

**TESTIMONY OF
JOHN DENNISTON
PARTNER
KLEINER PERKINS CAUFIELD & BYERS**

**BEFORE THE
HOUSE COMMITTEE ON AGRICULTURE
SUBCOMMITTEE ON CONSERVATION, CREDIT, ENERGY, & RESEARCH
MARCH 7, 2007**

Introduction

Good afternoon, Chairman Holden, Ranking Member Lucas and Members of the Subcommittee. My name is John Denniston and I am a Partner at the venture capital firm Kleiner Perkins Caufield & Byers. It's my privilege to be here today and to have the opportunity to share my views on moving advanced energy technologies to the marketplace.

Ensuring a sound energy future is one of the most urgent policy challenges facing our nation and indeed the global community, and I sincerely appreciate this Committee's leadership in this arena.

Along with the rest of America, venture capital and technology industry professionals – Republicans and Democrats alike -- are deeply concerned about the risks to our nation's welfare posed by our energy dilemma. Specifically, this includes the looming climate crisis, our oil addiction, and the very real danger of losing our global competitive edge. Yet our industry is also in a unique position to recognize that each challenge presents dramatic new opportunities to build our economy, creating jobs and prosperity.

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, which next week will release a detailed set of policy recommendations to drive the development and adoption of technologies we believe can help solve some of the world's most pressing energy and environmental problems. We refer to this emerging industry as "greentech," and it includes everything from fuel cells to biofuels to the mechanics enabling solar and wind power, geothermal and tidal power and small-scale hydropower. We look forward to sharing that report with the Committee. My testimony today reflects my own views.

Based in California's Silicon Valley, and founded in 1972, Kleiner Perkins is one of America's oldest venture capital firms. We have funded more than 500 start-up companies over the years, backing entrepreneurs who have introduced innovative advances in such vital growth industries as information technology, medical products and services, and telecommunications. More than 170 of our companies have gone public, including Amazon.com, AOL, Compaq Computer, Electronic Arts, Genentech, Google, IDEC Pharmaceuticals, Intuit, Juniper Networks, Millenium Pharmaceuticals, Netscape,

Sun Microsystems, Symantec, and VeriSign. Today, our portfolio companies collectively employ more than 275,000 workers, generate \$90 billion in annual revenue, and contribute more than \$400 billion of market capitalization to our public equity markets.

Before joining Kleiner Perkins, I was a Managing Director at Salomon Smith Barney, where I served as the head of Technology Investment Banking for the Western United States. Prior to that, I was a Partner at the law firm Brobeck, Phleger & Harrison, where I was the head of its Venture Capital Practice Group.

In the 1990's, I served on the Board of Directors of a California-based fuel cell start-up firm. The experience opened my eyes to both the daunting energy challenges our country faces and the myriad opportunities we have to solve our problems through technology innovation.

You've asked me specifically to address the current conditions of the biofuels market, including public policies affecting the industry, and to recommend policy initiatives going forward. Before I speak to that, I'd like to take just a few minutes to offer an overview of how I and many of my venture capital colleagues perceive the energy challenges and opportunities facing our country today.

The Challenges

I believe there is an unprecedented degree of consensus in America today as to our three main energy challenges: the climate crisis, our dependence on oil, and the risk of losing our global competitive edge by failing to champion new technologies that are becoming a huge new source of economic growth, jobs and prosperity.

The Climate Crisis

Just last month, the most recent report of the more than 2,000 scientist members of the Intergovernmental Panel on Climate Change warned us, once again, that the planet is warming, glaciers are melting and sea levels are rising. The panel concluded, with ninety percent certainty, that most of this warming is due to higher greenhouse gas concentrations in the atmosphere, including fossil fuel emissions from human activities.

Many scientists predict we have only a short period of time to make dramatic cuts in our greenhouse gas emissions or risk irrevocably changing the climate. In fact, the IPCC report concludes temperatures and sea levels would continue to rise even if we were somehow able to immediately stabilize atmospheric concentrations. To date, we have failed to heed such warnings.

I want to note that in the venture-capital profession, we never make commitments without thorough research and consideration. Professionally and personally, I'm convinced, on the basis of exhaustive scientific evidence, we need to take bold action to solve our climate crisis. But wherever you stand on this issue, it's clear a lot of creative momentum is building in this country to seek solutions to global warming, including new collaboration between energy companies, civic groups and scientists, such as the United States Climate

Action Partnership (USCAP). This trend is promising not only for our environment, but for our national security and our economy.

Energy Security

As for our energy security dilemma, this Committee is well aware the U.S. imports about 30% of its overall energy needs, including approximately 60% of its oil. Rapid growth in worldwide energy demand has stretched supplies, tripling the price of both crude oil and natural gas. And there is every reason to assume this trend will continue, as world population and energy demand increase.

