Hearing on Clean Energy Deployment Administration within the Department of Energy

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Good morning, Chairman Bingaman, Ranking Member Murkowski and Members of the Committee. My name is John Denniston, and I am a partner at the venture capital firm Kleiner Perkins Caufield & Byers. I most recently testified before you in July of last year, and am honored to return today to share my views on how federal policy might help build a more sustainable energy future.

I'm inspired to witness the manner in which you've been tackling our energy crisis with bold legislation, including the pending Clean Energy Deployment Act, CEDA. This bill couldn't be more essential at this juncture, promising to provide not only strong environmental stewardship but also well-timed help for our struggling economy, and a tonic for U.S. international competitiveness.

Making the clean energy loans enabled by CEDA even more opportunely timed is the progress you and your colleagues are making toward adopting comprehensive energy legislation. As America moves forward to reduce greenhouse gas emissions and enhance our climate security, it becomes all the more urgent to empower our capital markets to support new, clean energy technologies.

Together with most of the rest of America, venture capital and technology industry professionals - Democrats and Republicans alike – we are deeply concerned about the risks posed by our energy crisis: a tripartite challenge encompassing climate change, energy security, and increasing threats to our global competitiveness. At the same time, our industry is in a unique position to help seize the opportunities these challenges present to rebuild our economy, creating jobs and prosperity along the way.

Even in these difficult economic times, the American venture capital sector stands ready and able to spur new, innovative businesses and boost employment. According to an IHS Global Insight Study soon to be released, venture-backed companies in 2008 employed more than 12 million Americans, and generated nearly $3 billion in U.S. sales, corresponding to 10.5% percent of U.S. private sector employment and 20.5% percent of U.S. GDP. From 2006 – 2008, venture-backed companies grew jobs at three times the rate of the private sector taken as a whole.

In fact, over the past several decades, U.S. technology companies have accounted for as much as one-half of GDP growth, providing Americans with one of the world's highest standards of living. Our country would look quite a bit different today had we not, several decades ago, become a global leader in biotechnology, computing, the Internet, medical devices, semiconductors, software, and telecommunications.

Founded in 1972, and based in California's Silicon Valley, Kleiner Perkins is one of America's oldest venture capital firms. We have funded more than 500 start-up companies, backing innovative entrepreneurs in the digital, green technology and life science industries. More than 170 of our companies have gone public, including Amazon.com, AOL, Compaq Computer, Electronic Arts, Genentech, Google, IDEC Pharmaceuticals, Intuit, Juniper Networks, Millennium Pharmaceuticals, Netscape, Sun Microsystems, Symantec, and VeriSign. Today, our portfolio companies collectively employ more than 275,000 workers and generate nearly $100 billion in annual revenue.

Kleiner Perkins is a member of the National Venture Capital Association and a founding member of TechNet, a network of 200 CEOs of the nation's leading technology companies. I serve on TechNet's Green Technologies Task Force. My testimony today reflects my own views.

Before I respond to your invitation to comment on the pending Clean Energy Deployment Act, I'd like to briefly recap and augment some of my previous testimony – an overview of the way many of us in the venture capital industry perceive the energy challenges and opportunities now facing our country. I've touched on some of the following points in my previous testimonies, but at the risk of a little repetition, I think it's worthwhile to bear in mind the scope of our challenges as we move forward to address them.

The Energy Crisis

There's a fast-growing consensus among Americans today about the need to confront our three main energy challenges: the climate crisis, our dependence on foreign oil, and the risk of losing our global competitive edge by failing to champion the new green technologies which are destined to become a dominant economic growth engine over the coming years and decades.

Addressing these challenges vigorously may well be our best opportunity to alleviate our financial crisis, create jobs and get back on the road to prosperity. Green technologies – including sun, wind and geothermal power, as well as advanced batteries, electric transportation, and waste-to-energy processes – offer this country's best hope of combating climate change, rebuilding our domestic economy and regaining our edge as an economic superpower. But we have little time to spare.

