

CLEAN ENERGY, GREEN ECONOMY,
AND A HEALTHY ENVIRONMENT

THE
100 DAY
ACTION PLAN
TO SAVE
THE PLANET

A CLIMATE CRISIS SOLUTION
FOR THE 44TH PRESIDENT



WILLIAM S. BECKER, EXECUTIVE DIRECTOR,
PRESIDENTIAL CLIMATE ACTION PROJECT

THE 100 DAY ACTION PLAN TO SAVE THE PLANET



A Climate Crisis Solution
for the 44th President

William S. Becker



ST. MARTIN'S GRIFFIN  NEW YORK

THE 100 DAY ACTION PLAN TO SAVE THE PLANET. Copyright © 2008
by The Regents of the University of Colorado, a body corporate.
All rights reserved.

For information, address St. Martin's Press, 175 Fifth Avenue,
New York, N.Y. 10010.

www.stmartins.com

E-book ISBN-13: 978-1-4299-5357-3

E-book ISBN-10: 1-4299-5357-8

First Edition: October 2008

10 9 8 7 6 5 4 3 2 1

To my wife, Mary, for the many hours this project has stolen from our life together, and to our children and grandchildren—Aaron, Sarah, Michaelyn, Don, Jason, Megan, and Carter

Americans can always be counted on to do the right thing . . . after they have exhausted all other possibilities.

—Sir Winston Churchill

CONTENTS

Prologue to Electronic Edition vii

Foreword ix

Introduction: Presidential Power and the 100-Day Plan 1

1. What's the Problem? 5
 2. Great Challenges, Great Opportunities 11
 3. The Great Trap: Carbon Lock-In 23
 4. Mobilizing the Marketplace 31
 5. Restore the Integrity of Climate Science 39
 6. The Clean Energy Surge 47
 7. Green for All: Equity and Opportunity 55
 8. Citizenship and Stewardship 65
 9. Adaptation Versus Mitigation: Why Not Both? 75
 10. Redefining National Security 81
 11. Rejoining the International Community 89
- Epilogue 97

Appendix A: What You Can Do 105

Appendix B: The Use of Executive Authority 111

Acknowledgments 116

PROLOGUE TO ELECTRONIC EDITION

At the end of every e-mail message, my friend and colleague Hunter Lovins offers this reassuring promise:

No trees were destroyed in the sending of this message.
A significant number of electrons, however, were terribly inconvenienced.

We can say the same of this book, thanks to the decision by St. Martin's Press to publish it electronically. Besides saving paper, ink, transportation, packaging, and the energy to run the printing press, this virtual book has another advantage: It allows you to link to many of the research documents upon which its ideas are based. If something interests you, look for the blue color-coding. If it's there, you can hyperlink to the report or news article or academic study that stands behind the idea.

If you're old-fashioned like me, and need something you can hold, feel free to download the sections of the book most important to you. But please don't destroy any trees if you don't have to.

This book has another backup: the full Presidential Climate Action Plan that we will deliver to the President-elect and his transition team, and that we hope provides many good ideas for leadership. You can find the full document at www.climateactionproject.com.

Enjoy!

Bill Becker

October 2008

FOREWORD

The 44th President of the United States will take the oath of office on January 20, 2009. From that moment forward, he will have a relatively short honeymoon period during which he has the best chance of advancing his agenda. This book is an action plan for the new President to attack the problem of global climate change during his first 100 days in office.

Every president over the last thirty years has known about climate change. It is the most dangerous and difficult challenge of our time, and it remains largely unaddressed. While scientific research has reached a consensus that human activity already is causing worldwide climate change, America has lacked the political will to do something about it. Since the oil embargoes of the 1970s, every president has gone on record in support of reducing America's dependence on foreign oil, a necessary step for both energy and climate security; presidents as far back as Lyndon Johnson have been advised about the dangers of climate change. But today, the United States imports more oil and emits more greenhouse gases than ever before.

In 2007, the Intergovernmental Panel on Climate Change (IPCC)—the largest international science collaboration in history—concluded unequivocally that climate change is underway, that it is primarily the result of our consumption of fossil fuels, and that time is growing short if we are to avoid catastrophic consequences on a global scale. “What we do in the next two to three years will determine our future,” says Rajendra Pachauri, the head of the

IPCC. “This is the defining moment.” It has been left to the new President to define how the United States will respond.

