

Remarks by Lee R. Raymond
"Energy, The Economy, And The Environment: Moving Forward Together"
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Economic Club of Detroit
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We all know that Detroit is synonymous with the American automobile industry, and I would like to begin today by congratulating our friends in the auto industry on reaching their 100th anniversary. Of course, we in the petroleum industry have been fortunate to share much of the journey with you, and we have many ties. Both of our industries have a common set of customers. And it takes both of us to keep America and the world moving.

We've accomplished a great deal together. One very important environmental example is the progress we've made over the past quarter century in reducing vehicle emissions. With new technology from the auto industry and new fuels from the petroleum industry, we've reduced those emissions by 96 percent, and we'll make further progress in the years ahead. We believe that's a tremendous achievement, rarely acknowledged by our critics, and a source of pride for both industries.

The auto industry and the Economic Club of Detroit have another common bond with those of us in the petroleum industry. That is a strong interest in the subject I would like to discuss with you today — the need for economic growth and energy development while recognizing the impact on the environment.

Creating and sustaining economic growth is one of the great challenges facing the world. It is necessary to create more and better jobs, raise standards of living and provide hope for a brighter, more secure future for people around the world.

As I travel around the world, I see a different look on people's faces where economic growth is occurring. It's a look of excitement and optimism. And

where it isn't occurring, the despair and resignation show that economic progress is more than numbers — it's a whole psychology of being.

The need for growth is universal, but it's especially strong in the developing nations. Those countries are where most of the world's population growth is occurring — growth which is expected to add 1.4 billion people to our planet by the year 2010. Developing nations are also where most of the world's poor people live. To meet the human needs in these countries, economic growth will be absolutely essential.

To support economic growth, we need a second "E" — energy. Energy use and economic growth are inextricably linked. If you plot on a graph the countries with the highest standards of living, you will find that they are the countries with the highest energy use per capita. Today, most of that energy comes from fossil fuels — about 85 percent. Of these, oil and natural gas supply the majority, with oil alone supplying the lion's share, 40 percent of world energy demand. And we expect that to be true well into the future.

The predominant position of oil is understandable. Compared to other sources, it has a high energy density — that is, the amount of energy produced per unit of volume or weight. As a liquid fuel, it is very easy to transport and convenient to use. Contrary to current comments in the press, it is very affordable. And it is the most versatile energy source, used to run everything from cars, airplanes and ships to home furnaces, factories and electric power plants.

Oil also has many non-energy uses. In the petrochemical industry, it is used to create countless everyday products — from carpeting to clothing, detergents to disposable diapers, paints to videocassettes. The automobile itself is a rolling showcase for petrochemicals — used in everything from bumpers and dashboards to rubber hoses and tires, and even extending to the asphalt roads we drive on.

One might say that between its energy and non-energy uses, oil is the genie behind much of modern life.

But despite all the benefits, some people today are very concerned about oil. They see it as a finite resource whose use presents a grave danger to our environment. And they advocate very strong steps to curb its use.

This contemporary "petrophobia" contrasts sharply with the attitudes prevailing in the 1950's and '60's. Then, people tended to associate autos and oil with progress and the freedom of "Happy Motoring" — one of Exxon's ad slogans in those days.

The fear associated with oil has its most recent roots in the 1970's, and, in some ways, it is understandable. Twice during the 1970's, Middle East oil supplies were disrupted, leading to sharply higher price and price controls in this country that resulted in gasoline lines at service stations. Under such conditions, people in our country began to associate energy, especially oil, with loss of independence, limits on opportunity and another word — "crisis."

The environmental movement, which gained momentum in the 1970's, also played a role in changing the perception of oil. Critics in that movement faulted all fossil fuels, including oil, for their environmental impact. They pointed to renewable energy sources, such as solar, wind and geothermal, as alternatives to high-price oil.

As we all know, in time, the energy crisis passed, oil prices dropped, and the industry developed cleaner oil-based products. But the negative perception of oil is still with us today.

As difficult as the challenges of the 1970's were, they should not blind us to the significant benefits derived from oil. Nor should they cause us to give in to fears about oil which its detractors raise. Let me briefly address the two major fears that are put forward — oil supply and environmental impact.