Climate Change:

America's leading scientists predict we have only a short period of time to make dramatic cuts in our greenhouse gas emissions or risk potentially catastrophic climate change. Global temperatures and sea levels are already rising and will continue to do so; the question now is whether we can slow down the projected rate of future increases.

Climate change is no longer a partisan issue: both President Obama and Republican former presidential candidate Senator John McCain have publicly declared we must confront this crisis, with President Obama putting it at the top of his policy agenda. Yet to our peril, we have so far failed to move with the requisite speed and determination.

Energy Security:

As for our energy security dilemma, this Committee is well aware that America continues to import approximately 70% of our oil needs. Given both rising international competition for these supplies and the political instability of some of our major suppliers, this is clearly a high-risk, unsustainable strategy.

Global Competitiveness:

Finally, our future prosperity is at risk, and here I speak from personal experience. As I've traveled on business to Asia and Europe, I've watched other governments strive, and often succeed, in emulating in the renewable energy sector the technology innovation that has been a hallmark of the U.S. economy. Determined public policy has given overseas entrepreneurs advantages, including financial incentives and large investments in research and education.

Simply put, America is trailing in the race to build renewable energy industries – the very industries that offer us our best hope of job creation and a rising standard of living. The news is sobering: Only five U.S. companies appear among the international lists of the top-ten firms producing solar modules, wind turbines and advanced batteries. That's five out of the top thirty companies in those crucial industries, a paltry 17% market share, and a far cry from the dominant position American companies enjoyed during the information technology revolution. Consider this: today, more Germans are employed by their greentech industry than by their automobile industry.

If we fail to reverse this equation, we'll forfeit our hope of solving our energy security crisis. In that case, future Americans will still be dependent on foreign energy imports – the only difference is they'll be importing innovative green technologies instead of crude oil.

As much as we've already fallen behind, however, I'm convinced there's still time for the United States to catch up, and once again lead a global technological revolution.

Renewables: The Opportunities

Moore's Law & The Pace of Technological Progress:

In Silicon Valley, we often refer to a principle known as Moore's Law: a prediction, credited to Intel co-founder Gordon Moore back in the 1960s, that semiconductor performance would double every 24 months. Moore's law underpins the information technology revolution of the past three decades. Better, faster, and cheaper silicon chips led the way, over just the past quarter of a century, from an era of big and expensive mainframe computers to affordable hand-held cell phones that today connect people all over the world to the Internet and to each other.

Over the past decade, we at Kleiner Perkins have seen signs of a Moore's Law dynamic operating in the energy sector, giving us confidence the rate of greentech performance improvement and cost reduction will lead to energy solutions we can't even imagine right now.

Alternative energy has become increasingly affordable. We're seeing breakthroughs in a host of energy-related scientific disciplines, including material science, physics, electrical engineering, synthetic chemistry, and biotechnology.

These improvements have occurred over a period of time in which there has been relatively little government policy support or entrepreneurial focus on these sectors. Today, we're witnessing many of our best and brightest innovators stream into the greentech sector. Imagine what American ingenuity might accomplish in the future as we combine our world-class entrepreneurial talent with a powerful policy push!

Renewables: The Challenges

Our opportunities are breathtaking. Yet today, three major obstacles still impede faster commercialization of renewable energy.

The Financial Crisis:

Our current economic downturn poses a dire threat to our overdue efforts on energy reform. Energy companies – both green and brown – depend on a flow of debt and equity investments to survive and prosper. But the financial crisis has squeezed financial markets, particularly prejudicing the emerging clean energy industry.

Long before this recession began, renewable energy companies with breakthrough technologies faced a unique "valley of death" challenge: it has been difficult, and often impossible, for these innovative companies to obtain debt financing on projects at their earliest stages. Banks are typically not interested in providing loans to companies with novel technologies until they have been fully demonstrated, over a period of time, in the marketplace.

As you might imagine, the global downturn has turned this valley of death even drier. Many promising new technologies today are being delayed or thwarted by the scarcity of commercial loans. The credit markets are unwilling or unable to assume the risk to help them grow.

