Security
Opportunity
Stewardship

PCAP

PRESIDENTIAL CLIMATE ACTION PROJECT

CLIMATE ACTION PLAN IN BRIEF

Security, Opportunity, Stewardship

The principal challenge facing the 44th President of the United States is to rally the nation to create a new 21st century economy. The United States, like other industrialized nations, has arrived at the cusp between two eras. The outgoing era has been powered largely by carbon-rich fossil fuels with an operating ethic of dominion over natural systems. The incoming era will embrace the responsibility of stewardship and will be powered by carbon-free and largely renewable resources.

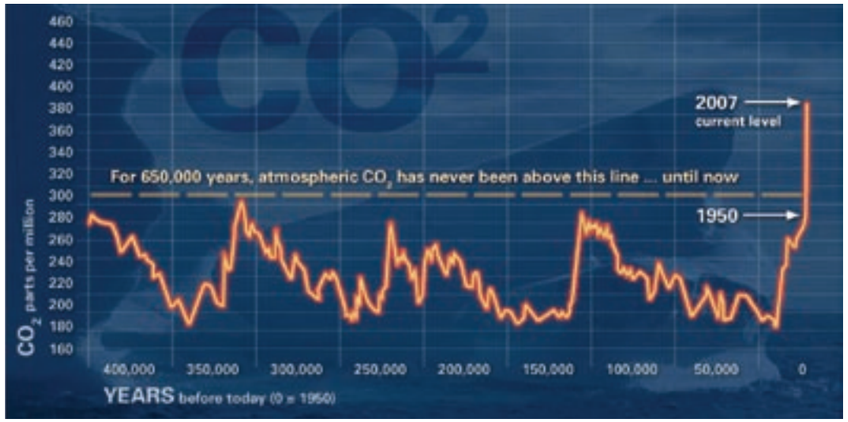
How quickly we make this transition will determine the future of our country and the quality of life of our children to a degree not true of any earlier generation. If we continue investing time and resources in life-support for the old economy, we will condemn the nation to a future of international resource conflicts and the catastrophic consequences of unmitigated global climate change. We will sentence future Americans to lives of coping rather than hoping, and surviving rather than flourishing.

If we embrace and invest in the new economy – and do it with unprecedented speed – we will create an opportunity society, a renewed America that is not only more vibrant, with new industries and jobs, but also more secure.

This is not an easy time but it is rich with promise. If we embark on the path of sustainability, help developing nations leapfrog from poverty to clean prosperity and build the new skills and industries that equip us for the post-carbon world, we will accomplish what author Thomas Berry calls the Great Work of our generation.

At every key turning point in our history – the American Revolution, the Civil War, the World Wars of the 20th century – the living generation has put itself on the line for future generations. Now we are being tested.

Americans sense it. There is a reason so many of us have responded to the theme of change during the 2008 presidential election. This is our moment. And although the transition from the old to the new will require action by every one of us, it also will require bold leadership from the next president.



In June 2008, 20 years after he first warned Congress about the threat of global warming, Dr. James Hansen returned to Capitol Hill to report that the Earth is running out of time.

From his post as the director of NASA's Goddard Institute for Space Studies, Hansen has watched the accumulating evidence of climate change and years of insufficient leadership from the federal government. He didn't mince words in his anniversary talk to Congress:

"We have used up all the slack in the schedule for actions needed to defuse the global warming time bomb," Hansen told the House Select Committee on Energy Independence and Global Warming. "The next president and Congress must define a course next year in which the United States exerts leadership commensurate with our responsibility for the present dangerous situation."

He is not the only one who hears the time bomb ticking. Leading scientists from around the United States and world are sounding the same alarm.

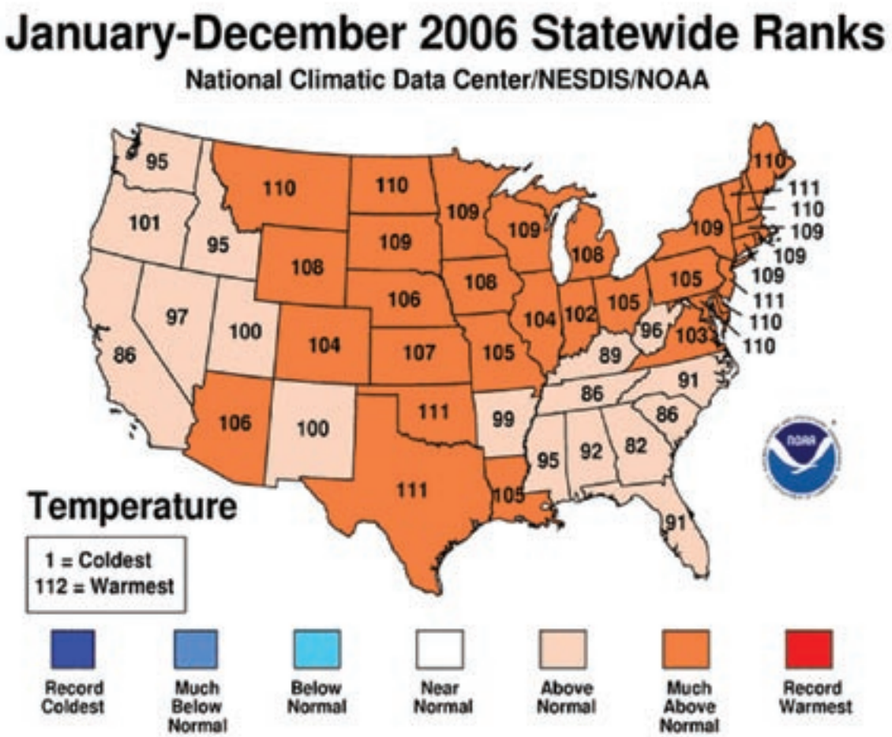
- In 2006, the Board of Directors of the American Association for the Advancement of Science (AAAS) warned, "The scientific evidence is clear: global climate change caused by human activities is occurring now, and it is a growing threat to society…The pace of change and the evidence of harm have increased markedly over the last five years. The time to control greenhouse gas emissions is now."
- According to past AAAS president and Woods Hole Research Center Director Dr. John Holdren, "Climate change is not a problem for our children and our grandchildren – it is a problem for us. It's already causing harm."
- "It's extremely clear and is very explicit that the cost of inaction will be huge compared to the cost of action," says Jeffrey Sachs, head of Columbia University's Earth Institute. "We can't afford to wait for some perfect accord to replace Kyoto, for some grand agreement. We can't afford to spend years bickering about it. We need to start acting now."
- Dr. Rajendra Pachauri, chairman of the Intergovernmental Panel on Climate Change (IPCC), warns: "If there's no action before 2012, that's too late. What we do in the next two to three years will determine our future. This is the defining moment."
- "We are at a crossroad," says U.N. Secretary General Ban Ki-moon. "One path leads to a comprehensive climate change agreement, the other to oblivion. The choice is clear."

Lyndon Johnson may have been the first U.S. president to be warned officially about the dangers of climate change. In 1965, the President's Science Advisory Committee reported that the burning of fossil fuels would "modify the heat balance of the atmosphere to such an extent that marked changes in climate, not controllable through local or national efforts, could occur." More than 40 years later, fossil fuels remain America's principal source of energy and greenhouse gas emissions continue growing at a dangerous pace.