By focusing on the first 100 days, this book underscores the need for urgent action. America’s greenhouse gas emissions are growing by 1.5 percent each year. The IPCC has concluded that worldwide greenhouse gas emissions must be stabilized and begin to decline by 2015, just six years after the next President takes the oath of office.

A 100-day action plan carries symbolic weight, too. President Franklin Roosevelt, whose leadership during two critical national crises is often used as a model for what must happen now, framed his own 100-day plan for the period between the opening and closing of the 73rd Congress in 1933. During that time, according to historian Arthur Schlesinger Jr., Roosevelt “sent fifteen messages to Congress, guided fifteen major laws to enactment, delivered ten speeches, held press conferences and cabinet meetings twice a week, conducted talks with foreign heads of state, sponsored an international conference, made all the major decisions in domestic and foreign policy, and never displayed fright or panic and rarely even bad temper.”

It’s an inspiring example, but we are now facing a different sort of crisis. The crises that FDR faced during his presidency were clearly visible and obvious: the Great Depression and World War II. The climate crisis is far more insidious; vested interests continue to sow doubt that it is real; and the solution will require a literal transformation of the industrial world’s economies.

The recommendations in these pages are the result of a two-year effort by the Presidential Climate Action Project at the University of Colorado Denver. I’m often asked how it got started. The short

answer is that the project is the brainchild of Dr. David Orr, the noted environmental educator and author at Oberlin College.

The long answer goes back to the 2004 presidential election. At the time, I was beginning my twelfth year as an official at the U.S. Department of Energy. Like many of my colleagues, I had spent my career pushing the United States to begin the transition to a new energy economy powered by renewable resources. When George W. Bush was elected to a second term that year, I was at first shocked, then depressed, that the American people had decided to retain a White House that would be a wholly owned subsidiary of the oil, gas, and coal industries for another four crucial years. I decided I had to make a choice. I either would move to another country so that my taxes would no longer support Bush's policies, or I would try to "light a candle."

I decided on the candle. I resolved to pull together many of America's foremost experts on green energy, climate change, and sustainable development and create a "Sustainable America" action agenda in time to give it to whoever was elected to the presidency in 2008. My starting point was the work of the President's Council on Sustainable Development (PCSD), which was convened by the Clinton administration. From 1993 to 1999, the PCSD developed more than 140 recommendations for policies and initiatives that would make the United States more sustainable, but its body of thoughtful ideas was ignored when the Bush administration took office.

The first step was to recruit the two co-chairs of the PCSD—Ray Anderson and Jonathan Lash—to lead an advisory committee that would guide the project. Ray, the founder and chairman of the board of one of the greenest companies on the planet—Interface Inc. in Atlanta—agreed immediately. He helped me recruit Jonathan, head of the World Resources Institute, to be co-chair.

We devised a plan to hold four National Leadership Summits

for a Sustainable America during 2006 and 2007. The Johnson Foundation offered us the use of their Wingspread Conference Center in Wisconsin for all four meetings.

While the objective of the conferences was to write an action plan on sustainable development, it quickly became apparent during the first summit in June 2006 that we could not discuss sustainability without tackling climate change. It was, and is, the mother of all sustainability issues. It was at this meeting that David Orr proposed a 100-day plan for presidential leadership.

As a first step, and with the objective of speaking with one voice on climate change, the forty participants produced “The Wingspread Principles on the U.S. Response to Global Warming,” and circulated it on the Internet for signatures. These principles became the guideposts for the work to follow.

Later that year, a mutual friend introduced me to Gary Hart, retired U.S. Senator and two-time presidential candidate, now a visiting scholar at the University of Colorado Denver. Hart, one of the nation’s most influential new thinkers on national security, immediately saw the importance of climate change. He agreed to join Ray Anderson as co-chair of a Presidential Climate Action Project, or PCAP, as we called it.

I retired from the Department of Energy on January 1, 2007, to begin work on PCAP. We formed a new national advisory committee that now includes Dr. Orr; Dr. D. James Baker, former head of the National Oceanic and Atmospheric Administration; Vice Admiral Richard Truly, a two-time shuttle astronaut and former NASA administrator; Theodore Roosevelt IV, chair of the Pew Center on Global Climate Change; John Petersen, the highly regarded futurist and head of the Arlington Institute; Hunter Lovins, president of Natural Capitalism Solutions; Terry Tamminen, the architect of Governor Arnold Schwarzenegger’s pioneering climate policies in

California; Larry Schweiger, head of the National Wildlife Federation; James Gustave “Gus” Speth, dean of Yale’s School of Forestry and Environmental Studies; Scott Bernstein of the Center for Neighborhood Technologies; Van Jones, founder of the Green for All movement; and several other distinguished experts.

