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Second Annual Clean Coal Technology Conference

Proceedings

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September 8, 1993

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Plenary Session 1

Moderator:
Jack S. Siegel,
Acting Assistant Secretary for Fossil Energy,
U.S. Department of Energy

Welcome to 2nd Annual Clean Coal Technology Conference

Kenneth J. Nemeth

September 8, 1992

On behalf of the Southern States Energy Board and the U.S. Department of Energy, it is my privilege to welcome each of you to this Second Annual International Clean Coal Technology Conference here in Atlanta, Georgia. As you glean information from the conference program over the next few days, I hope you will also take time to enjoy our dynamic Olympic city.

A clear understanding of state, regional, national and international issues is no longer peripheral to electricity generation and transmission...it is fundamental to the success of business and government operations. The objective of this conference is to examine the status of the Clean Coal Technology Demonstration Program and its projects. The program will be reviewed within the larger context of environmental needs, sustained economic growth, world markets, user performance requirements and supplier commercialization activities.

Program review will be accomplished through in-depth discussions of factors affecting domestic and international markets for clean coal technology, the environmental considerations in commercial deployment, the current status of projects, and the effectiveness of data transfer to potential users, suppliers, financing entities, regulators and the interested environmental community.

As environmental priorities and energy demands realign themselves, coal emerges as one of the most important energy resources we have here in the United States. Finding new programs that are both innovative and challenging, such as the Clean Coal Technology Demonstration Program,

will allow us to continue to fully utilized our most abundant natural resource, coal.

Last night, many of you attended a tour of Plant Yates. We in the South are very proud that The Southern Company is participating in the Clean Coal Technology Demonstration Program. In fact, the

I think we have prepared a program which accomplishes these objectives, and it is my hope that you will find these next few days in Atlanta fruitful. If I or the SSEB staff can do anything to enhance your stay in Atlanta, please be sure to let us know.

WELCOMING REMARKS

Lee Conn
Vice President Power Generation
Georgia Power Company

(The comments of Mr. Conn were not available at the time of publication.)

Remarks of Deputy Secretary of Energy
William White
2nd Annual Clean Coal Technology Conference
Atlanta, GA
September 8, 1993

Think with me about this. In a sense, here we are in the very middle of a quiet and unsung economic revolution. We are in the very middle of it. Think about this. We are sitting right now the international economy growing and becoming integrated like it never has in the history of the planet.

This will not be the last year that we have international delegations at this conference. They will grow. And when conferences are held abroad it will be Americans who will attend. That's because, as ideologies are swept aside, the common problems of economic growth and the practical problems of building the infrastructure needed to power that growth are things which we will share. That wasnt's true 50 years ago, it wasn't true 100 years ago, it wasn't true 500 years ago. But it is true today.

So when our grandchildren attend conferences like this we won't be recognizing international delegations because it will be taken for granted that conferences about the leading edge of technologies are at the very heart of economic growth throughout the world.

And we're here, frankly, right at the beginning. Now that's exciting.

Maybe I've overblown the topic, but when you think about it, there's something there, and it's not just the revelation of having an economic integration happening before our very eyes. We're seeing -- in the last 10 years and increasingly I predict in the next 10-20 years -- some fundamental redirection in the attitudes that we take toward the preservation of the environment during a period of explosive economic growth.

Whatever one might think about the data about global warming, nobody dismisses the concern of global climate change as something that's merely science fiction. It's plausible -- we've seen pictures taken from space not only of this country but of entire regions of the world -- and they look different than they did 10 years ago. Deforestation is a fact, not a theory. The limitations on the water supply are a major constraint to growth, not just some possibility. And the list goes on and on. We are increasingly faced with bumping up to the limits of what nature is willing to give us.

No nation facing these questions in an honest and democratic fashion can turn their head aside because none of us -- whatever business or industry we're in -- want to be in a situation where we can't take our kids or grandkids out in a natural environment and let them expeience that for themselves and make their own choices.

Don't you see how clean coal technology is right in the middle of that?

It's not just this government and this Adminstration that ran on a politicl platform of improving economic growth and creating jobs. That is the same platform that politicians now throughout the world are running on. They put their test of whether they're going to be elected or reelected ultimately on that economic growth, growing economic opportunities for growing populations. Make no doubt about it.

That requires the basic infrastructures of our countries -- power, electricity, transportation, water supply, legal and property rights -- to be in place. Without those foundations, no nation has ever had sustained economic growth. There are nations that have literally come and gone -- that's what archaeology is all about. You don't think there are going to be archaeologists in 500 years? What countries are they going to dig up? They'll dig up the ones that didn't sustain economic growth.

Now Jack and others are right in saying that our most abundant resource is coal. And you know the squeeze and the dilemna about the alternatives. I don't need to talk to this group about the turmoil and the economics encountered in the nuclear industry. There's not a serious, thoughtful thinker that can say that coal is not a part of the power future of this country. We know that. And we in this Administration are committed to seeing that the coal technologies of this country advance in a way that's compatible with the other interests that I outlined. The fact that right now we've run into the limits of nature and we're trying to figure out as a people what to do about that -- not just in our country but in others.

The government that the people in this room have been paying for through their tax dollars has made an enormous investment. We've done what many people are challenged to do; we've put our money where our mouth is through the Clean Coal Technology program as have many of our industrial partners. We have a number of projects and we have results. Some of those aren't what we expected them to be, but a lot are or are better. There is a track record.

The question that I have in my mind is this: will the industry and industry groups represented in this room, starting with the utility industry, be willing to step out and get ahead of the curve? Get ahead of the economic trend that they see coming? Or will they wait to be pushed along? And if they wait, will the trend overpower them and pass them by?

Look at the way that large industrial enterprises -- including utilities -- have evolved over the last 100 years. You know, it hasn't been that long since the advent of the corporation, the international corporation and the form of doing business where many people pool their capital and create large enterprises. If you can say anything about the history of the corporate enterprise, both in this country and abroad, it's that no company -- however big and perhaps even especially the big -- is immune to change.

And organizations which resist that change, the market overtakes. And it is overtaking them at an accelerated pace. You know, I don't come from the utility industry myself, and I've been told by people who are more famaliar with the industry than I what a conservative group this is -- made even more conservative by the fact that, in many cases, regulatory commissions have been able to use the benefit of hindsight to penalize without creating sufficient reward for risktaking.

But I'll tell you something. The most risky strategy for any industry, the utility included, is not to change, and not to try to remain in front of the trend. We can some day go look at the companies that make up the Dow Jones industrial average and look at who they were 30 years ago and who they are today. We can look at what people said about them 30 years ago and what people say about those same companies today.

You will see that the fastest growing companies, the companies that offer real security, are those who have put themselves at the forefront of technological change. Those that have missed the change in technology -- even by a mere 5 to 10 years -- are the ones who are struggling to survive. And they are surviving only by borrowing amounts of money they will not be able to repay unless they change their way of doing business and unless they change their technology.

We have a track record in the utilization of coal which reduces emissions and increases efficiencies in its use. Those who want to wait 5 or 10 years, to make sure that the rest of the industry goes before them, to take a wait-and-see attitute, see the safe thing as being behind the pack.

But that's not the safe place.

The safe place is to be right at the forefront of where that change is. We need to recognize that the trend of awareness of respect for our environment is one that is occurring worldwide, is one that transcends partisanship and ideology.

Yes, there are times when the regulatory commissions of the states and the federal government make mistakes. People in government make a lot of mistakes. I said earlier that some of the biggest companies were the ones finding themselves most in trouble in this world because they had become so successful that they resisted change, they resisted new technology. Well, the biggest enterprise of all is the government, and we've made plenty of mistakes.

Sometimes we within government -- I've only been here three months but have the identity association already -- those people in government, who look both to regulate industry and balance environmental concerns against concerns for growth, are struggling too. And we have vowed to do a better job and to take seriously what this week the President and Vice President will be preaching -- which is to view the taxpayers, the businesses, the employers of America as our customers, as people we must please and serve.

So by challenging you in the use of new technologies, I do not want to be presumptuous. I know that the knowledge and information that we have at the DOE and within government has only been purchased by use of other people's money -- the taxpayers' money. It is our obligation to get information into the hands of people as quickly as possible. I commit for all the employees of the DOE that we we will try to do that. If it means working long hours, if it means using the fax instead of a first class letter to assist you in the changing environment in which we're living, we will do that.

But ultimately, as we realize in this country and as other countries realize as well, government can only play a small part of the economy. It cannot run the economy; it cannot take most of the resources of the economy. It is going to be utilities and vendors who understand the regulatory framework with which they operate who are going to have to take some risks with these new technologies. We challenge you to do that.

There are many people who have helped in this program today. Jack Siegel has been a key player along with all the DOE employees who are here. I thank them for the work they've done in bringing you together as well as the Southern States Energy Board.

I think we will see conferences like this growing as time goes on and as people realize that power is not a matter of ideolgy or theology. When you read the facts, you will understand what electricity generation necessarily will be over the next two decades and that coal and clean coal technologies are squarely at the heart of that.

If anyone here in taking me up on my challenge -- whether a vendor, a utility, or a regulator -- takes a move that steps out in front and gets well ahead of the prospect of fines from the Clean Air Act and wants to set a new standard -- a standard that will endure for the year 2000 or 2010 -- and wants public recognition in support of taking that risk and implementing that new technology -- I encourage you to call us at DOE. It's part of our leadership role in this technological effort to highlight your efforts, to make sure that these efforts receive attention, and to make sure the message gets to the consumers of power who often take power for granted and only become aware of problems and take for granted the people who find solutions day in and day out.

We will do what we can to express the support and appreciation of the poeple of the United States of America. We are as close as your telephone. We want to be accessible and we thank you for joining us this morning.

Plenary Session 1

Kurt E. Yeager
Senior Vice President
Electric Power Research Institute

Second Annual Clean Coal
Technology Conference
Atlanta, Georgia
September 7-9, 1993

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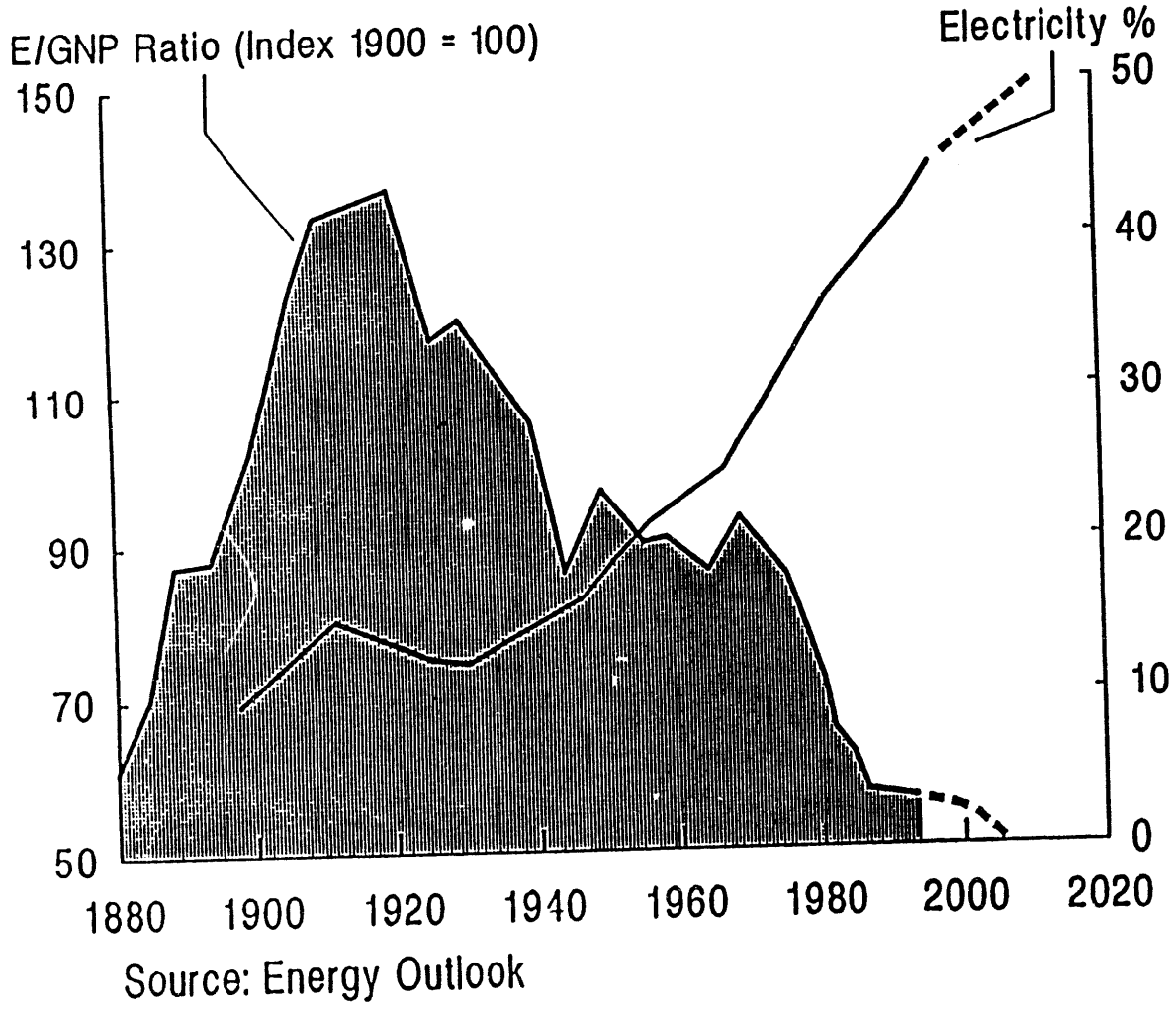
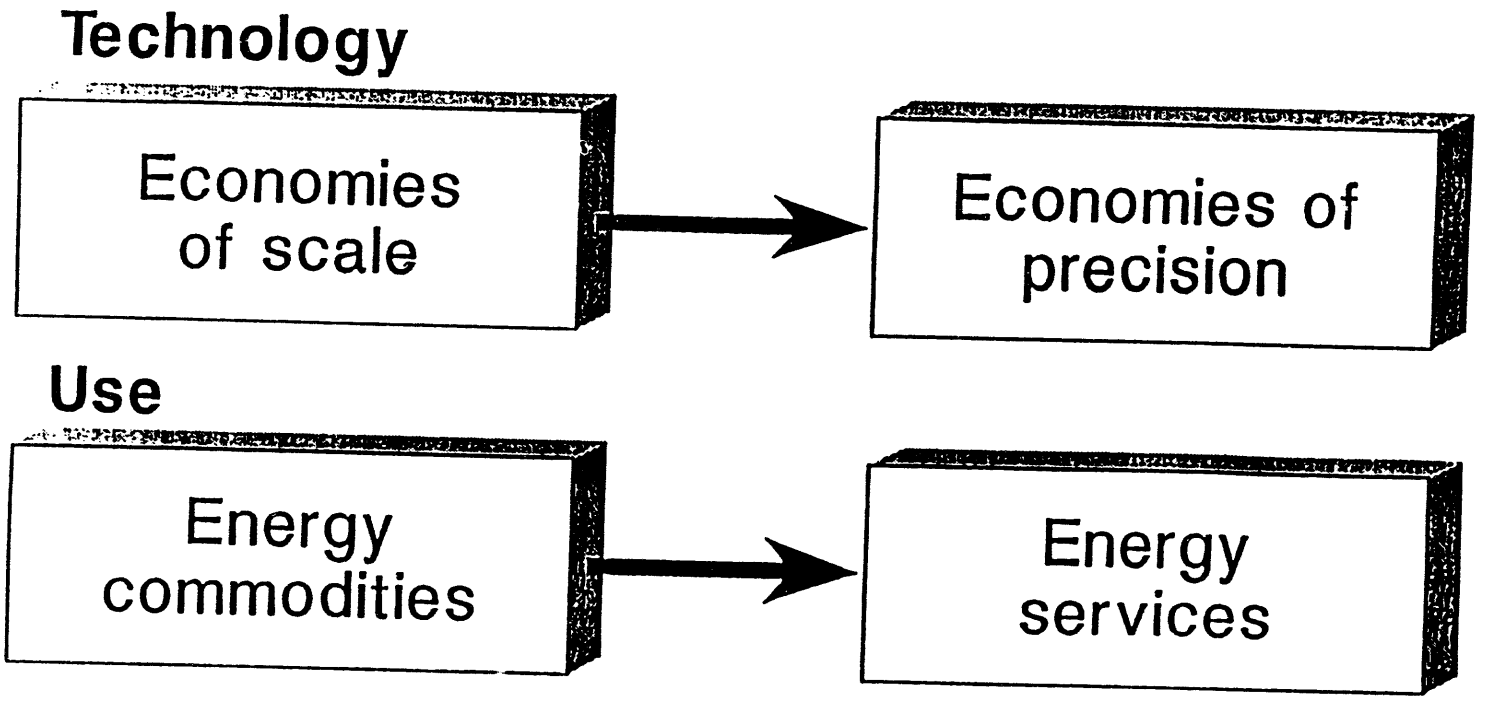
Energy Consumption/GNP vs Electricity Use



Electricity Will Continue to Substitute for Less Efficient and Productive Energy Forms