Regarding supply, many people tend to see oil as a finite resource, but they forget that human ingenuity is not. Technological advances are adding greatly to our discovery and economic recovery of oil. And the result is that proved remaining world oil reserves have actually grown by 40 percent over the last 10 years.

These reserves now represent a 45-year supply at current consumption, even if we never discover another barrel. But of course, we do find more oil all the time, and the long-term trend over the past several decades has been toward increasing, not diminishing, supplies of oil.

The bulk of the current reserves — some two-thirds — are in the Middle East. But significant reserves also exist in other parts of the world — from the North Slope of Alaska to South America, from Africa to the North Sea. One very encouraging development is the doors that have opened since the collapse of Communism. As a result of those changes, the area of the world open for energy development has been increased by more than one-third.

A few years ago, who would have thought companies such as Exxon would be exploring for petroleum and selling our products in China? Who would have thought we would be doing the same in Russia, Eastern Europe and Vietnam?

These new opportunities and the increasing economic interdependence of oil-producing and oil-importing countries have reduced the risk of oil supply disruptions. That fact was illustrated by the Persian Gulf War of 1991. Look at the alliance of nations involved. And notice the fact that, in marked contrast to the conflicts in that region in the 1970's, the most recent one did not result in any supply disruptions.

The other great fear about oil relates to the third "E" — environment. Some people believe that oil use is incompatible with a cleaner environment. But the truth is that we have made enormous progress over the past quarter century in

reducing the environmental impact of oil and other fossil fuels and making them much cleaner to use.

Let me give you some data that illustrate the overall trend.

In this country since 1970, lead emissions have decreased by 98 percent and breathable particulate matter by 78 percent. Sulfur dioxide emissions have dropped by more than 30 percent and are expected to be cut by some 40 percent more by the year 2000. Carbon monoxide has been cut by one-quarter and is projected to be reduced by an additional 36 percent by the year 2000.

Like the auto industry, the petroleum industry has taken unprecedented steps to reduce the environmental impact of its products. Today, in the U.S. alone, the industry is spending at a rate of more than \$10 billion per year on environmental improvement — as much as we spend searching for oil and gas in this country. Exxon itself spends some \$2 billion per year worldwide on environmental measures.

During the past 20 years, the U.S. petroleum industry has introduced new, cleaner-burning motor fuels five times. Each of these new fuels has produced fewer pollutants than its predecessor. Just last year, we introduced reformulated gasoline that cuts summertime hydrocarbon emissions by 16 percent, with a 27 percent reduction projected when new standards take effect in the year 2000.

Unfortunately, many Americans are unaware of this progress. Public opinion surveys show that most Americans believe that the environment has actually gotten worse over the last two decades.

Misunderstanding about environmental progress creates fertile ground for fear. Nowhere is that better illustrated than in the concerns expressed about global warming. The scientific evidence points to significant uncertainty around the issue. But you would not get that impression from the many news stories that appear on the subject.

Proponents of the global warming theory say that higher levels of greenhouse gases — especially carbon dioxide — are causing or will cause global temperatures to rise. But more than 96 percent of the carbon dioxide is naturally produced in the environment, and it has nothing to do with human activity. It and the other greenhouse gases are necessary for life to survive on earth. Currently, the scientific evidence is inconclusive as to whether human activities are having a significant effect on the global climate.

The lack of scientific understanding on this subject has not prevented activists from politicizing it and seeking to stir up all kinds of fears. They do so in an effort to force wrenching changes in our lifestyles and in the economies of the world's industrialized nations, with their real objectives often obscure. Such attempts represent a threat both to sound science and sound economics.

In the years ahead, most of the growth in carbon dioxide emissions will occur in the developing nations, where the most pressing environmental problems are related to poverty and not global climate change. According to the World Bank, one-third of the world's population is without adequate sanitation. More than one billion people are without safe drinking water. Millions of cases of disease are a direct result of the lack of these basic needs.

Addressing these problems will require economic growth, and that will necessitate increasing, not curtailing, the use of fossil fuels. This does not mean that we will inevitably experience grave consequences from global warming. We should keep in mind that some Cassandras of global warming were predicting the coming of a new ice age 20 years ago. And so, it makes little sense today to adopt economically punishing policies on the basis of uncertain predictions.

Our first priority ought to be to improve scientific understanding. Exxon is helping with that process by conducting its own research and by supporting that

of others, including a major research effort at M.I.T. on the science, economics and policy options of potential global warming.