A simple and clear message emerges from the esoteric scientific data: Climate change is real; it is caused principally by the burning of fossil fuels; it already has begun; we have the tools to address it; we are rapidly running out of time.

The clock is winding down on a second, closely related vulnerability – the world's dependence on oil. The approaching peak in global oil production combined with rapidly rising world demand is a recipe for economic instability and conflict.

It was in this climate of growing concern for the future that the Presidential Climate Action Project began in 2006. Its mission has been to develop a bold, science-based agenda for the 44th President of the United States to jump-start federal leadership on climate and energy security, within 100 days of taking office.



Climate action's most critical goal is keeping the Earth's temperature from rising more than 2°C (or 3.6° Fahrenheit) above pre-industrial levels. Above that temperature, climate scientists say, we are likely to see an end to the 20,000-year period that has been so hospitable to life as we know it. The Earth has already warmed 0.8°C and its average temperature is destined to rise 0.5-1.0°C more because of greenhouse gases already in the atmosphere. There is no margin for inaction.

"Climate change can act as a threat multiplier for instability in some of the most volatile regions of the world, and it presents significant national security challenges for the United States…The increasing risks from climate change should be addressed now because they will almost certainly get worse if we delay."

—*National Security and the Threat of Climate Change, Center for Naval Analysis*

The IPCC has concluded that to have even a 50-50 chance of avoiding runaway climate change, we must keep atmospheric concentrations of greenhouse gases at 450 parts per million Dr. Hansen now estimates that we need much lower concentrations, in the range of 300-350 parts per million.

So far, we are headed in the wrong direction. Atmospheric concentrations already are at 385 parts per million and climbing at a rate of 2 parts per million each year. Energy-related carbon dioxide emissions in the United States grew 1.6 percent in 2007.

If we continue with business as usual, U.S. emissions will climb 36 percent above 1990 levels by 2030, according to the U.S. Energy Information Administration (EIA). In a high-growth scenario, U.S. emissions will climb nearly 50 percent, according to the EIA.

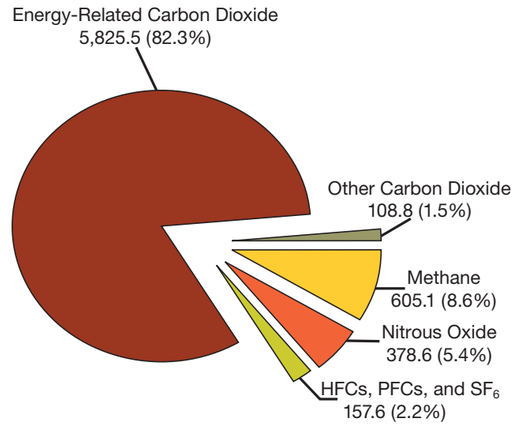
What kind of response does this require? McKinsey & Company, the global consulting firm, estimates global carbon productivity (economic output per unit of greenhouse gas emissions) must be increased more than 10-fold over the next four decades. "This is comparable in magnitude to the labor productivity increases of the Industrial Revolution," the company says. "However, the carbon revolution must be achieved in one-third of the time."

THE PRESIDENT-ELECT CAN…

- During the transition, convene a national meeting of leading governors and mayors to frame an Intergovernmental Climate Action Plan that coordinates the powers of all three levels of government.

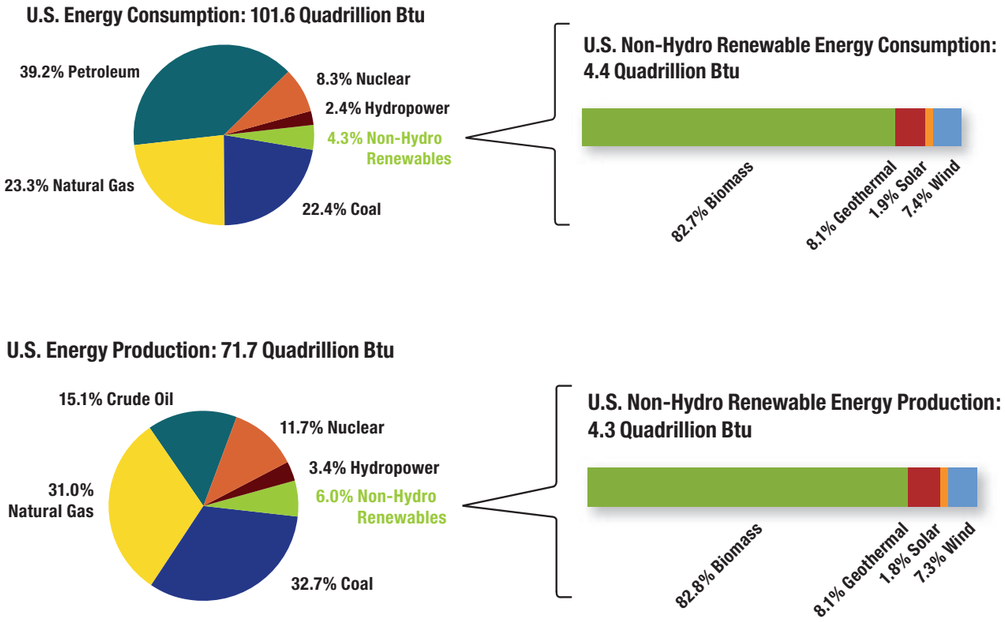
THE PRESIDENT CAN…

- Establish the goal of reducing America's greenhouse gas emissions 25 percent to 30 percent below 1990 levels by 2020.
- Send Congress a cap-auction-invest bill that will reduce net U.S. greenhouse gas emissions at least 80 percent by mid-century with a carbon-trading system that auctions allowances "upstream" to the producers of coal, oil and natural gas.
- Direct the EPA to expedite its decision and rulemaking to regulate greenhouse gas emissions under the Clean Air Act.
- Require agencies to evaluate the climate impacts of federally funded projects under the National Environmental Policy Act.
- Restore integrity to federal climate science by directing agencies to prohibit political interference in the work of government scientists and by appointing America's best experts to climate-critical federal positions.
- Increase resources for the government's earth sciences programs. We need a Mission to Planet Earth more than a Mission to Mars.



Source: Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2006* (Washington, DC, November 2007)

America's energy challenge also requires rapid response. We must move from carbon-intensive to low-carbon resources faster than any previous major energy transition. Today, our biggest domestic energy resource – coal – is also our dirtiest. Our principal fuel for transportation – oil – has changed from an asset to an addiction. If global oil production hasn't peaked already, it soon will – at a time when world demand is rapidly rising. That means higher prices, tighter supplies and a future of conflicts between nations competing for the same finite resource.



Graphics: U.S. Department of Energy

COAL: Coal produces 80 percent of the emissions from America's electric power generation. The environmental impacts of coal production extend well beyond the power plant. Coal produces greenhouse gases as it is mined and transported. Some of the industry's extraction techniques, such as mountaintop removal in Appalachia, are environmentally devastating.