Global Competitiveness

Finally, our future prosperity is at risk, and here I speak from very personal experience. Just in the past year, as I've traveled on business to China and Europe, I've witnessed how the rest of the world is striving, and often succeeding, to emulate the technology innovation that has been a hallmark of the U.S. economy and perhaps the single most important driver of our enviable standard of living. Increasingly, entrepreneurs overseas enjoy advantages in the form of determined government policies, including financial incentives and large investments in research and education.

Credible economic studies suggest our technology industries are responsible for roughly one-half of American GDP growth. 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.

Today, as our global energy challenges become ever more pressing, it's clear future economic growth throughout the world will depend to a great degree on new technologies to help us preserve our environment. Green energy technologies could very well become the economic engine of the 21st Century. Given its potentially massive market size, "greentech" could be the most powerful economic force of our lives. But will America again lead the way?

The Opportunities

Kleiner Perkins has been investing in the greentech field for the past seven years, backing more than 15 innovative companies in the fields of biofuels, coal gasification, energy efficiency, energy storage, fuel cells, solar energy, thermoelectrics and transportation. In the process, we've witnessed how technological progress is already revolutionizing our relationship with energy, solving problems that only recently seemed all but intractable. Solar manufacturers are innovating their way around silicon shortages, with next-generation materials including pioneering thin-film technologies. The agriculture industry is producing transportation fuels from plant matter -- even from microscopic algae -- and is developing technologies so we can economically convert non-edible plants to biofuels. And nanotechnology breakthroughs are creating the promise of new ways to

store energy, which in turn could dramatically accelerate market adoption of solar and wind power.

At Kleiner Perkins, four accelerating trends have encouraged us to make greentech a core investment sector:

- The promise of exponential growth in the energy technology field. The rapid cost-reduction curve we are already witnessing will become ever steeper over time, making emerging sources of energy more and more competitive in the marketplace;
- Rising prices for fossil fuels – oil, gas and coal – are making competing alternative energy sources more attractive;
- World class talent, with both missionary and monetary motives, is racing into the greentech sector;
- Americans are growing much more aware of and concerned by our energy crises, a development we believe will lend support to more sweeping policy solutions.

Moore's Law & The Pace of Technological Progress

In Silicon Valley, we often refer to a principle known as Moore's Law, which I'd like to explain briefly here, as it's fortunately quite relevant to what we see happening in the energy field. Intel co-founder Gordon Moore has been credited with predicting, back in the 1960s, that semiconductor performance would double every 24 months. That prediction was spot on, and helps explain the information technology revolution of the past three decades. Better, faster, and cheaper silicon chips led our transition from an era – remember, it was just 25 years ago! – of big, mainframe computers used principally by university researchers, to our capacity today to read the morning's headlines on our cell phones.

Today, we can already see a Moore's Law dynamic operating in the energy sector, giving us confidence the rate of greentech performance improvement and cost reduction will offer new energy solutions we can't even imagine right now. At Kleiner Perkins, we are excited by the accelerating evolution we have seen in a host of scientific disciplines relating to the energy sectors, including material science, physics, electrical engineering, synthetic chemistry, and even biotechnology. (We are particularly encouraged by innovations resulting from combining breakthroughs in several of these separate disciplines into single products.)

Witness some of these examples of the greentech equivalent of Moore's Law:

- The price of wind power has plummeted by an order of magnitude since 1980, to the point where it is now very close to being able to compete with coal and gas power;

- Solar power costs have fallen by more than 60% over the past fifteen years;
- Ethanol production efficiencies per gallon have improved by more than 45% since 1982. Back then, state-of-the-art technologies produced a gallon of ethanol using 55,000 Btus with a capital cost of \$2.25 per gallon of annual production capacity. Today, we can produce that same gallon of ethanol with nearly half the energy previously required, and at nearly half the cost.

These and other improvements have occurred over a period of time in which there was relatively little government policy or entrepreneurial focus on these sectors. Imagine what American ingenuity could accomplish in the future as more and more of our best and brightest devote their efforts to the greentech field.

But now I'll move on to explain how I view the emerging biofuels industry, and to recommend how government policy might encourage this exciting new field.

The Biofuels Market

Kleiner Perkins has invested in several biofuel start-up companies, each with a different approach to the market. All of the companies we support are pursuing ways to produce biofuels from sources other than corn.

The biofuels market has been extraordinarily volatile. In the summer of 2006, crude oil prices briefly surpassed \$70 per barrel, and market corn prices were approximately \$2.50 per bushel. At that time, ethanol prices were pushed to unsustainably high levels for a short while, partly due to the phase-out of methyl tertiary-butyl ether ("MTBE"), the previously dominant U.S. fuel additive, which had been found to be a carcinogen. These market conditions permitted the ethanol industry to operate at attractive profit margins.