0944c.18

CHANGE DRIVERS



Derived from PG&E, 1991

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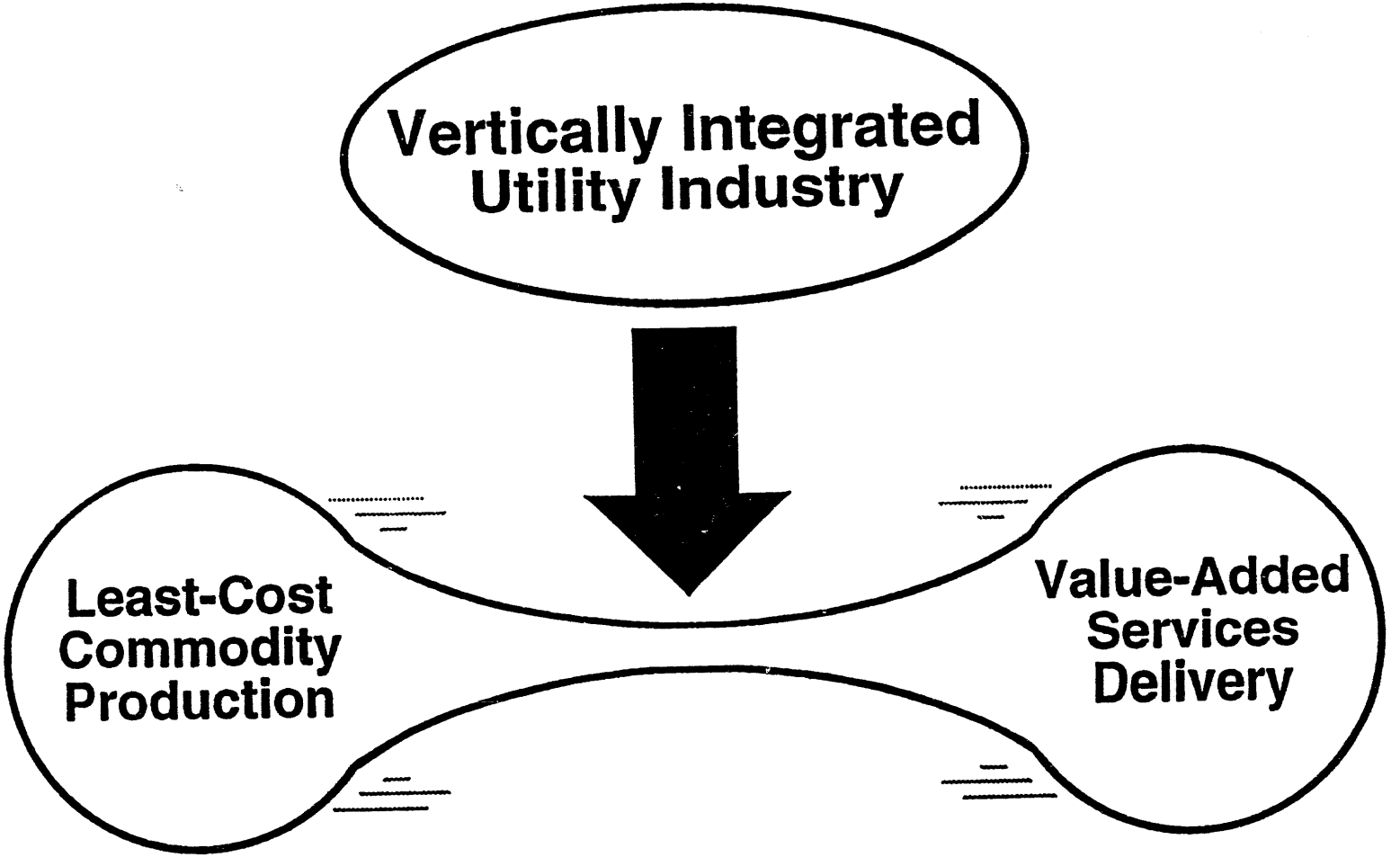
EVOLVING INDUSTRY STRUCTURE



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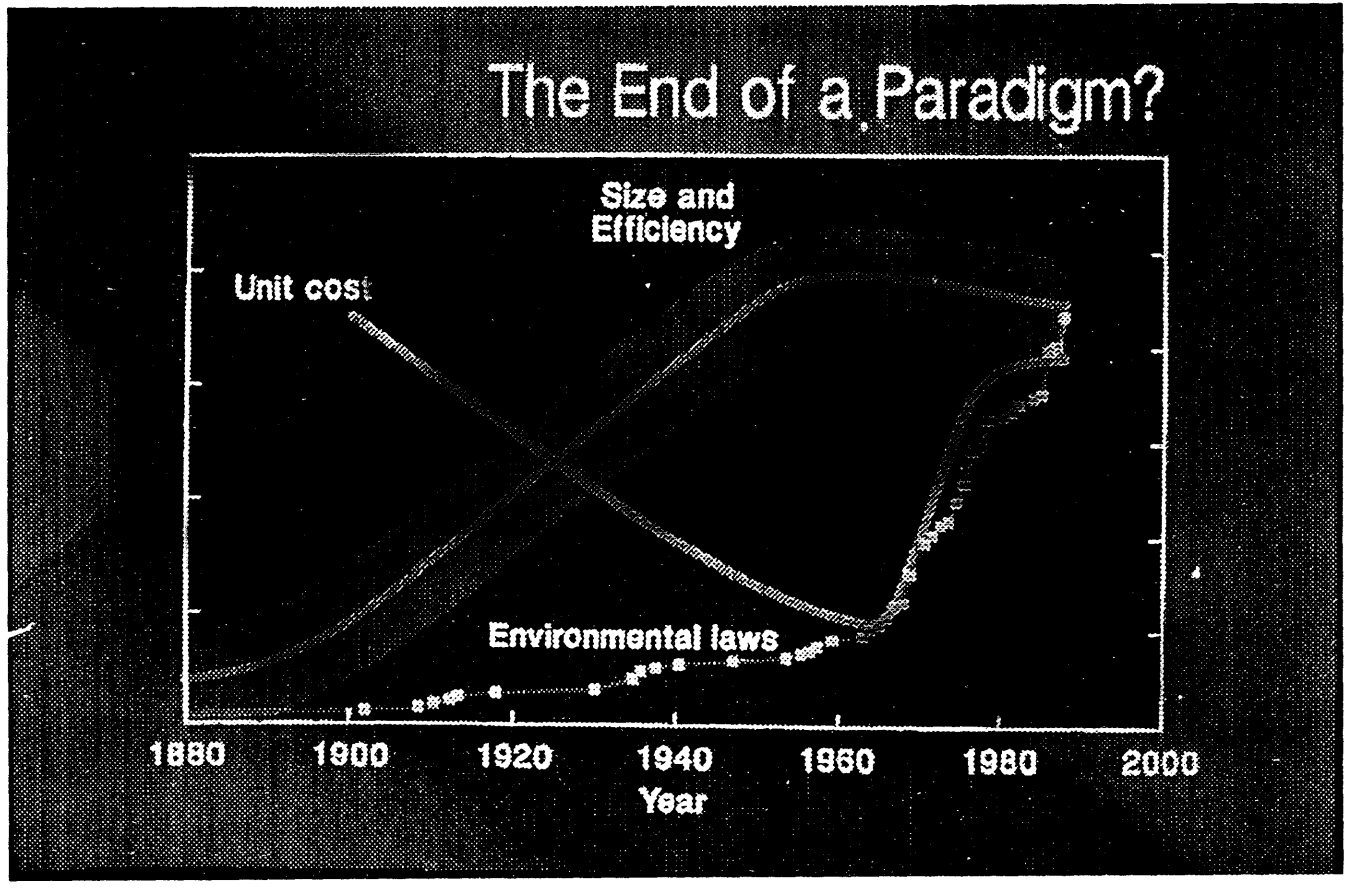
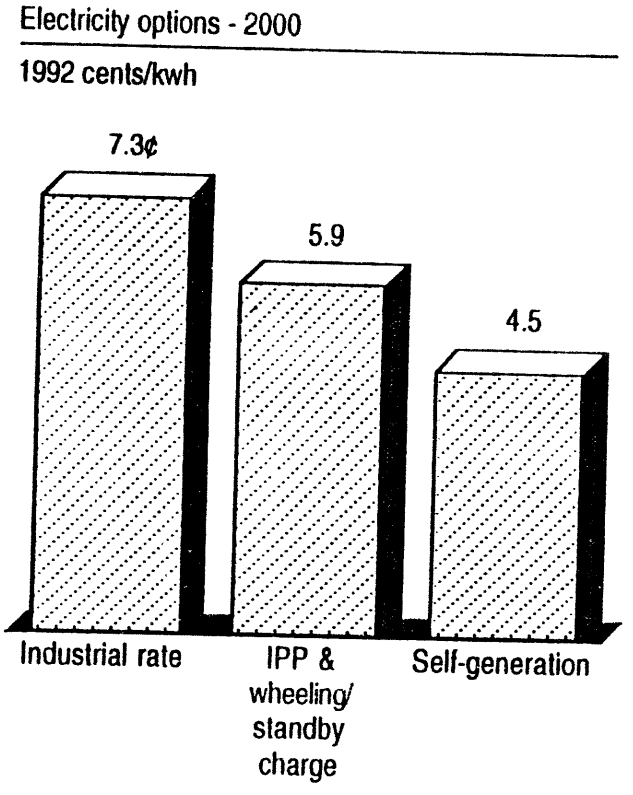
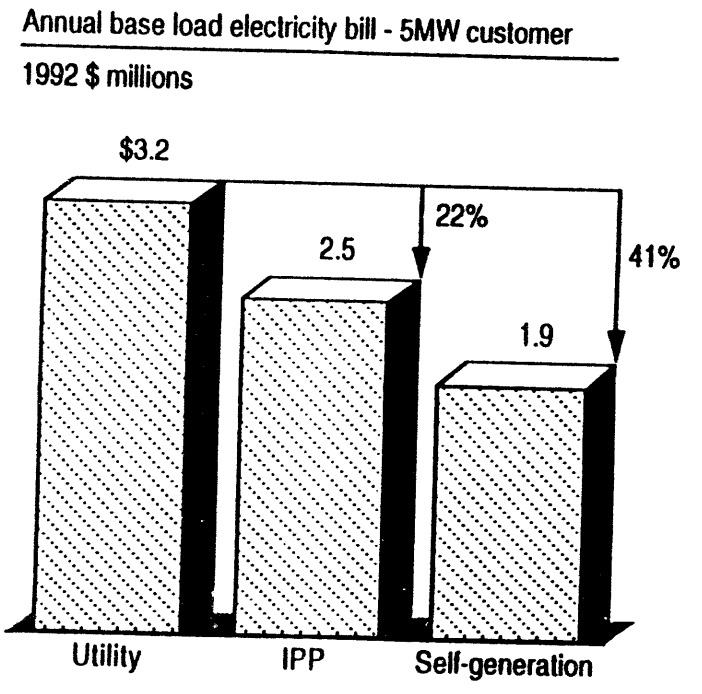

The End of a Paradigm?
Size and Efficiency
Unit cost
Environmental laws
1880
1900
1920
1940
1960
1980
2000
Year

TECHNICAL CHANGE VECTORS
Generation
From
To
Custom Central Station
Economy of Precision
Modular Distributed

Customer Incentives Are Significant





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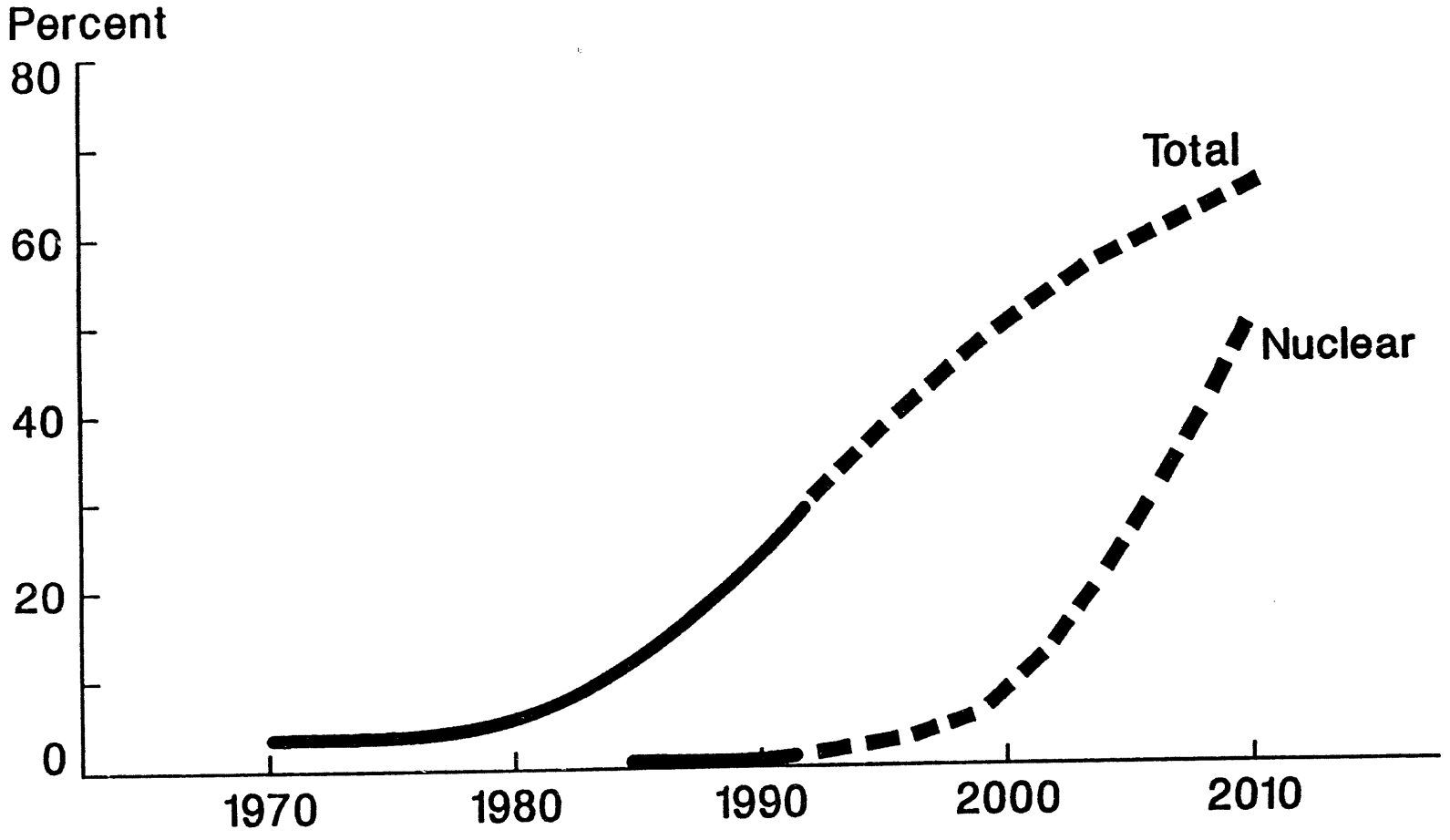
PERCENT OF GENERATING CAPACITY ≥30 Years of Age



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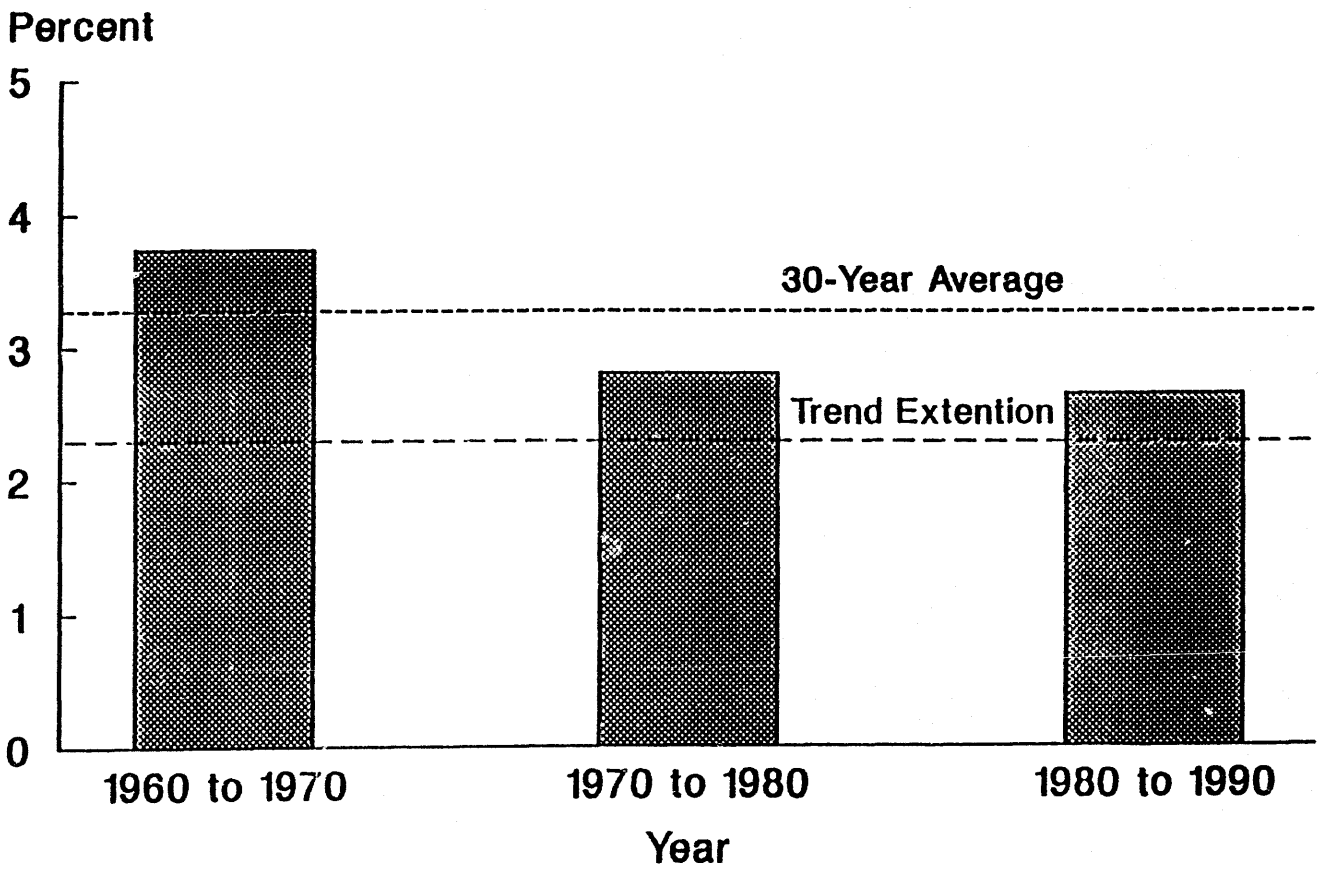
ANNUAL GNP GROWTH RATES



