What Can the United States Learn from Germany's Energiewende?

Posted July 18, 2013 1 comment

Keywords: Solar Power, Sustainability, Utilities, Cleantech, Nuclear Power, Renewables, Energy, Energy and Economy, Energy Collective Exclusive, News, Energiewende, Germany energy policy, united states

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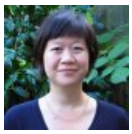

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Germany has embarked on a bold effort to transition their energy system away from nuclear and fossil fuels towards clean, renewable energy sources. This long-term energy transition, known as the *Energiewende* offers important lessons for U.S. energy policy.

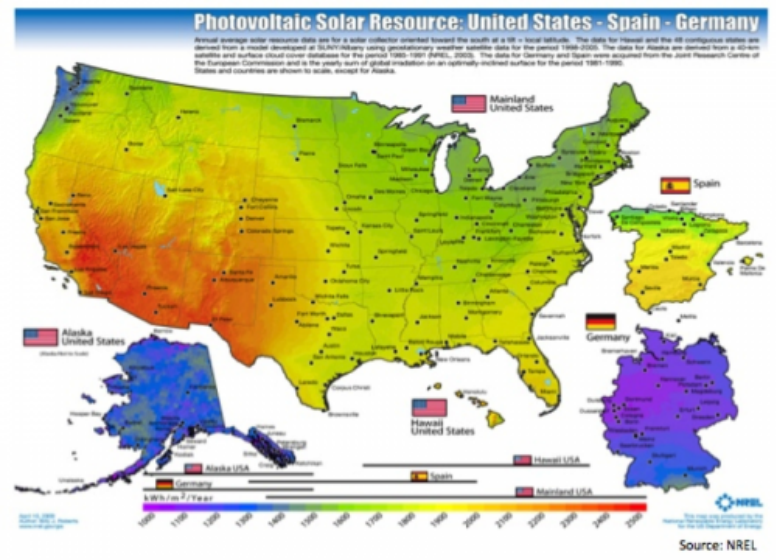
Editor's Note: Stephanie Wang was a participant in a July 9th TheEnergyCollective.com webinar, Exploring the Energiewende: Lessons from Germany's Clean Energy Push. *You can find an archive of that webinar here.*

First, it's important to note that wholesale distributed generation (WDG), larger distributed solar systems that serve not only on-site but also local electricity demand, has been critical to the German energy transition. Germany's solar market, which is now large enough to meet half the country's midday energy needs and roughly 5 percent of annual energy demand, is dominated by WDG. A full 80 percent of Germany's solar capacity is on rooftops, highlighting that *distributed* renewables – not larger utility-scale renewables – are powering Germany's solar energy transformation. With more than 33 GW of installed solar, Germany has installed about five times as much solar power than the United States despite having Alaska's level of sunshine.

Wholesale Distributed Generation (WDG) is the missing market segment in the United States

The United States boasts significantly stronger renewable resources than Germany, and growing the WDG market segment will put the nation on a path towards lasting energy independence. However, to effectively grow the WDG market segment, the nation must streamline lengthy and complex processes

that currently stymie widespread development of WDG projects.



The U.S. has a much stronger solar resource than Germany, yet the cloudy European nation is bring solar energy online more cheaply

Germany has made great strides in streamlining the process of bringing clean local energy online through, making its solar market decidedly more efficient than the U.S. solar market. A *Forbes* article declared that the installation costs of WDG systems in the U.S. could be reduced up to 50 percent simply by eliminating excessive paperwork. Research from Lawrence Berkeley National Laboratory suggests a streamlined market in California could bring rooftop solar online at a cost of 7-10 cents/kWh, depending on project size. Instead, the market in the U.S. remains prohibitively complex, and no solar project has ever delivered energy at such a low price.

Fortunately, forward-thinking utilities in the U.S. are already leading the charge by streamlining the development of cost-effective DG through CLEAN Programs.

CLEAN Programs offer a standardized, fair contract for use between utilities and DG energy generators, and make interconnection processes transparent and efficient. As a result, CLEAN Programs have proven effective in bringing clean local energy online across the country.

The Clean Coalition actively supports the design and implementation of CLEAN Programs. Our Local CLEAN Program Guide serves as a blueprint for developing a utility-specific CLEAN Program, while the CLEAN Resource Hub simplifies the process of designing and implementing statewide CLEAN Programs.

Los Angeles, the nation's second largest city, recently rolled out its CLEAN LA Solar Program to bring 100 megawatts (MW) of local solar online. Since opening the first 20 MW tranche in February, the Los Angeles Department of Water & Power (LADWP) has received applications totaling more than 115 MW – signaling strong demand for solar DG and correct pricing. To the east, Georgia Power – an investor-owned utility serving more than two million customers – is bringing 190 MW of cost-effective, local solar power online in its service territory by 2016 through a CLEAN Programs. Also this month, Long Island Power Authority (LIPA) expanded its Clean Solar Initiative from 50 MW to 150 MW, sending yet another signal that WDG is a readily available and cost-effective market segment.

The second lesson the U.S. can take from Germany is that achieving a high level of grid reliability is possible with significant renewable generation. As the world's fourth largest economy and home to a heavy industrial base, Germany demands enormous amounts of reliable power. Distributed renewables have met this need, and Germany even set a global reliability record in 2011 with only 15.31 minutes of average downtime. Now that Germany is on track to meet its national target of 50 percent renewables by 2030, the country has embraced widespread adoption of intelligent grid solutions to maintain reliability. For example, the Germans are utilizing advanced inverters paired with solar PV to efficiently regulate voltage. Having captured lessons from the world's best energy policies, the Clean Coalition recently laid out a roadmap for the U.S. to achieve a timely and cost-effective modern energy system.

As with any rapid transformation, the *Energiewende* has not been without controversy and setbacks. Yet, by serving as the global clean energy leader, the Germans are providing clear lessons for the rest of the world. If the United States wants to save time, energy and money in its transition towards a cleaner, more reliable and more affordable power system, we must learn from the *Energiewende*.

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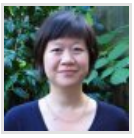

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Robert Wilson says:

This article makes some rather fundamental mistakes. For example solar providing 5% of Germany's electricity demand is not the same as it providing 5% of its energy demand. Engergy demand includes such things as heating and transport.

It's also very hard to see how Germany is having a rapid transformation. Consider these simple numbers. Average Germany electricity demand is 70 GW. Peak wind additions were 3.2 GW in 2002. Peak solar additions were 7.5 GW in 2012. Given

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Germany's average load factors this amounts to 1.4 GW of combined average supply from wind and solar on their very best years. These rates of deployment do not represent a rapid transition to low carbon energy, but one that will take more than one generation.

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