SPEECH ONE: ADAPTATION AND INNOVATION

LOCATION: Massachusetts State House, Boston

My Fellow Americans:

We gather today in the great city of Boston to discuss the issue of our changing climate—what some call "global warming." Every nation on Earth, including the United States, causes its share of climate change. Every nation will be affected, though some less than others.

How shall we confront this planetary problem? The answers to this question are not nearly as difficult as the newspapers, scare shows, and pseudo-documentaries would have you believe. Climate change is no greater than other challenges that we have faced and easily overcome.

Imagine, before we begin, the scene just one hundred years ago. A speaker in this august chamber who was asked to comment on the pressing environmental problem of that day would have given his address over to the matter of mud and dung. The streets were full of it, and when the rains came it flowed amply and everywhere. Travel was next to impossible.

Bostonians overcame the challenge. They paved the roads and built storm sewers. As they sought faster and more flexible means of transport they traded horses for cars, which also cut the noxious fumes.

We, too, will overcome the challenge by changing our environment and by embracing new technologies. As we contemplate crafting a strategy to address global warming—the effects of which will manifest themselves, if ever, over fifty to one hundred years—perhaps the biggest danger is that we become single-minded about this threat and let ourselves be blindsided by other problems and opportunities. Let us hope that the leader elected by our great-great-grandchildren does not chastise us for tunneling vast

resources into clever and costly solutions to today's equivalent of the mud crisis, only to find that the real world had moved on. We can serve our descendants better by focusing on fundamentals—by investing in economic growth and knowledge that can be passed across the generations.

Today I would like to explain the real nature of the threat of climate change, what we are doing already, and how your federal government will pursue a balanced response in the coming months and years.

There is little doubt that the climate is, indeed, warming. Scientists around the globe—including at the nearby Massachusetts Institute of Technology—have painstakingly assembled records from weather stations, ship buoys, and sundry other sources. The record is pretty clear. Since the 1950s the global temperature has risen by half a degree. Many scientists think we are on a path to raise the average temperature another few degrees over the next century. Sea level will rise a bit, which will affect some places in the United States. But in other places, such as the Gulf of Alaska and much of the Canadian Pacific Northwest, sea level is actually falling as the continents rise slowly out of the oceans—they are still rebounding from the weight of the glaciers during the last ice age.

Beyond that, the scientific crystal ball gets cloudier. Even the simplest questions—such as whether Earth is warmer today than at any moment in recent millennia—have no simple answers. Some experts say that climate change will cause more frequent and intense storms. Others disagree. So far there is little firm evidence either way. Some claim that wet areas will get wetter, and areas prone to drought will get dryer. There seems to be some agreement that hot summers will get hotter in most places. But the likely effects of a changing climate include good things as well. Cold winters probably will become less intense in most places, and we must not forget that in much of the country the winter cold is a bigger killer than heat.

The uncertainty does not stop there. As my administration reviewed the evidence we also found that our best economists don't really

know the cost of controlling emissions of the so-called greenhouse gases that cause climate change. Most greenhouse gases are released when we burn fossil fuels and thus are an essential part of the modern economy. You may have heard about policies that can reduce emissions at zero cost. We looked at those policies as well, and it turns out that even these "free" policies are often laden with hidden costs and perverse effects.

We do know that voluntary efforts can reduce emissions without imposing much burden on the economy. For several years this nation has had a bipartisan policy allowing firms to register their voluntary efforts to lower their greenhouse gas emissions. The list of participants is long and distinguished.

Similarly, the government has sponsored a host of other programs that have helped businesses of all sizes, as well as American households, reduce their energy consumption through more efficient technologies. Next time you buy a TV or computer monitor, look for the decal with the rainbow and the star—the sign of your government's "Energy Star" program, which helps consumers identify products that sip energy while not compromising on functionality. These programs—voluntary incentives and information for smart consumers—are examples of government at its nimble best.