The future of America's coal industry depends on "clean coal" technology – a process in which carbon is removed from coal and sequestered deep underground – but the technology does not yet exist and it's more than a decade away, assuming its problems can be solved. Researchers are not yet sure that large volumes of carbon dioxide can be safely and permanently stored underground. There are questions, too, about the competitiveness of electricity generated with carbon capture and sequestration (CCS). The U.S. Department of Energy (DOE) estimates CCS will increase the cost of electricity by 35 percent while electricity from solar, wind and other resources becomes less expensive.

In the meantime, given the urgency of cutting carbon emissions, we must avoid building new conventional coal-fired power plants. Each new plant locks us in to a half century of more carbon emissions. Using coal is tempting – the United States has 27 percent of the world's reserves – but unless it becomes a carbon-free fuel produced in environmentally responsible ways, it is not the answer to America's energy and climate challenges.

THE PRESIDENT CAN...

- Direct the EPA to re-establish full environmental regulation of coal production, including mountaintop removal and its impacts on waterways, groundwater, carbon sequestration services from woodlands and lost potential for wind generation.
- Direct the DOE to evaluate the feasibility of switching conventional coal plants to natural gas based on emerging estimates of domestic natural gas supplies.
- Direct the DOE to closely monitor and report annually on the results of clean coal research, including the projected life-cycle costs of coal-fired generation with carbon capture and sequestration and with carbon pricing, relative to the projected costs of electricity from energy efficiency and renewable-energy technologies.

PETROLEUM: Oil is sapping our wealth. The DOE calculates that over the past five years, our dependence on oil – foreign and domestic – has cost the economy $1.7 trillion, including $1 trillion transferred to oil-exporting nations. The direct economic cost of oil dependence is expected to be $560 billion this year, reducing GDP by 1.5 percent.

The United States imports 66 percent of its oil today – more than double our imports at the time of the first Arab oil embargo in 1973-74. Petroleum imports account for one-third of America's trade deficit. Nearly 40 percent of our imports come from potentially hostile or unstable regimes.

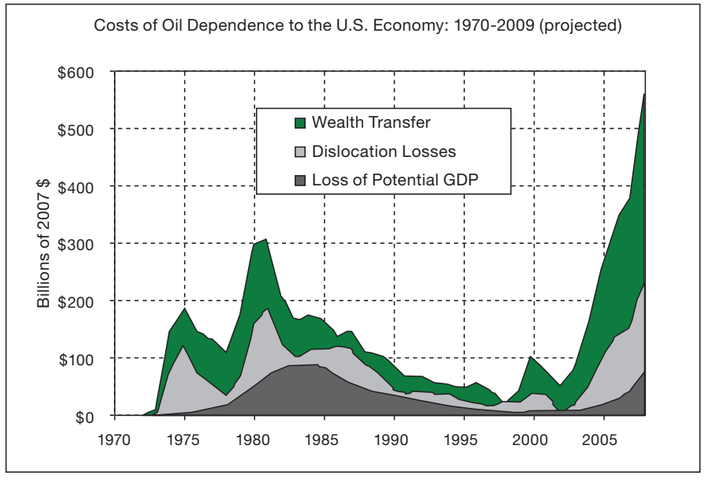
More drilling at home is not the answer to high oil prices or to energy dependence. You cannot cure an addiction by switching suppliers. U.S. oil production peaked in the 1970s and we have only 3 percent of the world's oil reserves. More importantly, the supply and price of oil aren't controlled by the United States, but by the global market. The Organization of Oil Producing Countries (OPEC) can offset any increase in U.S. drilling simply by reducing its members' production.

As for energy independence, there's only one way to achieve it: Engage in a *global* effort to reduce oil consumption. The United States could end all oil imports tomorrow and its economy would still be vulnerable to oil shocks if supplies were cut off to any of our major trading partners. We are part of a global economy.

The best way to get more oil is to use less of it. The Consumer Federation of America estimates that energy efficiency, conservation and alternative fuels can deliver 50 times more oil to the marketplace than expanded domestic production. If we want energy independence, we must redouble our efforts to develop alternative fuels, more efficient vehicles, more transit-friendly urban design and more efficient mobility options such as mass transit and high-speed rail. And, we must partner with other importing nations to share best technologies, policies and practices.

DIRECT ECONOMIC COSTS OF U.S. OIL DEPENDENCE, 1970-2008

Source: U.S. Department of Energy



THE PRESIDENT CAN…

- Set the goal to cut America's petroleum consumption in half by 2020.
- Establish a CAFE standard of 50 miles per gallon by 2025.
- Increase by a factor of 10 the government's investment in energy research, including better vehicle efficiency, battery technology and cellulosic (non-food) ethanol.
- Advocate new transportation policies to reduce the nation's vehicle miles traveled 20 percent by 2020; change the top priority of federal transportation funding from building roads to creating more mass transit and less reliance on automobiles.
- Propose that the world's oil-importing nations create an Organization of Petroleum Importing Countries (OPIC) to collaborate on technologies and policies to reduce their dependence on oil.
- Direct the DOE to review the objectives of the Asia-Pacific Technology Partnership on Clean Development to ensure they include petroleum withdrawal as well as climate protection.

NUCLEAR AND UNCONVENTIONAL ENERGY RESOURCES: As we search for new forms of energy, we need problem-solving rather than problem-switching. For example, nuclear power is carbon-free at the power plant but it creates other serious problems, including nuclear waste, increased danger of nuclear weapons proliferation and tempting targets for terrorists. Liquid fuels from coal could replace some of our oil imports, but at an unacceptably high cost in carbon emissions and water consumption. The same is true for oil from shale. On the other hand, recent research indicates that the United States has more natural gas resources than previously believed, in the form of gas shale deposits. New drilling and extraction technologies are making the deposits more accessible. With proper environmental practices, shale gas may be a way to replace our dirtiest fossil fuel with our cleanest.

THE PRESIDENT CAN…

- Oppose licensing of additional nuclear power plants in the United States until the problems of permanent waste storage, proliferation and safety are resolved.
- Avoid unacceptable or unanticipated problem-switching by directing the DOE and the EPA to develop a National Climate and Energy Security Subsidy Standard. Under the standard, a technology, resource or industry would have to meet minimum requirements for net life-cycle energy, climate, environmental and economic benefits before the administration would support public subsidies.

ENERGY EFFICIENCY AND RENEWABLE ENERGY: Energy efficiency is the nation's largest energy resource and the fastest and cheapest way to reduce greenhouse gas emissions. It has been America's principal source of "new" energy for the past 35 years and we've only begun to realize its potential.

