

# The “solarization” of the south-west

Is there a preference for large-scale solar projects in the USA? Assuming this is the case – how does it impact a sustainable development?

**W**ith an approval rate of one and a half new solar power plants per week starting in the first week of October the US Department of the Interior is about to make the state of California the world leader in large and super-large-scale solar power plants. Secretary of the Interior Ken Salazar announced the sixth approval – an equivalent of 3,037 MW – at the beginning of November, and if continuing in that pace the three south-western states California, Nevada and Arizona by the end of 2010 will have broken ground for 6 GW of solar power, planned to go online within the next 2 years.

**4.8 MW Springerville Generating Station Solar System, which will be expanded to 6.4 MW before the end of 2010.**

Photos (2): Tucson Electric Power

## A solar leader again?

The 1 GW mark in total solar installations was barely crossed this year, but now – mostly thanks to government loan guarantees and fast-track permitting pro-

cesses by the Obama administration – the US are on their way back to being a solar leader, a title they had lost in the 1980s. This quantum leap in solar deployment can only be achieved with large and super-large-scale power plants, central stations far away from the customer and in the majority with electricity generated from concentrated technologies, like CSP and CPV. Besides improving the renewable portfolio dramatically in these three selected states, 400 to 1,000 temporary jobs will be created per site during the 2-year construction phase, and 50 to 300 permanent jobs per plant will follow. This means a large number of qualified installers will be needed at the same time and in close proximity of three bordering states.

The largest and most recent approval, the Blythe Solar Project in the Southern California desert, will be the biggest in the world with a planned capacity of



1,000 MW to provide electricity for about 290,400 households through Southern California Edison. After speeding through the approval process in even less than one year, Blythe will be the first solar power plant to reach the electricity output of a large-scale natural gas or fossil fuel plant. The plant near Blythe will cover a footprint of 7,025 acres (2,843 hectare) of public land. To mitigate the project's impact the Solar Millennium AG, the German company which also built Andasol in Spain, is required by the Bureau of Land Management (BLM) to provide funding for more than 8,000 acres (3,237 hectare) of habitat for desert tortoise, the western burrowing owl, bighorn sheep and Mojave fringe-toed lizard, all species found on the original site.

## Slow growth in the rooftop sector

When taking this lead the USA is following the strategy of building big in the most sun-prone zones. This is the opposite approach Germany took, the solar leader, who last year generated 80 % of its solar power on residential roofs. But the deployment of residential installations in the US has been going way slower than expected. Despite the federal tax credit nationwide and solar incentives in basically every single state now, 30 states offer loan programmes and 24 states have solar grants, the growth on private roofs is just not gaining momentum, besides some exceptions.

"Historically, the numbers have been much lower for residential systems", writes Mark Bolinger from the Lawrence Berkeley National Laboratory in a report in January 2009 when describing investment opportunities for non-residential PV systems. "Unlike the commercial investment tax credit, the residential credit until 2009 had been capped at US\$ 2,000 per system," which did not help much for an installation of at least US\$ 18,000. Data from the Interstate Renewable Energy Council shows that up until 2002 the same capacity of residential and non-residential systems were installed, but in 2003 non-residential PV took off, each year close to doubling the residential capacity. Starting in 2007 utility companies began to play a role, which was also driven by available Power Purchase Agreements (PPA).

Nevertheless, there is no clear preference in policies for either residential or mid-size and large-scale solar power. According to a report by the Database of State Incentives for Renewables & Efficiency (DSIRE) 22 states in 2009 had an official budget for state incentives, 4 of them just starting in 2010. When looking at the incentive expenditures for 2009, in 9 states more money was spent on residential PV, and in 6 states more money on non-residential, which appears in favour of residential PV. But when comparing the total amount of funding in 2009 in these 13 states (no more information was available), US\$ 188 million were paid out to homeowners and US\$ 265 million to commercial solar investors, which reverses the preference in favour of non-residential. Also stimulus money was mostly spent on large-scale projects, says Darren

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One of the TEP employees inspecting a solar installation at Tucson's Reid Park Zoo.

M. Springer from US Senator Bernie Sanders' office. To help solar electric or water heating systems for residential and business installations Senator Sanders introduced the "10 million Solar Roof Bill" in the beginning of this year. The clear objective is to utilize roofs of homes and businesses to make use of solar power by taking advantage of fast installation and direct usage of produced electricity without losing power in the grid, which can be up to 12 % via transmission lines when coming from a central station.

### European feed-in tariffs as example

The FIT coalition campaigns for one solution which would also avoid preferential funding by applying a comprehensive feed-in tariff all over the United States to any kind of renewable energy. "We have learnt from countries in Europe, and we want to bring this now to the US," says Ted Ko, Associated Executive Director at the FIT coalition in California. In October the Federal Energy Regulatory Commission (FERC) announced a decision on feed-in tariffs in reaction to California's current policies. Instead of the local utility company setting a price for distributed power FERC recommended to "employ a multi-tiered resource approach for determining avoided costs, which would set different levels of avoided costs and thus different

avoided cost rate caps for different types of resources." This "clears one of the last remaining roadblocks to enacting true, comprehensive FIT programmes in the US," states the FIT coalition in its press release. "This was exactly what we were looking for," says Ko. The FIT coalition now wants the energy commission to also pre-approve a standard contract across all renewable energies, which becomes a mandate to all utility companies. This way, no matter if small or large-scale installers, all segments can develop on a fair base.

### Middle segment is favoured

The FIT coalition believes the middle segment, solar plants under 20 MW, has the highest potential for fast solar deployment. "Because we can go online within 3 to 18 months, sometimes even including the permitting process," says Ko. The environmental impact is lower, and with many smaller plants the grid reaches sustainability and can better compensate for temporary low performance. But so far Ko has not seen the big growth spurt in the middle segment of the solar market. California, the US leader, clearly favours large central stations and does not have a policy for the middle segment, says Ko.

When Paul Bonavia, CEO of the Tucson Electric Power (TEP), arrived at TEP a year ago, only 5 MW of solar power were installed, not an impressive number. Now, 150 MW are in the pipeline, mostly in the size of 30 to 40 MW plants. Bonavia, with a lot of experience in wind installations at Xcel Energy says he wants Arizona to become a leader when deploying practical renewable energy. His strategy is a blend of residential and utility scale. A largely sought after solar rebate programme in Tucson ran out earlier this year due to funding shortage. Bonavia thinks the rebates were too generous and skewed the market. The energy commission either has to allocate more funds or lower the subsidy level. The TEP plan to improve the solar portfolio is to use several brown fields, such as the area around the water treatment plant, in various locations, instead of just one enormous project. The advantage is, says Bonavia, that the site is already connected to the grid and controversial permitting can be avoided.

The Arizona Public Service Company (APS) went even one step further with a pilot project: with utility company owned solar resources on customer rooftops. The same way companies like SunRun or Solarcity offer solar leases with no upfront costs. About 600 kW residential, 400 kW commercial and industrial and 400 kW ground mounted PV will be installed as a community power project in Flagstaff. The customer provides his roof, and buys the electricity and that way neither the APS customer is shocked with high installation costs, nor the utility company has high expenses for land use. The systems will be installed and maintained by third-party solar installers. Eran Mahrer, Director Renewable Energy at the APS calls this the "solarization of the utilities."

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