There are other helpful steps we as a society can take that make sense in themselves, independent of the future findings of science on the issue. One is to encourage cost-effective, energy-efficiency programs so that we use all of our energy resources, including oil, as wisely as possible. Another is to promote sound forest management and reforestation policies, especially those that relate to the world's tropical rain forests.

Using energy wisely means applying it in a way that produces a net benefit for the economy and for the environment. Environmental extremists say we must make an either/or choice between economic and energy development on the one hand — and environmental protection on the other. My view is we need all three — and the history of the past 25 years in this country and in other developed nations around the world shows we can accomplish that.

Studies in the economic community support this idea. A recent study at Princeton found "no evidence that environmental quality deteriorates steadily with economic growth." Instead, they found that, after an initial phase of deterioration, economic growth brought environmental improvement. In most cases, the turning point occurs before a country reaches annual per capita income of about \$12,000 — about the level in Taiwan.

The truth is economic growth is needed to fund environmental improvement. And for that to take place, the world will need abundant, affordable and increasingly cleaner supplies of energy, and oil fills the bill.

Despite the recent upward spike in prices, gasoline, in real dollars, costs about half of what it did in 1950. And if you also consider gains in fuel efficiency, you find that the real cost of gasoline per mile driven has fallen by 70 percent since 1950.

As I mentioned earlier, oil-based fuels continue to get cleaner. Cleaner fuels and improved auto technology have allowed our country to reduce total annual automobile emissions by more than half since 1965 — even though today there are twice as many cars on the road, driving twice as many miles.

Among the so-called alternative fuels, none measure up to oil in abundance, performance and affordability. For example, ethanol, which is made mainly from corn, is about as clean as reformulated gasoline, but costs twice as much to produce. That's in part because it takes about the same amount of energy to harvest, transport and process it as it yields as a fuel.

None of the alternative transportation fuels can take you as far as gasoline, as cheaply. Most of them have environmental issues of their own. And because they don't make good economic sense, the alternative fuels must be supported by government through subsidies or, in some cases, outright mandates.

We in the petroleum industry are not opposed to alternative fuels, and, as a matter of fact, Exxon itself is in a good position to benefit from supplying them. We need economically and environmentally attractive alternatives, and those that meet these criteria will succeed in a free marketplace. But government should not try to pick winners by subsidizing one alternative over the other or by specifically discriminating against oil-based products.

Unfortunately, that is taking place. Some federal and state legislation sets goals and mandates for alternative-fueled vehicles. Despite its excellent emissions performance, reformulated gasoline is not considered an alternative fuel in some states or under some laws, simply because it's made from oil.

The reason for this discrimination goes back to the fears I spoke of a moment ago — unfounded fears that result in ill-conceived laws and regulations. And so, the challenge for us in the petroleum industry is to do what I'm doing

today — stand up in public and tell people that oil-based fuels are plentiful, affordable, clean and getting cleaner all the time.

In doing that, we look to natural allies such as the automobile industry for support. I recently heard an auto executive say that wherever he goes in the world, someone will come up and tell him that the internal combustion engine is an environmental villain whose time has passed. He says our industries are fighting a battle against misinformation, and I agree.

The internal combustion engine and the fuels that power it have greatly improved over the decades. We need to make that message clear to our mutual customers around the world. And we need to work together more closely on a range of other issues. Over the past decade, we've cooperated in research programs on both sides of the Atlantic, and we need to continue and extend the cooperation.

A spirit of cooperation is also needed by society as a whole as we continue to solve environmental problems. I believe most thoughtful people would agree that we need to weigh costs and benefits and seek the most cost-effective solutions. Economic progress should not be put at risk to placate alarmists or ideologues. In promoting environmental improvements, we should rely more on free markets and less on government.

I do, however, see a key role for government to play in setting rational environmental standards and promoting policies that spur productive investment. But government should avoid the temptation to intervene in energy markets in ways that give an unfair advantage to one fuel over another. Government's goal should be to promote a fair contest on a level playing field.

This will allow all of society to move forward. And that's the message I would like to leave you with — the economy and energy, with careful consideration of the environment, moving forward together. If that happens, we

can all look to economic growth, higher standards of living and hope for a brighter, more secure future for people all around the world.