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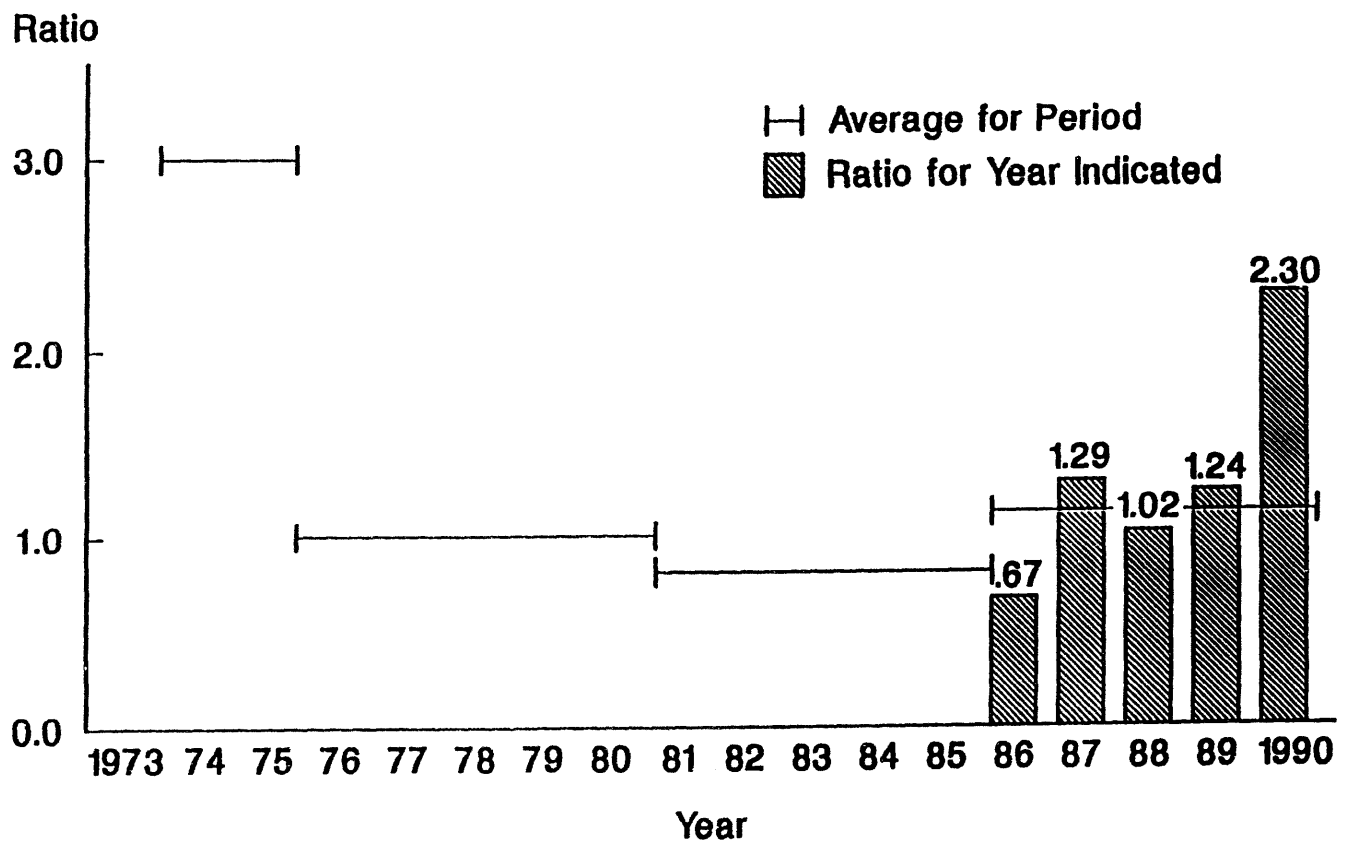
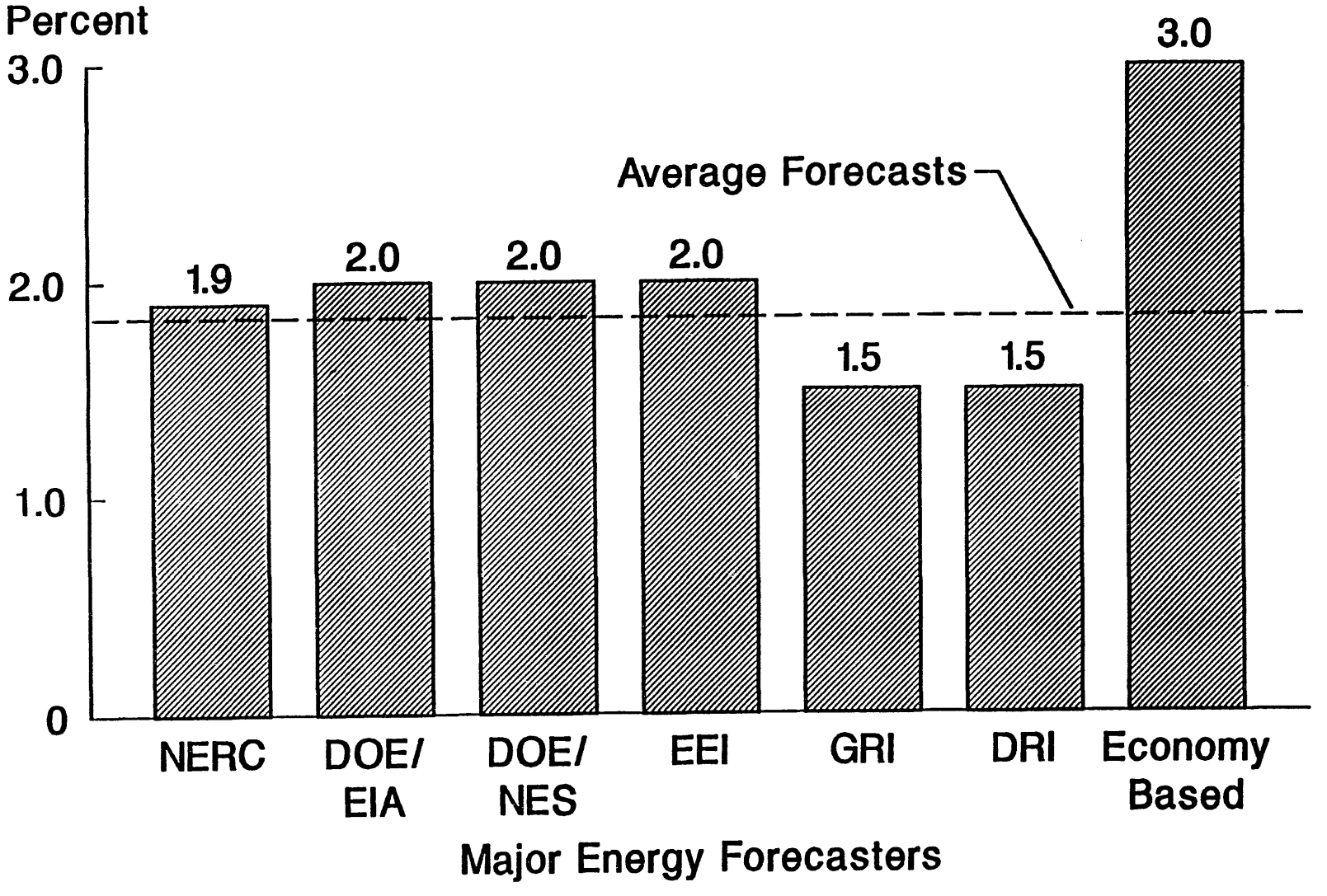
ELECTRICITY LOAD GROWTH/ECONOMIC GROWTH



21610.11 A

RATES OF ELECTRICITY DEMAND GROWTH



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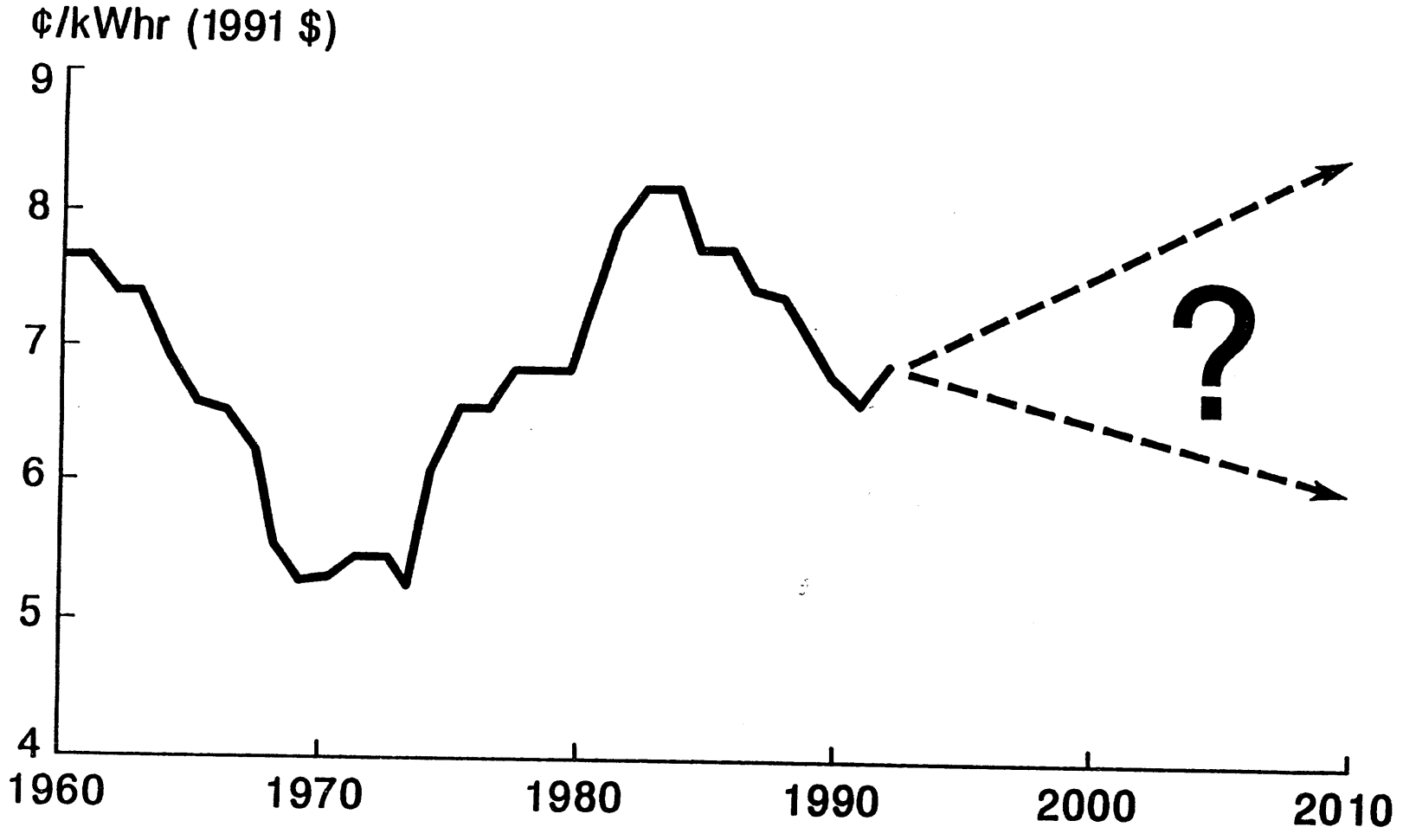
AVERAGE NATIONAL ELECTRICITY PRICE TRENDS



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SUSTAINABILITY

EPRI

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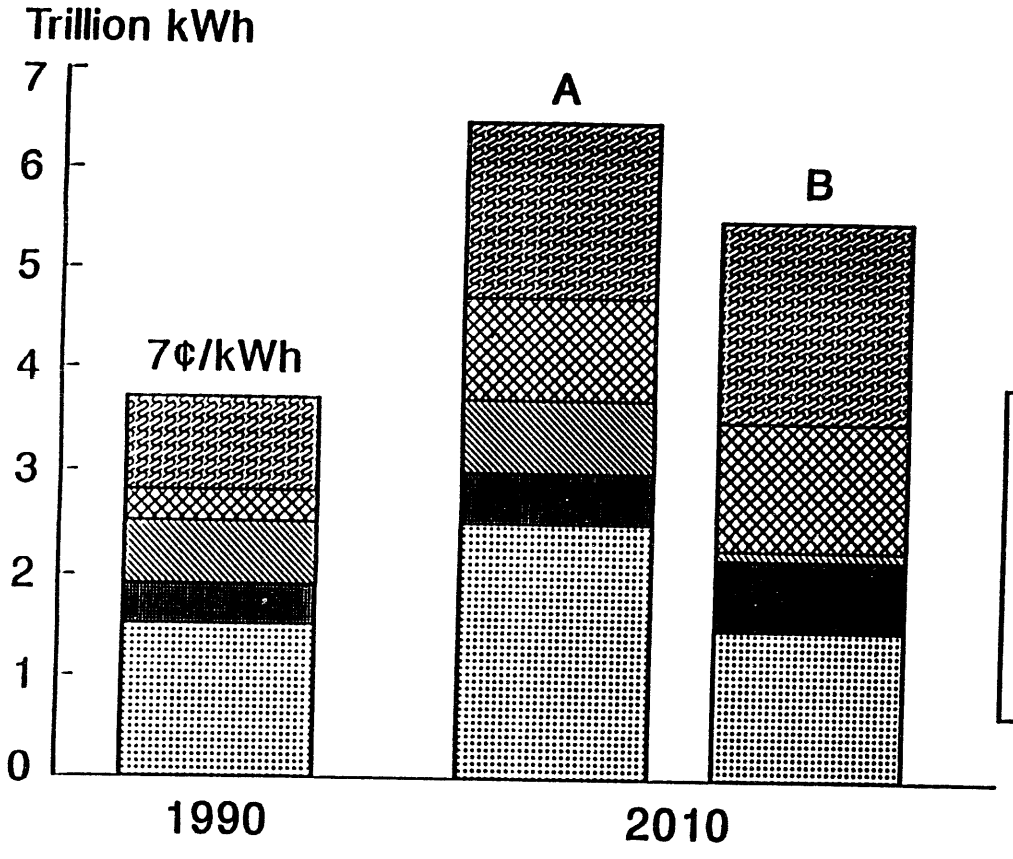
ALTERNATIVE FUTURES FOR ELECTRICITY GENERATION



Conservation
Gas
Nuclear
Renewables
Coal

A	B
6-7¢/kWh	9-10¢/kWh
3.5% GNP/yr	2.5% GNP/yr
2.8% E.D./yr	1.7% E.D./yr
100 BkWh/yr	40 BkWh/yr

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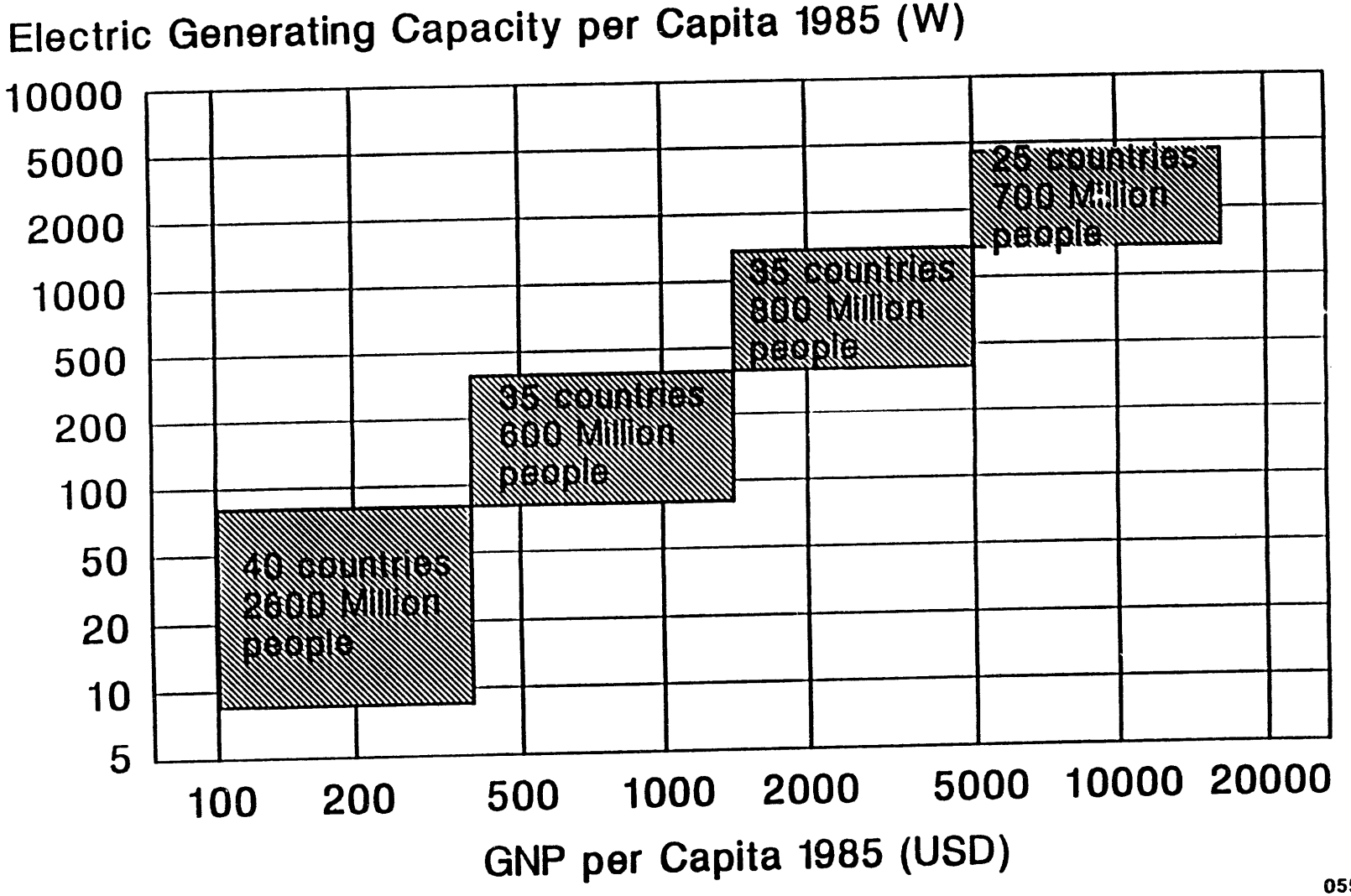
PROSPERITY AND ELECTRIC ENERGY