After eleven months of intensive research, consultation, and writing, we released the preliminary action plan on December 4, 2007. It contained more than three hundred specific proposals for federal policies, programs, executive orders, and legislation across fourteen topic areas—among them climate policy, energy policy, economics, stewardship, state and local adaptation, transportation, and buildings. Among other goals, the three hundred policies were designed to achieve:

- Zero-carbon buildings by 2030
- Dramatic cuts in oil use for transportation
- An economy-wide drive to improve America’s energy efficiency
- An 80 to 100 percent reduction in greenhouse gas emissions by midcentury
- An end to federal subsidies of carbon-intensive fuels
- A moratorium on new, conventional coal-fired power plants
- Carbon neutrality for the world’s biggest single energy consumer, the U.S. government
- An active and constructive role by the United States in the international effort to control greenhouse gas emissions

Since releasing the first plan, we have continued commissioning research and convening the nation’s top environmental, business, science, academic, and policy experts with the goal of providing the President-elect and his transition team an updated action agenda just after the November 4 election.

What we intend to demonstrate—and what I hope to convey in this book—is that global climate change will not be solved with a single bill in Congress, or with the President’s bully pulpit, or by hoping the marketplace will work its magic with no help from the federal government. The Presidential Climate Action Plan is based on the idea that an adequate response to this most complex of problems will require every tool in the toolbox—in the White House, the Congress, state and local governments, the business sector, on Main Street, and in households across America.

From the first 100 minutes of his inaugural address through the next 100 days, the next President must put America back on the path to achieving energy and climate security.

INTRODUCTION

Presidential Power and the 100-Day Plan

As he delivers his inaugural address, the new President will set the tone of his leadership for the next four years. The world community will be listening closely for signs of his—and America's—intentions in regard to energy and climate security.

It's difficult to exaggerate the importance of those signals. The nation's de facto energy policy has been to prolong the carbon economy of the past two hundred years. Climate change has been ignored in the highest places. Every generation faces challenges and every president shapes history, but this moment is special. The work ahead of us will determine the habitability of the planet on which we and future generations live. We who are alive today will lay the foundation for security and prosperity for generations to come, or we will create a world in which security, prosperity, and even liberty are relics of the past. It is a privilege, a challenge, and a profound obligation to be alive today and to be responsible for this historic passage.

The President will have his work cut out for him. To carry out the goals of this 100-day action plan, he will need to use his executive powers as well as the power of persuasion, work with Congress on a comprehensive legislative program, and collaborate

with international organizations and other countries working on a global solution to this global problem.

Here are the key parts of the plan. The President should:

- Take early action by using the powers Congress already has delegated to the executive branch
- Move rapidly away from investments that lock the nation into more long-term carbon emissions
- Rebuild the federal government's leadership capacity by restoring respect for science and bringing America's best experts on energy and climate security into public service
- Mobilize the marketplace to build a new twenty-first century economy
- Launch an economy-wide "clean energy surge"
- Ensure that climate action is equitable and fair
- Create an agenda for natural resource stewardship that responds to climate change
- Help the nation adapt to the climate changes already underway
- Redefine national security to include climate and energy security
- Work with leading governors and mayors to create an inter-governmental action plan
- Reengage the community of nations to find solutions to the climate and energy crises
- Work closely with Congress to create additional laws and to fund the programs we need to effectively address energy and climate security

What's at stake is not just America's credibility around the world. As I will explain in the pages that follow, climate action is

important to our national security, our economic stability, and to the health, welfare, and quality of life of the American people.

But first, I'd like to set the context by recapping the history of the current climate crisis and reviewing the latest research so the urgency of the solutions outlined here is clear.

1.

What's the Problem?

If you're reading this book, you probably don't need to be convinced that global climate change is real, or that its increasing pace presents the nation with a challenge as profound as any we've faced. But I will take a moment to explain the problem and to recap some of the most significant—and alarming—developments of the past few years.

