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**The Global Clean Energy Race**

**United States House of Representatives**
**Select Committee on Energy Independence and Global Warming**
**Wednesday, September 22, 2010**

## Introduction

Chairman Markey, Ranking Member Sensenbrenner, and Members of the Committee -- thank you very much for inviting me to be here today. It is truly an honor.

I appear before you here today as a general partner of New Enterprise Associates (NEA). NEA is, by assets under management, the largest US venture capital firm with ~$11 billion under management. Through our 30 years of history we've funded over 650 companies and have had over 160 of them go public. Our 50 largest companies have created over $65 billion in revenues and have created hundreds of thousands of jobs in this country. Today we have a global footprint, with offices in India and China and roughly 20% of our committed capital targeted at emerging markets.

In the past, the US venture capital (VC) industry has played a pivotal role in developing industries such as biotechnology, computing, medical devices, semiconductors, telecommunications, and the Internet. We deploy our capital in rapidly expanding companies which have the highest potential for long term economic growth and job creation. According to the National Venture Capital Association (NVCA), US VC-backed company revenue has equated to more than 22 percent of US GDP and over the past 3 years alone VC-backed companies have accounted for 3 times the growth rate in job creation than the private sector taken as a whole.

Today, the energy technology industry represents one of the most compelling investment opportunities in the history of venture capital. I serve as the co-head of our energy practice overseeing more than 30 portfolio companies here in the US that have raised a total of $2 billion in capital. Our enthusiasm for this emerging sector is shared by the vast majority of VC firms, with more than half of the NVCA's over 400 members expected to increase their allocation to the sector this year. NEA made its first investment in the clean energy sector in 2002 – at the time, the total capital deployed by VC and PE firms in clean energy totaled less than $500 million annually. Over the past 8 years, more than $40 billion has been invested in the sector. In spite of challenging economic conditions and a contraction in venture capital fundraising, the clean technology industry has attracted substantial venture capital investment in 2010, up more than 50 percent year over year.

Our portfolio includes investments in sectors such as Solar, Wind, Nuclear, Advanced Batteries, Smart Grids, Electric Vehicles, and Energy Efficient Building Materials. Many of our entrepreneurs are commercializing technologies developed in universities and national laboratories leveraging the historic and ongoing investment of federal funds, and have created

companies with innovation from great institutions such as Stanford, MIT, the University of Texas, NREL, NASA, and the Los Alamos National Laboratory. Energy technology is a complex industry, but the goals of our entrepreneurs are simple: create companies that enable us to make or save energy -- better, faster, cheaper, and cleaner, than anyone else in the world.

**The Current US Clean Energy Landscape**

The US has long been the home of great innovation in clean energy technology which continues to present a compelling opportunity for both entrepreneurs and venture capitalists. In 2010 the global clean energy market for technologies such as solar, wind, batteries, and smart grid infrastructure will exceed $100 billion with sector specific growth rates of 30-50% annually. NEA continues to pursue domestic investments in this sector as we believe that fundamental technology innovation will be able to drive down the cost of clean energy to achieve parity with fossil fuels over the next several years.

Though the US continues to be the home of the world's best clean energy innovation, the US has lost its leadership to China, Japan, and Germany in clean energy manufacturing and deployment, and is challenged and threatened by emerging economies such as India, South Korea, Malaysia, and the Philippines. These nations have outpaced the US in recruiting, incenting, and developing domestic manufacturing of solar, wind, and battery technology. We are not the market leader in producing and supplying this high growth industry, and have ceded our historic leadership in manufacturing of these key technologies to other nations.

As one example, the US's market share for solar manufacturing has fallen from 45 percent in the mid 1990's to roughly 5 percent today. In the past decade alone, the two best US solar technology companies in the world, First Solar and Sunpower, were recruited overseas to Germany, Malaysia, and the Philippines. Today these companies have developed the majority of their manufacturing overseas, creating jobs and economic growth primarily in other nations.

Prior to the Recovery Act, this paradigm of developing innovative technology in the US, and exporting manufacturing to foreign nations has been driven primarily by a significant imbalance between US and foreign tax policies and incentives. Contrary to popular belief, low labor cost has not been the most important variable in the equation -- upfront manufacturer's incentives, long term tax holidays, and end market incentives have been frequently as important, if not more important variables influencing US companies as to where they should establish their manufacturing facilities. Incentives from foreign nations have often totaled as much as 40 or 50% of the cost of a new manufacturing project. In addition, healthy demand side incentives such as national renewable energy standards, feed-in tariffs, and direct government loans and tax credits for the deployment of clean energy technology have made re-locating US manufacturing facilities overseas even more attractive. Without competitive incentives for companies to stay in the US, this nation's best manufacturers have had no choice but to look overseas to remain competitive in their industries. The result has been a loss of both direct and indirect jobs, a loss of intellectual property, and a loss of economic growth here in the US for one of the fastest growing global industries of the 21st century.

In describing this trend, I must remind the Committee that venture capitalists and entrepreneurs are by definition optimists. I believe the US can be a leader in clean energy manufacturing and deployment, and have witnessed this first hand. We are not giving up on the American entrepreneur, and I hope you won't either.

**Restoring US Clean Energy Competitiveness: A Case Study in Recovery Act Success**

I am grateful to this Committee and the current Administration for recognizing the need to level the playing field for US clean energy manufacturers. With the help of the tax policies and incentives put forth in the Recovery Act, this nation's best energy technology companies are expanding their domestic capacity, re-opening and retro-fitting closed factories, re-hiring and re-training new workers, and rebuilding local economies depressed by the "Great Recession".