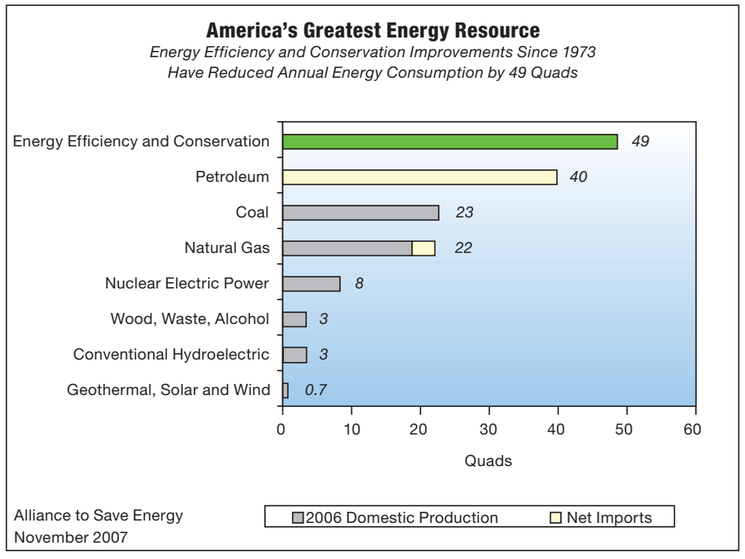
In electric generation alone, the United States wastes more energy than Japan uses to power its entire economy. The American Council for an Energy Efficient Economy estimates the U.S. can cost-effectively reduce energy consumption by 25 to 30 percent or more over the next 20 to 25 years.

Energy efficiency can help all consumers – individuals, families, communities, businesses and government – save a substantial amount of money. It will be an important tool in helping those least able to cope with rising energy costs.

THE PRESIDENT CAN...

- Challenge the nation to improve economy-wide energy efficiency 50 percent by 2030.
- Direct the DOE to develop model codes for zero-net-energy performance in new commercial buildings by 2025 and in new residential buildings by 2030.
- Dramatically increase the DOE's Weatherization Assistance Program (PCAP recommends $1.4 billion annually) for low-income families to help insulate them from rising energy costs.
- Provide communities with new resources for energy efficiency by urging Congress to fully fund the Energy Efficiency and Conservation Block Grant program authorized in the Energy Independence and Security Act of 2007.

U.S. ENERGY EFFICIENCY IMPROVEMENTS SINCE 1973



America's renewable energy resources are the second part of our one-two punch against climate change and economic instability. Renewables provided only 10 percent of America's installed energy capacity and 9 percent of total electric generation in 2007, but they are the fastest growing sources of electric power in the U.S. today.

U.S. renewable energy installations nearly doubled between 2000 and 2007. In 2007, investments in renewable energy projects totaled more than $13 billion in the United States. During the first half of 2008, at least 17,000 megawatts of wind, solar and geothermal energy were under construction in the United States. Wind power capacity grew 45 percent between 2006 and 2007; energy capacity from solar photovoltaics grew 40 percent.

According to the DOE, the U.S. could obtain 20 percent of its electricity from wind power alone by 2020 with major investments to improve the transmission system. McKinsey & Company predicts that over the next three to seven years, the unsubsidized cost of solar energy will be competitive with conventional electricity in California and the Southwestern United States. The Massachusetts Institute of Technology estimates that geothermal projects can provide 100 gigawatts of cost-competitive, clean electric power over the next 50 years.

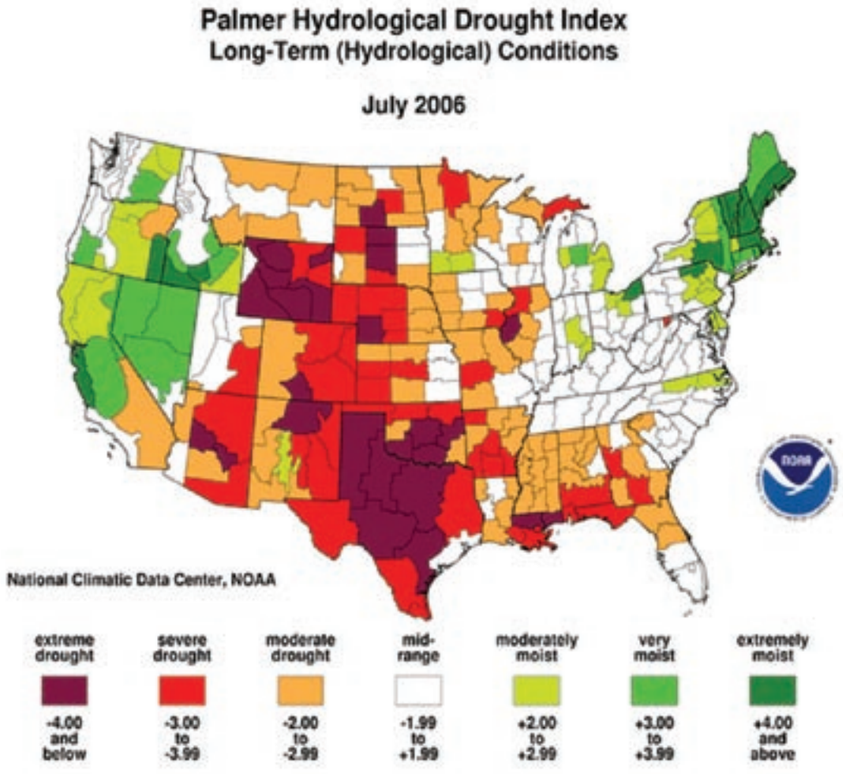
THE PRESIDENT CAN...

- Propose to increase the national energy research budget to $30 billion annually for 10 years and to focus research and development on renewable energy technologies, including methods to store solar and wind power.
- Set a national goal to generate 30 percent of American's electricity from renewable technologies by 2020.
- Challenge state regulators to meet the nation's need for electric power without building any new conventional coal-fired power plants.
- Direct the DOE to work with state regulators, national laboratories, the Federal Energy Regulatory Commission and others to develop standards and plans for a "smart grid" transmission system.

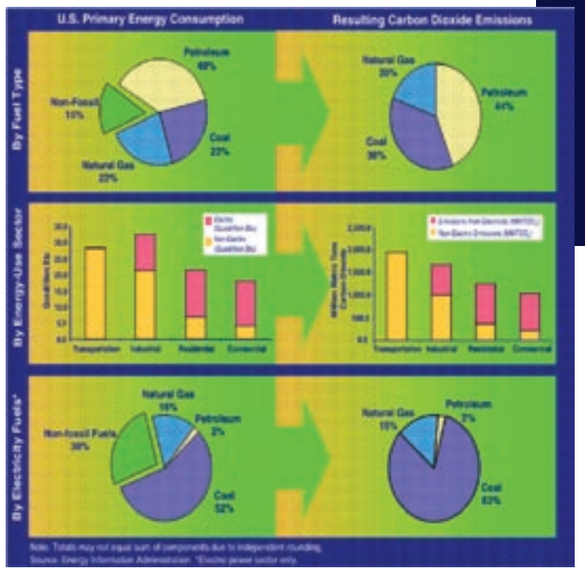
STEWARDSHIP

Stewardship is the practice of managing someone else's assets. In the context of climate change, it is the protection of the "commons" – the natural resources and ecosystem services that belong to us all and on which future prosperity depends.

A substantial body of federal laws and international agreements make stewardship an affirmative obligation of the President of the United States, and recognize that the obligation extends to protecting the assets available to future generations. The National Environmental Policy Act requires federal officials to consider the environmental impact of their decisions to "encourage enjoyable and productive harmony between man and his environment" and "to fulfill the responsibilities of each generation as trustee of the environment for succeeding generations." Under the United Nations Framework Convention on Climate Change, the U.S. has pledged to "protect the climate system for the benefit of present and future generations of mankind."



