

**Testimony of Bracken Hendricks
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“Creating Clean Energy Jobs to Drive Economic Recovery”

**U.S. Senate Hearing on Job Growth, Tax Incentives and Small Business
Pennsylvania State Capitol, Harrisburg, PA**

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Thank you Senator Specter for inviting me to speak to you here in the capital of the great commonwealth of Pennsylvania. My name is Bracken Hendricks and I am a Senior Fellow at the Center for American Progress Action Fund, a non-partisan think tank in Washington, D.C. I address you today, in your capacity as a member of the Environment and Public Works Committee of the U.S. Senate, but also as the senior senator from a commonwealth with a rich history of leadership in meeting our nation’s energy supply needs, driving succeeding waves of growth and innovation by generating affordable and reliable American energy to serve as the life blood of our economy.

It was here in the Quaker state that America first discovered oil; it was Pennsylvania that supplied the abundant coal that drove the explosive growth of the American steel and automotive industries. And, if recent events are any indication, it will be Pennsylvania again that leads the world in providing clean, renewable, and efficient energy and advanced technology to power a dynamic new low-carbon economy. This is one of the great economic opportunities of our generation.

My testimony today focuses on the topic of job creation during this challenging time of economic recovery. I will examine what has worked thus far, and what additional steps we can take to encourage further job growth, focusing particular attention on opportunities and concerns related to the topic of clean energy jobs, or “green collar jobs” as they are sometimes called.

Today we have an unparalleled opportunity to rebuild America’s economy and strengthen the middle class on the foundation of low-carbon energy, to create good jobs even as we respond to pressing energy and environmental challenges. But it will take policy and political leadership if we are going to unleash the creativity and investment of American entrepreneurs in solving these great challenges. Thank you for the opportunity to discuss this opportunity in greater detail. I will focus my comments on the potential for climate legislation to drive new investment in productive jobs, and explore how we can build a national strategy to use clean energy as a driver of job creation and economic recovery.

The clean-energy investment agenda

Too often in the United States today, we are having the wrong public debate about global warming. We are asking important questions about pollution caps and timetables, carbon markets and allocations, but we have lost sight of our principal objective: building a robust, prosperous clean energy economy. This is a fundamentally affirmative agenda, rather than a restrictive one. Moving beyond pollution from fossil fuels will involve exciting work, new opportunities, new products and innovation, and stronger communities. Our current national discussion about constraints, limits, and the costs of transition misses the real excitement in this proposition. It is as if, on the cusp of an Internet and telecommunications revolution, debate centered only on the cost of fiber optic cable. We are missing the big picture here.

Let's be clear: solving global warming means investment. Retooling the energy systems that fuel our economy will involve rebuilding our nation's infrastructure. We can create millions of middle-class jobs along the way, revitalize our manufacturing sector, increase American competitiveness, reduce our dependence on oil, and boost technological innovation. These investments in the foundation of our economy can also provide the opportunity for more broadly shared prosperity through better training, stronger local economies, and new career ladders into the middle class. Reducing greenhouse gas pollution is critical to solving global warming, but it is only one part of the work ahead. Building a robust economy that grows more vibrant as we move beyond the Carbon Age is the greater and more inspiring challenge.

Reducing greenhouse gas emissions to avert dangerous global warming is a moral and environmental challenge, but it is also an economic and national security imperative. Capturing this economic opportunity is the central challenge of our current energy and climate policy debates. Smart policy will treat clean energy as a strategic asset, and an opportunity to drive innovation and new investment broadly across the U.S. economy.

The Center for American Progress Action Fund identifies three core pillars of the clean-energy transformation: *Restoring markets*, *expanding financing*, and *rebuilding infrastructure*. Each of these pieces is distinct and essential to building a low-carbon economy, and each will require specific policy attention. The American Clean Energy and Security Act passed by the U.S. House of Representatives, and companion legislation currently under debate in the Senate both contain provisions that directly address each of these core pillars.