One of the most important policies in restoring American competitiveness in clean energy manufacturing is the Section 48C Advanced Manufacturing Tax Credit, providing a 30% tax credit for investments in facilities that manufacture clean energy products such as solar panels and wind turbines. This program awarded $2.3 billion in tax credits to over 100 companies in 43 states, and was oversubscribed with requests for over $8 billion in projects. Thanks to your efforts in the Recovery Act, four of our most promising companies were awarded the credit and were able to expand manufacturing and create numerous jobs here in the US.

One Section 48C recipient, Suniva, was able to expand its solar manufacturing from 33 MW to 170 MW in Norcross, Georgia, hiring an additional 60 workers, and creating more than 100 construction jobs in an economically depressed suburb of Atlanta. Many of Suniva's full time employees were either veterans or laid-off auto workers who have now subsequently been retrained in solar manufacturing. This company, whose technology originated at the first DOE Center for Excellence in Photovoltaics at Georgia Tech, was recently named the Renewable Energy Exporter of the Year by the Export-Import bank, was recognized by President Obama and Secretary Chu, and today exports greater than 90% of its industry leading high efficiency solar cells overseas to Europe, China, and India. Their products power the first utility grid connected solar farm in India, a market which many speculate will be as large as 20 GW by 2020. Suniva has plans to expand to 400 MW in Saginaw, Michigan, a project which would create over 400 direct and over 1450 indirect and construction jobs over the life of the project. This is just one of many Recovery Act success stories.

**Supporting the Key Pillars of a Domestic Clean Energy Manufacturing Industry**

In order to sustain a long term competitive clean energy industry in this nation, we need to support and expand the key policies put forth in the Recovery Act, and follow through and pass critical clean energy and climate legislation as proposed by members of this Congress.

This congress has put forth very important legislation which puts a price on carbon. Investors in both renewable energy sources and traditional fossil fuels today operate in a world of regulatory uncertainty, speculating on the implied cost of carbon without any efficient market for calculating or hedging against this risk. Putting a price on carbon by definition will reduce risk for all energy markets, decreasing the cost of capital and increasing investment in both carbon-emitting and renewable energy. We believe this is an important policy for the US to continue to attract capital to fuel the energy needs of our 21st century economy.

Growing a strong domestic clean energy manufacturing industry requires competitive supply and demand side incentives and policies. In order for the US to be truly energy independent in a world with clean, cheap, renewable energy, we need to re-invigorate our manufacturing base. We can't substitute our dependence on foreign oil with batteries, solar cells, or wind turbines made overseas. As I've discussed, one of the most important pieces of the Recovery Act was the Section 48c Advanced Manufacturer's Tax Credit. In addition, demand side incentives such as the 1603 grant program for clean energy deployment have been critical to sustaining a healthy

clean energy economy for US manufacturers. We need to make these tax credits permanent and refundable as put forth by members of this Congress.

In addition, we need to focus on scaling up and commercializing this country's best technologies through public / private partnerships. Countries such as Germany, Japan, and China have all dedicated funds to scale up the commercialization of their domestic technologies, but the US has only begun to pursue similar models. The US DOE Loan Guarantee Program is a good start, and initiatives such as the Green Energy Bank as put forth by members of this congress are important pillars to driving both an energy security and economic recovery agenda.

We need an effective national Renewable Electricity Standard and Energy Efficiency Standard with an incentive system for utilities to move forward without delay. Today, 30 states have already adopted statewide renewable energy standards, but those policies are at risk should the federal government fail to act with certainty to adopt a national standard. We believe a national renewable energy and energy efficiency standard would be consistent with policies adopted by EU nations, China, and India, who have all implemented similar policies which recognize that clean energy deployment is both an economic and environmental imperative.

In closing, we have never seen a greater opportunity to put capital to work in support of US entrepreneurs. We believe this is the greatest economic opportunity for our industry, for our entrepreneurs, and for our country.

Thank you very much for inviting me to be here today. I look forward to your questions.

**Biography**

Dr. Ravi Viswanathan is a General Partner with New Enterprise Associates, a global venture capital firm focused on investments in energy, information technology, and healthcare with $11 billion in committed capital. Founded in 1978, NEA has invested in over 650 companies, of which over 160 have gone public and more than 250 have been successfully acquired. NEA stands out today as one of the most active investors in the energy technology industry, with a commitment of over $2 billion to the sector. NEA's currently manages 30 energy portfolio companies that have collectively raised approximately $2 billion in capital.

Ravi is on the board of Availink, Deeya Energy, ISGN Technologies, Jentro Technologies, Liquidia, Solar Junction, Suniva and ViXS and works closely with GlobalLogic, OANDA, and NEA's energy portfolio companies. Prior investments include Tele Atlas. Prior to joining NEA, Ravi worked at Goldman, Sachs & Co. where he was co-head of the technology practice in their private equity group and led direct, fund, and secondary investments in the areas of information technology and life sciences. Prior to Goldman Sachs, Ravi worked for McKinsey & Company and advised clients in the software, communications, and pharmaceutical sectors on strategy, acquisitions and new business building. Previously, Ravi worked for Raychem Corporation in the Corporate Technology Division where he focused on research and product development in semiconductors, liquid crystals, and other materials systems. Ravi received a master's degree in Business Administration from the Wharton School at the University of Pennsylvania and a PhD in Chemical Engineering from the University of California at Santa Barbara where he focused his research on materials science applications in molecular electronics, biomaterials, and nanotechnology. Prior to graduate school, Ravi received a BS in Bioengineering from the University of Pennsylvania.