Later in the summer of 2006, however, commodity prices changed so as to narrow industry profits. Crude oil prices declined dramatically over a very short period, from \$78 per barrel to \$49 per barrel, while corn prices increased from roughly \$2.50 per bushel to over \$4 per bushel. As a result, at that time, the average production cost for ethanol makers in the United States increased, while the market price for ethanol declined. These commodity prices vary geographically.

The ethanol industry today is highly fragmented. In the past year, a large number of new companies have announced plans to build ethanol production facilities. However, the rapid deterioration of commodity prices has reduced the market capitalization of publicly held biofuels companies, with a ripple effect on private companies. As a result, I expect some of the announced plants will not be completed on schedule, and others will not be completed at all.

Biofuels industry leaders know they must continue to reduce production costs and increasingly use non-edible feedstocks in order to grow and help end our nation's

dependence on foreign oil. Cellulosic ethanol, which can be made from many sources of biomass, including weeds, prairie grass and even waste, holds the promise of reducing carbon emissions and benefiting the agricultural economy. Cellulosic biomass is cheap, relatively abundant and also popular, since it won't compete with food production. We have the technology today to produce mass quantities of cellulosic ethanol. However, that dream will be realized only when the industry lowers plant construction and production costs below where they are today.

Scientists and engineers are attacking this cost challenge with four tactics: crop engineering; pre-treatment of the cellulose to facilitate conversion to sugar; novel enzymatic conversion processes; and the use of a gasification conversion process instead of the conventional enzymatic approach. Meanwhile, other technical experts are working to develop low-cost methods of producing alternative fuels such as butanol, and applying synthetic biology tools to create even newer forms of biofuels.

Existing Policy

The two most important statutes relating to the biofuels industry are the renewable fuel requirements established by the Energy Policy Act of 2005 and the federal blender's credit, an excise tax incentive program first implemented in 1979 (Volumetric Ethanol Excise Tax Credit, also called "VEETC").

The 2005 Energy Policy Act put in place a Renewable Fuels Standard ("RFS"), which requires minimum volumes of renewable fuel, such as ethanol, to be used by petroleum refiners in the fuel supply. The annual requirements start at 4 billion gallons per year in 2006 and grow to 7.5 billion gallons by 2012. In my opinion, these minimum volumes have not affected the market, since the demand for these new fuels has quickly surpassed the statutory minimums.

The blender's credit allows gasoline distributors that blend ethanol with gasoline to receive a federal excise tax reduction of \$0.51 per gallon of ethanol.

Policy Initiatives

To address the climate change crisis and our oil dependence, and to strengthen American competitiveness, federal biofuels policy could be strengthened in several respects, including:

1. **Increase RFS Requirements.** Consistent with the "20 in 10" initiative announced by President Bush in his 2007 State Of The Union Address, Congress should significantly increase the RFS requirement to spur innovation. Congress should separately establish minimum E85 standards. The RFS requirements should include ethanol and all other alternative fuels.

2. **Create A Safety Net.** The blender's credit, as currently structured, does not create a safety net for the biofuels industry. Oil and corn commodity prices could once again move against the biofuels industry, draining profits and investment capital in the process. Two modifications to the blender's credit could assure the survival of today's nascent biofuels industry. First, change the structure of the credit so the amount is inversely related to the price of ethanol – at low ethanol prices, the credit is relatively high, and at high ethanol prices, the credit is relatively low. Second, change the payment mechanism so ethanol producers, not gasoline distributors, receive the subsidy. As an aside, I applaud Congress' recent vote to repeal the \$14 billion in subsidies the oil and gas industry has enjoyed for many years now.
3. **Provide Incentives for Non-Edible/Cellulosic Feedstocks.** Create a volumetric incentive, in addition to the blender's credit, for biofuels created from non-edible feedstocks. Congress might consider using some portion of the federal gasoline tax to partially fund this incentive.
4. **Mandate Flex Fuel Vehicles and E85 At Gas Stations.** The industry currently faces a chicken and egg problem in which E85 producers are reluctant to invest in distributing their fuel because there are so few flex fuel vehicles, and vehicle makers are reluctant to bring flex fuel vehicles to market because there are so few gas stations serving E85. Congress could break the log jam by requiring auto makers to produce a gradually increasing number of flex fuel vehicles, and by requiring a gradually increasing number of gas stations to be fitted with E85 pumps.
5. **Strengthen CAFÉ Standards.** A significant increase in CAFÉ mileage standards would without a doubt help kickstart the growth of all alternative fuels.
6. **Fast Track Approval For Energy Crops.** Many companies are pursuing modifications of non-edible crops so they can be used for biofuel feedstock. The USDA and, where applicable, the FDA and EPA, regulatory approval processes can be quite lengthy. Congress could accelerate the adoption of cellulosic biofuels by creating a statutory "fast track" approval process for non-edible feedstocks. The "fast track" process should not and need not compromise on safety issues.
7. **Federal Research Funding.** Total federal research funding for renewable energy (excluding nuclear power) and energy efficiency amounts to less than \$2 billion per year. Energy consumption and transportation account for roughly 15% of U.S. gross domestic product, which is approximately the size of the U.S. health care system. But research and development funding for new and necessary energy technologies is not commensurate. By comparison, the NIH budget this year is around \$28 billion. To oversee our federal energy research funding, I suggest Congress consider creating a new agency – you might call it the National

Institute of Energy – to consolidate and rationalize federal energy research funding.

