

Ship & Shore Environmental, Inc. Brings VOC Abatement Expertise to a Reshoring U.S. Solar Manufacturing Industry

LONG BEACH, CA, UNITED STATES, September 16, 2026 / EINPresswire.com/ -- [Ship & Shore Environmental, Inc.](#) (S&SE), a pioneer in clean air technologies, continues to expand its work with solar panel manufacturers as the U.S. industry moves through its most significant domestic buildout in more than a decade. The company first entered the solar pollution abatement space in 2023 and has since applied its regenerative thermal oxidizer (RTO) systems to help panel makers manage the volatile organic compounds (VOCs) and hazardous byproducts generated during module assembly.

Solar remains one of the fastest-growing sources of new electricity generation, but the manufacturing side of the industry still carries a real environmental cost. PV panel fabrication depends on thin films, glass, and silicone-based materials that must be chemically coated, often using compounds such as cadmium, lead, and volatile organic compounds like EB acetate and butyl glycol acetate. New research published in Nature and [covered by Tech Xplore](#) projects that global photovoltaic waste could reach 297 to 402 million tonnes by 2060, though the same study estimates that recycling this material properly could unlock nearly \$1 trillion in economic value.

Policy is still catching up. At the federal level, solar panels are not currently classified as universal waste, although some states have adopted their own requirements. The U.S. Environmental



Ship & Shore Environmental supports cleaner U.S. solar manufacturing with advanced air pollution control solutions.

Protection Agency is developing a proposed rule that would add hazardous-waste solar panels to the federal universal waste regulations, creating streamlined end-of-life management requirements intended to encourage collection and recycling while maintaining environmental protections. The EPA says the change could help reduce the quantity of discarded solar panels going to municipal solid waste landfills.

"Cleaner production upstream is one of the few levers manufacturers can pull today, well before recycling infrastructure catches up," said [Anoosheh Oskouian](#), CEO of Ship & Shore Environmental. "Reshoring gives the U.S. a real chance to build a solar supply chain that treats emissions control as part of the manufacturing process from day one, rather than something bolted on later."

A Manufacturing Base That's Growing Fast, But Still Incomplete

The reshoring story Oskouian references is well underway. U.S. solar module manufacturing capacity has grown from roughly 8 gigawatts before federal manufacturing tax credits took effect to 69.9 gigawatts as of June 2026, an increase of more than 750 percent, alongside more than \$43 billion in announced domestic manufacturing investment since 2022. Companies such as Qcells have opened facilities capable of producing a panel from ingot to finished module under one roof for the first time in the U.S. in over a decade.

That growth has outpaced the upstream supply chain, however. According to Canary Media's reporting on the sector, domestic solar cell capacity still sits at only about 3.2 gigawatts, well short of what's needed to feed the country's module factories. New cell fabrication plants are under construction, but manufacturers are racing to close that gap while also managing the emissions and chemical byproducts that come with each new production line.

The Incentive Landscape Has Shifted

The financial picture that shaped S&SE's original entry into this market has changed. The Section 45X Advanced Manufacturing Production Credit, which rewards domestic production of solar components, remains in place for components sold before 2030 before phasing down through 2032. But the 2025 One Big Beautiful Bill Act reshaped the surrounding rules. Starting in 2026, manufacturers claiming 45X, along with the 45Y and 48E credits that apply to solar generation projects, must meet new sourcing requirements tied to so-called prohibited foreign entity restrictions, and project-level credits for wind and solar generation facilities now face an accelerated phase-out timeline.

"The incentives haven't disappeared, but the rules surrounding domestic solar manufacturing have become more complex," said Oskouian. "As manufacturers expand U.S. production, emissions control needs to be considered at the same time as capacity, sourcing and compliance — not after a new production line is already operating."

Where S&SE Fits In

S&SE's most direct experience in this space came in 2024, when the company partnered with a U.S.-based solar PV panel manufacturer that needed to meet urgent emission control requirements. Rather than wait the typical 30 to 36 weeks to build a new RTO, S&SE sourced and installed a high-efficiency unit from an idled pharmaceutical facility, getting the manufacturer into compliance in a matter of weeks.

That kind of turnaround reflects a broader trend. The global market for regenerative thermal oxidizers, the technology S&SE relies on most heavily for VOC and HAP destruction, is projected to grow from roughly \$9.8 billion in 2025 to \$13.3 billion by 2033, driven largely by tightening emissions regulation across chemical, semiconductor, and renewable energy manufacturing. Across its broader portfolio, S&SE's systems consistently destroy more than 99 percent of targeted emissions and have helped manufacturers reduce fuel consumption by up to 30 percent, figures the company points to when discussing what's achievable for solar manufacturers weighing new pollution control investments.

"There are still compelling environmental and operational reasons for solar manufacturers to invest in pollution abatement now, ahead of the recycling rules that are still working their way through the regulatory process," Oskouian added. "Getting the manufacturing side right is what will help make solar panel recycling safer and more affordable as that infrastructure develops."

About Ship & Shore Environmental, Inc.

Ship & Shore Environmental, Inc. is a Long Beach, California-based, woman-owned, certified business specializing in air pollution capture and control systems for industrial applications. Ship & Shore helps major manufacturers meet Volatile Organic Compound (VOC) abatement challenges by providing customized, energy-efficient air pollution abatement systems for various industries, resulting in improved operational efficiency and tailored "green" solutions. Since 2000, Ship & Shore has been prepared to handle and advise on the full spectrum of environmental needs with its complete array of engineering and manufacturing capabilities and global offices around the U.S., Canada, Europe, Middle East, India, Thailand, China, and more. The Ship & Shore Technical Engineering Team has designed custom solutions for clients throughout the world. For more information, visit www.shipandshore.com.

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