Center for American Progress Action Fund

Committee on Energy and Natural Resources
U.S. Senate

Investing in a Clean Energy Present and Future:
Opportunities and the Costs of Inaction

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Chairman Bingaman, Senator Murkowski, and members of the Committee, thank you for the invitation to discuss the opportunities associated with investing in a clean energy today and tomorrow. Investments in the rapid deployment of existing clean and efficient energy technologies as well as investments in the research and development of new technologies will serve three paramount national priorities: growing our economy, securing our nation's energy supplies, and combating global warming.

I am Kit Batten, Senior Fellow at the Center for American Progress Action Fund, a non-partisan multi-issue think tank focused on developing innovative policies that build a more broadly shared prosperity. At CAPAF, our work demonstrates that energy policy is economic policy, that reducing our dependence on volatile-priced dirty sources of energy and increasing investments in low-carbon energy and efficiency are imperative to our nation's economic prosperity and security.

Our nation is currently poised to take action to fundamentally change the way we produce and consume energy, to significantly reduce our greenhouse gas emissions, and to create millions of jobs as a result of investing in a clean energy economy. It is my pleasure to participate in this discussion with you today, and I applaud your leadership on these public policy issues. CAPAF and I look forward to continuing to work with you all on these issues in the 111th Congress.

The Center for American Progress, the 501(c)(3) sister organization of the Action Fund, has proposed a comprehensive clean energy and efficiency strategy to capture the "energy opportunity" afforded by the transition to a low-carbon economy.[1] This comprehensive strategy must involve incentives and mandates to increase investment in low-carbon and efficient technologies in our homes, businesses, and transportation

[1] John Podesta, Todd Stern, and Kit Batten, "Capturing the Energy Opportunity: Creating a Low-Carbon Economy" (Washington: Center for American Progress, 2007), available at http://www.americanprogress.org/issues/2007/11/energy_chapter.html

system; investment in research and development of new technologies for use here at home and to export overseas; capping and reducing greenhouse gas emissions across all sectors of our economy; and re-engaging in and taking on a leadership role in the international climate negotiations. At the core of this strategy is a greenhouse gas cap-and-trade program that would provide tens of billions of dollars to build a green economy and offset the cost of rising energy prices for low- and middle-income Americans.

The transition to a green economy—at home in the United States, and globally— can be a source of increased business opportunity, innovation, and competitiveness; job creation; stronger, more prosperous communities; and improved energy and national security. This transition must be at the center of both America's energy policy and each step of our economic policy—stabilization, stimulus, recovery, and growth. Investing in this transition—starting immediately, and putting us on a long-term low-carbon and energy independence pathway, will help to solve many of our nation's current interrelated challenges: a financial recession, job loss, rising and volatile energy prices, secure energy supplies, and a growing climate crisis.

This testimony focuses on the opportunities associated with transforming the U.S. economy to a low-carbon model and the significant costs of not investing in this transition or addressing global warming. Some make the case that we cannot afford to change the way we do business when in fact the exact opposite is true. We cannot afford *not* to act—in the short term, middle term, or long term.

Businesses and banks recognize this imperative to invest in a clean energy transition and the economic opportunities this transformation will create. In October, General Electric Chairman and CEO Jeff Immelt stated that GE eco-friendly products and energy efficiency technologies are a "green lining among the current economic storm clouds, and GE customers and investors are benefiting."[2] In October, sales of GE's Ecomagination products and services were projected to top $17 billion in 2008, a 21-percent gain over 2007. And end-of-year reports from Deutsche Bank and HSBC highlighted the opportunities associated with investments in clean energy and efficiency.[3, 4, 5]

Our energy and economic strategy must include short-term and long-term strategies, which we can and must embark on immediately. A green stimulus is an essential first step, especially for jump-starting the economy, creating more jobs (including more good

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[2] Green Biz Staff, "Green Products Help GE Weather Rough Economic Times" GreenBiz.com, October 22, 2008, available at http://www.greenbiz.com/news/2008/10/22/green-products-help-ge-weather-rough-times

[3] DB Advisors, Deutsche Bank Group, "Investing in Climate Change 2009: Necessity and Opportunity in Turbulent Times" (Deutsche Bank 2008) available at http://dbadvisors.com/climatechange

[4] DB Advisors, Deutsche Bank Group, "Economic Stimulus: the Case for "Green Infrastructure, Energy Security, and "Green" Jobs" (Deutsche Bank 2008) available at http://dbadvisors.com/climatechange

[5] HSBC Global Research, "The Green-Collar President" (HSBC 2008) available at http://www.hsbcnet.com/hsbc/research

jobs at higher wages), investing in the infrastructure necessary to facilitate the transition to a clean-energy economy, helping keep energy bills low, and acting as a first step in creating new markets for American business while reducing the overall cost of addressing our climate and energy crises.

