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Solar Comes of Age

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BY LAURA W. GELLER

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The solar industry is entering a dynamic period as costs decline, demand for electricity continues to grow, and competition heats up. The result has been a rise in M&A and vertical integration as solar energy providers seek to carve out a leading role in the market and ensure their access to customers. Some high-profile bankruptcies have captured headlines in recent months, perhaps the most infamous being government-subsidized Solyndra. But as Carrie Cullen Hitt, vice president of state affairs at the Solar Energy Industries Association — the national trade association of the U.S. solar industry — notes, failure is part of any industry's natural evolution, and solar is no exception. Rather than indicating imminent decline, it points to solar energy's potential for growth.

Roadblocks remain: The U.S. energy industry still operates within a century-old framework of laws, regulations, and infrastructure, and low natural gas prices are diverting attention, and investment, from renewables. But with the right mix of rules, policies, and incentives, Cullen Hitt argues, great opportunity exists for solar in the years ahead. She spoke about the future of the solar industry in October 2011 at the Wharton Energy Conference in Philadelphia, and then in a conversation with *s+b* in December 2011.

S+B: What is the current overall state of the solar industry?

CULLEN HITT: We're in a time of fairly significant transformation, for three equally important reasons. One is that solar costs have come down dramatically in the past two or three years, largely due to increased efficiencies: Companies have gotten better at doing what they do.

The second reason is that declining costs and increased efficien-



Carrie Cullen Hitt

cies have led to significant competition among providers in the solar space. Particularly in the U.S., there are thousands of providers, and that wasn't the case five or six years ago.

The third reason is the impact of the current economic and political climate. It's not necessarily negative, but it does drive the level of tax credits and incentives that exist. What are the policy structures in the various states and at the federal level that support or inhibit solar? What is the next generation of policy?

S+B: How will this transformation affect industry players?

CULLEN HITT: As the industry matures, more startup companies are getting acquired. The big squeeze right now is on the manufacturing side, but we also see some developers starting to acquire, or merge with, other companies. Pure manufacturers are looking for ways to decrease their sales time line and their distribution costs. Whereas before, they may have worked with 300 different providers, some of them are now using vertical integration to gain direct access to consumers and to have a way to sell their products. In some instances, manufacturers are choosing to become developers — they're building these capabilities internally. There's a lot of activity across the value stream.

For example, NRG Energy Inc., a large national energy company involved in all aspects of generation, purchased Solar Power Partners, a solar company in California, in November 2011 with an eye toward helping California meet its aggressive energy goals. And Q-Cells SE, a German manufacturer, is now moving more into the development space — and is currently building Europe's largest solar park.

S+B: How will the industry evolve in the years ahead?

CULLEN HITT: Solar is still a young industry. Although it's been around for a while — people have been making solar panels for 25 or 30 years — it didn't really take off until five or six years ago. There are a lot of companies in different parts of the value stream, and increased efficiencies through R&D are coming out every day. But they have only scratched the surface. This phase is going to last for a while. Once the economy picks up, however, we're going to need new sources of elec-

tricity, and they're going to have to come from everywhere, including from solar.

Everyone gets worked up when there's something in the paper, such as the Solyndra or Evergreen Solar bankruptcies. My opinion is that those are just natural things that are going to happen as any industry matures. You have companies and products that don't survive. It doesn't mean the industry is failing. In the case of Solyndra, it became political. But solar itself actually isn't that political. And an interesting, little-known fact is that tons of military bases across the U.S. — which typically have a lot of land and rooftop space — have adopted solar. They are trying to reduce cost, but also want energy independence and a reliable grid.

S+B: What do you see as some of the main roadblocks?

CULLEN HITT: The fundamental one is this traditional, jurisdictional monopoly framework that we have. I'm not blaming the utilities. It's just the way the structure has been set up, and that's not going anywhere. If you want to interconnect, you have to call the utilities. In most places, utility commissions have a fairly transparent process, but in some cases the process can be slow, difficult, and expensive.

In some areas, things are held up by uncertainty about rules such as the alternative compliance payment, which is the penalty the utilities or other load-serving entities pay when they don't comply with the RPS [the federal Renewable Portfolio Standard, which requires the increased production of energy from renewable energy sources]. And with the current political and economic turmoil comes uncertainty about

how committed states are to implementing their policies. Uncertainty increases risk, which increases cost. Another challenge is that, in many cases, investors want companies to have long-term commitments from customers to buy the output of solar, whether that is energy or a renewable energy credit. But it's hard to get a long-term contract because they're not mandated. As a result, it's difficult to get financing.

first is net metering rules. Net metering allows customers to produce power when they're not using it to sell back into the system and receive a credit. The second is interconnection rules. If you're building solar systems, you want to be able to hook up to the grid. The third is incentives, such as rebates and tax incentives. Are they sustainable over time? Do they reflect different technologies? The last is rate structures. All

S+B: Who's doing it right?

CULLEN HITT: California; that's no surprise. New Jersey is the second-biggest solar state in the country, because they decided that they didn't want to be dependent on fossil fuels alone. They don't have a lot of room to build conventional power plants, and they don't want to import everything, build more transmission lines, and so on. It's a surprise to people, because New Jersey is a big industrial state with a lot of users, but they're very aggressive in the solar space.

Arizona also sometimes surprises people. Of course, the sun shines there, but people tend to think of it politically as being a more conservative state. Arizona does, however, understand the value of solar from an economic standpoint. Water resources are a major issue in the Southwest, and solar typically uses less water than traditional power generation. For policymakers in Arizona, solar looks more promising in the long term when they add that benefit to the equation.

Every state is different. But the four buckets I talked about form the basic model. Ask yourself: What are the barriers? Are there state laws and regulations that ease those barriers? What are the rate structures, interconnection rules, and net metering rules? What do the economics look like — tax incentives, rebate incentives — and are they sustainable over time? These are the things that we look to replicate. +

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“Water resources are a major issue, and solar typically uses less water than traditional power generation.”

Low natural gas prices are also causing some distraction. Americans may look around and say, “Maybe we don't need to do that much solar, or anything else, for that matter.” The perception is that we're going to have cheap gas forever, the key word being *perception*. That's typical behavior. And it's unfortunate, because it's shortsighted. The up-front costs of solar are higher than those of other energy sources. But then after that, you're done; there are no fuel costs.

Not that different energy sources are mutually exclusive. You need a mix of many fuels, and you have to have good, sound policy to do that. We don't have a national energy policy, so that longer-term view that would typically come from Congress isn't there, which is why I'm focused on the states.

S+B: What's happening at the state level?

CULLEN HITT: We put the factors that make a good market, at the state level, into four buckets. The

customers in the U.S. are served by a utility, and when they try to install a solar system, their relationship with the utility and how the rate structure looks can be either a barrier or a complement.

Progress in these four areas varies across the country. For example, in terms of negotiating rate structures, early on there was some resistance, and then five or six years ago, probably five or 10 of the more progressive utilities decided to make it work. We've seen some retrenchment from that in the past year or so because penetration has increased. The utilities are concerned, legitimately or not, about the physical impact on the system. With net metering, there's also been a little bit of an ebb and flow. But today, 46 states have net metering in some form.

All of this is challenging, because the system that we have in the U.S. — the way the economics are set up and the regulation and politics around electricity — is 100 years old. That's a big deal. All these things are work-arounds.

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