Those responsibilities are not being fulfilled today. In recent years, important environmental protections have been rolled back or ignored in the United States. Globally, the Millennium Ecosystem Assessment, conducted by 1,300 experts from 95 nations between 2001-2005, concluded that 60 percent of the ecosystem services that support life on Earth are being degraded, causing "irreversible loss in the diversity of life on earth." The Intergovernmental Panel on Climate Change estimates that 20 to 30 percent of the plant and animal species that scientists have studied so far are at risk of extinction from global warming. Large and essential environmental systems – the rain forests that serve as the planet's lungs, the oceans that provide livelihood for so many of the world's people, and the atmosphere – are under siege.



THE PRESIDENT CAN...

- Establish the policy that the atmosphere is a public commons owned by all and that federal employees are its trustees, with the duty to protect it.
- Direct federal agencies with stewardship responsibilities to inventory and map environmental resources and ecosystem services in the U.S., identify the potential impacts of climate change and propose improvements in federal programs and policies.
- Create special institutions to focus on key stewardship issues, including an Earth Systems Sciences Agency and a Department of Oceans.
- Urge Congress to support the Global Warming Wildlife Survival Act to mitigate the harmful impacts of climate change on animal habitats and species.
- Propose that the United Nations create an Intergovernmental Panel on Ocean Ecology, similar in scope to the Intergovernmental Panel on Climate Change, to focus the attention of the world's leading scientists on the challenges facing the world's oceans.

INTERNATIONAL LEADERSHIP

During the President's first year in office, the international community will engage in intense deliberations on an agreement to succeed the Kyoto Protocol, which expires in 2012. Nations are scheduled to meet in Copenhagen in December 2009 to work on a new agreement. Before then, at least three two-week negotiating sessions will take place – in March/April, June and August/September 2009.

While the U.S. is not a party to the Kyoto Protocol, the United States consented in December 2007 to collaborate in the process of developing a post-Kyoto Protocol climate action plan. The emerging international consensus is that industrialized countries must collectively cut their greenhouse gas emissions 25 to 40 percent below 1990 levels by 2020. Today, U.S. emissions are 40 percent *above* 1990 levels.

Clearly, the movement to a post-carbon economy cannot be incremental. It must be revolutionary and transformative. And that will require bold leadership at the highest levels of the public and private sectors in all nations, including the United States.

To regain credibility in the international community, the President and Congress first must make a convincing, concrete commitment to address climate change at home. Then, the President must constructively and proactively reengage the international community during 2009 as nations search for a new global agreement.

THE PRESIDENT CAN…

- Commit during his inaugural address to join other nations in holding the increase in the Earth's temperature to no more than 2°C above pre-industrial levels.
- Early in 2009, meet with key congressional leaders to agree on the actions the U.S. government will take before Copenhagen to show concrete progress on domestic climate action.
- Invite representatives from key congressional committees to attend and monitor international negotiations, building a foundation for Senate ratification of future international climate agreements.
- Negotiate a bilateral agreement with China in 2009 to collaborate on reducing both nations' greenhouse gas emissions and to demonstrate cooperation between the developed and developing world.

INVESTING IN A NEW 21ST CENTURY ECONOMY

If global climate change is the greatest challenge of our time, it is also the greatest opportunity. As former President Bill Clinton put 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.

The fundamental mission for the next president is to lead America in building a 21st century economy. Global warming, roller-coaster energy prices, the decline in American prestige and competitiveness, even terrorism, are symptoms that the old economy is dysfunctional and obsolete.

In this new century, we face new realities. We have reached the limits of the Earth's capacity to absorb the growing human footprint. We are reaching the limits of finite resources such as oil and gas. Climate change is a growing concern for national security, threatening instability in some of the world's most volatile regions. Its damage to public health and safety, infrastructure and agriculture are liabilities we cannot afford. The geopolitics of oil, including the U.S. military presence in Islamic holy lands, leads to Faustian bargains that compromise America's values and become a recruitment tool for terrorists. Part of the money we spend every time we fill up our gas tanks goes to countries that support terrorist organizations.

In an economy fueled by renewable resources, no one could cut off our supply of sunlight or wind. We would not need to go to war to secure supplies. Price shocks would become a distant memory, because sunlight and wind are free.

The first green shoots of economic transformation already are appearing at home and abroad. The United Nations reports that 2.3 million people have found jobs in renewable energy industries in recent years. Global employment in wind and solar energy alone is expected to reach more than 8 million by 2030. We are experiencing a "gold rush of new investment into renewable power," the United Nations says, with capital investments increasing 60 percent from 2006 to 2007.

The gold rush is just beginning. Renewable energy investments are expected to reach $450 billion annually between now and 2012, and more than $600 billion annually from 2020 to 2030. The global market for environmental products and services is expected to double to $2.74 trillion by the end of the next decade. In short, the global demand for clean energy is creating an enormous global market opportunity that can mean new industries and jobs if the United States chooses to compete.

The DOE reports that renewable energy technologies are booming in the United States

as well, with project investments reaching more than $13 billion in 2007. The Center for American Progress estimates that a $100 billion investment over two years – about one year's worth of revenue under the carbon trading proposals being considered by Congress – would create 2 million high-quality green jobs. The Apollo Alliance – a coalition of business, labor, environmental and local leaders – estimates that a $500 billion investment over 10 years will create 5 million new green jobs. A national push for renewable energy, alternative transportation fuels and energy efficiency would create 2.5 million green jobs in U.S. metropolitan areas over the next 10 years, 3.5 million jobs in 20 years and 4.2 million jobs in 30 years, according to the U.S. Conference of Mayors.

Some experts and entrepreneurs regard green energy as the next IT revolution. In September 2008, Eric Schmidt, chairman and CEO of Google, called for a government stimulus package that would help the nation obtain 100 percent of its electricity from renewable resources by 2030.

The President should enlist the American people in a World War II-scale effort to build the new economy. At every level of society, we must redirect our capital to an economic revolution that delivers peace, prosperity, stability and security in the 21st century.

In the Manhattan Project, the U.S. government invested an average of $4 billion annually (in 2007 dollars). In the Apollo Project, taxpayers invested $7 billion per year, on average. After the oil shocks of the 1970s, the Department of Energy invested $7 billion annually. Today the DOE invests an average of only $3 billion each year in research for energy technologies (fossil and nuclear as well as renewables and efficiency).

THE PRESIDENT-ELECT CAN…

- During the transition, convene the nation's top experts in climate, energy, environment, economics, labor and business to create a roadmap to America's 21st century economy.

THE PRESIDENT CAN…

- Continue involving the nation's top experts in economic renewal after inauguration by creating an Energy Security and Stabilization Board – a cross between Franklin Roosevelt's War Production Board and Bill Clinton's President's Council on Sustainable Development.
- Use the bully pulpit to call for public and private investments in energy efficiency, renewable energy, climate adaptation and the modernization of infrastructure to stimulate the economy with new businesses and jobs.
- Work with Congress to phase out taxpayer subsidies of the coal, oil and gas industries and redirect the funds to develop and commercialize emerging energy efficiency and renewable energy technologies.
- Use existing federal grant, loan and loan guarantee programs to leverage private investments in a post-carbon nation, including special economic development assistance to those businesses and communities hit hardest by the transition to sustainable energy.
- Work with Congress to fully fund the provisions of the Energy Independence and Security Act of 2007, including the Green Jobs initiative – $125 million to train 30,000 young people annually in green trades.
- Strengthen the U.S. Small Business Administration's assistance to small companies that manufacture, install and service carbon-free energy technologies.
- Offer $1 billion over five years in "platinum carrot" awards for breakthrough technologies that enhance America's energy and climate security.

