

# ASU-led Futures Engine funds 8 promising tech startups

**\$1.5 million to go toward advancing economic development, technology in the Southwest**

By Pete Zrioka, ASU News  
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In the startup world, tech companies often fall victim to what's known as the "valley of death" — the gap between technological proof of concept and actual viable product.

Aiming to bridge this perilous gap, an Arizona State University-led, multi-institutional enterprise is funding eight promising companies with technologies that stand to spur economic growth in the desert Southwest.

[NSF Futures Engine in the Southwest](#), or Futures Engine, announced today \$1.5 million in its inaugural round of [Innovation Grants](#), which are intended to support the transition from proven model or prototype to commercialization.

Launched in early 2024, Futures Engine is one of the National Science Foundation's inaugural [Regional Innovation Engines](#). By uniting academic, community, nonprofit and industry partners across Arizona, Nevada and Utah, Futures Engine is creating a regional economic development ecosystem in the Southwest. This ecosystem is based on technological solutions to air quality, water scarcity and energy security — domains that enable regional industries in the Southwest critical to the global economy and national security.

"These startups emerged from a competitive selection process due to the promise of their technologies, which stand to advance new industries and future-proof existing ones," said [Brian Sherman](#), Futures Engine's CEO. "This series of awards is intended to be the first of many funding cycles that we believe will expand and strengthen our region's innovation ecosystem."

Futures Engine received more than 220 applications from 16 states, and applicants underwent a rigorous selection process involving multiple Futures Engine partners.

"The overwhelming response to this funding opportunity underscores the dire need for investment in technologies at this stage, as well as the broad interest in new solutions for critical resource management," said [Katie Pettinger](#), Futures Engine's chief innovation officer.

The eight companies are either based in or are piloting projects in Arizona, Nevada and Utah, and are advancing solutions in industries ranging from semiconductor manufacturing and solar power to mining and atmospheric water harvesting.

## **Saving water in a water-intensive industry**

Semiconductor manufacturing in Arizona is projected to use an estimated 8 million gallons of water daily by 2030.

Arizona-based company [Purity ReSource](#) is looking to reduce the impact of this water-intensive industry on our arid region with its new membrane technology. Built to integrate into existing semiconductor wet cleaning tools, its technology is designed to extract purified water, reducing hazardous disposal costs and water waste.

Purity ReSource's Innovation Grant funds technology optimization and field testing — providing the opportunity to move this water-saving technology closer to commercialization.

## **Working in tandem**

As solar electricity technology improves, the industry-standard silicon-based solar cells are rapidly approaching their theoretical efficiency limit of 27%. [Beyond Silicon](#) is an Arizona-based startup looking to shatter that barrier. It is developing tandem perovskite-silicon solar cells, which have a projected efficiency of 38% and could deliver 30% more electricity than silicon solar panels. The technology is based on innovations pioneered by a team of researchers at ASU.

Beyond Silicon's Innovation Grant will cover costs associated with patenting its technology and speeding the manufacture of these high-efficiency solar panels.

## **Sound engineering**

Silicon has long been the foundation of semiconductors, but it is rapidly being replaced as a substrate material by next-generation materials such as silicon carbide and gallium nitride. Though these materials enable electronics that can withstand higher temperatures and voltage, they are costly — representing more than half of manufacturing costs. Worse, upwards of 75% of these expensive materials are wasted in the manufacturing process as their substrate is reduced to an acceptable thinness to house devices. Arizona-based [Crystal Sonic](#) seeks to reduce this waste with its patented Sonic Lift-off technology — developed at ASU — which harnesses acoustic energy to separate devices from substrates, allowing the material to be reused for additional device manufacturing.

The funding from Futures Engine will advance this technology, bolstering the rapidly growing semiconductor industry in the Southwest.

## **Water from thin air**

Arizona, Nevada and Utah all depend on the Colorado River, which is experiencing its driest conditions in more than 1,000 years due to decades-long drought and overallocation. [WAVR Technologies](#), a Nevada-based startup, is looking to the sky for water security — but it's not hoping for rain.

Using a novel, patent-pending approach to atmospheric water harvesting that has proven effective in even low-humidity environments, WAVR is charting a course toward secure freshwater supplies even in the most arid regions. [Born from NSF-funded research at the University of Nevada, Las Vegas](#), this water distillation process can be continuously operated and run on numerous energy sources — solar, traditional grid power or waste heat.