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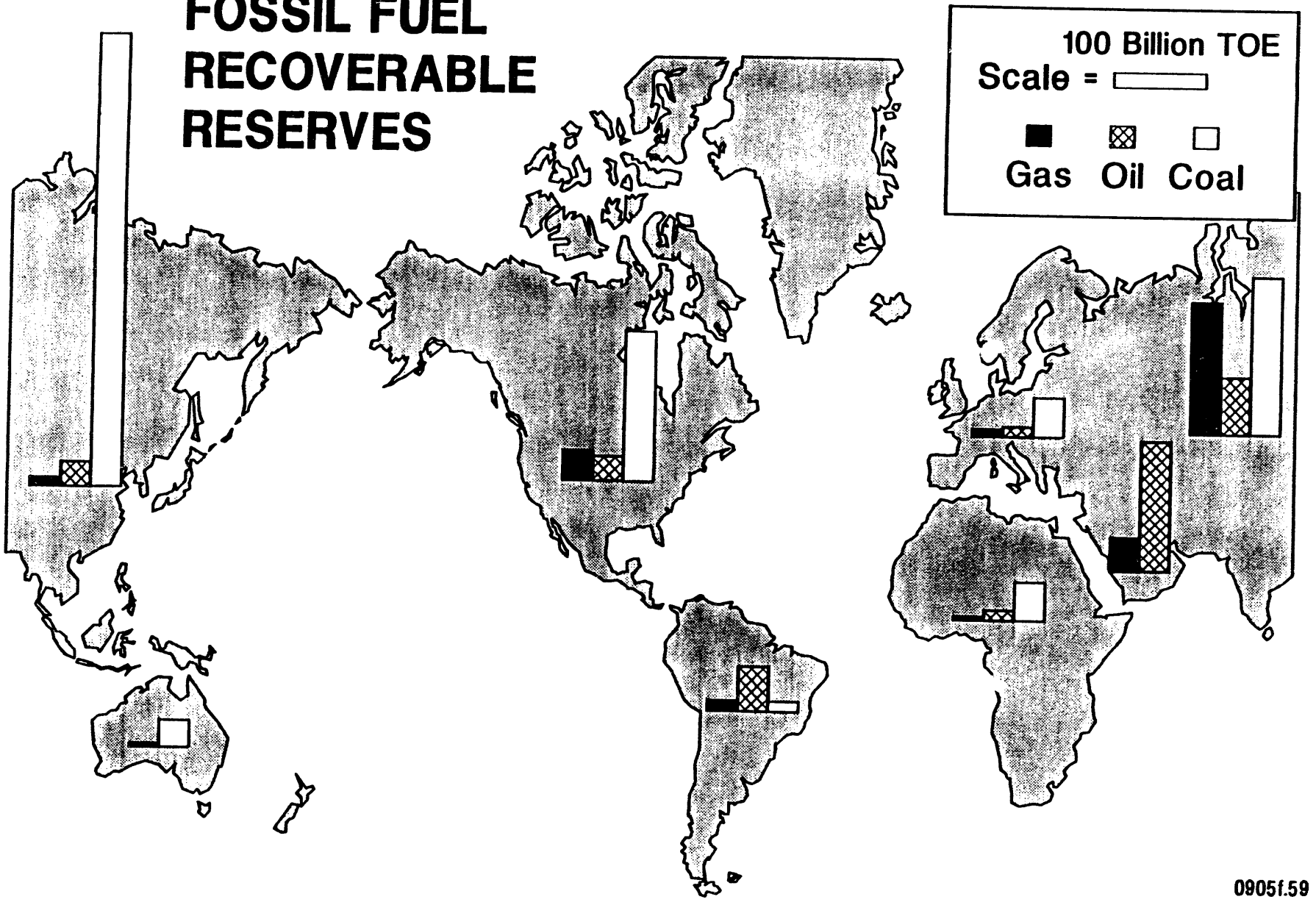
FOSSIL FUEL
RECOVERABLE
RESERVES
100 Billion TOE
Scale =
Gas
Oil
Coal
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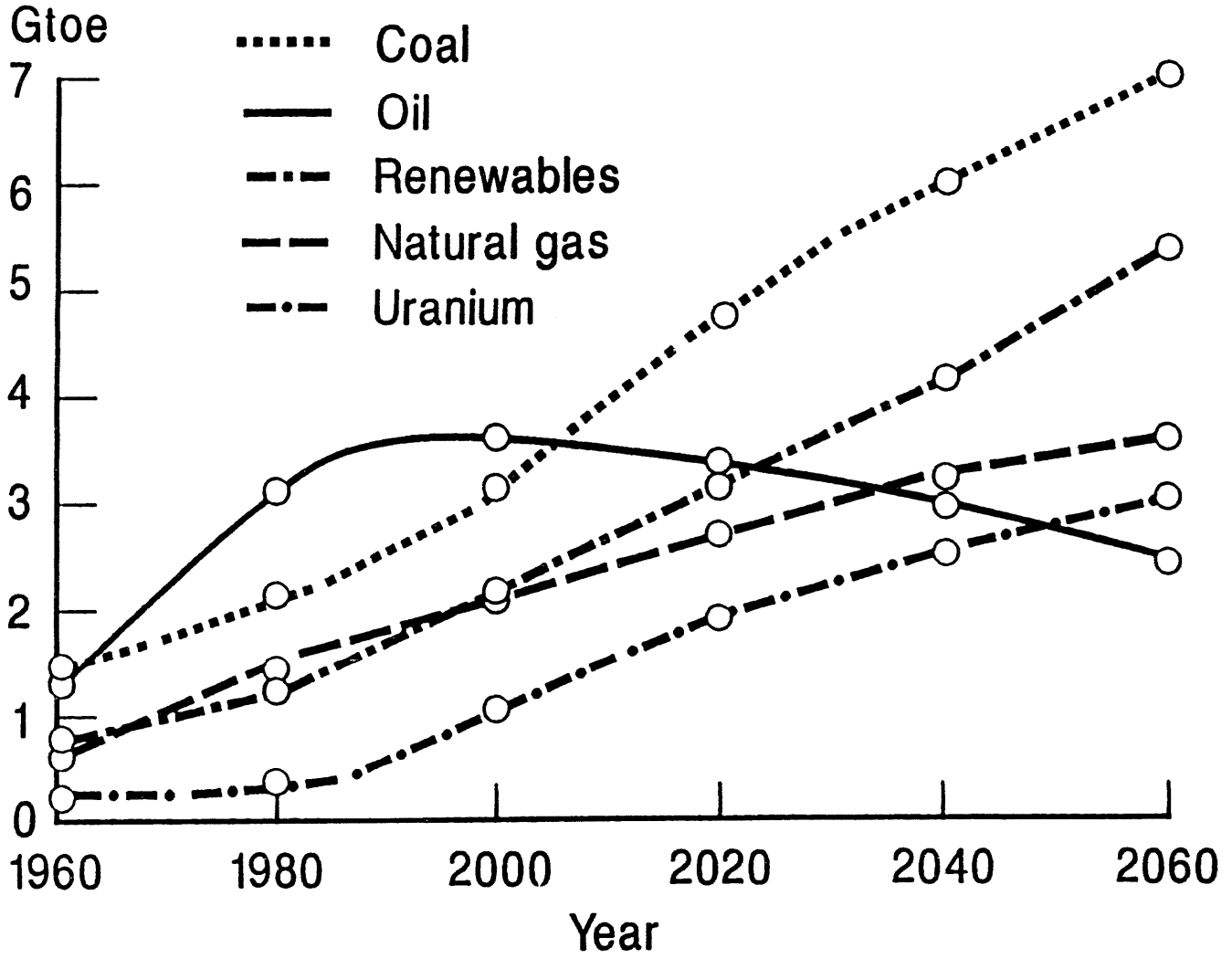
EVOLUTION OF WORLD ENERGY UTILIZATION



World Energy Conference - Conservation Commission, 1986

0549E.46

FUTURE SUSTAINABILITY
Renewables
Nuclear
Coal

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Regulatory Climate for Clean Coal Technology into the Next Century

Remarks of Commissioner Lynn Shishido-Topel
2nd Annual Clean Coal Technology Conference
Atlanta, Georgia
September 8, 1993

I. Introduction

Good morning. I have been asked to talk about the regulatory climate for clean coal technology (CCT) into the next century. By clean coal technology, I mean new technology that uses coal more efficiently or cleaner in the combustion process than conventional techniques. The ability to use a domestically abundant fuel to meet increasingly stringent environment standards efficiently is certainly a valuable option to pursue. Rate of return regulation, with its capped authorized return and infamous disallowances is often criticized as a hostile environment for such promising but relatively risky investments. However, looking to the future, I think the most important issue for CCT is how well it will fare in a more competitive electricity generation industry with the kind of regulation such an industry implies. The next century is only seven years away, but many observers are predicting sea changes within the next five years. Will there be retail wheeling? To what extent? Will generation essentially become deregulated?

The focus of my talk today will be on how increasing competitiveness in the electricity generating industry may affect the regulatory climate for CCT generally. In this regard, I have two observations:

1) The regulatory climate in the future may be more conducive to capital-intensive innovative technologies. However, CCT will have to develop faster payback times to do well in a more competitive future; and
2) that two things that could help it move in this direction are:
   a. greater emphasis of government funding at the idea stage rather than at the commercial development stage; and
   b. the careful use of incentives to achieve an efficient allocation of risk to utilities.

I also want to underscore the fact that state regulation is only one part of the picture. An increase in certainty over compliance standards for air toxics, co2, and nox, is also key to the future of CCT.

Let me start with a little background. State regulation is a creature of state statute. Therefore regulators do not have total discretion to craft regulatory devices or mechanisms. Fuel adjustment clauses, for example, had to be specially legislated in order not to run a afoul of legal restrictions against single issue ratemaking. Similarly, incentive regulation would require specific legislative authority and is not permitted currently by many state statutes.

An increasingly popular regulatory structure mandated by state statute is least cost planning, also known as integrated resource planning. The National Association of Regulatory Utility Commissioners (NARUC) defines IRP as "a way of analyzing growth and operation of utilities that considers a wide variety of both supply and demand factors so the optimal way of providing electric service to the public can be determined." The planning horizon is set out by state statute. In Illinois it is 20 years. Generally, the present value of revenue requirements of various options are compared. Long-lived, capital intensive projects with big upfront costs, and payoffs far into the future fair less well than projects with a lower upfront costs and faster payoffs.

An increasingly relevant question is how regulation will have to change to accommodate the changing environment inhabited by ratepayers and utilities. In this regard, one aspect of least cost planning process that may need to be considered is the planning horizon length over which various options are evaluated. As the generation industry becomes more competitive, it may become increasingly difficult to know with any degree of confidence what conditions will be in place 10 years from now, let alone 20. Will there be retail wheeling? What sort of technologies will competitors utilize? How will technological innovations spawned by a more competitive environment affect long-range planning assumptions? If planning horizons do shorten in response to a more uncertain, competitive environment, long-lived, capital intensive projects with payoffs far into the

future will have greater difficulty passing least cost screens. This is the major challenge I see for CCT.

Currently, it appears that the payoffs to CCT occur very far into the future and are not sufficiently large relative to the upfront costs. A recent PUF article described two instances in which, but for government grants, a cct project would not have been approved by state regulators. In addition, for one of the projects, even with the DOE funding, it was expected it would be 17 years before ratepayers saw benefits to the use of CCT. I have no personal knowledge of the particulars of the cases aside from those reported in the article. However, these examples indicate that if the planning horizon under regulation is shortened, the amount of subsidies required to obtain acceptance of the cct project, all else constant, would have to increase. Now, state regulators are always happy to be offered federal funds to defray our costs. However, if the goal of cct research is to develop the most efficient and salable technology possible, increasing government subsidies in order to sustain otherwise uneconomic projects is unlikely to achieve this goal. Nor is this method likely to be practical. The two projects described in the article received 189 and 120 million dollars in federal grants, respectively.

This is not to say that there is no role for government subsidies. The classic problem for innovation is that because one cannot be compensated for all the benefits attributable to one's efforts there will be less than the optimal amount of

investment into innovation. Thus, potentially socially beneficial effort into technological innovation is often governmentally subsidized. Under this theory, however, subsidies should be applied where the ratio of private gain to social gain is smallest. The concept and initial pilot stage would appear to have smaller ratios than the commercial demonstration stage in which the utility participates. This is because while good ideas can take lots of effort to generate, you can't patent them. Furthermore, at the concept or pilot stage, much of the activity consists of understanding what are not good ideas and what won't work and no one will pay you very much for that, although it is valuable to have been done. At the commercial demonstration stage, however, the ideas generally have been proven and the benefit of a marketable technology can be made proprietary. In one of the cases I mentioned above, for example, the utility would have the right to profits from commercialization of the technology by other utilities.

It seems to me that constant innovation is going to be the name of the game so that a lot of attention should be paid to generating new ideas, techniques to reduce payback times and or reduce costs. It would therefore seem that the most important use of scarce government funding would be to help generate ideas rather than to assist commercial demonstrations. While some government subsidies may still be necessary, there should be less emphasis on government funding and more emphasis on entrepreneurial initiative at the commercial demonstration stage

so that the most promising technologies to commercially develop well be ferreted out. In this regard, traditional rate of return regulation has been criticized as providing little incentive for utilities to invest in uncertain technology and to operate efficiently. As a result, it is argued that the current regulatory climate is not conducive to innovative, entrepreneurial, activity. This view is based on the fact that the incentive to engage in innovative behavior is dependent on the expected gain and the risk of doing so. Under rate of return regulation, it is argued, the expected gain is insufficient to compensate for the anticipated risks. Under rate of return regulation, the utility is given the opportunity to earn a set authorized rate of return determined to be appropriate through formal hearings. Rates are a function of just and reasonable expenses and the return on the utility's approved rate base. Unreasonable and imprudent expenses or capital expenditures are disallowed. Untried technologies present a greater risk of disallowances due to construction cost overruns, management mistakes due to lack of experience with the technology, abandoned plant due to failed technology. Thus, it is argued that since great performance is not rewarded and bad performance is punished, there is no incentive for the utility to take risks that could be avoided by using more traditional technology. It is also argued that there is little gain to cost-reducing investments since these gains would be eliminated at each rate case. In addition, since reasonable costs are passed through,

and because regulators cannot detect with certainty all unreasonable costs, the incentive to minimize costs is reduced. This characterization is not totally correct. Disallowances are tempered by a regulator's statutory concern with a utility's financial viability. In addition, due to regulatory lag, utilities can benefit between rate cases from cost-reducing activities. The timing of rate cases is largely up to the utility. However, disincentives may exist for relatively long payback, capital-intensive investments such as cct.

The view that the use of incentives could improve utility performance to the benefit of ratepayers is certainly not new. The debate has centered on how to apply them. The concern is that incentives would still be applied under a regulated structure and be subject to potential abuse. There is wide agreement that if not applied carefully, you can get perverse results.

However, as the industry environment changes, there is increasing agreement that regulation may need to change with it. One point of view is that incentives mechanisms are necessary to get utilities to develop and use skills similar to firms it will be competing with. Implicit in this view is that a greater entrepreneurial spirit may better able utilities to meet the increasingly costly and complex challenges of providing electricity in a cost-effective manner.

In this regard, the use of incentives whereby a utility is rewarded for superior performance in return for accepting certain

risks could increase the willingness of utilities to adopt CCT. In addition, it could allow entrepreneurial forces to reveal the more salable and beneficial technologies. Finally, if utilities are, say, willing to absorb cost overruns in exchange for the ability to profit from "underruns" relative to a benchmark incentive scheme, the upfront costs a utility will require from ratepayers to fund CCT investments should be lower than under rate of return regulation. However, it should be noted that these are general consequences that apply to other technologies as well. Thus, while conducive to CCT, the use of incentives alone will not necessarily assure its success.

In any case, I think that resolving the uncertainty over environmental rules on air toxics, Co2, and NOx is also key to the future of cct. Given the large investment required for CCT, great uncertainty over how future rules will affect the need to incur additional costs will influence the value of your investment could easily discourage such investment. Some observers credit this uncertainty for the relative lack of interest in cct for phase one compliance. This observation is supported by a recent NBER research paper which finds that uncertainty over federal regulatory change after 3 Mile Island was more important than technological uncertainty in the decision to cancel or not invest in a nuclear plant.

II. Conclusion

In conclusion, CCT is of interest because it has the potential to use a very abundant fuel to meet environmental standards more efficiently than other means. Given the changing economic environment in the electric industry, CCT therefore should be viewed as a potential competitive strategy as well as a potential compliance strategy. The success of CCT will therefore depend in large part on how well CCT and the way it is developed will be able to adapt to the changing economic environment.

A COAL PRODUCER'S PERSPECTIVE–CLEAN COAL TECHNOLOGY PROGRAM

Flynt Kennedy, V.P.-R&D, CONSOL Inc.

I have been given the task of presenting a coal producer's perspective to the Clean Coal Technology Program. Our luncheon speaker Mike Reilly, Chairman of National Coal Association, will cover the broad picture of coal as the fuel of choice and the fuel of necessity. I will limit my remarks to CONSOL's perspective of clean coal technology.

I will cover four areas:

First, CONSOL's long-term commitment to clean coal technology. Second, our objectives and strategy in Clean Coal Technology involvement. Third, our direct involvement in DOE clean coal technology projects. Last, and probably most important, our concerns about clean coal technologies relative to the changing regulatory targets for coal.

Let me briefly introduce you to CONSOL as a company. CONSOL Coal Group member companies operate over 30 mines with a combined annual capacity of more than 70 million tons. Underground mines account for more than 90% of production capacity. Approximately 40%

of our production is high-sulfur coal in West Virginia, Ohio, Kentucky, and Illinois.

CONSOL has been committed to the development of technologies to utilize coal cleanly since our Research and Development organization was started in 1947. We have always seen clean coal technologies as a win-win situation for the environment, for the utility industry, for the coal industry, for the electric-consuming industries, and most importantly, for the individual electric consumer -- you and me. Back in the '60s and '70s, we were focused on synthetic fuels development. We suspended synthetic fuel activities in 1982 and our emphasis was shifted toward enhancing coal as a solid fuel by investigating environmentally acceptable coal cleaning and combustion technologies. Today, well over half of our R&D budget is spent directly or indirectly on environmental-related research, including coal cleaning, combustion, SO_2 control, NO_x control, particulate control, by-product solids management, and air toxics. For the record, CONSOL has the largest privately-funded coal R&D commitment in the United States.

Our objective for clean coal technology is to protect and expand our coal markets, especially for medium- and high-sulfur coals, in the face of increasingly stringent environmental regulations. Our top priority has

been SO_2 controls needed by existing power plants to meet the Clean Air Act Amendments of 1990.