The global climate that has made the planet hospitable to life as we know it depends upon a balancing act that works roughly like this: When living things die, they emit carbon as they decompose. Some of that carbon enters the atmosphere. The rest is absorbed and stored by plants, the oceans, and soils.

The carbon that enters the atmosphere acts like a blanket of insulation, trapping some of the sun's heat so that the planet remains the right temperature for humans and other species alive today. If too much carbon goes into the atmosphere, the planet gets warmer; too little, and the planet cools.

In effect, the earth breathes, inhaling carbon during warm seasons when plant life grows; exhaling it in cold seasons when plant life goes dormant. Forests and other vegetation are its lungs. This breathing is part of a natural cycle that maintains the carbon balance, not unlike that maintained by us humans as we breathe in oxygen and breathe out carbon dioxide.

One factor that created the friendly carbon balance we know today was that nature stored enormous amounts of carbon underground long ago: once-living plants and animals that over the eons became oil, gas, and coal. That carbon was permanently sequestered in the earth until we began digging it up and burning it on a large scale to fuel the industrial age.

The combustion of these fuels has released their carbon into the atmosphere, in such large quantities that the earth is losing its carbon balance. Carbon dioxide and other greenhouse gases* are increasing the atmosphere's insulating effect and trapping more of the sun's heat. As always, soils, oceans, and plants try to absorb these emissions. But as a result of agricultural practices, the loss of tropical forests, and the natural limitations of carbon sinks, they have not kept up with the intense emissions of the industrial era. The result is an increase in the earth's temperature, a trend that scientists have physically measured.

Another important effect of warming is what scientists call “positive feedback loops”—events that speed up the climate change process. For example, polar ice reflects some of the sun's heat. When it melts, the surfaces of the exposed land or water reflect less heat and absorb more, accelerating global warming.

Today, the concentrations of carbon dioxide in the atmosphere are rapidly approaching the point at which they are “too high to maintain the climate to which humanity, wildlife, and the rest of

* There are six major greenhouse gases. Carbon dioxide is the heat-trapping gas most often discussed in relation to climate change because it is one of the most common and most persistent. Once in the atmosphere, it remains for thousands of years. Because of that fact, many scientists communicate greenhouse gas reduction goals in terms of carbon dioxide (CO₂) emissions. For ease of communications in this book, I use the terms “carbon dioxide” and “greenhouse gas emissions” interchangeably.

the biosphere are adapted,” according to Dr. James Hansen, chief climate scientist at the National Aeronautics and Space Administration’s Goddard Institute for Space Studies. In other words, without rapid action to curb greenhouse gas emissions, the twenty-thousand-year period that has proven so hospitable to life as we know it will be gone, replaced by rising sea levels, dying oceans, severe drought, extreme weather, spreading disease, and species extinction, among other things.

The scientific consensus is that to have a fifty-fifty chance of avoiding the worst consequences of climate change, we must hold global warming to no more than 2 degrees centigrade (3.6 degrees Fahrenheit) above preindustrial levels. That will require that we keep atmospheric concentrations of carbon dioxide at about 450 parts per million or less. They already are at 385 parts per million and climbing. Hansen believes concentrations must be much lower, eventually returning to 300–350 parts per million.

While a 2-degree centigrade temperature increase doesn’t seem like much of a difference, it’s more appropriate to compare it to the temperature of the human body than to the normal fluctuations we experience in weather. A 2-degree temperature rise in a human being is a fever. A rise of 5 or 6 degrees centigrade—the increase we can expect if greenhouse gas emissions go unabated—is fatal.

To keep atmospheric temperature rise below 2 degrees centigrade, the Intergovernmental Panel on Climate Change (IPCC), a collection of the world’s top scientists, says that global carbon dioxide emissions must peak within the next few years and begin to decline. Most experts accept that industrial nations must take most of the responsibility for reducing greenhouse gas emissions, at least over the next few decades. After all, the industrialized nations account for most of the man-made greenhouse gases in the atmosphere today, and have greater resources to address the challenges they’ve produced. In

August 2007, a group of 158 nations meeting on the climate problem urged industrialized economies to reduce their emissions as much as 40 percent by 2020, compared to 1990 levels.

But the trend is moving rapidly in the opposite direction. Here in the United States, the nation most responsible for the current atmospheric concentrations of greenhouse gases, the Energy Information Administration predicts that if we continue business as usual, our emissions will not stabilize and decline; they'll grow 35 percent by 2030. If global emissions continue unabated, carbon dioxide concentrations in the atmosphere will be double preindustrial levels by midcentury.

