

INNOVATE

How This Bill Nye-Endorsed Startup Plans to Upend the Solar Industry

Rayton Solar creates its solar panels in a completely new way.



By Kevin J. Ryan [@wheresKR](#)

CREDIT: Getty Images

Solar energy might very well be the way of the future—but it still has a ways to go. Less than one percent of all U.S. energy consumption comes from solar, a number that's remained low largely because consumers are scared off by the high initial costs and the **aesthetics**.

A startup out of Los Angeles thinks it has a solution to one of those problems. **Rayton Solar** says it has found a way to manufacture solar panels using a high tech process that can shave costs by up to 60 percent. Rayton's process uses less material and creates less waste, driving down the price for both the company and its potential customers.

Silicon, the key component of solar panels, also happens to be the most expensive. Solar panels and electronics are conventionally manufactured by taking a block of silicon and trimming it down using a wire saw. It's a process that wastes up to 50 percent of the silicon, turning it into sawdust or unusable shards—which isn't a huge deal if you're creating the tiny chips that go into phones and computers, but becomes much more significant when making large panels. And lots of waste means high prices for the consumer: The average solar installation can run around \$20,000 before tax incentives.

Rayton found a way to avoid creating much of that waste. The company's founder, Andrew Yakub, previously worked in UCLA's Particle Beam Physics Lab and founded a government grant-based solar energy company, ReGen America. Using a technique called ion implantation, which Yakub says has been used since the 1980s but is yet to be commercialized, Rayton injects protons at specific depth within the atoms of a chunk of silicon. Technicians then apply heat, which lets them trim off a thin slice of silicon with very little waste produced.

The decreased manufacturing costs mean Rayton can afford to use the highest grade silicon available—the same grade used in NASA's technology. The silicon wafers it slices off are 3 microns thick, compared to the industry standard of about 200 microns. And less silicon used also contributes to a lower cost to manufacture. Overall, Yakub says his panels can be 25 percent more efficient than the industry standard while using about 1 percent of the material.

To help market Rayton's product—and offer some assurance of its viability—Yakub reached out to a giant in the science community: Bill Nye. After much back and forth between Yakub and Nye's agent earlier this year, "The Science Guy" agreed to come check out the product at Rayton's LA headquarters. Yakub says it was only after he spent hours asking questions and carefully vetting the product that Nye agreed to put his name behind it. He then filmed a video explaining the science behind Rayton's process, which the company now proudly displays on its site.

"That was a new experience," Yakub says. "Being a scientist, you don't really get to do much work with celebrities."

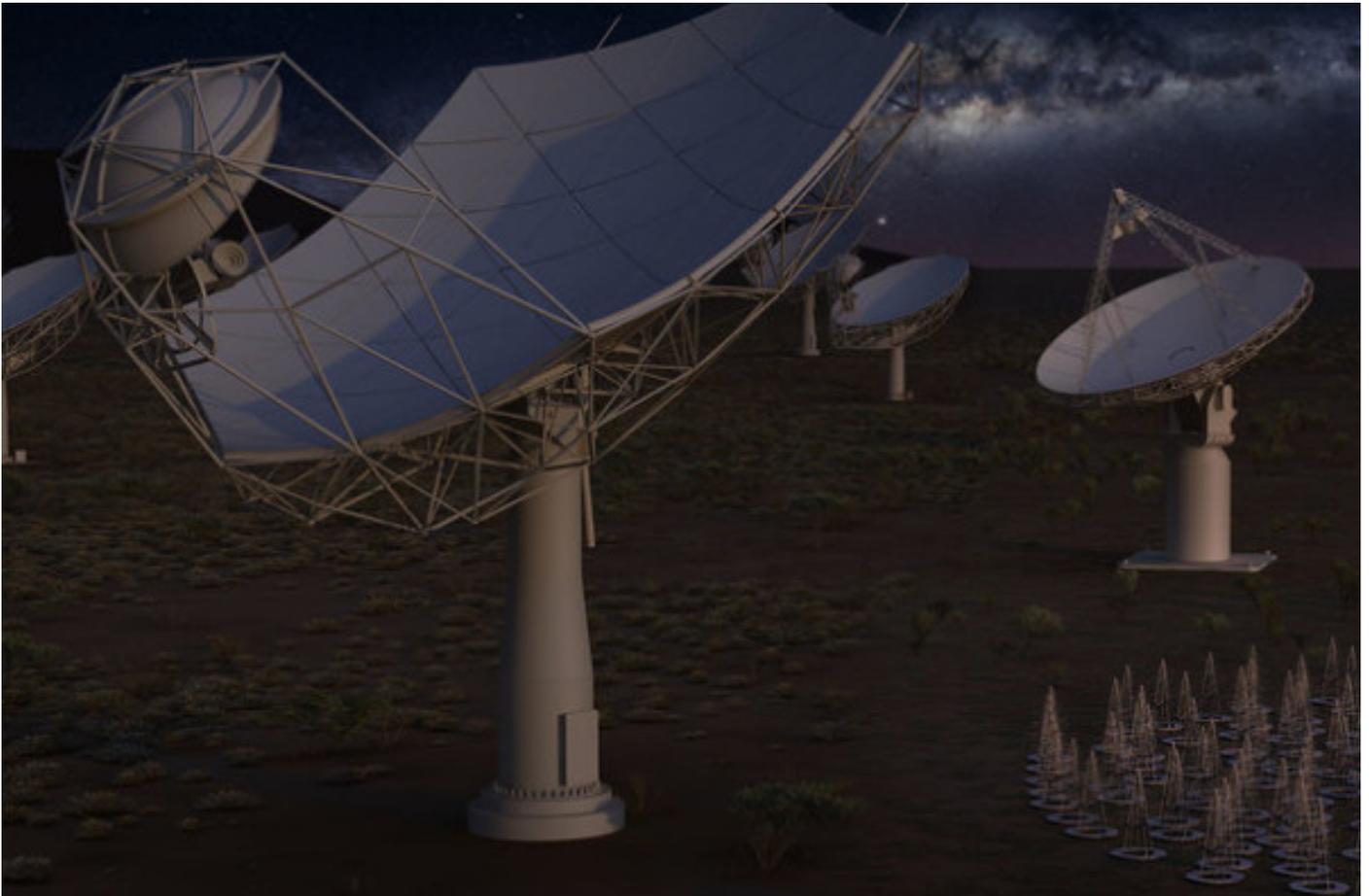
Rayton currently has six employees and has raised \$2.8 million in funding, \$2.4 of which came through accredited investor portal Fundable.com. The solar panels are now in the design stage, and Yakub hopes to begin manufacturing for consumers in about 12 months.

Check out Nye's explainer video of the technology below.

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