Restoring markets

Creating and expanding markets and driving demand for new clean and efficient energy products and services. Creating dependable markets and driving demand for low-carbon energy is critical to giving the private sector the security it needs to make capital-intensive investments. One simple and budget-friendly approach is to adopt new standards that shift incentives for policymakers, energy companies, consumers, and firms

to adopt low-carbon, high-efficiency policies and practices. Some examples of rules and incentives that improve market functioning in the current policy debates, include:

- **A cap-and-trade system**, establishing a firm ceiling on carbon emissions across the economy and putting a price on carbon emissions to place clean energy on a level playing field with pollution and to fix market signals.
- **A Renewable Electricity Standard**, or RES, requiring every state to meet a set percentage of its power needs through renewable generation.
- **An Energy Efficiency Resource Standard**, or EERS, requiring every state to decrease its energy consumption through efficiency measures. And, **updated codes to increase efficiency** of home appliances, and residential, commercial, and industrial buildings.
- **Financial incentives**, such as **production and investment tax credits** for renewable energy; **rebates for building owners** who invest in efficiency improvements; and **performance-based incentives to reduce carbon emissions** from existing fossil fuel resources such as carbon capture and sequestration.

Expanding financing

Encouraging and investing in research, development, deployment, and commercialization of the technologies needed to meet demand is a necessary component of a long-term clean-energy standard. There is a long and successful history of public support for emerging technologies with demonstrable public benefits, from land grants to the railroad companies to military investments in ARPANET, the precursor to the Internet. Quite often, it is this initial seed of public support that enables the launch of a vibrant new industry led by private investment. Given the myriad benefits and enormous economic development potential of the emerging clean-energy sector, these nascent technologies are clear candidates for similar kinds of public assistance.

Residual tightness in the credit markets has also made it difficult for developers to secure adequate capital to invest in deploying clean-energy projects. And some investments carry slightly more fiduciary risk than traditional capital markets are willing to bear, particularly in these difficult economic times. These factors make a strong case for government support for financing investments in clean energy, either through direct loans, or through various types of credit enhancements to reduce some of the risk for private investors.

- **Investing in research and development**, providing stable, long-term support for clean-energy research and public investments in science and technology using all the means at our disposal, including the National Science Foundation; national laboratories and land-grant universities; federal programs such as ARPA-E, which is designed to invest in early-stage, high-yield technologies; and various Cabinet agency budgets with relevant jurisdictions such as defense, energy, and education.
- **The Clean-Energy Deployment Administration**, or CEDA, a “Green Bank”

like the Export-Import Bank, overseen by the Department of Energy.

- Property Assessed Clean Energy bonds, or PACE, which provide federal underwriting to drive down the cost of capital for cities that want to undertake ambitious energy-efficiency retrofit projects.
- **Federal loan guarantees and other credit enhancements** to help draw private capital into the market for energy efficiency retrofits

Rebuilding infrastructure

Revitalizing and reinvesting in the nation's physical and economic infrastructure upon which the clean-energy transformation—like all major industrial transformations in the past—will be built. America's physical infrastructure has suffered from years of disinvestment and neglect. The American Society of Civil Engineers gives the country's infrastructure a "D" grade, and estimates the need for \$2.2 trillion in new investments. Building the clean energy economy and keeping America competitive in a globalized world will require major investments— both public and private—in revitalizing our infrastructure and laying the foundation for growth and prosperity. We must also think of our workforce and manufacturing sector, which at the most basic level, produce our nation's goods and services, as key pieces of America's clean-energy infrastructure. This will involve restoring our nation's electricity grid and transit infrastructure, and more broadly expanding our infrastructure for training, workforce development, and modern manufacturing capacity. Some key policies to rebuild this infrastructure, in the current energy debates include:

- **Building a modern electricity grid:** Resolving the gridlock over planning, siting, and cost allocation; providing incentives for the deployment of "smart grid" components; taking measures to increase the physical and cybersecurity of the grid; providing the conditions necessary to ensure that new grid investments help lower emissions from the electricity sector
- **Transportation and fuels infrastructure:** Developing a mix of incentives and standards to encourage private investment in alternative-fuel vehicles and fuel distribution infrastructure, including electric vehicles, the use of natural gas in the heavy-duty fleet, and increasing production of high-yield, low-carbon biomass feedstocks for ethanol and biodiesel. And shifting the focus of federal transportation spending toward mass transit options and the repair and maintenance of existing roadways.
- **Expanding funding for the Workforce Investment Act:** which provides the funding used to train workers in the skills that will be most sought after as we ramp up the clean energy economy. We must also ensure that any allocation of federal funds to support this ramp-up is accompanied by strong labor standards and community reinvestment strategies so that the fruits of investments in clean energy benefit all Americans.
- **IMPACT Act:** In the Senate, the American Clean Energy Leadership Act includes provisions on industrial efficiency, and the Investments for Manufacturing Progress and Clean Technology Act currently before the Commerce committee would provide low-cost loans to help manufacturers

retool to produce clean-energy technologies.

