


Environment and sustainability

A win for the environment and the economy in the Southwest

ASU-led, NSF-funded initiative will power regional climate solutions that offer economic opportunities



By uniting academic, community, nonprofit and industry partners across Arizona, Nevada and Utah, a new NSF-funded initiative aims to establish the desert Southwest as a leader in carbon capture, water security and renewable energy and bring high-wage industries to the region.

By [Pete Zrioka](#) | 
January 29, 2024

The U.S. National Science Foundation announced today that Arizona State University will lead a multi-institutional enterprise to confront the climate challenges facing the desert Southwest and spur economic development in the region.

The effects of climate change are acutely evident in the American Southwest, from the desertification of Utah’s Great Salt Lake to record-breaking extreme heat in Arizona and a dwindling supply of Colorado River water reaching Nevada.

NSF Engines: [Southwest Sustainability Innovation Engine](#) will use these challenges to catalyze economic opportunity and seeks to establish the Southwest as a leader in carbon capture, water security and renewable energy and bring high-wage industries to the region. Southwest Sustainability Innovation Engine unites academic, community, nonprofit and industry partners across Arizona, Nevada and Utah that are committed to this goal.

“Our rapidly developing global challenges, if unabated, will result in a planetary emergency. They require immediate action, and the NSF Regional Innovation Engines award offers a new, transformative avenue to apply our holistic sustainability innovation approach to the Southwestern United States to keep this region on a path of economic growth,” said Peter Schlosser, vice president and vice provost of the [Julie Ann Wrigley Global Futures Laboratory](#) at ASU and principal investigator of this project.

“The Southwest Sustainability Innovation Engine combines the extensive expertise of ASU and all our partners to simultaneously ensure a sustainable future and prosperity for our region.”

Southwest Sustainability Innovation Engine, or SWSIE, is among the first proposals selected by the NSF to establish a [Regional Innovation Engine](#), a first-of-its-kind NSF program to create focused research and technology transfer hubs.

The NSF will fund SWSIE’s initial development and growth with \$15 million over the next two years. The engine can be renewed for up to 10 years with \$160 million in funding available for each regional engine.

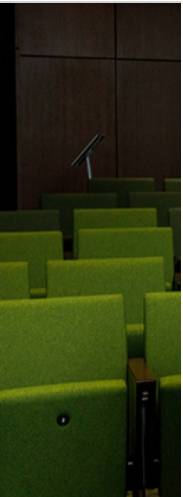


Since 2013, Lake Mead and its counterpart Lake Powell are critical water reservoirs serve as barometer for water security for the Southwest. In 2023, after a dry year, Lake Mead saw an uptick in water levels, Lake Mead reached a record low water level in 2023.



The Southwest Sustainability Innovation Engine unites academic, community, nonprofit and industry partners across Arizona, Nevada and Utah who are committed to establish the Southwest as a leader in carbon capture, water security and renewable energy and bring high-wage industries to the region. Pictured here are representatives of SWSIE partners, including ASU, the University of Utah, Desert Research Institute, Maricopa Community Colleges, University of Nevada, Salt River Project, the Rucks Group and more.

Photo by Andy DeLise/ASU



The Southwest Sustainability Innovation Engine aims to transform the Southwest into a leader in carbon capture, water security and renewable energy with the School of Sustainable Engineering and the Built Environment, the School of Social and Behavioral Sciences, and Peter Schlosser, principal investigator.

Photo by Andy DeLise



"The inaugural NSF Engines awards demonstrate our enduring commitment to create opportunity everywhere and enable innovation anywhere," said NSF Director Sethuraman Panchanathan. "Through these NSF Engines, NSF aims to expand the frontiers of technology and innovation and spur economic growth across the nation through unprecedented investments in people and partnerships. NSF Engines hold significant promise to elevate and transform entire geographic regions into world-leading hubs of innovation."

Strong partnerships for a shared future

SWSIE combines perspectives and expertise from more than 50 partners from academia, industry, nonprofit and entrepreneurial organizations, and local and regional governments.

"Ensuring a healthy future in which humankind can thrive is truly a collaborative effort. No single organization can go about it alone," said Sally C. Morton, executive vice president of ASU's [Knowledge Enterprise](#). "This coalition of partners, led by ASU, is dedicated to leveraging collective expertise to ensure a vital, sustainable and prosperous future for the Southwest. This award aligns with the university's mission to drive impactful change and supports our efforts to advance our global competitiveness by creating socioeconomic solutions for our communities."

ASU's core academic partners in SWSIE include the [University of Utah](#), the [University of Nevada, Las Vegas](#), the [Desert Research Institute](#), [The Water Research Foundation](#), [SciTech Institute](#) and [Maricopa Community Colleges](#).