But alongside these successful programs is a minefield of failure—a long list of wrongheaded policies that past administrations have designed around the false idea that government knows best. These policies have tied firms and consumers in red tape; they have blocked innovation and stripped consumers of their power to choose. They undermine our competitiveness and threaten our way of life.

For example, my administration has opposed radical new efficiency standards that will be imposed on the manufacturers of new air conditioners. Quite often, higher efficiency is not free—it requires making a more expensive product that is not affordable for everyone. For households that survive paycheck to paycheck, these new standards would force them to spend even more of their scarce savings on something that they need. Is it right for government

to assume that you, the consumer, are unable to read the labels on products and decide for yourself what is best?

And that is just the beginning. Some of the professional global warming pundits claim that protecting the climate requires cutting world emissions by half or more. Yet developing countries are adamantly opposed to doing anything about the threats of climate change. They say that they have other priorities—development, for one. These nations already account for half of the world's net emissions of greenhouse gases, and their emissions are rising rapidly. That means that a deep cut in global emissions will require America and the rest of the industrialized world to do more—much more than our share. In this global economy, how can we expect our factories to compete with those in China, Brazil, or India if we are hobbled by a costly mandate to eliminate fossil fuels from our economy while they face no such constraint?

I can appreciate why the developing countries are putting development first. They know that wealth will make them better able to adapt to environmental stresses, including climate change. Development is such an important, overriding goal that my administration has created a novel "Millennium Challenge Corporation" that will deliver development assistance to the countries that will make the best use of our help.

We should not lament development. It is our moral duty to help where we can, and a growing world economy is good news for us as well: it will breed fewer terrorists and offer bigger markets.

Some still say that it will be inexpensive—perhaps even profitable—to eliminate fossil fuels from our economy. They imagine that we will stumble on some miracle energy source that satisfies our need for energy services yet is free of carbon dioxide and causes no other types of harmful pollution. That's a tall order. Your government, along with industry, has redoubled its support for research and development on a portfolio of promising technologies. So far, however, nothing seems likely to deliver the magic bullet.

Serious strategies to combat global warming require abandoning old prejudices. We must, for example, take a fresh look at

nuclear power. I find it encouraging that several utilities are likely to announce in the coming few years that they will commit funds to building the next generation of nuclear reactors. I know that many people are opposed to nuclear reactors, but we must look carefully at the risks and benefits. Nuclear power is one of the cleanest ways to make electricity. With the price of natural gas high, as it has been for the last two years, nuclear power is also economically competitive. Many of the obstacles to a rebirth of the nuclear power industry are being cleared. The Price-Anderson Act, which holds reactor owners accountable for their actions yet puts a reasonable cap on their liability, is up for renewal. Without this legislation, no sane company would invest in nuclear technology, which already supplies about one-fifth of the electricity that America needs while emitting no greenhouse gases.

We have finally opened the permanent repository for spent fuel at Yucca Mountain in Nevada. With the Federal Energy Regulatory Commission, we are making progress in introducing market forces to the U.S. electric power system. In the last decade alone, as market forces have come to the U.S. electric power system, new managers have dramatically improved the performance of U.S. reactors. Across the United States, the cost of wholesale electricity generated from nuclear plants has actually declined about two-fifths as market-sensitive operators have found ways to cut costs and keep their reactors online generating electricity for more hours every year.

We must also explore ways to make use of America's abundant coal reserves. Several major utilities, along with the federal government, have launched the FutureGen program to study and demonstrate a promising technology called coal gasification. This technology will make it possible to generate electricity and hydrogen fuels from our nation's abundant coal reserves while capturing the carbon dioxide and putting it safely underground. Like nuclear power, coal gasification will also help us improve our energy security by making the best use of resources we have at home.

We are making sound investments in these new technologies. But it is one thing to back novel technologies with uncertain deliv-

ery and quite another to bet our economic future by imposing strict limits on emissions. Until we know more about what it will really cost to control emissions it is not possible to justify imposing binding limits on emissions. The American economy has grown admirably when we have made full use of our capital base, including the flexible energy infrastructure that rests mainly on the power of fossil fuels. Government must focus on ways to multiply the productivity of capital, not erase it.