FINDING CAPITAL

At a time of record national debt, a record budget deficit, a slumping housing market, an unprecedented government bailout of financial institutions and the American Dream in retreat, how can we expect to pay for the initiatives proposed in the PCAP?

First, we should correctly frame the question. Government investments in the new energy economy are just that – *investments*. They promise substantial economic return as we improve national energy efficiency, reduce the transfer of American wealth to oil-producing nations and end our dependence on finite resources destined to increase in price and decline in supply.

The average price of a barrel of crude oil was under $12 a decade ago; in 2008, it climbed above $140. Ten years ago, the average price of residential natural gas was $7.45 per thousand cubic feet. In the first 10 months of 2007, the average price was $14.49.

Second, the investment must be made not just by taxpayers, but by the private sector as well. Federal policy should leverage much larger investments by state and local governments, the business and capital communities and individual consumers.

Third, when we calculate the public-private cost-benefit ratio of climate action, we must count the high cost of doing nothing. The anticipated damages from unmitigated global warming are extreme and already have begun, manifesting in the United States in drought, wildfire, extreme weather, pests and public health problems.

Much more research needs to be done, but a series of analyses by the University of Maryland is helping to bring the cost issue into clearer focus.

Reporting that "the true economic impact of climate change is fraught with hidden costs," the University concludes:

- The direct costs of not taking on the challenges posed by climate change are typically not calculated. The indirect effects are considered even less frequently, yet can be substantial.
- The effects will be unevenly distributed, but will be felt by the entire nation and by all sectors of the economy.
- Essential infrastructures for reliable services and high standards of living and health (such as water supply and water treatment) will be impacted.
- Climate change will place immense strains on public sector budgets. Various estimates project the maintenance of Alaska's infrastructure will cost $10 billion; property damage from rising sea levels will cost as much as $170 billion by 2100; and upgrading water treatment facilities will cost up to $2 billion over the next 20 years.
- Secondary effects of climate impacts can include higher prices, reduced income and job losses.

One of the many lessons to be learned from the meltdown of America's financial markets in September 2008 was that policy makers must do a much better job anticipating economic crises and must take action to prevent them. Climate change and peak oil are shocks we can see coming. We have been warned and we are seeing their first effects. We must invest now to minimize the damage, while seizing the enormous positive opportunities a 21st century economy presents.

Two federal insurance programs are harbingers of the cost of climate disruption. From 1980 to 2005, taxpayer exposure under the Federal Crop Insurance Program increased 26-fold to $44 billion. Taxpayer exposure in the National Flood Insurance Program quadrupled, approaching $1 trillion in 2005. The program had to borrow more than $17 billion from the Treasury to pay claims following Hurricanes Katrina, Rita and Wilma.

THE PRESIDENT CAN…

- Require that Iraq pay for its own reconstruction. Iraq was expected to earn $156 billion in oil revenues between 2005 and the end of 2008, and by mid-2008 had amassed a budget surplus of $79 billion.
- Cut U.S. dependence on oil. Keeping oil dollars at home will produce an enormous economic stimulus that creates more disposable income and investment capital in the national economy.
- Use federal aid strategically to leverage private investment. A recent study by Navigant Consulting estimates that the eight-year extension of the federal solar tax credit approved by Congress on October 3, 2008, will result in $232 billion in new investment in the solar industry by 2016. Federal loan and loan guarantee programs should support elements of the low-carbon economy, including energy-efficient homes financed by federal loan and insured loan programs; disaster-resistant buildings assisted by the SBA's disaster loan program; and small businesses that manufacture, use and/or service renewable energy systems with the help of SBA's 7a loan guarantee program.
- Use public funds to leverage state and local government investment. One example worthy of federal emulation has been proposed in California – a bill that gives priority in transportation funding to cities that reduce transportation emissions with high-density development.
- Veto congressional earmarks: Citizens Against Government Waste, which tracks pork-barrel spending in Congress, tallied 9,963 earmarks in 2006 appropriations bills, totaling $29 billion. The 2007 military spending bill contained 2,700 earmarks totaling nearly $12 billion.
- Redirect federal subsidies for fossil and nuclear energy to emerging renewable energy and energy efficiency technologies. The American Enterprise Institute recommends an end to subsidies for energy supply technologies, higher taxes on carbon-rich fuels and more incentives for energy conservation. The Presidential Climate Action Project agrees, but with two exceptions. First, temporary subsidies are justified for research on next-generation technologies that are in the public interest but aren't receiving adequate private investment in research and development. Second, temporary subsidies are necessary when national and economic security demand rapid market-penetration of an energy technology that is not yet cost-competitive, even after a price is put on carbon. As for fossil energy subsidies, it makes no sense to try to correct market signals with carbon pricing while distorting the same signals with subsidies.
- Redirect other non-essential carbon subsidies. The President should direct the Office of Management and Budget to conduct a first-ever inventory of other federal subsidies that encourage greenhouse gas emissions. No matter how sacred, all carbon subsidies should be made transparent and many should be ended to provide more capital for carbon-reducing investments.
- Invest revenues from carbon pricing. Carbon pricing is expected to produce $100 billion to $200 billion in federal revenues in the first year it is fully implemented. Under the Lieberman-Warner bill that reached the Senate in 2008, revenues would reach an estimated $6.1 trillion in current dollars by 2050. Initially, one third of the revenues should be invested in energy efficiency and renewable energy research and deployment; one third should be dedicated to helping families, workers and communities adapt to climate change; and one third should be sent to Americans at the lower end of the income scale. Gradually, 100 percent of the revenues should be returned directly to all Americans.

The campaign for economic, energy and climate security must begin well before the president takes office. The President-elect will have only 11 weeks between the election and inauguration to prepare for leadership. As the Congressional Research Service puts it, "The importance of the transition process cannot be underestimated in determining the ultimate success of an Administration."

The traditional honeymoon period in which a new president has the best opportunity to advance his or her agenda lasts only about six months, from inauguration on January 20 to Congress's August recess. The rush of issues facing the White House team has been compared to "drinking from a fire hose," leaving little capacity for handling more than a few major priorities.

Unfortunately, the 44th President's early agenda will be dominated by inherited problems: two wars, an economic crisis, a record budget deficit, rising healthcare costs. But in addition to these near term problems are the historic opportunities addressed by the Presidential Climate Action Project – creating a rational, and forward-looking national energy policy; establishing U.S. leadership on climate change at home and abroad; and enlisting the American people in the job of economic transformation.