Our primary strategy is to expedite the development of a variety, or menu, of cost-effective technologies. No one process will be the panacea for all utility situations. If we can minimize SO_2 control costs, utilities can use locally-available coals, especially medium- and high-sulfur coals. Their use minimizes coal transportation costs, keeps the local economy and coal mining-related jobs alive, and, most importantly, minimizes the ultimate electricity cost to the consumer.

Our secondary strategy is to support our coal customers in evaluating, developing, and installing clean coal technologies. Our scientists and engineers share their know-how and experience with our customers to supplement the customer's often limited technical staffs. Our R&D personnel provide unbiased, objective technical inputs because CONSOL has no proprietary interest in, nor affiliation with, any specific clean coal technology or technology vendor. As an example of our willingness to share data and information, we have published over 50 technical papers in just the last three years pertaining to clean coal technologies and the environmental issues involving coal.

Now, let me briefly describe the CONSOL involvement in DOE Clean Coal Technology projects. CONSOL has been a strong supporter of the DOE Clean Coal Technology Program since its inception in 1985. We have been directly involved technically and financially in two major clean coal projects and have the same commitment to a third. The first two projects involve SO_2 control technologies - Coolside in-duct sorbent injection and second-generation wet scrubbers.

After a series of pilot plant and industrial tests, we worked closely with Ohio Edison, Babcock & Wilcox, and the State of Ohio Coal Development Office to successfully demonstrate 70% SO_2 reduction with the Coolside Process at the Ohio Edison Edgewater Station. We provided substantial technical and financial support to this DOE Round One project completed in 1992. The Coolside Process fits best with lower- and medium-sulfur coals and with older and smaller power plants.

We are strong proponents of second-generation wet scrubbers for applications to high-sulfur coals and high SO_2 removal requirements. Many of these advanced scrubbers have been operated in Europe and Japan. They can achieve over 95% SO_2 reduction in large, unspared absorber vessels, have low internal power use, and produce minimal solid waste. These advanced scrubbers achieve higher SO_2 reductions

at 30 to 40% lower costs than the first-generation scrubbers installed in the 1970s and 80s.

Second-generation scrubbers are a technology that CONSOL has not developed, but we are trying to expedite its commercialization for the U.S. utility industry because the technology fits well with our coals and our coal markets. We feel second-generation scrubbers may well be the main SO_2 technology for utility compliance with Phase 2 requirements of the Clean Air Act Amendments. As you will hear throughout the conference, several of these second-generation scrubbers are being demonstrated under the DOE Clean Coal Technology Program. Some of the more promising second-generation scrubber projects include: the Pure Air Advanced FGD Demonstration Project at the NIPSCO Bailly Station, and the CT-121 demonstration at Georgia Power Company's Plant Yates, which many of you visited yesterday.

We also worked closely with New York State Electric and Gas Corporation to develop a DOE Clean Coal Technology Round 4 project involving the Saarberg-Holter, or SHU, second-generation scrubbing process. The wet-limestone scrubber will handle the two-unit, 320 MW Milliken Station located in Lansing, New York. The SHU process will demonstrate up to 98% SO_2 reduction with an economical design, and will

generate minimal solid and liquid by-product waste. The project will also maximize thermal efficiency and will reduce NO_x emissions. Start-up is planned for early 1995. CONSOL is a technical and financial member of the NYSEG team on this exciting clean coal technology project. You will hear more details on this project on Thursday.

Our third clean coal project involves an air-blown Integrated Gasification Combined Cycle process. IGCC is an attractive power generation technology. Air-blown IGCC has the commercial potential for improved energy efficiency and lower costs compared to conventional pulverized coal-fired power plants. The technology can also be used to repower natural gas-fired combined cycle plants when the economics are right and base-loaded power demand is needed. We will subsidize the fuel costs for testing a Pittsburgh Seam coal in the Sierra Pacific Power Company Pinon Pine Project. The IGCC project involves the KRW gasifier. Utah coal will be the main test fuel for the 80 MW demonstration at the Tracy Station in Nevada. CONSOL has agreed to subsidize the Pittsburgh Seam coal test so the air-blown IGCC technology can be demonstrated and then offered commercially by the vendors for use with eastern bituminous coals.

As the final part of my presentation, I would like to share with this Conference our concerns about clean coal technologies. Will clean coal technologies really save the future of coal in the face of tougher and constantly changing environmental regulations? Let me be more specific.

Take SO_2 control. I mentioned that promising SO_2 control technologies like second-generation wet scrubbers were being demonstrated in the DOE Clean Coal Technology Program. Will the economics of the demonstrated clean coal processes be attractive enough to continue to use high-sulfur coals for Clean Air Act compliance? To be successful, clean coal processes must offer utilities a means to use higher sulfur coals and still cost-effectively comply with the SO_2 emission regulations of the Clean Air Act Amendments of 1990. As you are aware, under the legislation, utilities will be able to buy and sell rights to emit SO_2. The market price of these SO_2 allowances will set a ceiling on the costs utilities will be willing to pay to remove SO_2 emissions using clean coal technologies. As the market prices for SO_2 allowances become clearer, so too will the target costs for clean coal processes. There is little doubt in my mind that the costs of technology must continue to improve to meet those targets. Otherwise, widespread deployment of these technologies will never be realized.

NO_x control is another area. With some of the stringent regulations being proposed for Title 1 compliance, I wonder if there will be economical, acceptable-risk NO_x control technologies? EPA's attitude was: Just put on low-NO_x burners, and that's it. Well, it's not turning out to be that simple. Many utilities have experienced considerable difficulty in achieving performance expectations. And it is not just a problem of meeting those NO_x reduction levels. Many installations have experienced increased carbon in the ash, and some have seen unacceptable mechanical problems with the burners.

Compounding the problem, some states, especially in the northeast, have set or proposed very stringent NO_x reduction standards. Selective Catalytic Reduction (SCR) could be an answer. But SCR is expensive and still unproven on high-sulfur coals. Selective Non-Catalytic Reduction (SNCR) may also be a solution for intermediate NO_x reduction requirements. For SNCR, the potential problem of excess ammonia break-through must be addressed. Possibly, a combination of SNCR and SCR used in conjunction with combustion modifications may be the ultimate answer. The real issue for government is: Should we mandate stringent NO_x reduction requirements if we don't have proven, reasonably-economical technology solutions to meet those requirements?

Potential air toxics regulations create a similar dilemma - emission regulations that out-distance economical, acceptable-risk technologies to address such regulations. Does the Clean Coal Program even address air toxics? There are significant problems in even determining the low concentrations of some of these elements in the coal or flue gas. For example, cadmium, selenium, and especially mercury are extremely difficult to measure.

Solid waste management. Will solid waste disposal regulations continue to get tougher? Can we find more ways to utilize these materials? Solid waste management or by-product utilization has become a major R&D priority for CONSOL. The question is: Should it become a higher priority for the Clean Coal Program?

Carbon dioxide emissions. Will we see CO_2 emission reduction regulations in the near future? If so, will the advanced power generation technologies be successfully demonstrated and ready to go at economics that make new or repowered coal-fired plants viable? Will hybrid technologies of gasification and fluidized bed combustion be possible long term solutions? Will advanced combustion technologies, like those being developed under the DOE Combustion 2000 Program, achieve thermal efficiencies of 50% or above? Many advanced technologies

won't be commercially viable until well after the year 2005. Will governments wait until then before legislating global climate change laws? Will the U.S. government facilitate the transfer of advanced combustion technologies to the developing countries? Can the world economy even afford global climate change emission reductions?

Now, let me quit beating the environmental regulators and address two other concerns. First, the deployment schedule of clean coal technologies. The ultimate success of the DOE Clean Coal Technology Program will be measured by the contribution that the technologies make to the environmental, economic, and energy future of our nation. Will utilities take the risks to deploy clean coal technologies? Will Public Utility Commissions give incentives to the utilities to take the needed risks? I hope the panel session Thursday morning on clean coal technology deployment and technology transfer addresses these concerns.

My final concern deals with energy policy and the definition of a clean coal technology. There have been initiatives to persuade PUCs to endorse co-firing of natural gas with coal by electric utilities as a so-called clean coal technology. Co-firing is fundamentally an unsound utility SO_2 control compliance strategy due to poor economics. Studies

have shown that scrubbing, coal blending, or even switching to lower-sulfur coals is economically superior to natural gas co-firing. Co-firing can be shown as an economic compliance strategy only when using unrealistically low gas prices that do not reflect the risks associated with volatile future gas prices. I believe natural gas best fits as an important resource for high-value applications such as home heating and transportation.

Even though we have such concerns about clean coal technologies, I want to conclude on a positive note. CONSOL remains committed to the commercialization of clean coal technologies. We want to applaud the many utilities across the nation that have and will take the risks to demonstrate and deploy these promising technologies. We applaud the state public utility commissions which have allowed utilities to take the economic risks to test these technologies. I also want to thank Senator Byrd of West Virginia for his strong support of the Clean Coal Program, especially when it came time for budget appropriations. As we all know, coal is our most important long-term natural energy resource. Clean coal technologies can help to use it efficiently, economically, and in an environmentally acceptable manner.

I think we are going to find that the Clean Coal Program has achieved remarkable results--creating legitimate options for emissions control. It will be a major disappointment to me if we cannot celebrate those successes or applaud DOE, the coal industry, and others for spending large amounts of money merely because political groups with short attention spans, have shifted their attention to the new "politically correct" issues even before the current one is solved. Though it is frustrating to solve problems, and concurrently find that public interest has moved on, we should feel proud of our accomplishments in developing clean coal technology.

Thank you.

PLANTING THE CEED FOR SUCCESS

John Paul
Southeastern Regional Director
The Center for Energy Economic Development

In 1944, over half of the American people heated their homes with coal. Even in the mid-to-late 1940s, coal was the favored heating source for most people relative to gas and oil. Coal was part of peoples' everyday lives. Sure, there were the negatives to using coal as with any fuel - people then and now think of air pollution scenes of Pittsburgh in the '40s -- but people also knew, personally, the benefits of coal.

Well, since the '40s, new technologies have cleaned the air in Pittsburgh. But coal as a home heating source has become nearly extinct -- and by extension, coal's familiar benefits have disappeared from view for most people.

In this generation, coal as an energy source has become something of an abstraction -- in many ways like nuclear power. People never see coal except when there are problems; Tragic but thankfully infrequent mine accidents, transportation problems resulting from a disruption or derailment, and blame for a range of environmental problems.

Today, coal's benefits are largely invisible. But coal's problems are very visible and easy targets for the media. And as coal has become more of an abstraction, false information and negative images brought by anti-coal forces -- which include the media, environmental groups and competing fuels -- have become more easily imbedded in the public mind and are trending more negative. Why? Because there are precious few countervailing positive images of coal -- we no longer have the personal experience, as with home heating, or we fail to recognize that the electricity that runs the conveniences in our daily living is, in fact, the modern manifestation of coal.

This model of "what's gone wrong," actually poses two challenges:

First, the issue of coal's negative image. There are negative imbedded attitudes about coal and coal use across broad cross-sections of the American people, and targeted audiences of political/social activists. These negative attitudes are trending worse and are driven by organized opponents, and political agendas.

Secondly, there is the hurdle of doing something about it. The relative good times for the coal industry -- we have almost doubled our production in the last 20

years -- have masked the serious slippage in public opinion. Production is up. Public opinion is down. This phenomena sets the industry up for a fall, if left unattended. An evading image is a ticking bomb.

So, what to do? It is very clear we have a major challenge on our hands. The facts I have just recited, and a series of delayed or cancelled coal units throughout the U.S., particularly a number of proposed coal fired independent power projects in the South, caused CEOs from several major railroads to review options aimed at addressing the problem. Those discussions led to interaction with their counterparts at major coal companies, and a new movement was formed. Major resources were joined to deal with a major challenge.

For those of you familiar with the history of the rail and coal industries you know that the sharing of resources under this new common banner - The Center for Energy and Economic Development - or CEED, is no small miracle. For those of you not familiar with the history of these two major industries let me simply say we have had a very torturous and often openly hostile relationship. Fortunately, rail and coal leadership recognized the overall, long-term good of both entities required the subordination of parochial interests and conflicting positions on specific national issues.

CEED has been organized to advocate responsible energy policy - a policy that does not discriminate against coal. Where there is coal - there is low-cost electricity and economic development. It is an umbrella under which a broad coalition of business and individual interests can cooperate.

The CEED process began with a comprehensive public opinion research program that would allow us to understand attitudes and opinions about energy and economic development, more specifically coal, and related issues. We reviewed the public opinion history of coal beginning with the first national survey in 1944, and then is December of 1992 we held a series of qualitative focus discussions in Tampa, Hartford, Denver and Indianapolis. In each city there was a discussion between business leaders and environmental activists, and one with the general public. In January of 1993, the focus groups were followed by a quantitative assessment of national opinion measuring trends, and collecting demographic and geographic differences.

Let me share a few observations that resulted from the focus groups and survey:

Slide Public Perception of Fuel Used to Generate Electricity in the U.S.

Slide Public Vision of Future Fuel Use to Generate Electricity in 10 Years

Slide Public Knowledge About Coal - Electricity Coal Provides More Than 25%
Slide Public Perception vs Reality of Coal Use
Slide How Likely We Will Run Out of Coal in 50 Years
Slide New Coal Plant in Your Area
Slide Acceptability of High Technology Plant In Your Area
Slide Future Importance of Coal

These survey results and the CEO level discussions led to the establishment of a plan of action -- that action was the creation of CEED.

Slide CEED

There are numerous industries and individuals economically allied with the coal industry and share concerns about coal's image. Where there are shared concerns there should be shared resources. These shared resources will be organized to produce positive education and outreach programs to business, the media and policy makers. CEED has been established to fulfill that mission. CEED will produce and sustain a long-term education and information effort to communicate messages about coal, the U.S. economy, new technologies and environmental progress and compatibility.

Slide Regional Organizations

We are a single purpose organization created for the purpose of keeping the coal option a viable alternative for utilities, IPPs and industrial users, funded by eight of the Class I railroads and coal companies representing more than 50% of the total U.S. production. The membership recognizes that it took us a long time to get into the predicament we find ourselves in and there will not be an overnight solution; therefore, there is a long-term commitment to the program.

D.C. Administrative Office
Regional Offices
Member services and facilities/small staff
Not a beltway institution
Not a typical issue organization or coalition
Board of Directors/Regional and State Steering Committees
Deal with each area or state in a manner that fits the individual situation.

Slide Immediate Goals
Slide Communication Tools

Basically, we plan to "get out among them", "show up", and generally establish a presence to insure that the real facts get out. We intend to build out a single, straightforward, reality-based program that builds off the unambiguous strengths of coal, while recognizing existing public perceptions. This is not an anti-other fuels program, but we do want a level playing field where coal is part of the business decision process. This will be accomplished through a true grassroots effort that will energize individuals and entities, and in the long term establish coal's image as a fuel of the future -- a high technology product and a critical American asset that touches the lives of most Americans.

Thank you for your attention. I will be happy to answer questions or provide you with information on how you can join with us in this most important effort.