A Tilted Playing Field:

The high cost of renewable energy sources, relative to the incumbent fossil fuel and nuclear competition, is a second barrier to greater capital investment and more rapid adoption of clean power. Why does green power still cost more? Primarily because it's still so new, meaning innovators have only just begun to work on cost-reducing breakthroughs, and production volumes are still so low that providers have yet to benefit from economies of scale. In other words, these cost-down and scale-up phenomena are still in their infancy in the renewable energy industries. In contrast, most coal-fired and natural-gas plants were constructed many years ago, have already achieved the benefits of cost reductions, and are now fully amortized, meaning their owners no longer need to pass on these costs to ratepayers.

It's also worth noting that government policy to date has provided powerful and costly support for fossil fuels and nuclear energy. In the special case of nuclear power, the federal government has for many

decades assumed enormous costs for research and development, plant operations, insurance and waste disposal – all of which, if borne by nuclear plant operators, would make this power source a much less viable option.

Beyond government subsidies, the fossil fuel industry has long benefited economically by escaping responsibility for the costs of the environmental consequences of its emissions – instead, society has paid that price. These traditional power sources would become much more expensive, and alternative sources of energy more cost-competitive, if plant owners had to bear the true costs of these emissions.

Scarce Research Funding:

The third major impediment to swift commercialization of clean energy is America's woefully long record of underfunding basic, translational and applied research for green technologies. At a time when faculty interest in this field has never been keener, our leading research institutions are begging for federal funding. Amounting roughly to just $1 billion annually - most of which is ear-marked - DOE funds dedicated to clean energy research are minuscule relative to the problem at hand, especially when you take into account that America's energy arsenal lacks a sufficient array of technological strategies to solve our energy crisis. If we don't start filling our pipeline with innovative new approaches, other countries which have long been more prescient about this opportunity will continue to dominate this critically important market.

The Pending Legislation

Turning now to the pending Clean Energy Deployment Act, I first want simply to repeat my enthusiasm. This far-sighted and skillfully drawn bill directly addresses one of the most daunting impediments to the more rapid adoption of renewable energy sources: the longstanding unavailability of loans for breakthrough technologies now aggravated by our financial crisis.

CEDA's Progress

Goals and Priorities:

While I applaud your efforts in general, I particularly admire several specifics of this bill, including the adroitly worded goals, and the tactic of creating a diversified portfolio, weighted in favor of the most effective technologies. By setting out your goals so clearly and drawing on scientific expertise to prioritize projects accordingly, you are taking a big step to favor the technologies that will give us the

biggest bang for the buck, in terms of protecting the climate, providing new jobs, and establishing energy security.

Breakthrough Technologies:

I heartily commend CEDA's rational and balanced approach of supporting newer technologies, even though they carry with them somewhat higher commercialization risks than conventional energy sources. The loan-loss reserve provisions send a clear signal that CEDA's managers are to provide the maximum practicable percentage of support to promote breakthrough technologies – a recognition that these innovations will lead the way in addressing our energy crisis. In contrast, a zero risk tolerance policy would defeat our efforts to mobilize America's inventive spirit in this endeavor.

From my reading of the bill, it also appears that once our current financial crisis ends and credit markets return to normal, CEDA managers will be authorized to step back from lending to recipients that can secure their own private funding. This will allow the federal government to focus its limited resources on those breakthrough technologies struggling to cross the "valley of death."

Yet another welcome nod to younger companies is CEDA's stipulation that its managers, in appropriate cases, may reduce, or even eliminate, previously required initial "loan loss reserve" payments, currently calculated by multiplying the loan guarantee amount by an actuarially determined default probability. Most emerging growth companies cannot afford these payments. Similarly, CEDA lightens the burden for companies pioneering breakthrough technologies by minimizing application fees for loan guarantees.

Loan Aggregation:

Loan aggregation is another terrific, and again, timely feature, since it will both facilitate the rapid increase of clean energy loans and energize the local banks that provide them. Under this approach, CEDA will be able to bundle together loans from multiple borrowers, which will both finance the up-front cost of renewable energy products for large numbers of buyers and reduce the cost of capital by lowering interest rates.