THE PRESIDENT-ELECT CAN…

- Convene America's most experienced experts to advise him on climate, energy and economic policy during the transition. During his transition to the White House, President Kennedy appointed 29 task forces equally divided between foreign and domestic policy. By inauguration, 24 already had completed final reports with specific recommendations for presidential action.
- Meet with Senate leaders and the Office of Personnel Management to expedite clearance and confirmation of the President's key appointments.
- Request that President Bush order a freeze on hiring or appointing new employees.
- Direct the transition team to work closely with senior managers in each federal department and agency to review and advise the President-elect on the recommendations of the PCAP.

THE PRESIDENT CAN…

- Deliver an inaugural address that reignites the national spirit of hope, mission, service and common cause.
- Create a National Energy and Climate Council, equal in stature to the National Security Council and National Economic Council, to coordinate implementation of the PCAP.
- Launch a national conversation, using state-of-the-art web-based citizen involvement tools, to develop a common vision of post-carbon America.
- Set priorities that achieve early success and celebrate those successes to restore the confidence of the American people and make clear the fact that today's challenges are indeed great opportunities and that Washington is capable of principled, bipartisan, effective leadership in the national interest.
- Direct agencies to identify all executive actions and legislation that undermine environmental safeguards, greenhouse gas reductions or energy security and that should be rescinded by the President or

To address energy and climate security, the 44th President and 111th Congress must work together more closely than they have for many years. In the final analysis, these are not partisan issues or issues that require power struggles between the executive and legislative branches. The PCAP has identified the specific powers the President already has to begin leading on energy and climate without further action by Congress – powers that are delegated to the administration in existing law. The PCAP recommends the President make full use of his current authorities to take bold and early action. But the President must also make clear that he respects the boundaries of his current powers and that much that needs to be done will require new legislation. From his first day in office, the President should establish a pattern of collaboration and consultation with the legislative branch.

WINGSPREAD PRINCIPLES ON THE U.S. RESPONSE TO GLOBAL WARMING

Great nations rise to great challenges. Today, no challenge is more critical than global climate change. It reaches to the core of humanity's relationship with the Earth. It tests our capacity to make intelligent changes in our economy, policies and behaviors in the interest of all people and all generations. So how should the United States respond to climate change?

URGENCY:

Global warming is real and it is happening now. Every year that we delay action to reduce emissions makes the problem more painful and more expensive – and makes the unavoidable consequences more severe. Leaders in government, business, labor, religion and the other elements of civil society must rally the American people to action.

EFFECTIVE ACTION:

The U.S. must set enforceable limits on greenhouse gas (GHG) emissions to significantly reduce them within the next 10 years, and should work with other nations to achieve a global reduction in absolute GHG emissions of 80% below 1990 levels by midcentury. Experience proves that voluntary measures alone cannot solve the problem. Aggressive government action, including mandates based on sound science, is imperative and must be implemented now.

CONSISTENCY AND CONTINUITY OF PURPOSE:

Climate stabilization requires sustained action over several decades to achieve deep cuts in greenhouse gas emissions throughout the economy. With its frequent changes of leadership and priorities, however, the American political system does not lend itself to long-term commitments. Leaders in both government and civil society must shape policies and institutions that ensure sustained climate protection.

OPPORTUNITY:

Mitigating and adapting to global warming offer the opportunity to create a new energy economy that is cleaner, cheaper, healthier and more secure. We must awaken America 's entrepreneurial spirit to capture this opportunity.

PREDICTABILITY:

Measures that signal investors, corporate decision makers and consumers of the certainty of future reductions are essential to change the economy.

FLEXIBILITY:

Deep cuts in greenhouse gas emissions demand and will drive innovation. Our economy will innovate most efficiently if it is given the flexibility to achieve ambitious goals through a variety of means, including market-based incentives and/or trading.

EVERYONE PLAYS:

Measures to stabilize the climate must change the behaviors of business, industry, agriculture, government, workers and consumers. All sectors and the public must be engaged in changing both infrastructure and social norms.

MULTIPLE BENEFITS:

Actions to stabilize, mitigate or adapt to global warming should be considered alongside other environmental, economic and social imperatives that can act synergistically to produce multiple benefits – for example, "smart growth" practices that conserve forests and farmland while reducing the use of transportation fuels. Many actions to stabilize climate offer local, regional and national, as well as global, benefits.

ACCURATE MARKET SIGNALS:

The true and full societal costs of greenhouse gas emissions, now often externalized, should be reflected in the price of goods and services to help consumers make more informed choices and to drive business innovation. Policymakers should eliminate perverse incentives that distort market signals and exacerbate global warming.

PRUDENT PREPARATION:

Mounting climatic changes already are adversely affecting public health and safety as well as America's forests, water resources, and fish and wildlife habitat. As the nation works to prevent the most extreme impacts of global warming, we also must adapt to the changes already underway and prepare for more.

INTERNATIONAL SOLUTIONS:

U.S. government and civil society must act now to reduce their own greenhouse gas emissions, regardless of the actions of other nations. Because greenhouse gas emissions and the effects of climate change are global, however, the ultimate solutions also must be global. The U.S. must reengage constructively in the international process.

FAIRNESS:

We must strive for solutions that are fair among people, nations and generations.

The Wingspread Principles and the concept for the Presidential Climate Action Project were developed at the National Leadership Summit for a Sustainable America, held in June 2006 at the Johnson Foundation's Wingspread Conference Center.

WINGSPREAD PRINCIPLES

WHAT IS THE PRESIDENTIAL CLIMATE ACTION PROJECT?

The Presidential Climate Action Project is a two-year, $2 million initiative administered by the Wirth Chair, School of Public Affairs at the University of Colorado Denver. The project is guided by a prestigious National Advisory Committee chaired by **Ray Anderson**, former co-chair of the President's Council on Sustainable Development and founder and chairman of the board of Interface Inc. in Atlanta, Ga.

The Committee's ground rules do not require consensus; rather, the Committee has urged the project team to push the envelope of public policy as far as the urgency of the climate and energy issues requires. In other words, while the project's advisors do not all agree with all of the plan's proposals, they agree on the need for boldness. Other members of the National Advisory Committee are:

D. James Baker, *director of the Global Carbon Measurement Program of the William J. Clinton Foundation*
Scott Bernstein, *president of the Center for Neighborhood Technology*
April Bucksbaum, *executive director of the Baum Foundation*
Brian Castelli, *executive vice president of the Alliance to Save Energy*
Dianne Dillon-Ridgley, *chair of Plains Justice*
Boyd Gibbons, *immediate past president of the Johnson Foundation*
Sen. Gary Hart *(Ret.), Scholar in Residence, Wirth Chair, University of Colorado Denver*
Sheila Slocum Hollis, *partner at Duane Morris LLP*
Van Jones, *board president and co-founder of the Ella Baker Center for Human Rights*
William C. Kunkler III, *executive vice president of CC Industries, Inc.*
L. Hunter Lovins, Esq., *president of Natural Capitalism Solutions, Inc;*
Michael Northrop, *program director for sustainable development at the Rockefeller Brothers Fund*
David Orr, *Ph.D., Paul Sears Distinguished Professor of Environmental Studies and Politics at Oberlin College*
John L. Petersen, *president of the Arlington Institute*
Theodore Roosevelt IV, *chair of the Pew Center on Global Climate Change*
Larry Schweiger, *president and CEO of the National Wildlife Federation*
James Gustave Speth, *dean of the Yale School of Forestry and Environmental Studies*
Jeremy Symons, *director of the Global Warming Campaign of the National Wildlife Federation*
Terry Tamminen, *Cullman Senior Fellow and climate policy director for the New America Foundation*
Vice Admiral Richard H. Truly *(U.S. Navy Ret.); former administrator of NASA and former director of the National Renewable Energy Laboratory*
Heidi VanGenderen, *former senior policy advisor in the Colorado Governor's office.*