Today, signs of climate change are appearing much more quickly than predicted and they are not restricted to the Arctic and Antarctic. Troubling patterns are emerging in the United States. For example:

- In the far west, wildfires are regularly setting new records for their size and intensity. The National Oceanic and Atmospheric Administration reported in 2007 that the 2006 wildfire season in the United States set an all-time record with more than 9.8 million acres burned in more than 96,000 wildfires. The National Interagency Fire Center reports that nearly 14,000 square miles burned in 2007, costing the federal government more than \$1.8 billion and making the year the second-costliest fire season on record.
- During 2008, nuclear power plants in the southeastern United States faced the prospect of curtailing generation because a prolonged drought in that region left them with insufficient water to cool their reactors. Drought is becoming a factor in the power choices of other regions, too.

- On September 1, 2008, New Orleans was evacuated as Hurricane Gustav threatened it and other areas of the Gulf Coast. Gustav appeared almost exactly on the third anniversary of the city's devastation from Hurricane Katrina. It was followed quickly by Hurricane Ike, which caused billions of dollars' worth of damage when it hit the Texas coast and traveled deep into the U.S. mainland. Seven of the ten most expensive hurricanes on record have occurred since 2004.
- The nation's flood season started unusually early in 2008. Flooding in March killed at least sixteen people in Missouri, Arkansas, Tennessee, and Oklahoma. In the Midwest, severe flooding started even before winter was over as heavy snow alternated with warm weather. The Mississippi River was so swollen from March floods that officials talked about diverting water from the river into Lake Pontchartrain—the lake that flooded New Orleans after Hurricane Katrina.

Climate scientists are reluctant to attribute single weather events, or even short-term weather patterns, to global climate change. But a growing number of experts are acknowledging that these extreme events may be the early signs of impacts that will grow much, much worse.

In other words, we can't leave global warming to be solved by future generations. The problem is here and now. Solving it will require nothing less than a transformation in how we and the world's other people fuel our prosperity—a change in which we finally make economic development compatible with environmental protection and restoration.

2.

Great Challenges, Great Opportunities

If global climate change is the greatest challenge of our era, it also is the greatest opportunity. As former President Bill Clinton puts it, “Creating the low-carbon economy will lead to the greatest economic boom in the United States since we mobilized for World War II.” And that might be understating the potential of this moment.

Global warming is a signal that our old economy no longer works. It’s not the only sign of malfunction. As I write this, the Department of Labor reports that 9.4 million Americans are unemployed and 84,000 jobs disappeared in just one month. The Economic Policy Institute (EPI) reports that “working families are seeing extraordinary economic challenges.” In its 2008/2009 State of Working America analysis, EPI writes:

When it comes to efficient, profitable production, the men and women of the American workforce have a lot to be proud of. But when it comes to being rewarded for the work they do, the skills they have sharpened, and the contributions they make . . . well, that’s a different story. Their paychecks have been frozen, their health coverage is being cut back, their jobs are at risk of being shipped overseas, and their pensions are

more precarious than ever. For the first time since the Census Bureau began tracking such data back in the mid-1940s, the real incomes of middle-class families are lower at the end of this business cycle than they were when it started. This fact stands as the single most compelling piece of evidence that prosperity is eluding working families.

The overriding responsibility facing the next President is to lead the United States, and to assist the rest of the world, in creating a new economy that delivers prosperity in the new realities of the twenty-first century. What are those realities?

First, more nations, including the world's largest, are committed to intense economic development to lift their people out of poverty. That means more cars, more buildings, more appliances, more energy consumption, more pollution, and more climate change, if the emerging economies follow the same path the industrialized world followed, including conspicuous consumption, careless waste of resources, environmental degradation, and intensive use of fossil energy. Left unaddressed, the negative impacts of global climate change will increasingly tax prosperity.

Second, the growing economies and the growing world population—scheduled to increase from 6.5 billion to 9 billion by midcentury—are creating competition for oil and natural gas at the same time global supplies of those finite fuels are peaking or in decline. There are two results: oil and gas prices are rising as demand exceeds supplies, and competition for the fuels is adding to international tensions. In the old international order, when nations demanded more petroleum, the world responded by producing it. Today, the global oil market has become a zero-sum game. When one nation obtains more oil, other nations obtain less, and U.S. intelligence experts predict more conflicts ahead.