You elected me to spur economic growth in America. We are energizing the economy, and we won't threaten America's economic health with ill-conceived limits on fossil fuels aimed at achieving a highly uncertain impact on a highly uncertain problem that we probably can't control anyway.

My administration's thorough review of the climate change issue has also revealed that the likely effects of climate change are not as serious as some say. A few degrees' change in global average temperature is within the realm of what we already experience. As you know here in Boston, some months are warmer than average, and others are colder. Variation in rainfall will affect our reservoirs and farmers, but America's quiver of responses to a changing climate is stuffed full of effective arrows. When farmers see the real price of water rise they have found myriad ways to cut their consumption, such as through the deployment of new seed and crop varieties. In some settings they have also installed drip irrigation—itself an innovation from water-starved Israel, proving once again that necessity is the mother of invention. We can respond and adapt easily, if American ingenuity is allowed to work its magic.

In my meetings with civic leaders here in Boston I have heard fears that rising sea levels will swamp the city. But it is important to recognize that higher sea levels, if they occur at all, will manifest themselves over decades, during which time we can easily prepare for change. Again, it is important to put the long time scales that are relevant for global warming into historical perspective. One hundred and fifty years ago any discussion of rising sea levels would have focused on the shallow swamp called Back Bay. Then, the dominant industries of the day—mills and railroads—

invested to fill Back Bay with dams and reclaimed land. Beacon Street, which runs down the hill from where we are assembled today, ran across the top of a long and wide dam that was used to control the tides. Today, Back Bay is land, not water, and invulnerable to the tides. In fact, one-sixth of Boston's land area today is land that has been claimed from the seas. In the redevelopment of Boston harbor in the 1980s, planners factored in a likely rise in sea level—by preparing when they were already changing the landscape, Boston made itself more adaptive to climate change, at little cost. The "Big Dig," which put Boston's central road artery underground, is also constructed with the odds of higher seas in mind.

Every city with responsible leaders and a far-reaching vision has planned for such contingencies—London and Venice, for example, have movable sea walls to protect humanity's great physical assets from a flood tide. Such investments make sense even without global warming. Venice was already sinking into the ocean; its leaders have found a way to limit the danger of its natural sink and higher sea levels all at once.

We found that most claims of the high cost of climate change are built on a fallacy. They look only at losers and ignore the many winners. For every ski area that loses a day of sales from the earlier spring, global warming alarmists shed a tear and tabulate a cost. But they ignore the new business for fishing guides and outfitters, who can open earlier and close later. In fact, when Americans speak with their pocketbooks they prefer warm weather. They spend more on summer sports than those in the winter. Americans have moved in droves to warm weather. Even this audience of great Bostonians, I am sure, longs for a Florida respite in the dead of winter.

It is easy to be lighthearted about the weather, but I underscore a deadly serious point. We must be cautious about the "threat industry" that is drawn to the problem of global warming like termites to wood. A vast enterprise of analysts thrives—I dare say, draws its paycheck—from the exaggeration of environmental calamity. This same industry tells you that the streets are not safe, that prayer is corrupting, that the sky is falling. This same industry earns mil-

lions from malpractice lawsuits. They tell you that they are drawing your attention to problems; they say that they are making the world safer. But the reality is that it is you, the American consumer, who pays for them to tilt at windmills.

The threat industry draws its sustenance from fear. Its goal is self-propagation. Its standards are not rooted in the scrutiny, skepticism, and truth that are hallmarks of real science.

The threat industry has been working the climate case for decades. In the early 1970s analysts looked at the possibility of global cooling, triggered by grand plans at the time for a massive fleet of supersonic aircraft that would travel the globe. (Those plans were never realized because supersonic travel proved too costly; only the French and British Concorde program went ahead, and that only because those governments were willing to waste their taxpayers' money on a program for national pride.) Sure enough, when the doom patrol feared global cooling a plethora of detailed studies confirmed that cooling was bad news. Today the fear is warming and the studies show that warming is bad.