Longer-term policies must also be put into place, including a cap-and-trade program designed to reduce our emissions and generate revenue to help fund a green transition; incentives and mandates to invest in and develop low carbon and efficient technologies; and taking a leadership role in the international climate negotiations. We need this type of comprehensive strategy to ensure all of these goals are met, to take full advantage of the opportunities afforded by this low-carbon transition, and to avoid the significant economic and environmental costs of inaction. These costs of inaction entail everything from the price we would pay by missing the opportunity to lead the world in the development of new clean technologies for use at home and for export; to the costs of responding to and preparing for the effects of climate change domestically and internationally, including national security, disaster preparedness and response; and impacts on agriculture, natural resource availability and management, human health, and infrastructure.

Job creation

Our country is currently in a financial recession, and a major indicator of our flagging economy is unemployment. The number of jobs in the United States has declined for 11 months in a row, and even before this decline, job growth has been meager since 2001. [6] Between the start of the recession in December 2007 and November 2008, our country lost 1.9 million jobs and the unemployment rate has increased to 6.7 percent, up 1.7 percent from last year.[7] In November 2008, 533,000 jobs were lost, the largest one-month decline in 34 years, and not only are people are losing jobs more quickly, but the average duration of unemployment has also risen—it is increasingly difficult to find a new job once a worker becomes unemployed.[8] December 2008 unemployment figures will be officially released on January 9, 2009 but are projected to reveal additional significant job losses and a possible unemployment rate of 7 percent.[9]

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[6] Christian Weller and Amanda Logan, "From a Trickle to a Flood: The Sharply Accelerating Contraction of an Already Weak Labor Market" (Washington:
Center for American Progress, 2008), available at
http://www.americanprogress.org/issues/2008/12/pdf/labor_contraction.pdf

[7] Bureau of Labor Statistics, *Latest* Numbers, (Department of Labor, 2009), available at
http://www.bls.gov/

[8] Christian Weller and Amanda Logan, "From a Trickle to a Flood: The Sharply Accelerating Contraction of an Already Weak Labor Market" (Washington: Center for American Progress, 2008), available at
http://www.americanprogress.org/issues/2008/12/pdf/labor_contraction.pdf

[9] Rich Miller, "Engines of Recovery Flame Out as Economy Seeks Obama-Fed Rescue," *Bloomberg*, January 5 2008, available at
http://www.bloomberg.com/apps/news?pid=20601087&sid=anuuEj0tNs1Q&refer=home

We must reverse this trend. Investments in clean energy and efficiency as part of the upcoming economic stimulus package will help kick-start the clean energy economy and create millions of jobs. In collaboration with the Political Economy Research Institute at the University of Massachusetts, CAP released a report in September 2008 detailing how a $100 billion investment in clean energy and efficiency technologies and infrastructure would create 2 million jobs over two years, nearly four times as many jobs created by a similar level of investment in oil and gas.[10]

Last month, my colleague Bracken Hendricks, Senior Fellow at CAPAF, testified before this committee on a report issued by the Center for American Progress outlining a plan to invest $350 billion in a one-year stimulus and recovery package, including significant investments in clean energy and efficiency.[11] This package includes four broad categories: $55 billion to spur demand and assist those most in need, $70 billion in aid for states and localities, $175 billion for infrastructure investments, and $50 billion for tax cut stimulus. Clean energy, efficiency, and environmentally beneficial projects comprise a large part of the infrastructure plan—over $100 billion. This approach will generate construction and manufacturing jobs, create new markets for technology and skilled labor, help reduce energy costs for American families and businesses, and implement new infrastructure and investments to enable our nation's clean energy transition.

Infrastructure to enable a clean-energy transition

Prioritizing investments now in clean energy and efficient infrastructure is essential to transforming our economy to a low-carbon model and increasing prosperity and growth. Now is the time to wisely invest taxpayer dollars in a clean energy future, rather than continuing to invest primarily in infrastructure to support traditional sources of dirty energy which will have to be phased out as we meet the challenge of significantly reducing greenhouse gas emissions. This clean infrastructure must include efficient green buildings; improved and scaled-up low-carbon energy production, transmission, and distribution; mass transportation and rail systems; and job programs to train Americans to run our clean energy future.