The Futures Engine award will advance WAVR's prototype to commercial applications, attract additional investment and forge new partnerships for testing.

## **Sweet separation**

[GlycoSurf](#) is a Salt Lake City-based company manufacturing natural, sugar-based chemicals for a variety of applications — from soaps and textiles to agriculture and food emulsifiers. The company was founded by three researchers from the University of Arizona, who brought their technology out of the lab and into the market.

GlycoSurf's Innovation Grant supports the development of new, biodegradable extractants for mineral reclamation from industrial waste streams. Heavy industries such as mining have long used mineral flotation, a process to separate valuable components from undesirable ones in wastewater. GlycoSurf's bio-based extractants make mineral flotation more efficient and stand to help companies reclaim valuable rare earth minerals and enhance water purification.

Futures Engine's support will help GlycoSurf continue to validate this technology and its use cases, as well as explore the potential of extracting additional high-value minerals such as gallium and germanium from industrial waste streams. Gallium and germanium are used in semiconductors and a variety of other electronics, and domestic sources could help shore up stateside tech development and manufacturing.

## **Green concrete**

[Solid Carbon](#) is on a mission to revolutionize the concrete industry, which produces approximately 8% of the world's CO<sub>2</sub> emissions. The company creates concrete admixtures made from organic waste streams to sequester biogenic carbon in concrete, lowering the carbon footprint of the most frequently used construction material.

Futures Engine's funding will allow Solid Carbon to explore how to upcycle organic waste — such as biochar — from Arizona forests and transform it into a durable, carbon-storing concrete.

## **Capturing pollution at its source**

While many sectors have promising energy alternatives to fossil fuels, industries such as chemical production, long-haul transportation and materials manufacturing may prove difficult to

decarbonize.

Faced with that challenge, [Carbon Utility](#) instead focuses on capturing the emissions from those high-polluting industries. Its modular, scalable direct air capture system removes carbon dioxide at a lower cost, with a smaller physical footprint than competitors. The Arizona-based company's technology also transforms captured carbon into fuels and other sustainable carbon products.

Carbon Utility's Innovation Grant will enable it to scale its technology and create pathways to pilot programs implementing carbon capture in commercial and industrial settings.

## **Powering a battery revolution**

As electrified transportation becomes more widespread, critical gaps in the battery supply chain are emerging. Aeonix, a spinout of [Storagenergy Technologies](#), intends to fill those gaps with safe, energy-dense batteries. The Salt Lake City-based startup is developing anode-free lithium metal batteries that pack more power, performance and efficiency into a smaller footprint.

Targeting aviation applications, Aeonix plans to use the grant from Futures Engine to accelerate manufacturing to test its products.

## **Investing in more than technology**

This first round of Innovation Grants represents more than simply seed funding. Keeping with the Regional Innovation Engine's self-sustaining model, these awards lay the groundwork for tech companies to stimulate ongoing regional economic growth by creating jobs and fortifying industries.

"These awards are more than just funding for eight startups; they're an investment in the Southwest's future," Pettinger said. "Collectively, they're testament to our belief that the Southwest can lead the way in resilience, prosperity and next-generation technological advancements."

The eight awardees will also pitch their companies to investors, furthering their technologies and goals at Futures Engine's upcoming Innovation Summit, slated for May 21–22 in Las Vegas.

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## **Global Futures Laboratory**

Futures Engine's efforts at ASU are anchored by the Julie Ann Wrigley Global Futures Laboratory, which represents the urgent belief that we can and must make a meaningful contribution to ensuring a habitable planet and a future in which well-being is attainable.

The Global Futures Laboratory is the world's first laboratory dedicated to the health of the planet and its inhabitants. It is built upon the deep expertise of ASU and leveraging an extensive network of partners for an ongoing and wide-ranging exchange across all knowledge domains to address the complex social, economic and scientific challenges spawned by the current and future threats from environmental degradation.

This platform positions a new world headquarters for an international array of scientists, scholars and innovators and lays the foundation to anticipate and respond to existing and emerging challenges and use innovation to purposefully shape and inform our future. For more information, visit [globalfutures.asu.edu](http://globalfutures.asu.edu).

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*This story originally appeared on [ASU News](#).*

## Main image



The Innovation Grant awardees are pioneering solutions in industries ranging from semiconductor manufacturing and solar power to mining and atmospheric water harvesting. Photo illustration by Ana Hernandez/ASU