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# Green technology: The next great global industry

—by John Doerr and Jeff Immelt

America confronts three interrelated crises: an economic crisis, a climate crisis, and an energy security crisis. We believe there's a fourth: a competitiveness crisis. This crisis is particularly evident in America's worldwide standing in the next great global industry, green technology. There is no topic of greater importance to America's economic future. The question is whether the United States will lead or lag in tomorrow's global energy markets. And the difference between these two futures is dramatic.

Energy in the United States costs more than \$1 trillion a year—for oil, coal, natural gas, nuclear and renewables. This is on top of a similar sum spent on the things that use this energy—our homes, shops, factories and cars. That means about \$2 trillion a year is at stake right here.

Do we want to win the race to lead the next great global industry, clean energy? That is the choice before us.

We are clearly not in the lead today. That position is held by China, which understands the importance of controlling its energy future.

Consider: Chinese cars are more than one-third more fuel-efficient than U.S. cars. China is investing 10 times as much on clean power, as a percentage of gross domestic product, as the United States is. China is on track to create 150,000 jobs through the deployment of 120 gigawatts of wind power by 2020—an amount equivalent to today's global total and nearly five times America's. As a result, China is already curb-

ing its carbon emissions. This year alone, it will abate almost 350 million tons of CO<sub>2</sub>. That's as much as is emitted by Argentina.

What do Amazon, eBay, Google, Microsoft and Yahoo have in common? Two things: They are the world's five leading Internet technology companies, and they are all American. But when it comes to wind power, the most mature of the clean-energy sectors, of the top five manufacturers—Vestas, GE, Gamesa, Enercon and Suzlon—only one is American. Similarly, the United States is home to only one of the 10 largest solar panel producers in the world, and two of the top 10 advanced battery manufacturers. How can we catch up? Not through protectionism or massive government intervention, but through the power of good old home-grown innovation.

We are American businessmen. Our job is building businesses and commercializing innovation. Every year, GE invests six percent of its industrial revenue in research and development to produce more efficient and cleaner wind turbines, jet engines, locomotives, power turbines, and appliances. Kleiner Perkins has invested \$680 million in 48 of the most compelling new clean-energy technologies, with \$1.1 billion more to invest. We are trying to do our part. But our government's energy and climate policies are our principal obstacle to success.

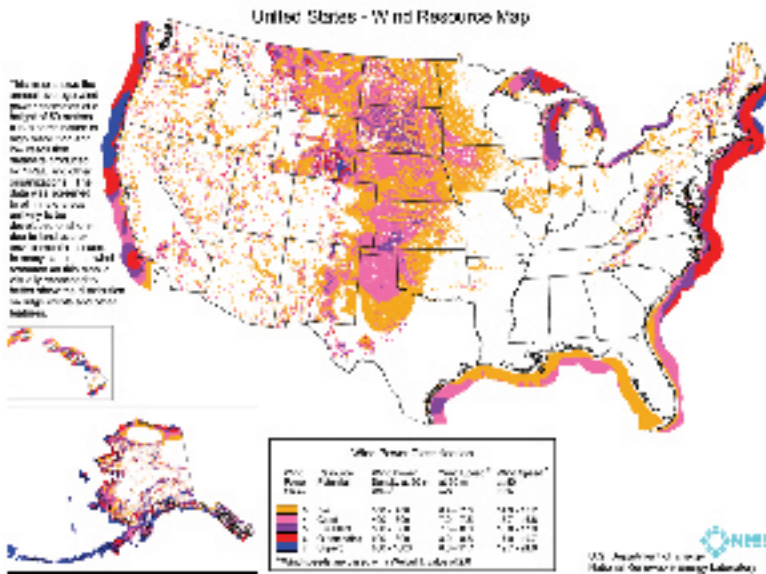
Right now, the United States has no long-term market signal to tell companies and consumers that it values low-

Green, p. 14, 2nd col.