CAPAF has proposed investments ranging from programs to increase use and expand capacity of mass transportation and rail systems; expansion of weatherization assistance and building retrofitting; investments to green and improve energy efficiency in homes, businesses, federal buildings, and schools; programs to create and improve clean energy job training programs; increases in the use of renewable electricity in states, counties, and cities as well as in federal and tribal governments and electric cooperatives; investments

[10] Robert Pollin, Heidi Garrett-Peltier, James Heintz, and Helen Scharber, "Green Recovery" (Washington: Center for American Progress, 2008), available at http://www.americanprogress.org/issues/2008/09/pdf/green_recovery.pdf

[11] Bracken Hendricks, Testimony before the Senate Committee on Energy and Natural Resources, December 10, 2008, available at: http://www.americanprogressaction.org/issues/2008/pdf/green_recovery_testimony.pdf

to modernize the transmission grid including smart grid technologies; spurring carbon capture and sequestration technology; and manufacturing and consumer incentives to enable the transformation of the American auto industry's production of more fuel-efficient vehicles. The full list and a more detailed description of these policy proposals are included in Bracken Hendricks' testimony.[12]

Keeping energy bills low through efficiency investments and increased consumer choice

American families and businesses are facing high and volatile energy prices. In July 2008, the price per gallon for regular, unleaded gasoline reached a record $4.11, but as of the week of December 29, 2008, the price had dropped to $1.61 per gallon.[13] 2008 also saw a rise in electricity prices due to a number of intersecting factors, including rising fuel costs, and the Energy Information Administration projects that electricity prices will rise an additional 5 percent in 2009.[14, 15] Price increases and volatility make it difficult for Americans to plan budgets, especially as pocketbooks are tightening in the face of a recession. For example, in 2007, gas price volatility led to families buying fewer other items or dipping into their savings because commutes and other driving responsibilities remained fairly constant.[16]

A significant short-term benefit from investing in energy efficiency is keeping energy bills low, even if energy prices increase. Building retrofits, incentives to adopt more efficient appliances, implementation of smart grid technologies, and increasing vehicle fuel efficiency can help stabilize American's energy bills in the face of rising energy prices.

For example, The Department of Energy has found that a $2,500 investment in home retrofitting can reduce average annual energy consumption in a typical American home by 30 percent. In 2006, average household income was approximately $60,000, and the average household spent about 5 percent of its income on household energy consumption,

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[12] Bracken Hendricks, Testimony before the Senate Committee on Energy and Natural Resources, December 10, 2008, available at: http://www.americanprogressaction.org/issues/2008/pdf/green_recovery_testimony.pdf.

[13]Energy Information Administration, *Weekly U.S. Regular All Formulations Retail Gasoline Prices*, (Department of Energy, 2009) available at http://tonto.eia.doe.gov/dnav/pet/hist/mg_rt_usW.htm.

[14] Paul Davidson, "Price jolt: Electricity bills going up, up, up," *USA Today*, June 20, 2008, available at http://www.usatoday.com/money/industries/energy/2008-06-15-power-prices-rising_N.htm

[15] Energy Information Administration, *Short Term Energy Outlook*, (Department of Energy, 2008), available at http://www.eia.doe.gov/emeu/steo/pub/contents.html

[16] Amanda Logan and Christian Weller, "Pain in the Gas: Volatile Gas Prices Wreak Havoc on Household Financial Planning" (Washington: Center for American Progress, 2007), available at http://www.americanprogress.org/issues/2007/05/pdf/gas_prices.pdf.

or $3,000 per year on energy. With a 30 percent improvement in efficiency and stable energy prices, the $2,500 could be recouped in saved energy costs in less than three years.[17]

Diversifying our nation's sources of energy will help keep prices lower and less volatile. For example, a 2008 Merrill Lynch & Co., Inc. study found that increased biofuel production was helping keep gasoline prices about 15 percent lower than they otherwise would have been.[18] It is critically important that new sources of renewable energy are further developed with targeted federal funds alongside already rising private sector investment. This includes renewable sources of electricity as well as sustainably produced biofuels with lower lifecycle greenhouse gas emissions than gasoline that do not raise food or feed prices.

