

**Testimony before the Senate Energy & Natural Resources Committee
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Good morning, Chairman Bingaman, Senators, ladies and gentlemen. Thank you very much for hosting me here today. It is an honor and privilege to be before this committee again.

I join you in my role as analyst with Bloomberg New Energy Finance, a division of Bloomberg focused on the clean energy sector. Our group provides accurate and actionable data and insight on investment, technology, and policy trends in clean energy. My remarks today represent my views alone and not the corporate positions of either Bloomberg LP or Bloomberg New Energy Finance. In addition, they do not represent specific investment advice and should not be construed as such.

In June 2010, my firm produced a study in partnership with the non-profit Clean Energy Group entitled *Crossing the Valley of Death: Solutions to the Next Generation Clean Energy Project Financing Gap*. That report examined the various challenges facing energy technology companies looking to scale up while driving their costs down. It encompassed interviews with more than five dozen technologists, entrepreneurs, and investors in the clean energy space.

Other studies have since explored this area in greater depth and advanced the discussion in important ways. The most notable has been the American Energy Innovation Council's work, which examines the same valley of death conundrum but with an explicit focus on American competitiveness. My fellow witness, Jesse Jenkins of the Breakthrough Institute, and others have also provided important insights in this area.

The clean energy sector has seen significant growth in recent years. New investment into the industry, which totaled \$54bn in 2004 and \$189bn in 2009, rose to \$263bn last year. In fact, in the fourth quarter of 2011, our firm counted the one trillionth new dollar invested in this sector.

Meanwhile, we have seen clean energy technologies make important progress down their respective learning curves. The price of a solar module at the factory gate has dropped by more than half in the last 16 months. The efficiency of wind turbines continues to improve. Prices for lithium ion batteries used in electric vehicles are starting to tick down.

A substantial part of this progress is a result of innovation, but much of it is due to simple economies of scale. As production of this equipment has ramped up, per-unit costs have come down.

Inevitably, all of this raises the question of whether the capital markets are today providing sufficient financing to address the valley of death conundrums. I would argue that they do not, and a closer examination of the investment trends reveals why.

The vast majority of new capital entering the clean energy sector in any given year is actually directed toward well established, low-risk technologies. Just \$5.1bn of the \$263bn invested in 2011 came in the form of venture capital in support of new companies with the newest technologies. And within their portfolios VC's are today placing fewer bets on the very earliest stage companies. So, the so-called technology valley of death for embryonic research and development has by no means yet been bridged.

Similarly, the riddle of the later stage "commercialization" valley of death also remains unsolved. For a time, it appeared the solution might come from the public stock exchanges where new biofuels, solar, and electric vehicle companies raised billions via initial public offerings to support their growth. But public market fund raising has all but evaporated in recent quarters for clean energy. Today, for instance, there are half a dozen next-generation biofuels firms looking to IPO. It remains to be seen if any will ultimately float their shares.

Before concluding, I'd like to take just a moment to address the question of where the US stands in comparison to its peers in terms of clean energy technology development and deployment. And I would emphasize that these two issues -- development and deployment -- should be addressed separately.

In terms of deployment, there can be little debate that the US today trails nations such as Germany and Italy in terms of the installation of new clean energy power generation. The same goes for the manufacturing of that conventional equipment with the US often lagging behind China and others.

On the question of new technology development, there remains much to play for, however. The clean energy marketplace cannot be sustained primarily by subsidies forever, and already we are seeing signs of declining support from governments around the world. Rather, the industry must -- and we think will -- compete and beat its fossil rivals on price without government support.

For some technologies in some parts of the world, this is already occurring. But the day when it happens far and wide still lies ahead. When it arrives, will the US be home to the most critical new energy technologies and the associated manufacturing capacity? Will the US be a market maker for these technologies or a price taker, buying the equipment from companies overseas?

This remains very much to be seen, but there are hopeful signs for the US despite the lack of investment. The country is home to world class research

institutions and laboratories. It is the hub of venture investing -- three out of every four venture capital dollars for clean energy comes from US funds.

In short, in my view no nation may be better positioned to own the long-term energy technology future than the US. The only question is whether these resources can be coordinated to maximum advantage. That is where public policy inevitably enters the picture.

Thank you for your time and I look forward to your questions.