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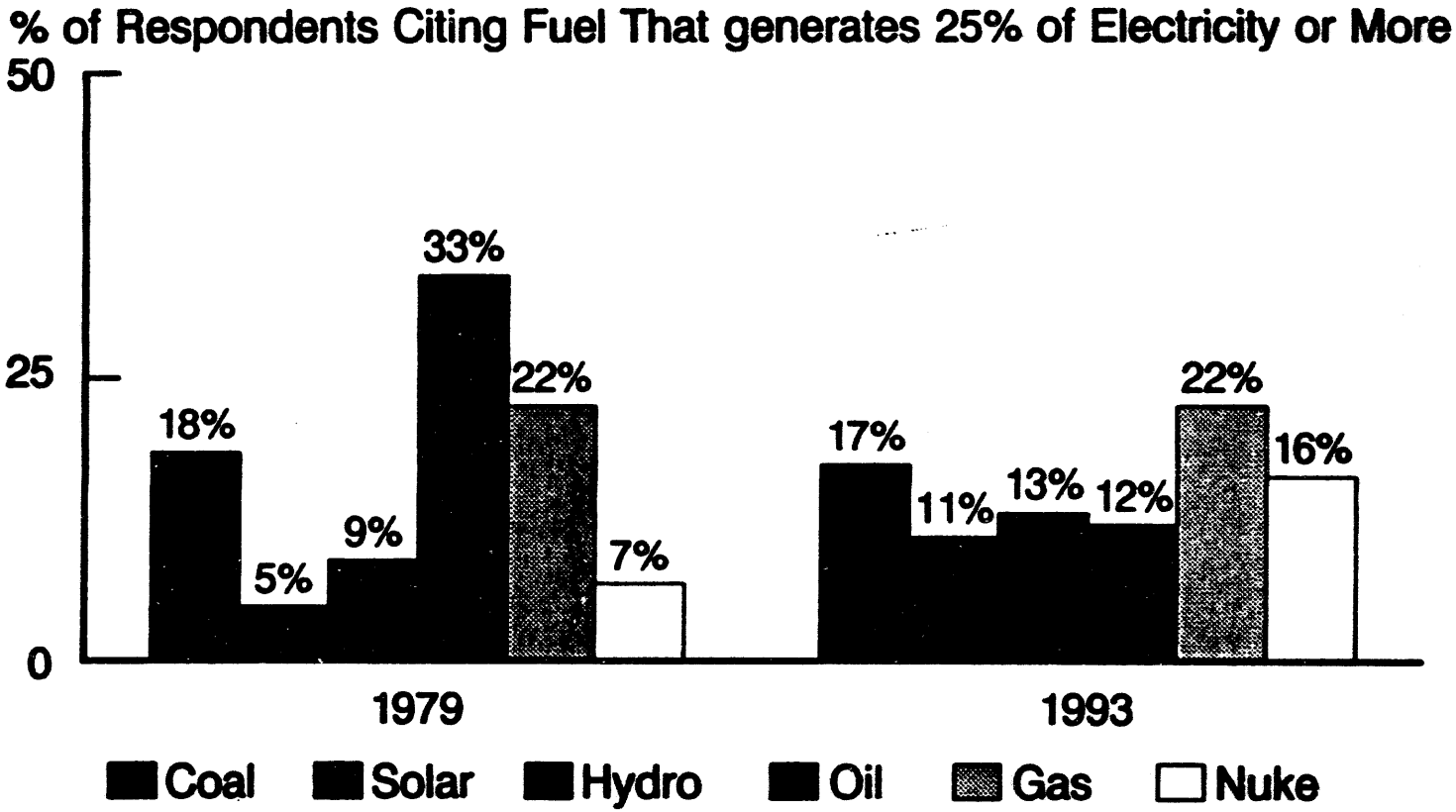
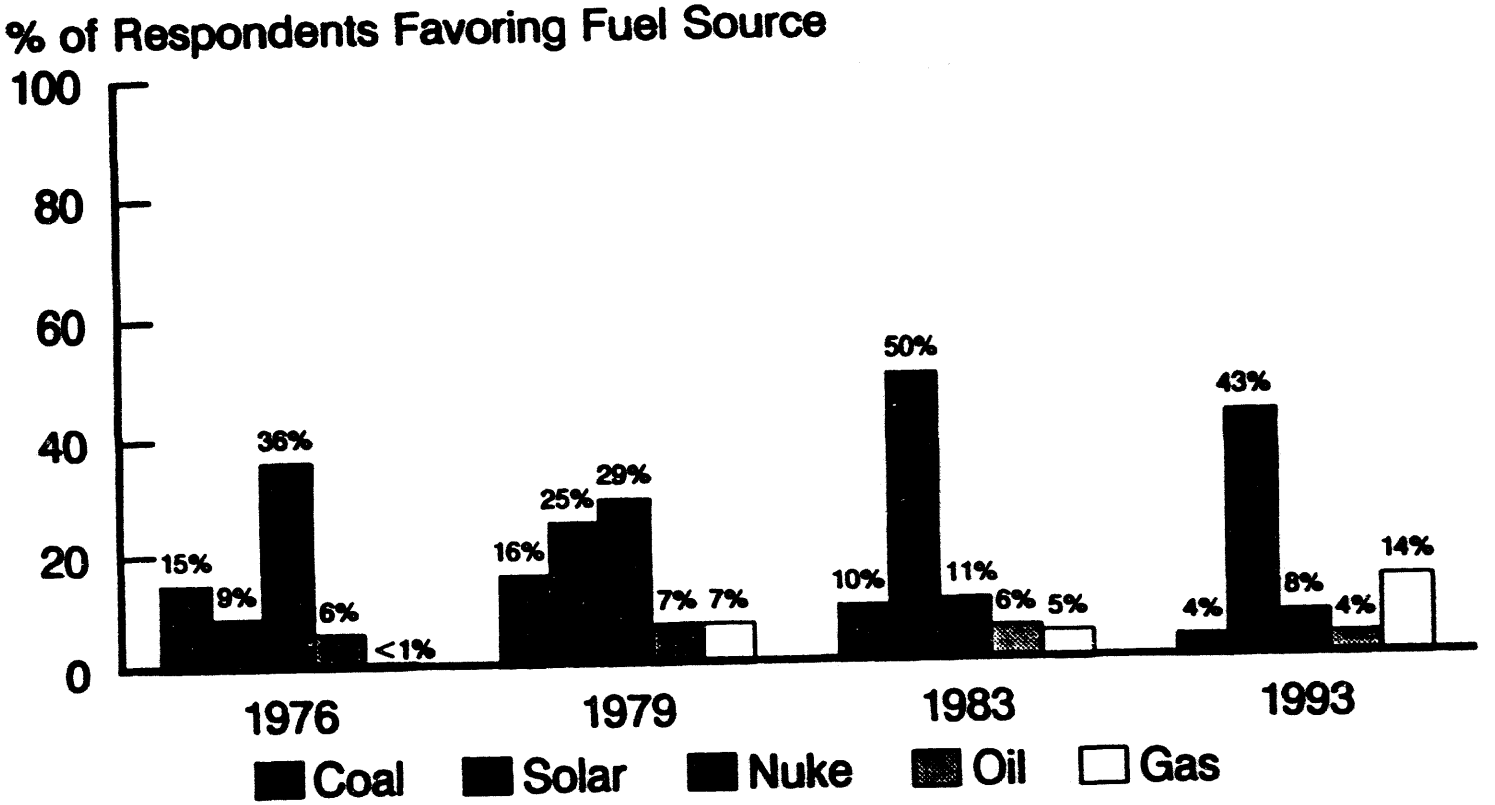
ECONOMIC
DEVELOPMENT

PUBLIC PERCEPTION OF FUEL USED TO GENERATE ELECTRICITY IN U.S.



'79 ABC News/Harris & Associates Poll
'93 Wirthlin for the Center for Energy and Economic Development

PUBLIC VISION OF FUTURE FUEL USE TO GENERATE ELECTRICITY IN 10 YEARS

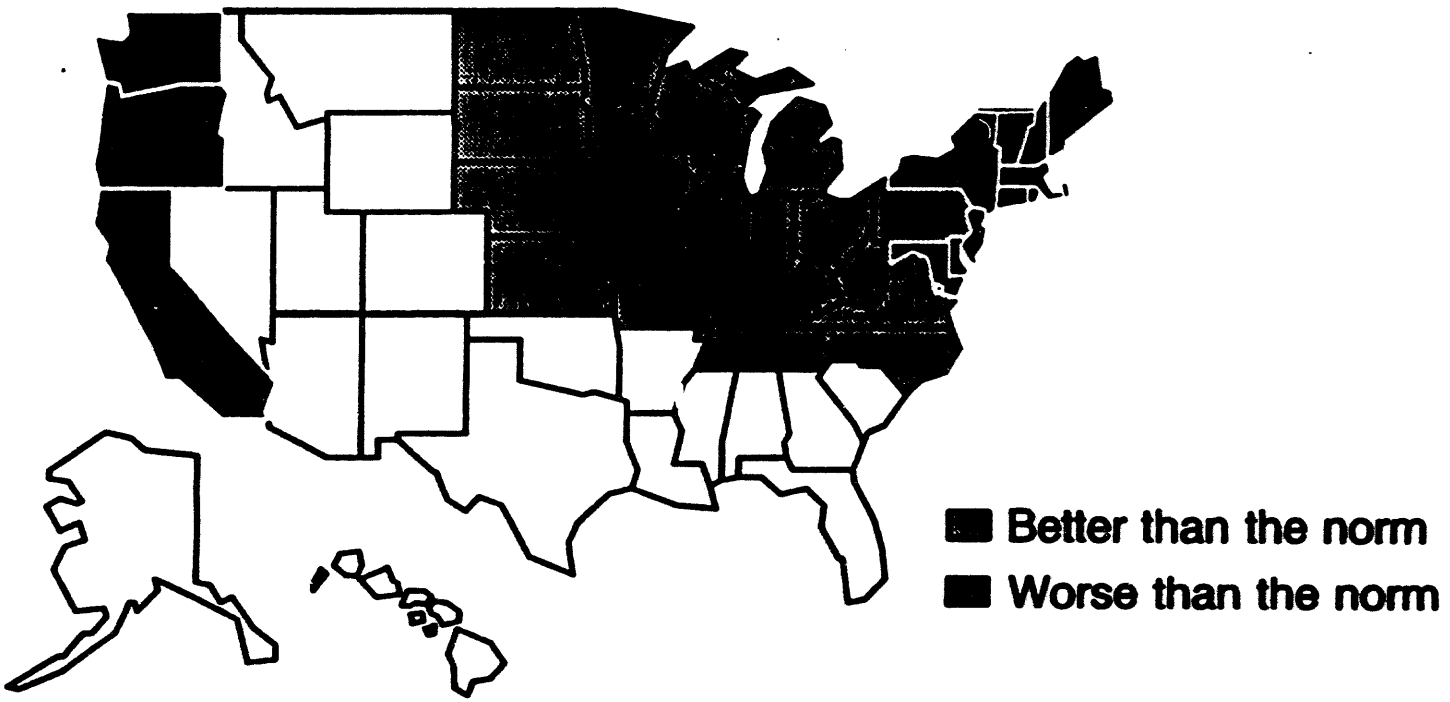


'76 Harris & Associates Poll for Ebasco Services Inc.
'79 ABC News/Harris & Associates Poll
'83 Cambridge Report Poll for U.S. Council for Energy Awareness
'93 Wirthlin for the Center for Energy and Economic Development

PUBLIC KNOWLEDGE ABOUT COAL

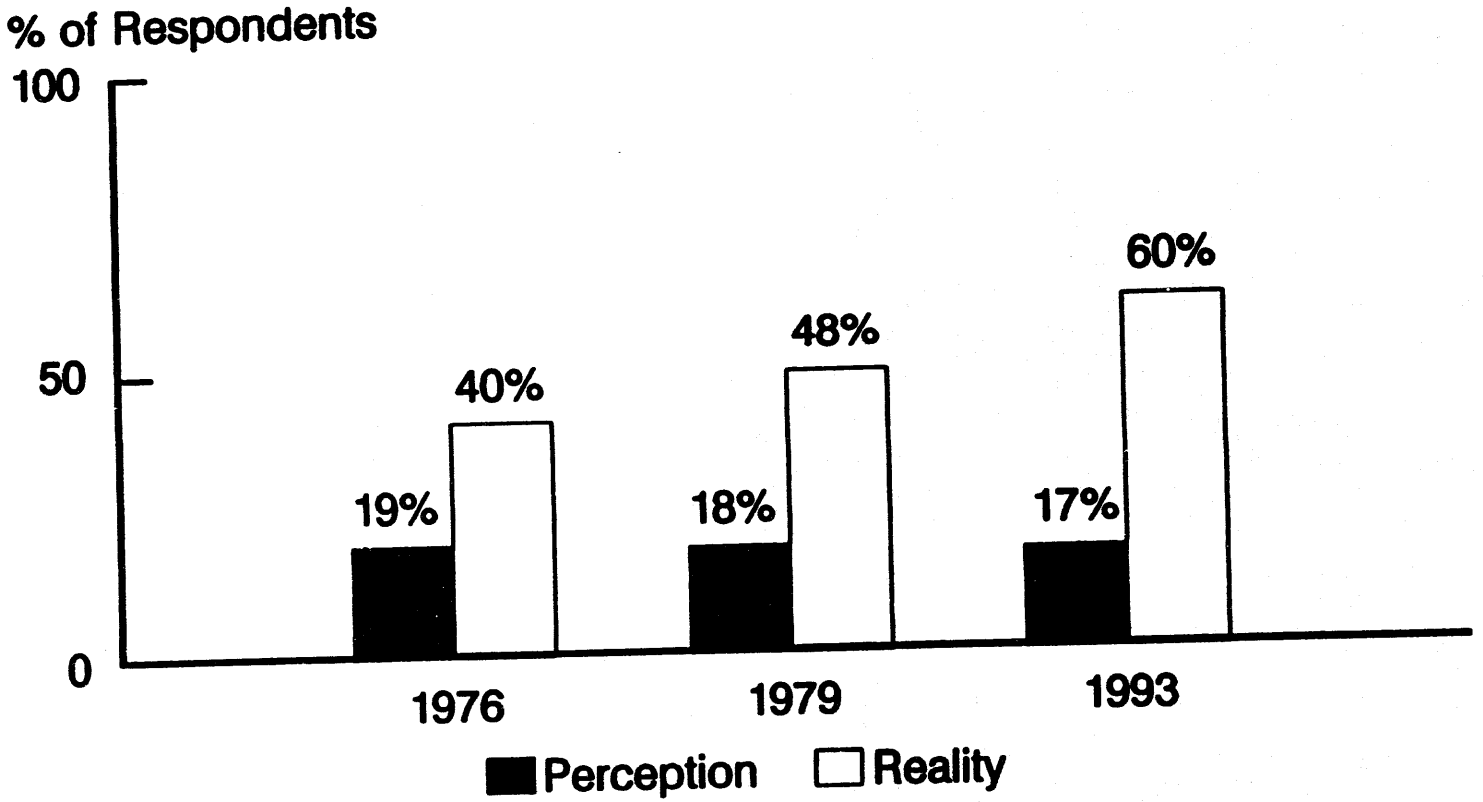
"Coal Provides More Than 25% of Electricity Nationally"

National Norm: 17% of respondents identify coal



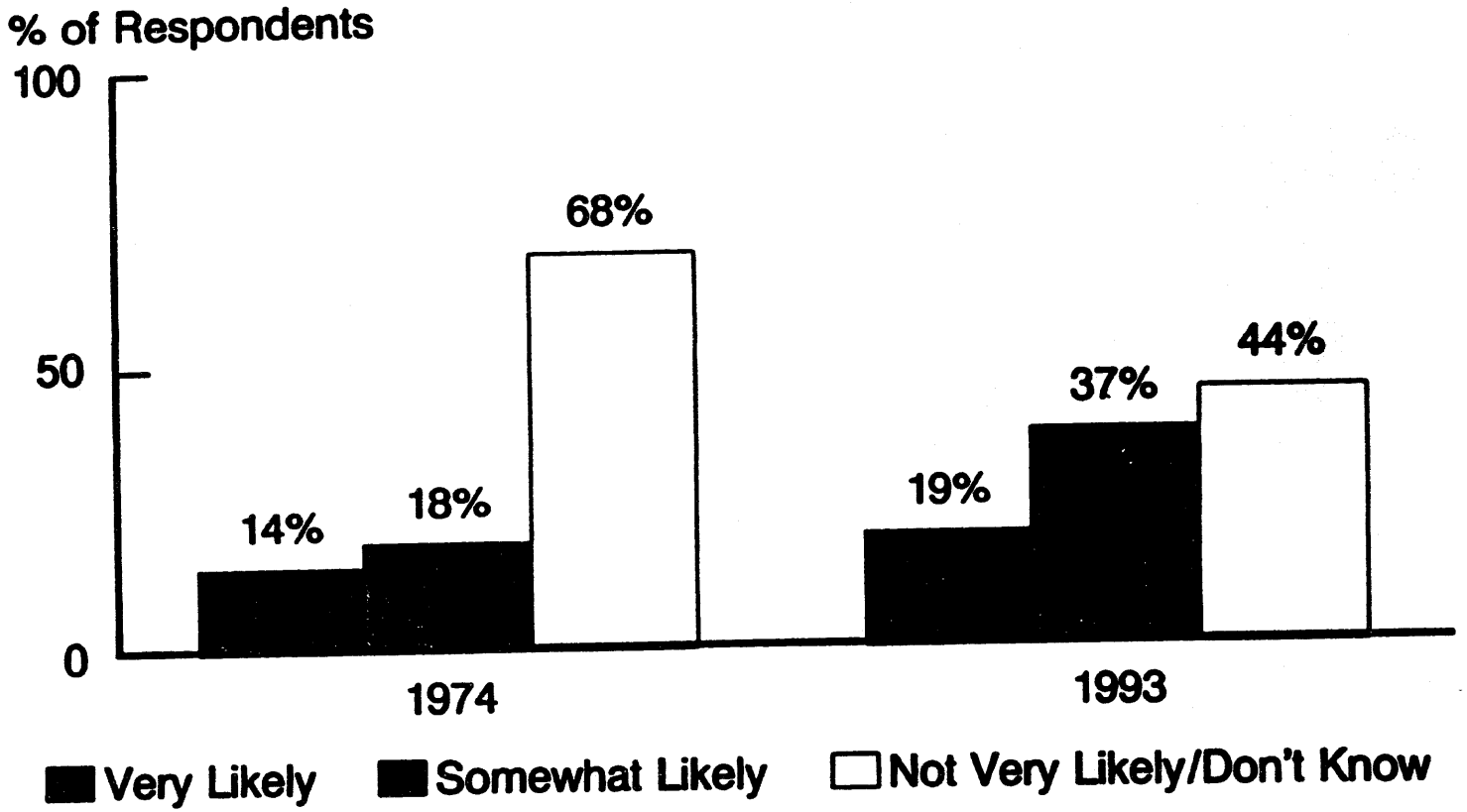
'93 Wirthlin for the Center for Energy and Economic Development

PUBLIC PERCEPTION VS. REALITY OF COAL USED TO GENERATE ELECTRICITY IN U.S.



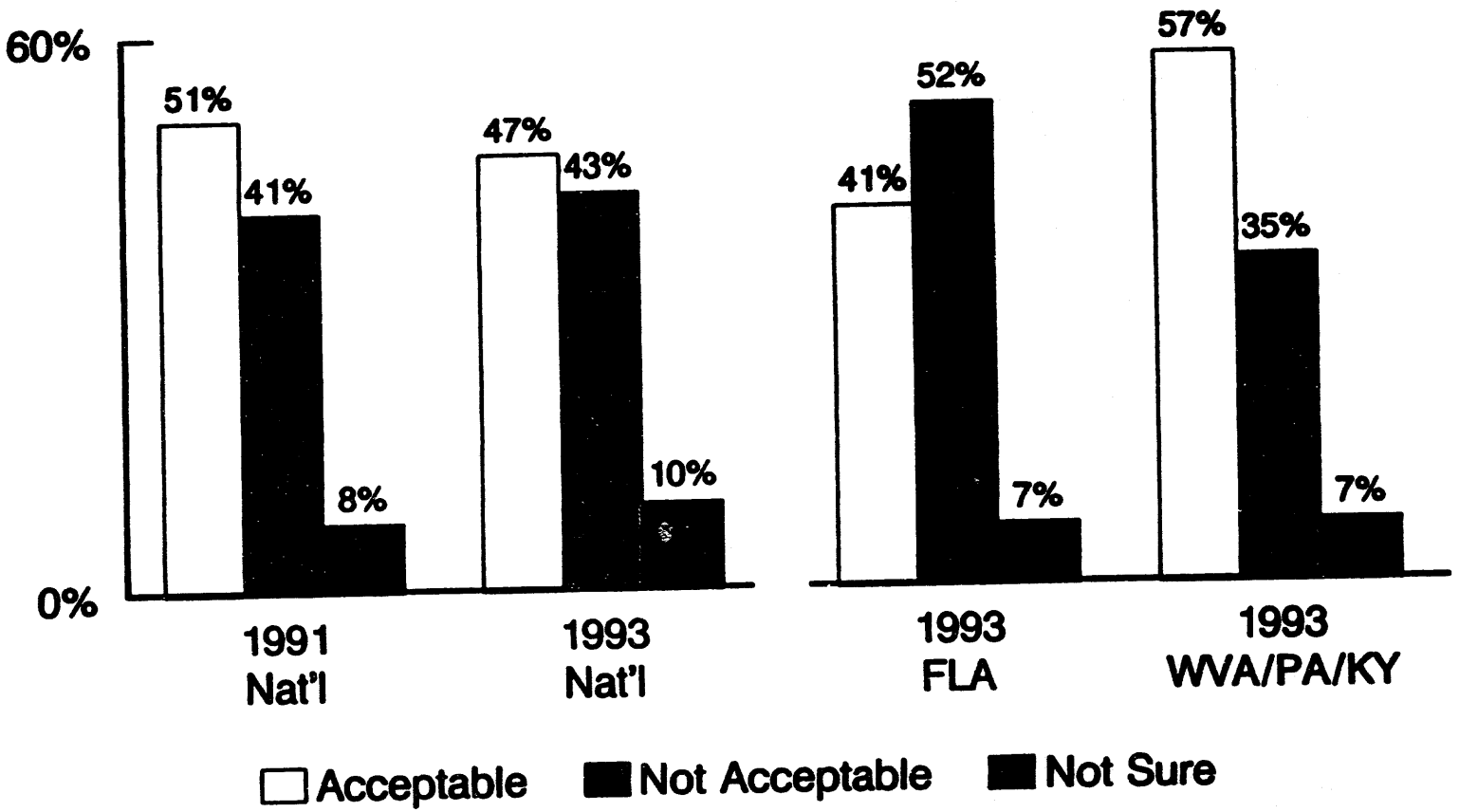
National Energy Information Center, DOE
'76 Harris & Associates
'79 Harris & Associates
'93 Wirthlin for the Center for Energy and Economic Development

HOW LIKELY IS IT THAT THE U.S. COAL SUPPLY WILL RUN OUT IN 50 YEARS?