Third, we have reached the limits of the environment's ability to absorb the impact of carbon economies. In the old days, environmental problems seemed local—a burning river, a degraded forest, a polluted waterway, a regional threat to air quality. Today, we know we are threatening the quality of the earth's life-support systems—the atmosphere, forests, and oceans. The carbon emissions from each household, factory, automobile, and city affect all people everywhere. Spaceship Earth is becoming Greenhouse Earth and global warming has become perverse evidence that we are all, indeed, interconnected.

Fourth, as Vietnam showed us a generation ago and as the war in Iraq has demonstrated today, the nature of warfare has changed. Fielding the biggest armies with the most modern weapons can no longer guarantee access to natural resources. As one observer has put it, when you've used up all your capital you can do one of two things: declare bankruptcy or pick up your gun and rob a bank. The United States has used up all of its easy carbon capital. Oil and gas production peaked here in the early 1970s. But the modern reality of asymmetric warfare, where an inferior but determined enemy can cause such high losses of life and treasure that a militarily superior nation loses the will to fight, has made "robbing the bank" not only morally wrong, but also too costly and too uncertain. And where the "bank" is located in sensitive places such as Islamic holy lands, staking it out fuels terrorism.

The United States and other industrialized nations must decarbonize their economies and do so quickly, in the process demonstrating a new path to prosperity for developing countries. At the core of the transformation will be the switch from finite, carbon-intensive fuels to resource-efficient economies powered by renewable low- and no-carbon fuels. We have all the technologies and knowledge we need. We know, for example, how to produce energy

from sunlight, wind, geothermal resources, and biomass materials. The technology exists for much more efficient vehicles, buildings, and power production. We don't lack technology; we have lacked the political will to use it.

But that is changing. The promising early evidence of the post-carbon economy already is appearing. Since 1974, the world's sixth largest economy—the state of California—has held its population's energy consumption to zero growth while energy consumption in the rest of the United States grew 50 percent. The state's per capita greenhouse gas emissions have fallen 30 percent since 1975. By one estimate, the average family in California has been paying eight hundred dollars less for energy each year than it would have without the state's energy efficiency efforts—and that was before the recent surge in oil prices.

In Texas, legislators implemented a requirement in 1999 that part of the state's electricity must come from renewable resources—a mandate known as a renewable energy portfolio standard, or RPS. The state met its ten-year goal in only six years. Today, Texas is the nation's largest producer of wind power and it recently approved the nation's largest investment in renewable energy to date—\$4.9 billion to extend the electric grid to new wind resources.

In Colorado, proposals for an RPS failed year after year in the state legislature because of opposition from utilities, including the state's largest, Xcel Energy. In 2004, voters took matters into their own hands and passed the nation's first ballot initiative establishing an RPS. It required utilities to obtain 10 percent of their electricity from renewable resources in ten years. But wind and solar power grew so fast that the legislature doubled the standard three years later, requiring the state's large utilities to obtain 20 percent of their electricity from renewables by 2020. An economic analysis predicted the state's gross domestic product would increase by

\$1.9 billion under the new requirement, and this time it passed in the legislature with Xcel Energy's support. Today, renewable energy portfolio requirements have been established in thirty-two states and the District of Columbia.

In 2006, Colorado Governor Bill Ritter won the election by promising to lead the state to a "new energy economy." Attracted by that plan and by the state's renewable energy mandate, the Danish wind company Vestas is building four manufacturing plants in Colorado to produce wind turbine blades and towers. The plants will create 2,450 green jobs. More and more blueprints are emerging for how the rest of America can create a new energy economy. The Apollo Alliance, a coalition of business, labor, environmental, and community leaders, has developed a plan to create 5 million high-quality "green-collar" jobs with an investment of \$500 billion over ten years; the Center for American Progress has developed a road map to the new economy and an analysis that shows, state by state, how an investment of \$100 billion over two years would create 2 million good jobs.

Amid all the bad news in the economy as the 2008 presidential election approaches, it is easy to miss the other good news that a sustainable economy is emerging. For example:

- The U.S. Department of Energy (DOE) reports that renewable energy technologies are booming worldwide. The number of renewable energy installations in the world and the United States doubled between 2000 and 2007. During the same period, worldwide wind energy generation quadrupled and installed wind capacity in the United States increased six and a half times.
- DOE says that U.S. investments in renewable energy projects grew dramatically over the past decade, reaching more than

\$13 billion in 2007. Investments in wind energy projects grew from \$250 million in 2001 to more than \$8 billion in 2007. During the same period, venture capital investments in solar technology increased from \$5 million to more than \$1 billion.

