

## Solar Research Spotlight: Manufacturing and Competitiveness

Manufacturing and competitiveness is one of the five main research areas in SETO, and it funds projects with the potential for high-impact innovation in the solar industry. The goal is to move technologies to market by strengthening innovative concepts and increasing their readiness for greater private sector investment and scale-up to commercialization.

Research and development in solar manufacturing and competitiveness helps to build a strong clean energy manufacturing sector and supply chain. This enables the production of cost-competitive clean energy products on pace with the rising domestic and global demand for

### Solar Energy Technologies Office

The U.S. Department of Energy (DOE) Solar Energy Technologies Office (SETO) funds early-stage research, development, and demonstration projects to improve the affordability, reliability, and domestic benefit of solar technologies on the grid. The office works to advance photovoltaic (PV), concentrating solar-thermal power (CSP), and systems integration technologies to drive U.S. leadership in innovation.



Production line at the First Solar manufacturing plant in Perrysburg, Ohio.

*Photo courtesy of Dennis Schroeder / National Renewable Energy Laboratory.*

affordable solar energy. Additionally, this research area helps small businesses develop ideas into successful technologies that benefit the solar industry.

Projects in manufacturing and competitiveness cover a wide variety of technologies including photovoltaics (PV), concentrating solar-thermal power, and power electronics, as well as those that address non-hardware costs such as customer acquisition, permitting, financing, interconnection, inspection, and solar workforce development.

### Funding Initiatives

Several funding initiatives within SETO focus on manufacturing and competitiveness.

#### Incubator

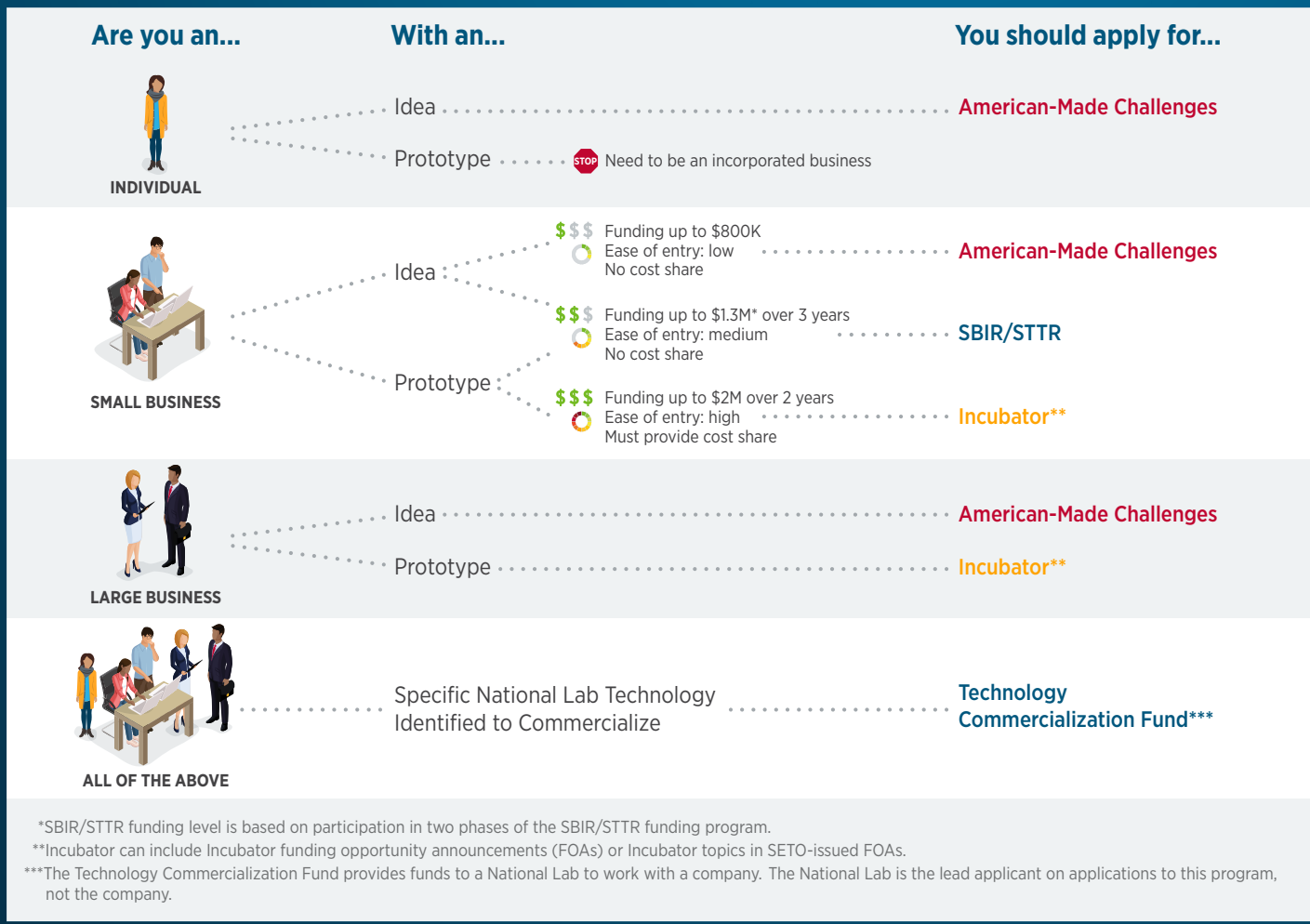
The Incubator program provides early-stage assistance to help startup companies cross technological barriers to commercialization while encouraging private sector investment. The Incubator program takes an all-inclusive approach to significantly lower the total installed cost of solar energy systems. By taking breakthrough innovations and putting them through a rigorous de-risking process, Incubator allows entrepreneurs to focus on rapid commercialization.