Additionally, investing in the development and broad deployment of low-carbon and efficient technologies will afford consumers and business greater choice over their consumption of energy and will also help keep energy bills lower. As consumers and businesses faced rising gasoline prices and a weakening economy in 2008, they made changes in their behavior, reducing vehicle miles travelled by nearly 90 billion miles (or a 3.5-percent reduction) as of October 2008[19] and reducing motor gasoline consumption by 3.4 percent (total petroleum product consumption decreased by 5.8 percent).[20] Investments to increase the availability of alternative low-carbon sources of vehicle fuels (such as low-lifecycle carbon biofuels and electricity as plug-in electric hybrid vehicles make it to the marketplace), to provide more fuel-efficient vehicles, and to provide greater alternative transportation options via mass transit, all will help to increase consumer choice in the future and keep energy bills low, even in the face of volatile and rising energy prices.

Development of new technologies for domestic and international markets

Typically, discussions of the costs of inaction—not investing in clean energy and efficiency and not reducing greenhouse gas emissions—focus on the impacts of global warming, including rising sea levels, more intense storms, changing weather patterns, increased incidence of human disease, reduced agricultural productivity, reduced clean water availability, etc.

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[17] Robert Pollin, Heidi Garrett-Peltier, James Heintz, and Helen Scharber, "Green Recovery" (Washington: Center for American Progress, 2008), available at http://www.americanprogress.org/issues/2008/09/pdf/green_recovery.pdf.

[18] Kit Batten and Jake Caldwell, "Energy Diversity Dividends: Biofuels Lower Oil Prices" (Washington: Center for American Progress, 2008), available at http://www.americanprogress.org/issues/2008/03/energy_diversity.html

[19] Federal Highway Administration, *October 2008 Traffic Volume* Trends, (Department of Transportation, 2008), available at http://www.fhwa.dot.gov/ohim/tvtw/08octtvt/index.cfm

[20] Energy Information Administration, *Short Term Energy Outlook*, (Department of Energy, 2008), available at http://www.eia.doe.gov/steo

These are of course very important costs of inaction, but they leave out an additional cost: If we do not put the right policies in place to enable investments in a clean and efficient economy today, the United States will lose the economic opportunities associated with regaining technological leadership in the global innovation marketplace. Moreover, we must ensure America is a leader in the clean energy and efficiency market so that Americans have access to the best technologies and therefore benefit from reduced energy costs via homegrown inventions. This, in turn, will also improve our nation's energy security.

The United States has already lost global market share in solar and wind technologies as a result of inconsistent policy.[21] In the last 10 years, the U.S. market share in photovoltaic cells dropped from 44 percent to 10 percent, while Japan and Germany have become solar leaders. Germany has seen significant employment growth in solar electricity: Firms that make photovoltaic panels and other components now employ 40,000 people, and 15,000 more work in the solar thermal business. In Germany and in some parts of Spain and Denmark, wind supplies more than 20 percent of electricity, while in the United States, wind currently stands at slightly over 1 percent of the electricity mix. U.S. government support for wind power has been erratic, marked by short-term extensions of the federal production tax credit, while in other countries wind power has taken off at a faster rate because of policies that provide renewable power producers with long-term purchase agreements at adequate prices.

Improved energy and national security

Energy security, national security, the economy, and global warming are integrally linked issues. The United States is currently dependent on foreign sources of oil to power its economy, but only has about 2 percent of global proved reserves as of January 2008.[22] This dependence results in economic, national security, and energy security concerns. New territorial disputes over oil and natural gas rights are erupting. As ice melts in the Arctic, several nations—including the United States, Russia, Canada, Denmark, Norway, Sweden, Iceland, and Finland—are racing to stake claim to oil, natural gas, and new shipping routes in our planet's north.[23]

America's dependence on oil leaves us vulnerable to energy supply disruptions and to price volatility. In order to better secure our energy and national security, the United

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[21] John Podesta, Todd Stern, and Kit Batten, "Capturing the Energy Opportunity: Creating a Low-Carbon Economy" (Washington: Center for American Progress, 2007), available at http://www.americanprogress.org/issues/2007/11/energy_chapter.html

[22] Energy Information Administration, *World Proved Reserves of Oil and Natural Gas, Most Recent Estimates*, (Department of Energy, 2008), available at http://www.eia.doe.gov/emeu/international/reserves.html

[23] Marsha Walton, "Countries in tug-of-war over Arctic resources," *CNN*, January 2, 2009, available at http://www.cnn.com/2009/TECH/science/01/02/arctic.rights.dispute/