These policies together provide a comprehensive strategy for investing rapidly in the deployment of new technology, the transformation of our market-based economy, increasing opportunities for U.S. businesses, and expanding markets for American technology exports. When properly framed, the current energy debates can become a major catalyst for building a more robust domestic economy that invests in the infrastructure of communities, the skills of workers, and new profitable business models for American small business and large scale manufacturing.

Rather than trying to slow the movement to a low-carbon economy, it will show greater leadership to put in place smart policies that increase investment in new technologies and improved business practices, as a form of economic development.

Investing in a green recovery

The Center for American Progress, alongside the Political Economy Research Institute at the University of Massachusetts, has undertaken detailed analysis of the impacts that strong climate and clean-energy legislation could have on the U.S. economy. We looked at a suite of policies designed to curb CO₂ emissions by driving investment into clean energy technology, and assessed their impact on employment opportunities, economic growth and people's incomes. Our modeling focused on the combined impacts of two federal government initiatives. 1) The set of clean-energy provisions incorporated within the American Recovery and Reinvestment Act, initiated by the Obama administration and passed into law by Congress in February, and 2) The recently passed American Clean Energy and Security Act, co-sponsored by Rep. Henry Waxman (D-CA) and Rep. Edward Markey (D-MA).

Our analysis shows that these two measures operating together can generate roughly \$150 billion per year in new clean-energy investments in the United States over the next decade. This estimated \$150 billion in new spending annually includes government funding but is notably dominated by private-sector investments. We estimate this sustained expansion in clean-energy investments triggered by the economic stimulus program and the potential implementation of Federal climate and clean-energy legislation, can generate a net increase of about 1.7 million jobs nationally. This expansion in job opportunities can continue as long as the economy maintains a commitment to clean-energy investments in the \$150 billion per year range. If clean-energy investments expand still faster, overall job creation will increase correspondingly.

These job gains would be enough—on their own—to reduce the unemployment rate in today's economy by about one full percentage point, to 8.4 percent from current 9.4-percent levels—even after taking into full account the potential for any job losses or transitions elsewhere in the U.S. economy. Our analysis calculates that roughly 2.5 million new jobs would be created overall by spending \$150 billion on clean-energy investments. Similar investments in conventional fossil fuel energy would produce only 800,000 jobs, so that even if all the investment in clean energy and efficiency were to

come directly from traditional energy sectors, an unlikely event, the total impact on the U.S. economy would be a net gain of 1.7 million sustained jobs.

What's more, we looked closely at the distribution of the jobs created in a low-carbon economy, and found clean-energy investments generate roughly three times more jobs than an equivalent amount of money spent on carbon-based fuels, with substantially more jobs created at all wage levels. Importantly, within the lower wage sectors of the economy, we further identified substantial opportunities for rebuilding skill ladders into career track employment, if smart climate and energy policies are linked to economic development, workforce investment, and job-based training programs. From our analysis it is clear that a clean-energy economy is a better economy for American businesses and American workers, creating more jobs and better jobs, even as it improves the efficiency and productivity of markets and reduces the costs of environmental pollution.

As a final piece of analysis, our research looked at the various economic models used to estimate the impact of a carbon cap on the long-run growth trajectory of the U.S. economy. Our key finding: All of the models, without exception, forecast that with a carbon cap, such as that proposed in the ACES act, the economy would grow very substantially, and that climate policy would at most slow this growth by only a matter of a few months many years in the future. Moreover, these models generate this basic finding without considering some of the major ways in which clean-energy policies can stimulate economic growth. These include the expansion of employment opportunities itself, a reduction in the trade deficit, promoting technological improvements and thus falling prices in renewable energy sources, and reducing the negative impacts on economic activity of greenhouse gas emissions and unmitigated global warming.

From this analysis, it is clear that under even the most pessimistic assumptions, the costs of climate and clean-energy legislation are small, while the benefits both from increased economic growth, and avoided negative consequences of inaction are very substantial. Our analysis supports strong public policy action in the near term to limit carbon emissions, by investing in the rapid deployment of new clean, renewable, and energy efficient technologies.

Establishing the right roll for both public and private sector action

There is a common misconception that the "green jobs" resulting from a transition to clean energy will amount to government work. Nothing could be further from the truth. Private sector investments will be the main engine driving growth in the clean energy economy. The scale of the energy transformation is simply too large for public sector resources and programs to tackle alone. The significant public investments in clean energy included in the American Recovery and Reinvestment Act were a one-time stimulus to respond to dire economic circumstances. And it is unlikely that we'll see additional public funds at the same magnitude of ARRA anytime soon given the current state of U.S. government finances. Further, even stimulus funds were designed to create work in private companies using an infusion of public investment.