# ENERGY HOT SPOTS

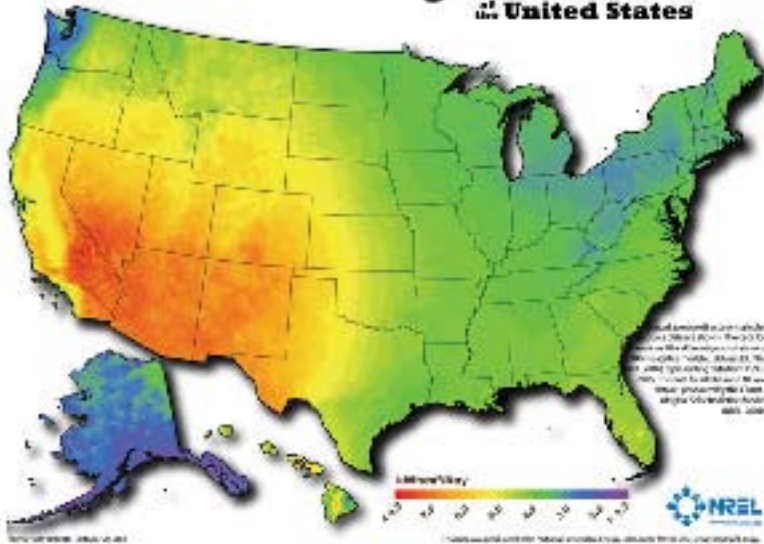
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## WIND

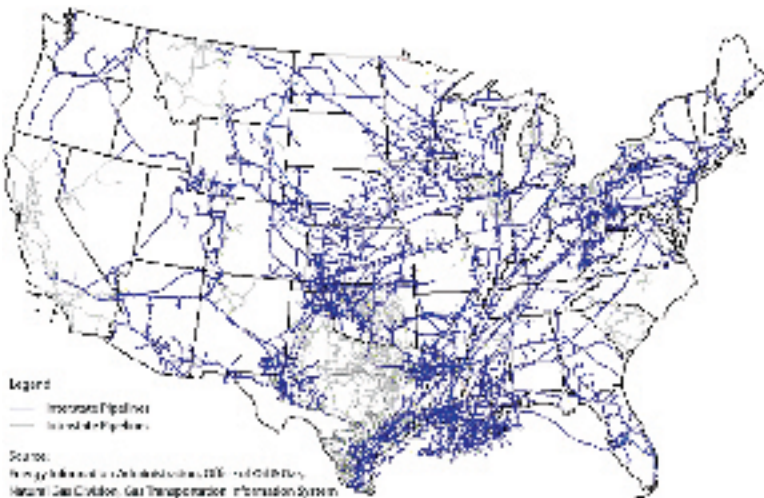


## SOLAR

### Concentrating Solar Resource in the United States



## NATURAL GAS PIPELINES



carbon energy. It has no policies to discourage sending hundreds of billions of dollars a year overseas for energy. It does not offer adequate sustained R&D funding to be a serious competitor in this huge business.

Instead of holding on to policies that stifle innovation and competitiveness, we need policy which can flip the prevailing dynamic. Five basic changes are needed:

- » Send a long-term signal that low-carbon energy is valuable. We must put a price on carbon and a cap on carbon emissions. No long-term signal means no serious innovation at scale, which means fewer American success stories.
- » Get the rules of the road right for utilities. We must make our utilities a driving force for re-powering America, driving efficiency through incentives, a renewable electricity standard, and a national unified smart grid.
- » Set energy standards that grow steadily stronger. America should strive to have the most efficient buildings, cars, and appliances in the world. The savings will land in the pockets of U.S. consumers and businesses.

» Get serious about funding research, development, and deployment, at scale. The federal government currently spends only \$2.5 billion on clean-energy R&D a year—0.25 percent of our annual energy bill.

» Fulfill President Obama's commitment to "become the world's leading exporter of renewable energy." We need a robust trade policy that seeks to open markets abroad—including the Chinese market—for U.S. clean-energy products through new trade agreements. Such policies unleash American competitiveness, disciplined by market forces. This is widely endorsed by U.S. companies that compete internationally and by the broad-based President's Economic Recovery Advisory Board.

We should carefully design policy to bring in other nations. Think of the Copenhagen climate summit in December as an opportunity to create world markets and momentum for a low-carbon future, just as the Internet set the world on course for an information-rich future. Some say we shouldn't move until China moves. In fact, China is moving full speed ahead—with or without us.

There is still time for us to lead this global race, although that window is closing. We need low-carbon policies to exploit America's strengths—innovation and entrepreneurs. We know that building such policies is a heavy political lift. But, without doubt, bad energy policy has cost our country dearly, and the costs of continuing it are incalculable.

[John Doerr is a partner in the venture capital firm Kleiner Perkins Caufield & Byers. Jeff Immelt is chairman and chief executive of General Electric.]