I have always found it puzzling why so many people who live in a country that has never been richer or more powerful are paralyzed by defeatism and malaise on environmental matters. Compare today with the turn of the twentieth century when soaring demand for wood fuel, railroad ties, and clear land for farming had denuded our forests and triggered fears of a "wood famine" in the United States. President Theodore Roosevelt created the U.S. Forest Service in 1905 to manage that strategic resource—to provide, in the words of the first Forest Service director, Gifford Pinchot, the "greatest good for the greatest number of people." Today, America's forests are larger and healthier because we have found ways to make productive use of our natural resources without overexploiting them. The effects are nowhere more visible than here in New England, where the countryside was virtually bare of trees a hundred years ago; today, healthy forests abound. Or, compare today with 1970, when President Richard Nixon's administration created the Clean Air Act, the Clean Water Act, and the National Environmental Policy Act—the most significant clus-

ter of environmental legislation in our history. Or, compare today with slightly more than a decade ago when President George H.W. Bush oversaw the creation of a nationwide system for trading pollution credits that has cut in half the gases that cause acid rain. Today we are laying the groundwork to cut those emissions even further while also reducing other forms of pollution. Our long history of environmental achievements underscores that a healthy economy and respect for market forces are the best ways to protect nature.

That is what we have found in our review of the global warming problem. To be sure, our information is incomplete and there is more to do. We must constantly update our policy as new information arises. Let me outline the achievements that we are planning for the next months.

My administration will continue the bipartisan tradition of investing in the science of climate change. We must learn more about the risks and opportunities in a changing climate. Perhaps we will discover credible evidence of a looming danger. Until we have that evidence my administration will not impose such costs on the American economy. We are spending nearly $2 billion per year on climate science, focused on a wide range of important questions so that future leaders have better information for making these tough policy decisions.

We will continue to develop sensible policies that create incentives to reduce emissions where that can be achieved at little or no cost. We must ensure, however, that programs designed to acknowledge the voluntary efforts of firms do not merely deliver public relations benefits for things that firms would have done anyway. My administration is now implementing new rules that aim to reward only genuine reductions in emissions, and I commit here to review the effectiveness of those rules in the coming months.

My administration will continue to invest in the development of new technologies that might make it much less costly to reduce emissions in the future. It is essential that we have these options ready in case we find that steep cuts are needed; to a point, it makes sense to invest in research and development on these options now. These investments include the FutureGen program for coal-

burning electric power generators, as well as a broad initiative to introduce hydrogen as a transportation fuel.

I don't know if these technology programs will pan out. That is the nature of bold technological investments—they are risky. We must expect failure but plan for success. I can assure you that these programs are already yielding important insights. We are working with industry so that the federal government is not given the task of paying the full cost and so that these programs are guided by practical considerations that industry knows best. We seek new technologies that work, not gold-plated behemoths that excite engineers but terrify hard-nosed businesspeople.

As we search for new energy systems, we must be mindful that real applications of technology depend on many factors, not just clever blueprints. We must create the market context that puts proper prices on energy and allows markets to transmit signals to final users. We must continue to introduce market forces in the supply of electricity. All these measures will create flexibility in the U.S. energy system, which is good news for the economy.

We must ensure that there are sufficient supplies of natural gas, a fuel that is intrinsically much less carbon-intensive than coal-fired electricity. Thus today I repeat my call for Congress to create the funding guarantees needed to encourage the private sector to build a gas pipeline to deliver the vast gas reserves in the North Slope of Alaska to markets here in the lower forty-eight states. Similarly, I applaud recent decisions by the Federal Energy Regulatory Commission to encourage the construction of liquefied natural gas receiving stations, which will help America overcome the crisis of high natural gas prices.