Private businesses will create most clean-energy jobs under climate legislation, as well. Existing sectors will expand, and whole new industries will develop to respond to increasing demand and new markets for clean-technology goods and services. The private sector will also lead the way in technological innovation, developing new products that will serve the domestic market and be exported to a global economy hungry for low-carbon energy solutions.

Yet these private sector investments will not materialize at nearly the scale needed without an initial dose of public investment coupled with strong public policy drivers. This is particularly true given the current policy environment, which disregards the cost of inaction on global warming and lacks the foresight to calculate the tremendous benefits that would accompany a strong clean-energy investment effort.

This is a time-tested script. Smart policy sets a framework for investment. It sends signals to the market that in time can transform the larger economy. This is how we built the railroads, electrified rural America, deployed the National Highway System, and launched a nuclear energy industry. In each case, public investment and public policy created vast new opportunities for jobs and profits in the private sector, enabling market transformation and industry growth.

Public policies are now necessary to correct existing market failures and put clean energy on an even playing field with fossil fuels; to establish the market certainty that businesses need to make long-term investment decisions; and to provide stable, long-term support for clean-energy research, development, and deployment, just as they have done in the past for the medical, aeronautical, and information technology sectors. The government itself can play a role in creating a market for clean-energy products by passing procurement policies that require it to purchase renewable energy and efficient goods and services.

Public investment is also required to bring the aging electrical and transportation infrastructure that powers our industries and facilitates commerce into the 21st century, and to ramp up our workforce and manufacturing infrastructure to meet the enormous new demands for goods and services that will result from new clean-energy markets. And finally, there is a public role to play in ensuring that we transition to a clean energy economy in a way that creates broadly shared prosperity and tangible economic and environmental benefits to local communities.

We will need a policy architecture that is much more comprehensive and nuanced than a simple cap-and-trade system for global warming pollution if we are going to achieve these goals. Existing buildings, for example, account for 40 percent of all energy use and greenhouse gas emissions, and the complexities of the real estate sector necessitate a specific strategy to encourage energy efficiency retrofits at scale. A gradual increase in the cost of energy from polluting sources will not be enough, nor is it a viable option for many low- and moderate-income consumers. Similarly, putting a cap and price on pollution will certainly help drive the market for less-polluting energy generation, but we will not see the ramp-up in new energy sources that we need without a corresponding

strong renewable energy standard that requires every state to meet a set percentage of its power needs through renewable generation.

Rebuilding America through energy efficiency:

One specific opportunity to simultaneously address the challenges of economic recovery, energy insecurity, and global warming deserves special mention. Energy efficiency retrofits in our nation's existing building stock offers an exceptional opportunity to lay the foundation for sustained economic growth, driving demand in the construction and manufacturing sectors by creating hundreds of thousands of good jobs across the country. Retrofitting our homes and businesses will also slash consumer energy expenditures, increase real estate values, and provide low-cost, near-term reductions in global warming pollution.

Buildings account for 70 percent of all U.S. electricity consumption and 40 percent of total U.S. greenhouse gas emissions today. Yet much of our housing and building stock is old, inefficient, and unnecessarily wasteful. While building codes and green building standards offer a tool for achieving deep improvements in energy use for new buildings, half of the buildings that will be standing in 30 years already dot our landscape. Any strategy to capture the benefits of energy efficiency in our "built environment" must include a program to retrofit our existing stock of residential, commercial and industrial structures. Deep building retrofits can cut energy use by 20 to 40 percent with proven techniques and off-the-shelf technologies. Best of all, they can pay for themselves from the energy they save.

A national program to "Rebuild America" could cut energy waste in buildings, which could reduce energy bills economy-wide by hundreds of billions of dollars annually. Energy efficiency retrofits also create good local construction jobs across the country at a time when well over a million construction workers sit idle in a sagging housing market. Demand for the manufactured products needed to retrofit buildings will also result in jobs by revitalizing the manufacturing sector and contributing to sustainable, long-term economic growth. Although building retrofits can be profitable and offer additional social and economic benefits, the market for energy efficiency faces many information failures and real market barriers. Only a smart policy can overcome this problem.