Industry partners range from established companies with ambitious sustainability goals to businesses providing sustainability-based products and services, while nonprofit partners represent a variety of environmental interests across the Southwest.

[Learn more](#) about the many organizations contributing to SWSIE.

"DRI is eager to bring our recognized research expertise in sustainability issues related to water, energy and carbon in Nevada and the Southwestern U.S. to the project," said Sean McKenna, executive director of the Division of Hydrologic Sciences at the Desert Research Institute and SWSIE co-innovation lead. "Our experience producing scientifically proven innovations to address real-world sustainability challenges through commercialization makes DRI well-poised to contribute solutions for the particular issues facing the region."

Brenda Bowen, director of the University of Utah's [Global Change & Sustainability Center](#) and co-principal investigator on SWSIE, said, "We are so thrilled to have the opportunity to grow academic, industry and community partnerships that unite Utah, Nevada and Arizona as we innovate sustainable solutions for water, energy and carbon."

ASU's Global Futures Laboratory is leading efforts for SWSIE, supported by ASU's [Ira A. Fulton Schools of Engineering](#). The Global Futures Laboratory's researchers, scientists and scholars bring broad expertise in the topic areas at the core of SWSIE along with social and climate science. Added to the mix is the insight from faculty in the [School of Sustainable Engineering and the Built Environment](#), part of the Fulton Schools. Together, the team's efforts demonstrate ASU's continued investments in water, energy and technology, and support innovations that are actionable, community-based and — especially important when talking about strengthening the greater Southwestern region — scalable.

Fueling national leadership and regional growth

The Regional Innovation Engines program is overseen by the [NSF Directorate for Technology, Innovation and Partnerships](#) — the NSF's first new directorate in more than 30 years — and is a new effort to establish regional economic, technological and societal leadership in areas highlighted in the [CHIPS and Science Act](#).

Foundation Professor with the [School of Sustainability](#) in ASU's [College of Global Futures](#).

“We see those challenges as an opportunity to become the national leader in water security, renewable energy and carbon capture so this region can continue to thrive. So that if somebody wants to start a company in one of those areas, they’ll think of the Southwest as the place to go.”

SWSIE's work will involve not just bringing meaningful technology to market, but working with governments to ensure that policy provides a fertile space for its use.

“We’re at a moment in the Southwest where the ongoing drought and unending heat we’re experiencing is focusing the minds of elected officials and stakeholders toward solutions,” said Scott Barclay, SWSIE chief operating officer and a professor with the [School of Social and Behavioral Sciences](#) in ASU's [New College of Interdisciplinary Arts and Sciences](#). “And what SWSIE does is bring those stakeholders directly into the conversation about what could work in their location, for their priorities, in a way that helps them transform the space.”

These co-developed solutions require new and revised skill sets to implement them. SWSIE will draw upon partners' collective strengths to train that workforce. The engine will generate technical opportunities for the region, such as installing renewable energy systems, new water technologies and carbon capture infrastructure, as well as governmental and managerial positions focused on sustainability.

“This partnership aligns leading research institutions and public-private partners around a shared vision to accelerate an already growing regional innovation ecosystem around sustainability,” said Zachary Miles, UNLV senior associate vice president for economic development, who leads workforce development for SWSIE. “Together with partners throughout Nevada, Arizona and Utah, we’ll leverage our vast collective network of research, economic development and workforce partners to create opportunities and turn bright ideas into life-changing products and services.”

Ultimately, SWSIE aims to create an economic and social ecosystem that allows the region to thrive, not simply survive, amid serious climate change issues.


“Failure isn’t an option,” said Pataki. “We’re not going to abandon the Southwest. We’re going to solve the issues we face, and we’re going to become more prosperous in doing so.”

Funding information

Southwest Sustainability Innovation Engine is funded by National Science Foundation, [Award Number 2315479](#).

Grants / Awards	Innovation	SDG 06 Clean Water and Sanitation	SDG 07 Affordable and Clean Energy
SDG 08 Decent Work and Economic Growth	SDG 09 Industry, Innovation and Infrastructure		
SDG 11 Sustainable Cities and Communities	SDG 13 Climate Action	Water	Campus student
Entrepreneurship	Faculty	School of Social and Behavioral Sciences	Corporation
Environment and sustainability	School of Sustainable Engineering and the Built Environment	Engineering	
Environment	Policymakers	College of Global Futures	Julie Ann Wrigley Global Futures Laboratory
Renewable energy	Sustainability	Alumni	Community
		Employee	
Ira A. Fulton Schools of Engineering	Research	New College of Interdisciplinary Arts and Sciences	
Knowledge Enterprise	School of Sustainability		

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