I am also issuing a series of executive orders that will help improve the nation's capacity to adapt to changing climate. I am directing the Federal Emergency Management Agency to review the practices that govern settlement of coastal zones. Already today, nature's normal pattern of surging seas and storms periodically causes great harm to coastal settlements, such as on the barrier islands off the Carolinas. Government must strike a balance in these areas. We must have compassion for the people affected by these dis-

asters. But we must also avoid unwittingly creating an incentive for coastal dwellers to take risks with the government's money.

I am also directing the Federal Emergency Management Agency and other federal agencies to work with state and local authorities to be sure that the likely consequences of climate change are known—so that, where prudent, these factors can guide planning. In some cases it will make sense to build sea walls to fend off high sea levels and storms—almost always, the cases where such investments make sense are those in which such investments would be wise even without the risk of rising sea levels. Where we have already spent tens of billions of dollars on buildings near the coastline it makes sense to protect them against surging storms.

I would also like to outline some things that my administration won't do. For too long the policy response to global warming has been painted in stark, black-and-white terms. The threat industry has manufactured the terms of debate, and the noise has drowned voices of reason. In that polarized environment, analysts and politicians with special interests have brewed up a strong potion of mischief. My administration won't be serving that up.

I won't scare you with wild scenarios. Analysts have claimed that global warming will threaten America's security by spreading disease. Some claim, for example, that global warming will create malarial breeding grounds in the United States, implying that we will see a resurgence of that deadly disease here. The fact is that technology and policy are what determine the threat of malaria, not climate. During the Civil War the U.S. South was racked with malaria, driving up the world price for quinine, the only reliable treatment. Since then, programs to eradicate mosquitoes and control the disease explain why the South has long been malaria-free. The threat industry has concocted an endless array of other terrifying scenarios. I can't tell you that all are impossible. But I can say that the threat of climate change—like so many other policy challenges today—will require that we think in terms of probabilities. And the probabilities of these terror storylines are exceedingly low. We should spend our resources where the risks are greater.

I won't reengage with Kyoto. The problems with the Kyoto system are so severe that no amount of tinkering at the margins will fix them. It is hardly clear that substantial, coordinated reductions in emissions are needed. And the cost of meeting Kyoto's targets is way out of line with the treaty's minimal benefits. The most useful aspects of the Kyoto system envision engagement with developing countries; yet that system, known as the Clean Development Mechanism, has virtually no achievements to its credit. Environmentalists and European nations have burdened that mechanism with a plethora of special rules and procedures that make it difficult, if not impossible, for private firms to make the most sensible emission-reducing investments in developing countries. It is no wonder that developing countries have unanimously viewed this issue with suspicion—a plethora of promises but short on delivery. As a global strategy for tackling the problem of climate change, Kyoto is a backwater of costly paralysis and irrelevance.

Finally, I won't substitute government for your common sense. We will not construct elaborate government programs based on the idea that government is a nanny who must instruct you on the proper use of energy. Americans are smart. Armed with real information about real risks and rewards they will make sound choices. I view the role of government as helping, in those limited cases where markets fail, but leaving you—the consumer, parent, and steward—the freedom to choose.

In many ways the hypothetical dangers of climate change are, of course, quite different from the environmental problems that America has confronted in the past. The time scales are long; the causes are global; solutions are much more costly than anything else we have contemplated. But the global nature of climate change is not a reason for panic. In fact, we can handle these risks in our stride because the effects of a changing climate will unfold on the same time scale in which we will make many other changes in our society and technology. In the near future we have little control over the emissions that contribute to a changing climate,

not least because many emissions come from other nations that are steadfast in their desire not to alter their behavior.

In short, we must learn, innovate, and adapt. We will invest in science so that we better understand the road ahead before we bet the economy on any radical course of action. We will invest in technology so that our society has the tools on hand should we need to cut our emissions in the future—and so that American workers and businesses stand ready to profit from innovation. All the while, we will prepare to adapt, just as Americans have adapted to many other environmental challenges in the past. These elements are not so much a clever strategy as just plain common sense.