8. **Federal Fuel Procurement**. The federal government could lead by example and become the single largest consumer of biofuels in the country. For example, the Congress could impose stringent RFS standards on federal vehicles.
9. **Cap And Trade**. Congress should apply a carbon cap and trade system to transportation fuels. A well-designed national cap and trade system could simultaneously address all three of America's energy-related crises: climate change, national security threats stemming from energy dependence, and the danger of losing American competitiveness. America had great success with such a system in the 1990s, when it was used to curb sulfur-dioxide emissions causing acid rain. Applied to the transportation industry, the system would help place a price on greenhouse gas emissions, today a costly externality of our energy production and use, and reward companies producing cleaner transportation fuels.

Once again, I want to thank the Subcommittee for inviting me here today. I believe we all have an opportunity to be part of the solution to our country's energy challenges. I look forward to today's hearing and to learning about how we can work together to build a more secure future.

Committee on Agriculture
U.S. House of Representatives
Required Witness Disclosure Form

House Rules* require nongovernmental witnesses to disclose the amount and source of Federal grants received since October 1, 2004.

Name: John A. Denniston

Address: Kleiner Perkins Caufield & Byers
2750 Sand Hill Road, Menlo Park CA 94025

Telephone: 650-233-2750

Organization you represent (if any): N/A

1. Please list any federal grants or contracts (including subgrants and subcontracts) you have received since October 1, 2004, as well as the source and the amount of each grant or contract. House Rules do **NOT** require disclosure of federal payments to individuals, such as Social Security or Medicare benefits, farm program payments, or assistance to agricultural producers:

Source: _____ Amount: _____

Source: _____ Amount: _____

2. If you are appearing on behalf of an organization, please list any federal grants or contracts (including subgrants and subcontracts) the organization has received since October 1, 2004, as well as the source and the amount of each grant or contract:

Source: _____ Amount: _____

Source: _____ Amount: _____

Please check here if this form is NOT applicable to you:

X

Signature: 

* Rule XI, clause 2(g)(4) of the U.S. House of Representatives provides: *Each committee shall, to the greatest extent practicable, require witnesses who appear before it to submit in advance written statements of proposed testimony and to limit their initial presentations to the committee to brief summaries thereof. In the case of a witness appearing in a nongovernmental capacity, a written statement of proposed testimony shall include a curriculum vitae and a disclosure of the amount and source (by agency and program) of each Federal grant (or subgrant thereof) or contract (or subcontract thereof) received during the current fiscal year or either of the two previous fiscal years by the witness or by any entity represented by the witness.*

PLEASE ATTACH DISCLOSURE FORM TO EACH COPY OF TESTIMONY.

JOHN DENNISTON - BIOGRAPHY

John Denniston is a partner with Kleiner Perkins Caufield & Byers and came to KPCB from Salomon Smith Barney, where he was a Managing Director and Head of Technology Investment Banking for the Western U.S., and also served on the Investment Committee for Salomon's direct investment venture fund and its venture capital fund-of-funds. Prior to Salomon, John was a Partner with the law firm Brobeck, Phleger & Harrison, where he was the head of Brobeck's Venture Capital Practice Group, Co-head of its Information Technology Practice Group and a member of the Investment Committee for its venture capital fund.

Committee on Agriculture
U.S. House of Representatives
Information Required From Non-governmental Witnesses

House rules require non-governmental witnesses to provide their resume or biographical sketch prior to testifying. If you do not have a resume or biographical sketch available, please complete this form.

1. Name: John A. Denniston

2. BusinessAddress: Kleiner Perkins Caufield & Byers

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Menlo Park, CA 94025

3. Business Phone Number: 1-650-233-2750

4. Organization you represent: _____

5. Please list any occupational, employment, or work-related experience you have which add to your qualification to provide testimony before the Committee:

Partner, Kleiner Perkins Caufield & Byers

Previously, Managing Director and Head of Technology Investment Banking,

Western U.S., Salomon Smith Barney; Partner, Brobeck, Phleger & Harrison.

6. Please list any special training, education, or professional experience you have which add to your qualifications to provide testimony before the Committee:

7. If you are appearing on behalf of an organization, please list the capacity in which you are representing that organization, including any offices or elected positions you hold:

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