Retrofitting our houses and office buildings cannot be accomplished by public programs alone, however. Rebuilding our "built environment" will require changes in our real estate markets, new energy efficiency financing tools, more skilled labor to handle the construction and inspection work, and new private capital investments in the industries, infrastructure, and workforce required for energy efficiency. A coherent and coordinated national strategy for unleashing the market for energy efficiency is essential.

Establishing a national goal of retrofitting 50 million buildings—40 percent of our building stock—by 2020, would require \$500 billion in public and private investment but

will directly and indirectly generate approximately 625,000 sustained full-time jobs and save consumers \$32 billion to \$64 billion a year in energy costs, or \$300 to \$1,200 a year for individual families. Clean energy and climate legislation recently passed by the House of Representatives calls for reducing greenhouse gas emissions from 2005 levels by 17 percent by 2020, and by 83 percent by 2050. Rapidly improving the efficiency of our existing buildings is essential to meeting these goals, and a Senate climate and clean energy bill now under consideration could help in very specific ways by supporting:

- Easier access for new customers to energy-retrofit programs and financing.
- Improved capacity of businesses to meet this new demand for retrofits.
- Training and certifying workers to handle this new demand and assure quality.
- Affordable financing for residential and small business retrofits.
- New institutions that will organize this market.

Opportunities for Pennsylvania:

But national trends can be misleading when seen from within particular communities, so every state and region is right to ask what benefit a clean energy economy will mean to them. I am very pleased to report that Pennsylvania is well positioned to be a leader in the creation of green careers and innovation led clean technology businesses.

Already, there were 38,763 clean-energy jobs and 2,934 clean-energy businesses in Pennsylvania as of 2007. This only counts direct jobs and not the many indirect jobs in industries that support the clean energy economy. Pennsylvania's clean-energy businesses patented 241 new clean-energy technologies in 2007 alone. This is in part the product of leadership in the Commonwealth that saw early that renewable energy can be a form of economic development, linking state loan programs, industrial recruitment, and workforce training to the development of new clean-energy businesses such as Gamesa, the Spanish wind manufacturer that has opened several plants in Western Pennsylvania, and other manufacturers of advanced fuels, clean-coal technology, and other clean-energy products and services.

Additionally, efficient utilization of Pennsylvania's supply of natural clean energy sources can be tremendously beneficial. According to an economic study completed in July 2009 by the Pennsylvania State University for the Marcellus Shale Committee and the Pennsylvania House Natural Gas Caucus, natural gas drilling in the Marcellus Shale formation has the potential to infuse more than \$14 billion into Pennsylvania's economy in 2010 and create more than 98,000 jobs, while generating \$800 million in state and local tax revenues.

Looking forward, Pennsylvania will see \$6.1 billion in new public and private investment due to programs and incentives under the American Recovery and Reinvestment Act and American Clean Energy and Security Act. These investments will lead to 71,667 net new clean-energy jobs in Pennsylvania. As a coal producing state, your alternative energy policies have already pioneered new ground in demonstrating that innovative use of fossil

fuels can play a major part in developing a low carbon economy. But the economic benefits to commonwealth residents do not stop with direct job creation. Smart investment in energy efficiency and clean-energy technology are also a form of consumer protection by driving down energy bills for homeowners.

The average household in Pennsylvania will see a monthly savings of \$6.70 on their electricity bill by 2020 due to ACES' consumer protection and energy-efficiency provisions. Households in Pennsylvania will also save \$11.86 on gasoline each month by 2020 due to lower oil prices and more fuel-efficient vehicles under ACES. It is critically important to understand that with sound investments in energy efficiency, a clean energy bill can actually reduce family's monthly payments on energy. The average American family's annual spending on oil, gas, and electricity increased by \$1,100 under the Bush administration's energy policies. But American electricity and fuel bills would go down under the consumer protection provisions in the ACES bill. Emissions allowances allocated in the ACES bill for state efficiency programs alone will save Pennsylvanians \$2.7 billion between 2012 and 2020.

Conclusion:

Thank you Senator Specter for the opportunity to address this hearing. The Center for American Progress Action Fund salutes you for your courage and your leadership in supporting a smart recovery package that invested in clean energy, and for your vision of a national climate and energy strategy that supports workers in emerging technology, but also in existing manufacturing, construction, and energy sector jobs. We can have a national climate bill that is good for workers, good for rate payers, and good for the people of Pennsylvania. With your leadership in the Senate, we believe we can also have a climate bill that drives our economic recovery.

Thank you for your leadership, we stand ready to support you in this important work.