- The United Nations reports that the global market for environmental products and services is projected to double from \$1.37 trillion per year at present to \$2.74 trillion by 2020.
- An estimated 2.3 million people worldwide have found new jobs in the renewable energy sector, the UN says. It estimates that the number of jobs in wind power will rise to 2.1 million and jobs in solar energy will grow to 6.3 million by 2030.
- Improving the energy efficiency of buildings could generate as many as 3.5 million green jobs in Europe and the United States, with much higher potential in developing countries.
- The world economy is beginning to produce “solar billionaires.” There are at least three today: Shi Zhengrong of China, founder of Suntech Power Holdings Company; Frank Asbeck, founder of Germany’s SolarWorld; and Xiaofeng Peng, head of LDK Solar in China.
- The demand for hybrid and fuel-efficient cars has increased so rapidly that General Motors is in a race with Toyota to produce market-ready next-generation electric vehicles by the end of this decade. Ford has announced it’s converting two of its manufacturing plants from trucks—previously its bestseller—to the production of more fuel-efficient cars.

- Two of America's most successful oil tycoons now are betting on renewable energy. T. Boone Pickens is building the world's largest wind farm in Texas and is buying \$58 million in TV time to tell America that we can't "drill our way out" of the energy crisis. Denver billionaire Philip Anschutz is developing a two-thousand-megawatt wind project in Wyoming and has acquired rights to build a \$3 billion, nine-hundred-mile transmission project that will move wind-generated power to Southern California, Las Vegas, and Phoenix.
- Shareholders in America's big oil companies—for example, members of the Rockefeller family whose forebears founded what is now Exxon Mobil—are pressuring CEOs to invest more in the renewable energy resources of tomorrow. (While a few oil companies such as British Petroleum are investing in renewables today, those investments reportedly amount to less than 1 percent of their capital spending.)
- Wind is making money for lesser tycoons, too. Farmers, ranchers, and communities in rural America are discovering that the wind is a lucrative cash crop. Farmers are leasing sites for wind turbines at thousands of dollars per turbine per year. Wind power is generating new income for states and localities, too. GE Energy Financial Services estimates that wind projects capable of generating five thousand megawatts of electricity went on line in the United States last year. The plants are providing \$6 million annually in local property taxes, \$15 million annually in state income taxes, 17,000 construction-related jobs, and 1,600 long-term jobs. Although wind power provides only about 1 percent of America's electricity today, the U.S. Department of Energy says it can provide 20 percent of our power in the years ahead.

- The future is just as bright for solar power. McKinsey & Company, the respected global consulting firm, predicts that over the next three to seven years, the unsubsidized cost of solar energy will compete with conventional electricity in California and the southwestern United States. The company projects that solar electricity will cost as little as ten cents a kilowatt-hour by 2020, down from thirty-six cents today.

Investing in the Future

The transition to the twenty-first century economy won't be cheap. It will require massive public and private investments. For example, DOE figures it would cost at least \$43 billion to obtain 20 percent of the nation's projected electric demand from wind power by 2030.

Billions of dollars in public and private investment will be needed to upgrade the nation's aging electric infrastructure so that it is more reliable and efficient and able to more effectively move solar and wind energy around the country.

Other types of infrastructure also need upgrading. Today, America is investing only 2.4 percent of its gross domestic product in infrastructure—half of Europe's investment rate, and only a third of China's. The American Society of Civil Engineers has estimated that \$1.6 trillion is required nationwide for infrastructure repairs. A national commission estimates that the U.S. government should invest at least \$225 billion each year for the next fifty years to modernize our transportation systems. The U.S. Environmental Protection Agency estimates that the nation needs to spend \$11 billion more each year over the next twenty years to fix our water systems.

But these are investments America cannot afford to avoid. Our national objective should be to channel public and private capital to the technologies that will unleash the new economy. Without

forward-looking investment, the United States will have runaway carbon emissions and the infrastructure of a third-world country, threatening public safety and stunting our economic growth. For example, flight delays are costing at least \$15 billion each year; traffic congestion costs \$78 billion annually. Inefficient buildings are causing an estimated \$58 billion annually in worker sick time. Extreme weather events caused losses of about \$50 billion worldwide in the first half of 2008, and that trend is expected to become the new norm as a result of climate change.