A Broadened Range of Eligible Loans:

The legislation furthermore wisely expands the types of loans and credit enhancements that may be issued. This flexibility will empower federal officials, for example, to help provide financing to manufacturers and loan guarantees for customer purchases of clean technologies, such as solar panels and fuel cells. In light of the credit crisis, many potential manufacturers and customers would be otherwise unable to produce and buy renewable energy products.

Finally, I note that CEDA has been structured in a manner that allows government and private sector lenders to collaborate. I can imagine that one potential approach would allow CEDA and private lenders to share collateral. This could be done, for instance, by allowing a private lender to obtain a senior security interest on specific equipment, while at the same time, an additional, CEDA-enabled loan could attach its senior security interest to the remainder of the project. This flexibility will create a multiplier effect on the capital made available to clean energy companies under CEDA.

Recommendations

All these features go far along the way to ramp up urgently needed energy reform. Since you've asked, however, I'd like to recommend five ways you might go even further:

1. Loosen Hiring Restrictions:

American taxpayers will expect CEDA to retain the best available talent to make decisions involving many billions of dollars worth of complex loans, loan guarantees and other forms of credit enhancement. The current draft of the legislation allows CEDA to hire up to 20 employees outside of the customary federal hiring restrictions, and only in extraordinary situations, for example, where the CEDA Administrator certifies that CEDA "would not successfully accomplish an important mission without such an individual."

I recommend CEDA not be bound by unnecessarily restrictive federal hiring policies, as the DOE loan guarantee authority is today. These hiring restrictions to date have certainly slowed the implementation of the loan guarantees authorized under the 2005 Energy Policy Act. I believe a better approach would be to allow CEDA to employ and contract expertise as it sees fit, providing compensation consistent with prevailing private sector rates.

2. Add Business Expertise to the Advisory Council:

While I'm encouraged to note CEDA's refreshing strategy of welcoming scientific expertise to the new bank's Advisory Council, I recommend you balance that know-how with financial and energy market expertise, particularly individuals with experience with renewable energy. I believe this combination of scientific and business expertise will lead to the best decisions at the Advisory Council level.

3. Address Other Shortcomings of Existing Loan Policy:

CEDA amends the existing DOE loan guarantee program in important ways, but I recommend one further step: eliminating by statute the need for a credit rating agency review in the case of emerging growth companies. Such a review typically costs at least $150,000, and in the case of start-up firms simply confirms what everyone already knows - that fledgling companies have low credit ratings. This requirement should be eliminated in the case of young companies.

4. Collaborate with the Department of Energy

As I'm sure this Committee is already aware, the first conditional DOE loan guarantees were issued only very recently, even though Congress granted loan guarantee authority more than three years ago, in the 2005 Energy Policy Act. Energy Secretary Stephen Chu's team has been working hard to correct this state of affairs and get loans out the door to credit-starved energy companies. In addition to issuing conditional guarantees, Secretary Chu and his team are working to reduce the complexity and cost of applying for loan guarantees – efforts that will be particularly helpful to start-up companies. I would encourage you to implement CEDA in a fashion that doesn't interfere with the recent, impressive progress we've witnessed.

5. Communicate Progress and Challenges:

As our government moves ahead with its clean energy campaign, an effort that will surely require substantial cost and sacrifice, it will be particularly important to communicate to Americans what their tax dollars are achieving.

To this end, I'd like to remind you of a suggestion I've made in past testimony, which is to create a national energy dashboard - perhaps managed by the DOE - to monitor our national energy transition. Updated monthly and widely disseminated, the dashboard might measure greenhouse gas emissions, the share of U.S. energy consumption powered by imported fuel, U.S. market share of the global renewable

energy industry, federal funding for renewable energy research, and perhaps now even the ramping up of federal loans and credit enhancement.

Conclusion

Today's energy challenges are so vast and varied that we're ultimately limited only by our imagination in the ways we can most effectively address them. Again, however, I'm heartened by this Committee's efforts, and grateful you've once again invited me here to collaborate with you.

I look forward to today's hearing and to learning more about how we can work together to build a more secure future for America and the world.