'74 Opinion Research Corp.
'93 Wirthlin for the Center for Energy and Economic Development

NEW COAL PLANT IN YOUR AREA?

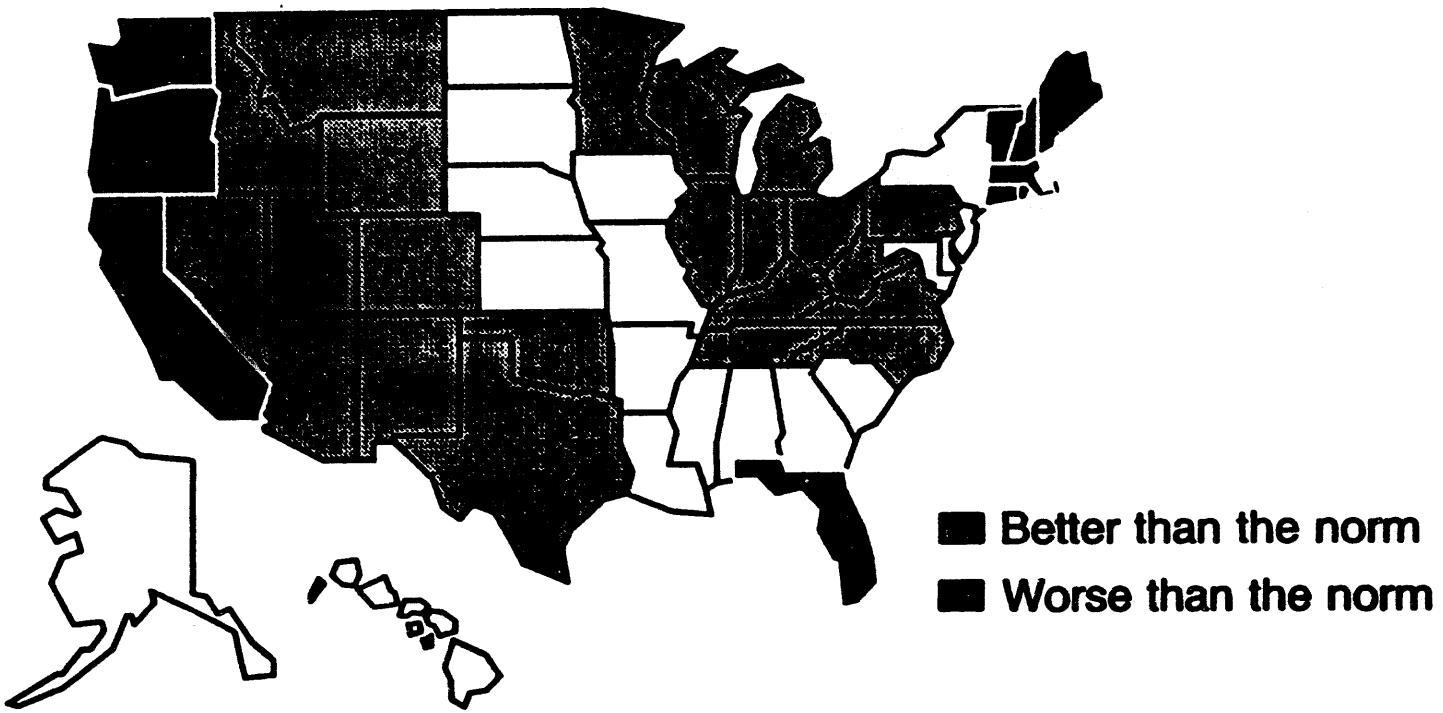


'91 Yakelovich Clancy Schulman
'93 Wirthlin for the Center for Energy and Economic Development

PUBLIC ATTITUDE ABOUT COAL

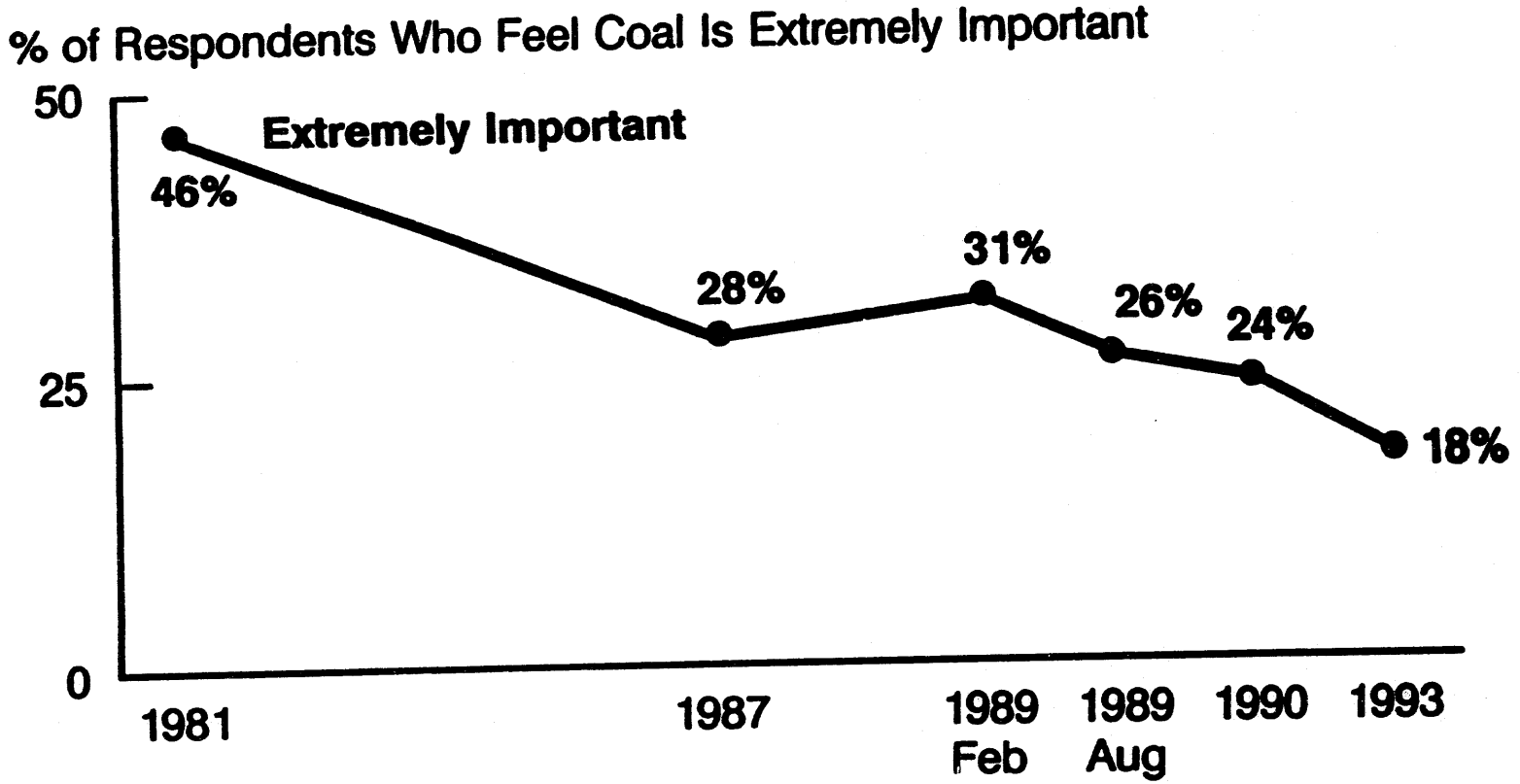
"Acceptability of Building High Technology Coal Plant in Your Area"

National Norm: 47% of respondents approve; 43% of respondents disapprove

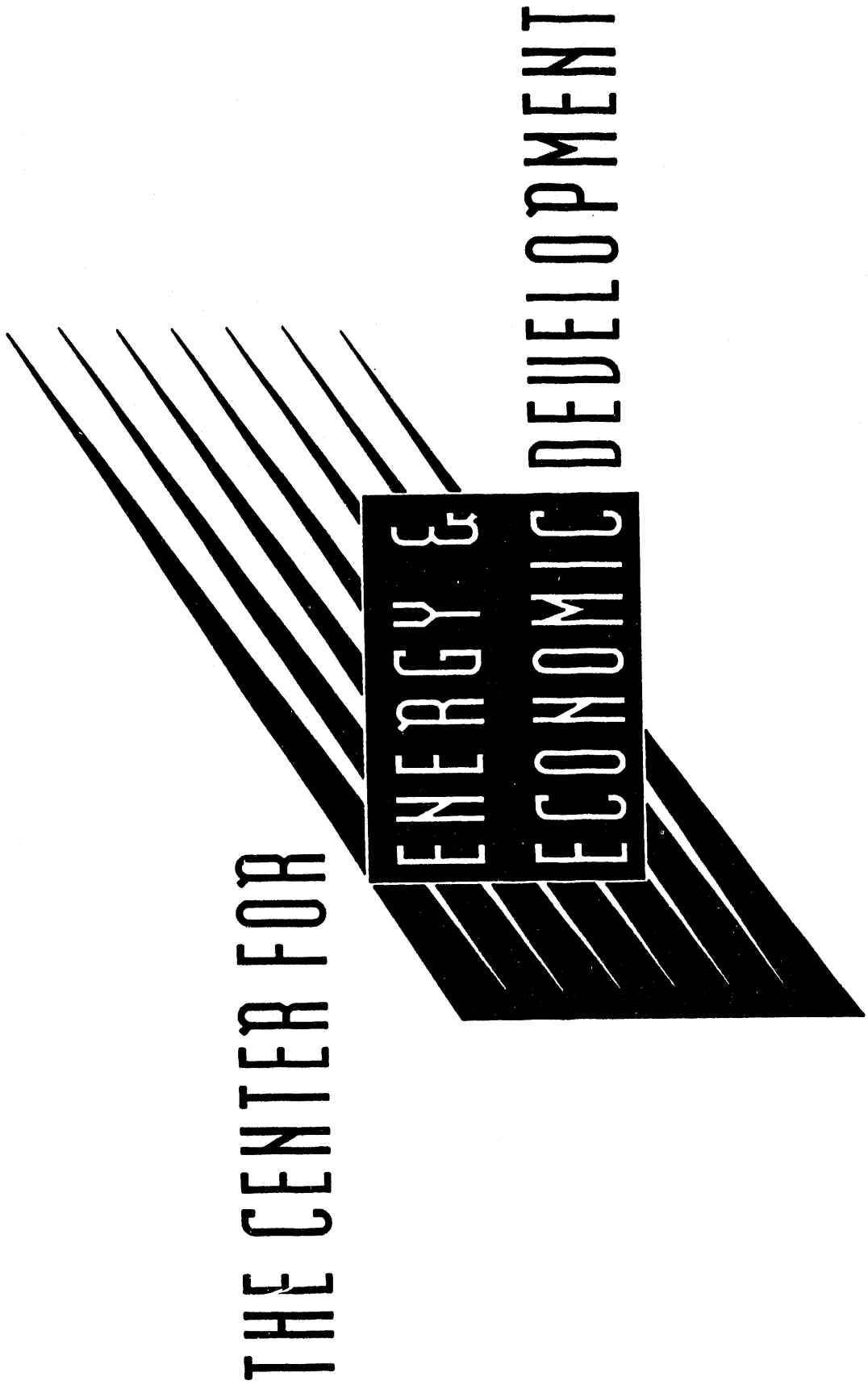


'93 Wirthlin for the Center for Energy and Economic Development

OUR FUTURE ENERGY NEEDS: THE IMPORTANCE OF COAL



'81,'87,'89,'90 Cambridge Report Poll for U.S. Council for Energy Awareness
'93 Wirthlin for the Center for Energy and Economic Development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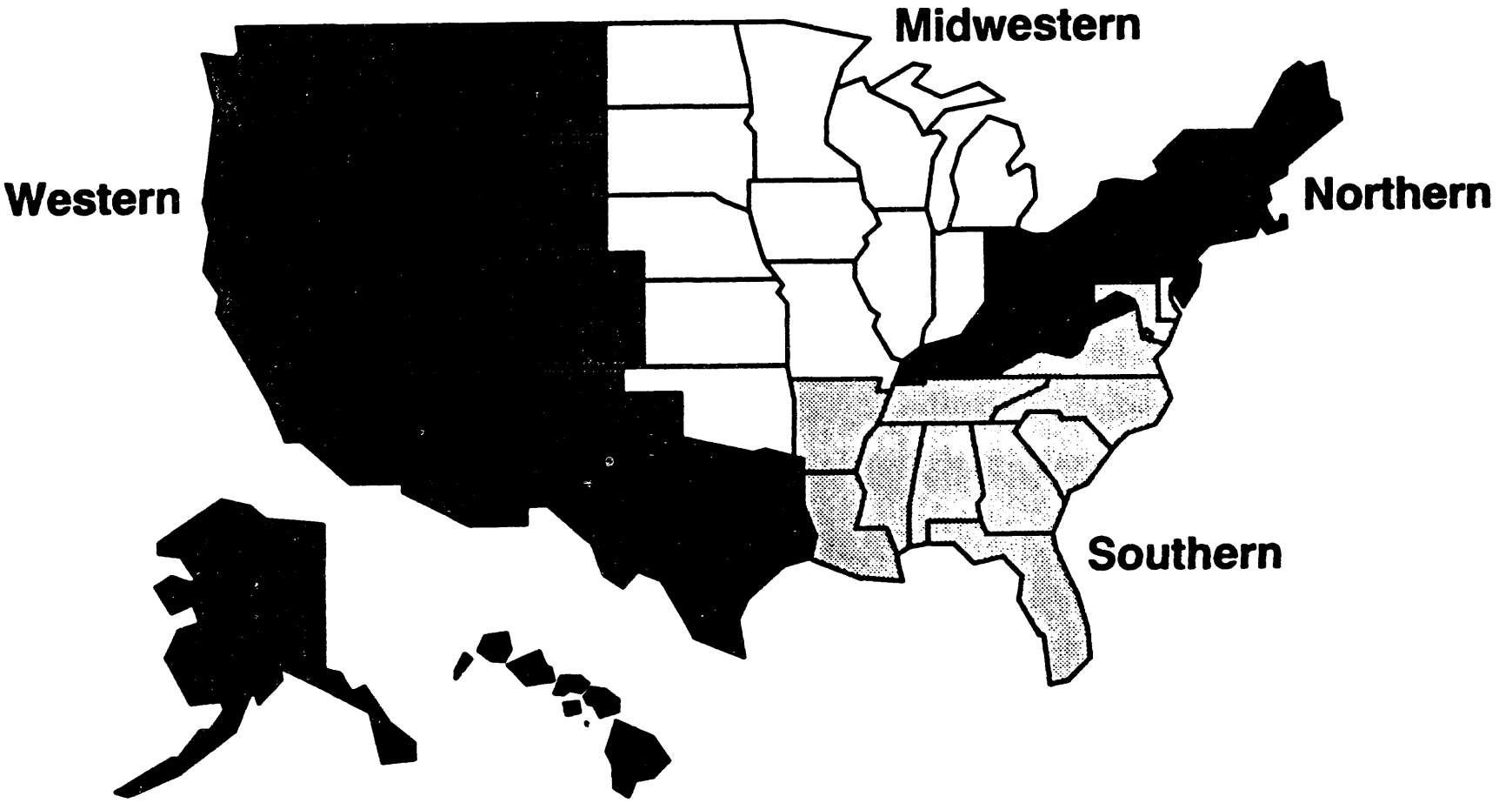
CEED REGIONS



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Immediate Program Goals

Organize and muster a broad base of pro-coal interests in states and communities:

- Plan and produce education and communications programs
- Neutralize efforts aimed at restricting the use of coal
- Reach out to decisionmakers in government, business, education, and the media
- Produce local pro-active programs in support of new high-technology coal/electric power plants
- Place expert witnesses at state and local regulatory and legislative proceedings, externality and siting hearings

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Communications Tools

- Recruiting and advocacy videos
- Ceed public affairs kit
- Electronic interactive information network

Luncheon

Speaker introduced by:
Jack S. Siegel,
Acting Assistant Secretary for Fossil Energy,
U.S. Department of Energy

CCT CONFERENCE ADDRESS
MICHAEL K. REILLY
SEPTEMBER 7, 1993 -- FINAL

THANK YOU LADIES AND GENTLEMEN.

ON BEHALF OF AMERICA'S COAL INDUSTRY, I WANT TO COMMEND THE DEPARTMENT OF ENERGY AND THE SOUTHERN STATES ENERGY BOARD FOR PUTTING ON THIS SECOND ANNUAL CLEAN COAL TECHNOLOGY CONFERENCE.