States must invest to make better use of the abundant energy resources we have at home. But any action to increase domestic energy production must not ignore the global warming consequences. Thus, we need to make sure we are investing in fuels that have lower greenhouse gas emissions on a lifecycle basis than traditional gasoline. This imperative applies to biofuels and also to other unconventional petroleum fuels such as oil shale fuel. The Center for American Progress has published an article on the climate and environmental impacts of oil shale development. The considerable energy costs, significant water needs, large greenhouse gas emissions, and air and water pollution associated with oil shale fuel production all render this fuel a non-viable alternative.[24]

We must also make improvements to our nation's electricity transmission grid to ensure our energy security.[25] The current grid configuration cannot handle the growth in electricity demand expected over the next few decades unless we act quickly to modernize it. Grid modernization must be compatible with scaling up renewable energy generation—including the ability to incorporate intermittent renewable electricity generation—and carrying renewable power to city centers, which in many cases will require long-distance transmission. Additional important modernization efforts also include grid expansion, improved connectivity between different U.S. regions, increased efficiency of electricity transmission, improved security to ensure reliable supply of electricity, and adoption of smart grid technologies.

Global warming has significant national security implications and significant costs of inaction. If we do not substantially reduce greenhouse gas emissions in the near and long term, we will experience significant costs. For example, in developing countries climatic shifts are expected to trigger or exacerbate food shortages, water scarcity, the spread of disease, and natural resource competition.[26] Thus, global warming is a threat multiplier for instability and will fuel political turmoil, drive already weak states toward collapse, threaten regional stability, and increase security costs. [27]

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[24] Alice Madden, "The Oil Shale Promise: A Trillion Tons Of Tater Tots" (Washington: Center for American Progress, 2008) available at http://wonkroom.thinkprogress.org/2008/07/09/oil-shale-potatoes/

[25] Kit Batten and Kari Manlove, "Identifying Hurdles to Renewable Electricity Transmission" (Washington: Center for American Progress, 2008) available at http://www.americanprogress.org/issues/2008/12/renewable_transmission.html

[26] John Podesta, Todd Stern, and Kit Batten, "Capturing the Energy Opportunity: Creating a Low-Carbon Economy" (Washington: Center for American Progress, 2007), available at http://www.americanprogress.org/issues/2007/11/energy_chapter.html

[27] John Podesta, Todd Stern, and Kit Batten, "Capturing the Energy Opportunity: Creating a Low-Carbon Economy" (Washington: Center for American Progress, 2007), available at http://www.americanprogress.org/issues/2007/11/energy_chapter.html

These costs will not be limited to impacts experienced by developing countries; the Stern Review estimates that a robust set of policies aimed at holding greenhouse gas concentrations at around 550 parts per million of CO2 equivalent are likely to cost about 1 percent of global gross domestic product per year by 2050, but that the economic costs of failing to significantly reduce emissions will be many times higher.[28] Here in the United States, costs associated with adaptation, disaster preparedness and response, human health, and natural resource management—just to name a few—are projected to be significant. The total cost of global warming in the United States could be as high as 3.6 percent of GDP, and hurricane damage, real estate losses, energy costs, and water costs alone may reach 1.8 percent of U.S. GDP by 2100.[29]

The International Governmental Panel on Climate Change has found that in order to avoid the worst impacts of global warming, we need to see a peak in global emissions over the next few years. This certainly poses a challenge, but this imperative can and must be met with smart policies that will not only put our nation on a path to a low-carbon economy, but also create jobs; foster innovation, competitiveness, and sustainable prosperity and growth; increase energy and national security; and protect the economic and environmental health of our nation and globe.

It is time for a new vision for the economic revitalization of the nation, the restoration of American leadership in the world, and the movement toward a brighter, more prosperous future. Remaking the vast energy systems that power the nation and the world are central to this opportunity. We must fundamentally change the way we produce and consume energy and end our dependence on oil. This transformation will provide enormous economic opportunities and security benefits and will enable us to comprehensively address global warming.

The time for action is now.

Thank you for your leadership on these pressing energy and economic policy issues. I look forward to your questions.

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[28] John Podesta, Todd Stern, and Kit Batten, "Capturing the Energy Opportunity: Creating a Low-Carbon Economy" (Washington: Center for American Progress, 2007), available at http://www.americanprogress.org/issues/2007/11/energy_chapter.html

[29] Frank Ackerman and Elizabeth A. Stanton, "What We'll Pay if Global Warming Continues Unchecked," (Washington: Natural Resources Defense Council, 2008), available at http://www.nrdc.org/globalwarming/cost/cost.pdf