On the other hand, a campaign to rebuild America's infrastructure would create 47,500 jobs for every \$1 billion invested while providing the opportunity to make our roads, bridges, electric grid, and waterworks more resilient against the predicted impacts of climate change. These are jobs that can't be exported overseas.

The best-available green building technologies could increase labor productivity by \$200 billion each year. If Pickens is correct, clean, domestic energy technologies will help prevent the transfer of \$10 trillion out of the U.S. economy over the next decade—the hemorrhage he estimates we'll experience if we continue importing oil at current levels and prices. And by emphasizing the use of low-carbon and environmentally friendly materials, an effort to rebuild America would create new green jobs and new markets for the green products that will support the twenty-first century economy.

The Time Is Now

The new President must make economic transformation an urgent national mission and must rally Congress, business, private investors, and state and local government officials to join the campaign. There is no more time to lose. Each year we postpone the transition, the window of opportunity closes farther as American

competitiveness declines, the costs of climate change and fossil energy dependence grow, and other nations capture the huge global market for clean technologies. The President should:

- Use state-of-the-art communications technology to engage the nation in a conversation about the future. New technologies are available to hold National Town Meetings that help citizens envision what a postcarbon America would be like—homes, workplaces, vehicles, communities. Millions of Americans can engage in real-time voting on their preferences, using available computer equipment. To win broad support for economic transformation, the administration can help the American people own the vision of that positive new society, and to own it they must help create it.
- Establish an Energy Security and Climate Stabilization Board consisting of America's top academic, financial, corporate, nonprofit, and government leaders, and charge the board with framing a road map to the new economy. The board would be a cross between President Roosevelt's War Production Board created in 1942 "for the purpose of assuring the most effective prosecution of war procurement and production," and President Clinton's President's Council on Sustainable Development. The board should recommend the market mechanisms, regulatory reforms, trade policies, and barrier-busting initiatives that will unleash economic transformation.
- Direct that where they have the legal authority to do so, agencies should retarget their grant, loan, and loan guarantee programs to capitalize low-carbon buildings, vehicles, communities, and energy systems. The loan guarantee programs

administered by the Department of Energy and the Department of Agriculture's Rural Utility Service, for example, should give highest, and perhaps exclusive, priority to renewable energy projects. Where legal authority for retargeting does not now exist, the administration should work closely with Congress to ensure that taxpayer investments in infrastructure serve the new economy, not the old one.

- Champion innovation and small business development. The President should propose that \$1 billion be allocated over five years to provide "platinum carrot" awards for breakthroughs in transformative technologies such as better batteries, plug-in hybrid vehicles, and ethanol made from nonfood crops. Because small businesses are America's principal source of new jobs and patents, the President should direct the U.S. Small Business Administration to beef up its programs to help veterans, women, and minorities start green enterprises.
- Direct agencies to use their power as consumers to open new markets for green products, from paper and paper clips to trucks and tanks. With more than 500,000 buildings, 600,000 vehicles, and \$18 billion in energy expenditures each year, the federal government can become a huge, sustained customer for green energy and products, spurring industries to invest in new plants and equipment. The government can require that its supply chains comply with standards to reduce their carbon footprints; it can require that state and local agencies do the same when they receive federal funding.

In a recent report, the McKinsey Global Institute concluded that to achieve necessary reductions in carbon emissions while maintaining

economic growth, the world needs a “carbon revolution” comparable to the Industrial Revolution—but in one-third the time. The costs are manageable and we have the technologies we need, the institute said.

We also have the talent. The Brookings Institution confirms that although America’s global leadership in innovation is slipping, we are still the world’s innovation leader, producing far more patents, employing more Nobel Laureates, and boasting more top universities than any other nation. A growing number of U.S. businesses, including some of the nation’s largest corporations, are moving ahead with climate action.

This is a time that merits superlatives. It is a moment of extraordinary opportunity, arguably the greatest challenge yet for America’s genius and entrepreneurial spirit. It tests our character and our commitment to the nation’s future.

To pass the test and capture the opportunity, we must meet the job of economic transformation head-on. We need new policies and institutions, smart investments, and a national commitment for change. And we need elected leaders who are willing to help the nation step boldly into this new century.