IT IS THROUGH GATHERINGS SUCH AS THIS THAT FACTS AND FINDINGS ARE ACCUMULATED AND ASSESSED. FROM A SIFTING AND SORTING OF THE FACTS, INDIVIDUAL DECISIONS EMERGE. AS THE DECISIONS MOUNT, CONSENSUS FORMS. AND FROM CONSENSUS FLOW THE ACTIONS THAT TURN PROMISE INTO REALITY.

I AM HERE TODAY IN THREE CAPACITIES. FIRST, AS CHAIRMAN OF THE NATIONAL COAL ASSOCIATION, WHICH REPRESENTS THE COMPANIES THAT SUPPLY MOST OF AMERICA'S LARGEST DOMESTIC ENERGY SOURCE.

I AM ALSO HERE AS CHAIRMAN AND CHIEF EXECUTIVE OFFICER OF ZEIGLER COAL HOLDING COMPANY. THE ZEIGLER FAMILY OF COMPANIES PRODUCES MORE THAN 40 MILLION TONS A YEAR AND HOLDS RESERVES OF 3.5 BILLION TONS. ZEIGLER IS THE NATION'S LARGEST INDEPENDENT COMPANY DEVOTED SOLELY TO COAL.

FINALLY, I AM HERE TODAY AS A TANGIBLE SUPPORTER OF CLEAN COAL TECHNOLOGY THROUGH THE ENCOAL MILD-GASIFICATION PLANT... AT ENCOAL; LOCATED AT OUR BUCKSKIN MINE NEAR GILLETTE, WYOMING, WE ARE IN PARTNERSHIP WITH THE DEPARTMENT OF ENERGY THROUGH ITS EXCELLENT CLEAN COAL TECHNOLOGY PROGRAM.

ENCOAL USES LOW-RANK, SUB-BITUMINOUS COAL AND PRODUCES TWO HIGH-RANK FUELS OF LOW SULFUR CONTENT. THESE INCLUDE A LIQUID FUEL THAT SUBSTITUTES DIRECTLY FOR NO. 6 FUEL OIL... AND A SOLID PROCESS FUEL WITH A MUCH HIGHER HEATING CONTENT THAN THE FEEDSTOCK. WE SEE IN ENCOAL PROGRESS IN TWO ENVIRONMENTS--THE ECONOMIC AND THE NATURAL. THIS IS THE PROMISE OF TECHNOLOGY, AND IT IS ONE THAT IS BEING PLAYED OUT WITH VARYING DEGREES OF SUCCESS ACROSS THE UNITED STATES.

I WAS ASKED TO SPEAK TO YOU TODAY ON THE TOPIC OF...COAL: FUEL OF CHOICE AND FUEL OF NECESSITY. AND WHILE, ON ITS SURFACE, THE TOPIC MIGHT HAVE SOMETHING OF A GENERIC QUALITY TO IT, AT ITS ESSENCE IS THE CORE OF THE CHALLENGES THAT WE'VE FACED, AND THE OPPORTUNITIES THAT AWAIT US.

FOR THE STORY OF COAL IS THAT OF A LOVE-HATE RELATIONSHIP THAT EXTENDS BACKWARDS MANY CENTURIES. COAL HAS SLOWLY... QUIETLY... STEADILY CARRIED THE PROGRESS OF ENTIRE CIVILIZATIONS UPON ITS BROAD SHOULDERS. YET WHILE COAL HAS OFTEN BEEN THE FUEL OF CHOICE...IT HAS RARELY BEEN ACCEPTED BY THE GENERAL PUBLIC WITHOUT RESERVATION. COAL HAS BEEN VIEWED NOT JUST AS A FUEL OF NECESSITY BUT AS A NECESSARY EVIL... SOMETHING TO GET US THROUGH UNTIL WE CAN FIND A TRULY GOOD FUEL.

THIS HAS BEEN THE CASE, DESPITE THE FACT THAT OTHER ENERGY ALTERNATIVES HAVE CONSISTENTLY FAILED TO MATCH COAL'S STABILITY... CONSISTENTLY FAILED TO MATCH COAL'S AVAILABILITY... AND CONSISTENTLY FAILED TO MATCH COAL'S PRICE.

WHEN I CONSIDER THE CLAIMS OF COMPETING FUELS... AND IT MAKES NO DIFFERENCE WHETHER YOU ARE DISCUSSING NUCLEAR ENERGY IN THE NINETEEN-SIXTIES OR NATURAL GAS IN THE NINETIES... I AM REMINDED OF THE STORY ABOUT A LITTLE BOY WHO WALKED INTO A CANDY STORE AND ASKED FOR A PISTACHIO ICE CREAM CONE. WHEN THE OWNER TOLD HIM IT WOULD COST A DIME, THE BOY SAID THAT THE STORE ACROSS THE STREET ONLY CHARGED A NICKEL.

"SO WHY DON'T YOU BUY IT THERE?" ASKED THE OWNER.

"BECAUSE THEY ARE OUT OF PISTACHIO," REPLIED THE BOY.

"WELL," SAID THE OWNER, "IF I WAS OUT OF PISTACHIO, I'D CHARGE A NICKEL, TOO."

FUEL OF CHOICE. FUEL OF NECESSITY. BUT IF YOU LOOK TO COAL'S PLACE IN THE NATION TODAY, AND FROM WHERE IT HAS COME, THAT IS NOT REALLY THE PROPER ORDER. AFTER ALL... COAL'S ASTOUNDING ABILITIES TO PROVIDE ABUNDANT, INEXPENSIVE AND RELIABLE FUEL WAS RECOGNIZED BY THE CHINESE AS FAR BACK AS 300 A.D., AND IN WHAT IS NOW AMERICA BY THE 1400S.

THOSE WHO ARE NOW READY TO PROCLAIM THE DEATH OF COAL WOULD DO WELL TO REMEMBER THAT THE FIRST ENVIRONMENTAL PRONOUNCEMENT EXPECTED TO DOOM THE COAL INDUSTRY WASN'T THE CLEAN AIR ACT OF 1970, OR ITS AMENDMENTS IN 1990--BUT AN EDICT FROM ENGLAND'S KING EDWARD THE FIRST IN THE EARLY 1300S.

NO SOONER HAD FOURTEENTH CENTURY ENGLAND DISCOVERED THE WONDERS OF COAL THAN THE KING CAME OUT WITH A HARSH ATTACK AGAINST, QUOTE, THE STINK AND BADNESS OF THE AIR AND THE DESTRUCTION OF THE FRUIT TREES. THERE IS NO RECORD, INCIDENTALLY, THAT HE MADE ANY REFERENCE TO NITROUS OXIDE EMISSIONS OR CLIMATE CHANGE.

IF YOU'RE CYNICAL, YOU CAN DRAW FROM THIS STORY THAT COAL HAS ALWAYS BEEN UNPOPULAR...AND ALWAYS WILL BE.

BUT WHILE OUR CRITICS WOULD DWELL ON ONLY THE UNPOPULARITY OF COAL, THIS APPROACH CLEARLY MISSES THE POINT. FOR IF IT IS EVIDENT THAT THE CLASHES OF COAL WITH THE DEMANDS OF ENVIRONMENTALISTS HAVE A SEVEN-CENTURY LEGACY, IT IS ALSO QUITE CLEAR THAT COAL HAS NOT ONLY SURVIVED DURING THAT TIME... BUT IT HAS THRIVED.

ON AN EMOTIONAL LEVEL, COAL MAY NOT HAVE ALWAYS BEEN THE FUEL OF CHOICE. IT HAS BEEN, THOUGH, AND WILL CONTINUE TO BE, THE FUEL OF NECESSITY. WHAT I BELIEVE WE ARE CONCERNED WITH TODAY, AND EVERY DAY, IS EXPLORING N[illegible]YS TO BRIDGE A NATION'S WANTS WITH A NATION'S NEED[illegible] WILL BE SATISFIED IF THE PUBLIC VIEWS COAL AS A NECESSI[illegible]. BUT I, FOR ONE, WOULD FEEL MUCH MORE SECURE IF THE PUBLIC VIEWS COAL THE WAY YOU AND I VIEW COAL... AS THE BEST SINGLE SOURCE OF ELECTRICITY IN THE COUNTRY TODAY.

WHY IS COAL THE FUEL NECESSITY? THE ANSWER LIES IN THE PRODUCT VIEWED BOTH SEPARATELY AND IN CONJUNCTION WITH THE OTHER AVAILABLE FUELS.

TO APPRECIATE THE BROAD SHOULDERS OF COAL IN OUR NATION'S LIFE, YOU DON'T NEED TO LOOK AT ITS MAJOR IMPORTANCE IN SETTLING THE WEST BY FUELING THE STEAM ENGINE. AND YOU NEEDN'T LOOK AT ITS CRUCIAL ROLE IN SERVING AS THE SPARK THAT IGNITED OUR INDUSTRIAL REVOLUTION. NO, TO VIEW OUR INDUSTRY'S BEHIND-THE-SCENES SUPPORT, YOU SIMPLY NEED TO PICK UP ANY NEWSPAPER OR MAGAZINE. THERE, HIDDEN IN A WORLD THAT HAS FOR TOO LONG TAKEN IT FOR GRANTED, ARE THE HUNDREDS OF STORIES THAT ILLUSTRATE HOW COAL AND ELECTRICITY CONTRIBUTE GREATLY TO OUR EVERYDAY LIVES.

IN PHILADELPHIA, COAL ASSISTED IN LASER SURGERY WHEN DOCTORS PERFORMED A BREATHTAKING OPERATION TO SEPARATE THE JOINED HEARTS OF SIAMESE TWINS. IN DENVER, COAL POWERED THE MICROPHONE AND VIDEO SCREENS THAT ENABLED THE POPE TO SPEAK TO HUNDREDS OF THOUSANDS OF HIS FOLLOWERS. AND HERE IN ATLANTA, COAL WILL BE A PARTNER... SILENT AS ALWAYS... IN ENERGIZING THE SPECTACULAR DISPLAY THAT WILL BE THE 1996 SUMMER OLYMPICS.

COAL LETS THE NEON LIGHTS SHINE BRIGHT ON BROADWAY. COAL FUELS THE COMPUTERS THAT COUNT DOWN THE SPACE SHUTTLE LAUNCHES. COAL ENERGIZES THE AUTOMAKER'S TOOLS, THE TEACHER'S CLASSROOMS AND THE BAKER'S OVENS FROM ALASKA TO FLORIDA.

COAL IS VAST AND ABUNDANT. IT CONSTITUTES 90 PERCENT OF THE NATION'S FOSSIL FUEL RESERVES--NEARLY 300 YEARS WORTH. AND IT ACCOUNTS FOR MORE OF THE NATION'S ELECTRICITY GENERATION THAN ALL OTHER FUELS COMBINED.

COAL'S LONGSTANDING USE CAN BE ATTRIBUTED TO SOME COMMON ADJECTIVES. CHEAP. ABUNDANT. DOMESTIC. RELIABLE.

IN A WORLD BLOATED WITH SLOGANS, THESE TERMS MAY SOUND HOLLOW. BUT OUR NATION HAS NEVER GONE TO WAR TO PROTECT OUR COAL INTERESTS, AS IT HAS WITH OIL. OUR NATION HAS NEVER SEEN ITS FACTORIES AND SCHOOLS CLOSE BECAUSE OF INSUFFICIENT COAL, AS THEY DID DURING THE NATURAL GAS SHORTAGES OF THE MID 1970S. AND OUR NATION HAS NEVER SEEN THE DRAMATIC PRICE VOLATILITY OF COAL THAT IT HAS SEEN WITH A VARIETY OF OTHER FOSSIL FUELS.

NONETHELESS, THERE ARE MANY PEOPLE WHO TODAY PREDICT COAL'S DEMISE, FEELING SURE THAT THE EFFECTS OF THE CLEAN AIR ACT WILL CRIPPLE THE INDUSTRY. TAKE THIS QUOTE, FOR INSTANCE:

"ALTHOUGH OUR INDUSTRY HAS MANY SERIOUS ECONOMIC AND REGULATORY PROBLEMS FACING IT TODAY, NONE ARE AS THREATENING AS THE CLEAN AIR ACT. THE SULFUR RESTRICTIONS IMPOSED BY THIS ACT ARE SEVERELY RESTRICTING THE ELECTRIC UTILITIES IN MEETING THE ENERGY DEMAND. THE LOW SULFUR FUELS REQUIRED BY THIS LEGISLATION ARE NOT GENERALLY AVAILABLE TO THE UTILITIES. SULFUR LIMITS HAVE BEEN SET WITHOUT REGARD FOR THE CURRENT STATE OF EMISSION CONTROL EQUIPMENT WHICH, DESPITE SIGNIFICANT PROGRESS, HAS NOT YET REACHED THE STATE OF A PROVEN FULL-SCALE COMMERCIAL PROCESS." END OF QUOTE.

THIS IS TYPICAL OF THE RHETORIC OF THE DAY, AND INDEED THERE ARE ISSUES THAT OFFER MAJOR SOURCES OF CONCERN. BUT WHAT IS NOTABLE ABOUT THIS STATEMENT IS THAT IT CAME FROM MY OWN COMPANY'S ANNUAL REPORT IN 1970, IN RESPONSE TO THE ORIGINAL PASSAGE OF THE CLEAN AIR ACT.

SINCE THAT TIME, ZEIGLER HAS INCREASED ITS SIZE BY A FACTOR OF MORE THAN 10 TIMES. BUT, MORE IMPORTANTLY, THE UNITED STATES COAL INDUSTRY HAS GROWN A HEALTHY 62 PERCENT. LET ME ASSURE YOU THAT WE AT ZEIGLER--AND MOST PEOPLE IN THE INDUSTRY--WOULD BE QUITE CONTENT WITH ANOTHER 20 YEARS AS "BAD" AS THE PAST 20.

REALITY AND PERCEPTION ARE NOT ALWAYS THE SAME, OF COURSE, AND COAL'S IMAGE HAS LONG LAGGED BEHIND ITS GRAND FUNCTION. AT THE SAME TIME, THE POWERS THAT BE LARGELY CONTINUE TO OVERLOOK COAL'S ACCOMPLISHMENTS AND PROMISE IN FAVOR OF THE POPULAR ENERGY OF THE DAY.

IN THE 1960S, NUCLEAR ENERGY WAS GOING TO BE THE FUEL TO MAKE ALL OTHER FUELS OBSOLETE. MORE RECENTLY, NATURAL GAS HAS ATTRACTED AN INSTITUTIONAL FOLLOWING IN WASHINGTON AND ELSEWHERE. AND RENEWABLE ENERGY CONTINUES TO CAPTURE THE IMAGINATION OF OUR NATION'S COUNTERCULTURE.

BUT TAKE A CLOSE LOOK AT ONE OF TODAY'S ENERGY DARLINGS... NATURAL GAS... AND SOMETHING INTERESTING OCCURS. BECAUSE IF YOU ATTEMPT TO ERASE COAL FROM THE AMERICAN SCENE AND SUBSTITUTE NATURAL GAS, YOU ARE NOT LEFT WITH A WONDERFUL NEW WORLD. IN FACT, YOU ARE LEFT WITH... A LOT OF QUESTION MARKS.

THE SIREN SONGS OF INDUSTRIES LIKE NATURAL GAS ARE PLAYED LOUDLY TODAY. BUT EVIDENCE SHOWS THAT THEIR PROMISES OF RELIABILITY AND PRICE SIMPLY CANNOT BE BACKED UP.

THERE IS A REASON THAT NATIONALLY, SINCE 1970, COAL'S SHARE OF THE ELECTRICITY MARKET HAS INCREASED 20 PERCENT WHILE THAT OF NATURAL GAS HAS PLUMMETED 60 PERCENT.

PART OF THAT REASON LIES IN RELIABILITY. FOR ALL OF THE HOOPLA SURROUNDING NATURAL GAS, INCLUDING THE INDUSTRY'S OWN CLAIMS TO BEING SUPERIOR TO COAL, THE FACT REMAINS THAT PROVEN NATURAL GAS RESERVES AT CURRENT USAGE RATES NOW STAND AT A MERE EIGHT-YEAR SUPPLY. THAT COMPARES TO WELL OVER A CENTURY FOR COAL. AND IF NATURAL GAS WERE TO COMPLETELY REPLACE COAL CONSUMPTION IN THIS COUNTRY--AS I ASSURE YOU SOME ENVIRONMENTALISTS WOULD DESIRE--THAT SUPPLY DWINDLES TO JUST FOUR YEARS' WORTH.

UTILITIES TODAY MIGHT BE ABLE TO GET A FIVE-YEAR CONTRACT FOR NATURAL GAS, AND THEY MAY HAVE SOME PRICE PROTECTION IN THE SHORT TERM. BUT I WOULD HATE TO BE THE CHIEF NATURAL GAS BUYER FOR A UTILITY TRYING TO PREDICT WHERE PRICES OR AVAILABILITY FOR THAT GAS WILL BE WHEN THAT CONTRACT RUNS OUT.

PRICE, OF COURSE, QUICKLY FALLS VICTIM TO SHORT SUPPLY. AND, AS A RESULT, WE HAVE ALREADY SEEN NATURAL GAS PRICES ROCKET 80 PERCENT FROM LEVELS OF A YEAR AGO. THESE AREN'T THE SORT OF NUMBERS THAT OFFER CONFIDENCE TO UTILITY PLANNERS AND FUEL BUYERS.

THESE NUMBERS, TOO, SHOULD NOT INSPIRE CONFIDENCE AMONG THE NATION'S DECISION MAKERS. AND IT IS OUR JOB TO MAKE SURE THEY ARE MADE AWARE OF THESE FACTS. OUR GOAL IS NOT TO TEAR DOWN THE NATURAL GAS INDUSTRY, BUT TO POINT OUT THAT IN TERMS OF RELIABLE, ABUNDANT, INEXPENSIVE DOMESTIC ENERGY, COAL STILL STANDS ALONE.

I DON'T KNOW HOW OUR ENERGY WILL BE SUPPLIED A CENTURY FROM NOW. IT MAY WELL BE FROM WIND OR GEOTHERMAL ENERGY OR SOME SOURCE NOT YET EVEN CONSIDERED. BUT THE HARD FACT IS THAT ONE ENERGY SOURCE IS IN A POSITION TO BEAR THE MAJOR BURDENS OF ADVANCING OUR CIVILIZATION. THAT ENERGY SOURCE IS COAL.