convenient, pleasant, and less time-consuming to shop near work or home than it is to go on expeditions to shopping centers in the suburbs.

Over time land use planning and energy costs will encourage more people to live in the city or near where they work. It will be a quieter, cleaner, healthier city which is not choked with auto traffic.

Another implication of these changes is that expensive energy will moderate our economy and our lifestyles. Problems might arise if that moderation constrains our choices excessively because the freedom of choosing one's lifestyle is elemental in our society. In most respects, though, the current shortage should induce long-needed changes that will have a very positive impact on society in general, and on energy and environmental policies in particular. Never again will energy, environmental, or economic policies be made in isolation. They are now, and will continue to be, interdependent.

Beyond that, perhaps the greatest irony of this current crisis is that the forthcoming short-term hardships may result in new policies, a new public awareness, and social benefits which could not have been realized without the stimulus of the oil embargo. And the "hardships" themselves may turn out to be benefits which we have desired all along. We may find once again that enjoy walking.

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