Early-stage Incubator assistance enables startup businesses to cross critical technological barriers that the investment community is unable to address. Once these key risks are addressed, the startup businesses are ideally suited for private follow on funding and success. Since the program began in 2007, DOE awarded \$323 million to more than 200 Incubator awardees, who have received \$8.3 billion in follow-on funding, representing a 25 fold return on investment.

#### American-Made Challenges in SETO

The American-Made Challenges incentivize the nation's entrepreneurs to strengthen American leadership in energy innovation and domestic manufacturing. These challenges seek to lower the barriers U.S.-based innovators face in reaching manufacturing scale by accelerating the cycles of learning from years to months. Competitors identify an impactful idea or solution that addresses a critical need, design a proof of concept and identify market demand for their solution, and develop and demonstrate their prototypes before a panel of expert judges for a chance to win cash prizes. All competitors have access to support from the American-Made Network, which leverages national laboratories, energy incubators, and other resources across the country.

# Manufacturing and Competitiveness Funding Programs



## Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR)

This program encourages U.S.-based small businesses to engage in high-risk, innovative research and technology development with the potential for future commercialization. It is part of the larger SBIR program across the federal government, which is administered by the Small Business Administration. Programs take a phased approach with two funding levels: feasibility study and proof-of-concept development (Phase I) and prototype development (Phase II). Small businesses that apply for SBIR/STTR funding are expected to address the commercialization challenges of their technology and ensure it is a profitable business opportunity.

## Technology Commercialization Fund

This program is designed to help commercialize promising energy technologies developed at the DOE's National Laboratories, ensuring federal R&D investments in technologies with commercial potential find their way to a viable market. Projects focusing on technology maturation are developed to the point where a business will enter into a cooperative research and development agreement or seek to license the technology. Projects focusing on technology

commercialization involve existing DOE facility technology or intellectual property, and the facility must have a private partner with an identified commercial application for the technology.

## Perovskite Funding Program

This funding program advances perovskite PV by addressing challenges with manufacturing processes and equipment. Projects are working to develop perovskite devices at commercially relevant sizes and throughput to understand manufacturing issues, improve process control, reduce cell-to-module efficiency losses, and validate production cost estimates. Each project aims to demonstrate viability of the manufacturing approach at a level that shows a clear path to commercialization for perovskite technology. ■



For more information, visit: [energy.gov/eere/solar](https://energy.gov/eere/solar)

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