The Presidential Climate Action Project is funded by contributions from private individuals and foundations, plus in-kind services provided by the University of Colorado, the Johnson Foundation and Natural Capitalism Solutions Inc. The PCAP team includes:

William S. Becker, *Executive Director*
Diane Carman, *Communications Director*
Laurette Reiff, *Project Director*
Morgan Pitts, *Research Director*

PCAP RESOURCES FOR THE PRESIDENT'S TEAM

THE PRESIDENTIAL CLIMATE ACTION PLAN: The full plan, designed for use by the Presidential Transition Team, offers recommendations in a number of areas not covered in this brief, including agriculture and forestry, ocean ecology, fresh water resources, natural resource stewardship, national security, climate adaptation, emissions reductions in the federal government and detailed roadmaps to carbon neutrality for buildings and transportation systems. The full plan can be found at www.climateactionproject.com/plan.php

BOUNDARIES OF EXECUTIVE AUTHORITY: A two-volume legal analysis on the president's authority to act on climate change without further approval by Congress. The analysis defines boundaries, affirmative responsibilities, specific statutory authorities and the president's emergency powers.
www.climateactionproject.com/docs/Executive_CEES_PCAP_II_Report_Jul_17.pdf ;
www.climateactionproject.com/docs/CEES_PCAP_Report_Final_Feb_08.pdf

WHO'S WHO IN CLIMATE ACTION: A directory of top national experts in climate science and policy, for possible use as a recruitment tool for climate-critical appointed positions in the administration.
www.climateactionproject.com/action/index.php?title=view

LOW-CARBON TRANSPORTATION ROADMAP: Detailed proposals on how federal transportation funding can be shifted to help states and localities reduce vehicle miles traveled and carbon emissions.
www.climateactionproject.com/docs/cnt2007.pdf

LOW-CARBON BUILDINGS ROADMAP: Details proposals on policies to achieve zero-carbon, zero-energy residential and commercial buildings by 2030.
http://www.climateactionproject.com/docs/PCAP_Buildings_Report_5-8-082.pdf

CLIMATE POLICY LIBRARY: Articles and research across 30 topic areas related to climate change and its impacts.
www.climateactionproject.com/resources.php

FEDERAL CARBON MANAGEMENT ROADMAP: Detailed proposals on making the federal government – the world's largest single energy consumer – carbon neutral by mid-century.
www.climateactionproject.com/docs/PCAP_Final_FEMP_Chapter_4-18-08.pdf;
www.climateactionproject.com/docs/white_papers/ASE_PCAP_Federal_Sector_Chapter_DRAFT_5-21-07.pdf

CLIMATE POLICY DATABASE: Searchable database of hundreds of climate-related policies around the world.
http://cees.colorado.edu/pcap/

CLIMATE ACTION BRIEFS: Short papers recommending climate policies related to breaking news events.
www.climateactionproject.com/climate_briefs.php

WHITE PAPERS COMMISSIONED BY PCAP

- "National Climate Policy: Choosing the Right Architecture"
  www.climateactionproject.com/docs/Repetto.pdf
- "The Outlook for Fresh Water in a Changing Climate"
  www.climateactionproject.com/docs/Water_Paper8-1-08.pdf
- "The Economic Case for Climate Action"
  www.climateactionproject.com/docs/HL_Economics.pdf
- "International Development and Trade Policies Related to Climate Change"
  www.climateactionproject.com/docs/white_papers/Daphne_International_Chapter.pdf
- "U.S. Climate Policy from the Ground Up: Federal Policies to Promote Local Government Climate Protection"
  www.climateactionproject.com/docs/FINAL_PCAP_Local_Climate_Paper.pdf
- "Have We Already Passed the Point of No Return?"
  www.climateactionproject.com/docs/Hassol_PPM_rev.pdf
- "Natural Resource Stewardship"
  www.climateactionproject.com/docs/white_papers/9_Natural_Resources_Extended_12.11.07.pdf
- "Agriculture's Role in Mitigating and Adapting to Climate Change."
  www.climateactionproject.com/docs/white_papers/11_Agriculture_Extended_12.14.07.pdf

You and your team have met the goal of providing the 44th President of the United States with a comprehensive plan to take bold action on climate change within the first 100 days of taking office.

— JOE CASCIO, Federal Environmental Executive, White House Task Force on Waste Prevention and Recycling

Finally! Someone has come up with a very substantial, broad-based, forward-looking study that suggests, in very concrete terms, what the U.S. (and the world, for that matter) can do about climate change. This Presidential Climate Action Project… is the finest systems approach to climate change that we have seen. The principles are highly adaptable to corporations and countries other than the U.S. Simply a wonderful, timely, and much needed piece of work.

— JOHN PETERSEN, President, the Arlington Institute

I would like to congratulate you and your colleagues on this project whose relevance and urgency is of immense significance…PCAP participants have a longstanding record in dealing with the climate change issues. Their recommendations to the next administration of the United States will help advance the climate change agenda.

— ACHIM STEINER, Executive Director, United Nations Environment Programme

PCAP has fought tirelessly to keep the important issues of energy security and climate change in the public eye. They have also provided extraordinary resources for anyone interested in clean energy policy. They have set the stage for the next administration and Congress to take real, comprehensive action and rebuild our economy clean and green.

— THE APOLLO ALLIANCE

The next president has no time to waste in building a post-carbon economy. This book is a distillation of the best policy advice he will get from anyone on the most important issue of our time.

— DAVID W. ORR, Paul Sears Distinguished Professor, Oberlin College

Bar none, this is the most comprehensive strategy for U.S. engagement on climate change. A must read.

— MICHAEL NORTHROP, Rockefeller Brothers Fund

PCAP is the go-to source for innovative and comprehensive climate policy proposals. Send a copy of this to your own Congressman and to anyone you know in the new Administration. This is "must reading" for every leader who recognizes that 2009 is going to be the pivotal year for turning this nation away from fossil fuels and towards a clean energy future.

— BETSY TAYLOR, President of the Board, 1Sky

The Presidential Climate Action Plan is thorough, ambitious, and well worth reading for anyone who wants to know what the next president can do about global climate change.

— JAMES GUSTAVE SPETH, Dean, School of Forestry & Environmental Studies, Yale University

Dear Mr. President: Please read this book! It is an action plan for building the energy and institutional infrastructures to cope with a changing climate, and to re-stabilize it!

— PAUL R. EPSTEIN, M.D., M.P.H., Center for Health and the Global Environment, Harvard Medical School

JOIN THE DIALOGUE

To access more complete explanations of climate issues and solutions, visit the PCAP website at **www.climateactionproject.com**

The PCAP team encourages your comments and ideas for climate leadership. Please submit them to **feedback@climateactionproject.com**

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