



fab2farm™



**Bringing Billions Back to Your Local Economy:
A Unique Energy Solution**

A Whitepaper by
Energy and Environmental Solutions

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fab2farm™ — BRINGING BILLIONS BACK TO YOUR LOCAL COMMUNITY: A UNIQUE ENERGY SOLUTION

UNIQUE MANUFACTURING SOLUTION DELIVERS BILLIONS IN ECONOMIC ACTIVITY, THOUSANDS OF JOBS AND LOWEST COST SOLAR ENERGY

Solar has long been heralded as a centerpiece of the green revolution—an idealistic vision of clean, abundant energy. And while the use of solar power isn't yet abundant, what most people don't realize is that solar isn't a pipedream. It's in fact a solution for TODAY: here, now, real, ready ... and better than current options to meet renewable portfolio goals.

It all boils down to a single notion: solar is a manufactured energy—a technology that is proven to become cheaper and more efficient as the installed base increases over time. In the past 30 years, solar has enjoyed significant and predictable cost reductions and is now at cost parity in many locations to peak electricity generation. And what's especially attractive about the promise of manufacturing is its ability to deliver hundreds of new jobs to local communities with the advent of a single factory.

Enter fab2farm: a powerful economic ecosystem that links communities, utilities and solar panel manufacturing to meet intermediate and peak energy demand—generating more than \$2 billion in economic development and creating over 2,500 jobs while enabling utilities to achieve their renewable portfolio goals.

At the heart of this new manufacturing ecosystem is Applied Materials' revolutionary SunFab™ solar line. The SunFab line, owned and operated by an Applied Materials customer, is capable of producing 80MW of panels a year. Over the course of 10 years, that's enough energy to power over 350,000 homes during peak demand.

Abundant raw materials, like silicon and silane gas, are fed into the front end of the manufacturing line and, later that day, the most powerful, cost-effective solar panel in the world emerges: a module that is 5.7m² (61 square feet) or approximately eight times the size of conventional solar panels. Why is this important? Consider a 20MW solar farm installed near a utility substation. Using full-size panels from a SunFab, that 20MW farm would require 35,000 panels to be installed. Compare that to the 230,000 panels required with current, standard-sized panels. Fewer panels, less material, less labor, faster installation.

As a result of the unique 5.7m² panel design, Applied has optimized a product for utility scale, driving down the two primary components of solar energy cost—panel cost and balance of systems cost—to enable a fully installed price of <\$3.50/watt.

To fully realize the fab2farm benefits, communities across the U.S. can work with Applied Materials and a SunFab customer to 1) locally site a manufacturing facility and 2) establish a long-term factory off-take agreement with a local utility or utilities. Since the manufacturing and electricity generation are tightly linked, the economics are unlocked. For a representative, medium-sized utility, that could mean a steadily growing amount of solar power for less than a \$1.00 per month per rate payer.

fab2farm: a powerful economic ecosystem that links communities, utilities and solar panel manufacturing to meet intermediate and peak energy demand.

Key benefits of a fab2farm solution include:

- **Community:** 100% of the energy dollars spent circulate back into the local economy and establish a permanent ecosystem around clean, renewable energy.
- **Government:** added revenues generated by greater local employment, avoided costs such as unemployment benefits and green collar job training programs at local community colleges.
- **College/University:** investments in industrial partnerships and R&D programs.
- **Rate payer:** <\$1 per month cost increase that is fed back into the local community to create jobs.
- **SunFab factory:** 850 construction jobs, 1.2GW of clean energy over 15 years, generating 500 permanent jobs.
- **Utility owned solar farms:** producing free energy past 2030, 170,000 metric tons of CO₂ avoided per year and a significant step toward achieving renewable portfolio goals.

A factory based on Applied Materials' SunFab solution produces large-scale, low-cost panels; local utilities get affordable, reliable, scalable solar energy; and local communities get a green economic corridor and clean electricity.

How do we know these cost reductions are achievable? We're Applied Materials, a Silicon Valley bellwether and Fortune 500 company. We are a world leader in all of the market segments we serve and have a long track record in scaling manufacturing technology to reduce cost. In integrated circuit manufacturing, Applied Materials' equipment has contributed to a 20 million-fold reduction in transistor cost over the last thirty years, helping to create the Information Age. In flat panel display manufacturing, Applied Materials equipment has achieved a 20x cost reduction in thirteen years, putting high-definition flat screens in homes and offices throughout the world. And in just two years time, Applied has become the leading supplier of manufacturing equipment for the solar PV industry.

Ultimately, with Applied Materials' fab2farm, everyone wins. A factory based on Applied Materials SunFab solution produces large-scale, low-cost panels; local utilities get affordable, reliable, scalable solar energy; and local communities get a green economic corridor and clean electricity. Meanwhile, local energy dollars are fed back into the community, creating jobs in your own backyard.

For more information please contact fab_2_farm@amat.com

*specifications are based on IHS CERA modeling and Applied Materials estimates.



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