

A university campus is rising where alfalfa usually grows in Imperial County, brought to life by a race to mine a cache of lithium big enough to power hundreds of millions of electric vehicles.

The mineral is deep underground near the Salton Sea, a motherlode whose value only recently became clear. Industry will need workers to mine and refine the so-called “white gold” — and San Diego State University will help provide them.

The university is building a STEM education center in Brawley that will train people to work in the nascent lithium industry, stirring hope for prosperity in a region where unemployment is almost 19 percent.

The center is coming together on a remote, lonesome road that extends through the Colorado Desert like a vein. Often, the only sound in this big-sky world is the wind blowing.

“We’re seizing the opportunity because lithium can transform clean energy, and it will help a county that wants and needs these jobs,” said Hala Madanat, SDSU’s vice president for research and innovation. “We’re responding to community needs.”

It’s a logical extension of the tiny campuses SDSU has operated for years in Calexico and Brawley — small cities that help make up a corner of southeastern California where one in five people lives in poverty.

The STEM center is part of a larger effort by the university to expand its footprint and its influence, especially in science. It’s currently developing a branch campus in Mission Valley that, among other things, will soon have an innovation district.

SDSU, which brought in \$230 million in research funding last year, will advance that goal in Imperial County, whose population of 180,000 is spread across an area nearly as large as San Diego County.

The university has already sent faculty out there to collect baseline data on air and water quality, which could later be used to determine if the lithium industry is operating cleanly. There will be opportunities to conduct research for the companies that will build and operate the lithium plants.

It's a sensitive issue locally. The Salton Sea — once a place for boating, fishing and scuba diving — has been scarred by decades of pollution, much of it coming from irrigated farmland. A drop in runoff from the farms also has been causing the lake to shrink. So are increasingly bad heat waves. Toxic dust from its receding shoreline can

cause asthma, a health problem that SDSU scientists are already exploring.

Now, SDSU is in the midst of all this because of Gov. Gavin Newsom, who awarded the university \$80 million to create the STEM outpost. He's hoping that the lithium industry can help California meet the zero-emission goals it has set for new cars and trucks.

This push for local

lithium also is seen as a chance to deal a blow to the nation's largest adversary, China, which provides most of the lithium used in the U.S.

Newsom has put a theatrical spin on the project, calling the Imperial Valley the "Saudi

Arabia of lithium."

His words have energized the lithium industry.

Three companies — including one based in Carlsbad — say they are in various stages of developing plants in Imperial County that will collect and refine lithium. A fourth says it will build a factory where workers can directly put the mineral into batteries.

The surge is not a guarantee of success. The industry has yet to prove that it can affordably do the job without damaging the environment.

No one is hoping for success more than Ramon Castro, the electrician who doubles as mayor of Brawley, a pancake-flat community 130 miles east of San Diego.

“We have resources, and we have manpower,” said Castro, a former Marine. “What we’ve needed is more access to higher education. That’s what it takes to move people from poverty to the middle class.

“SDSU is going to help us with that.”

Agriculture is a major force in Imperial County, employing, directly and indirectly, nearly 20,000 people and generating about \$5 billion in revenue a year. With water from the Colorado River, fields come alive with lettuce, cauliflower, spinach and watermelons. The work can be grubby and grueling, especially during the summer.

On a recent morning, the temperature was 108 and rising when Sean Wilcock, an executive with the Imperial County Economic Development Corp., snapped the steering wheel of his Ford pickup to get closer to farmland near Calipatria.

“The heat weeds out the weak,” Wilcock said. “It’s like the Wild West out here.”

He took in the sight, then added: “We need agriculture — and lithium.”

Similar thoughts are taking shape in the mind of Trevor Tagg, a University of San Diego graduate who helps his family run a large farm based in El Centro. He agrees that the local economy suffers from a lack of diversity.

“You have the school system, the prisons, the irrigation district, agriculture, government and not much else,” said Tagg.

“We have kids that are smart, motivated, polite and amazing. They go off to college, and you rarely see them come back. I do not blame any one of them.”

Changing the equation will be costly, difficult and time-consuming.

The focal point of the lithium boom is a patch of land at the southeastern edge of the Salton Sea where 11 geothermal plants use wells to move hot, salty water to the surface from a reservoir below. It is not hydrologically connected to the lake.

The so-called brine turns to steam that's used to drive turbines, which in turn are connected to generators that produce electricity. That electricity is placed on the power grid, then distributed to parts of California and Arizona.

But there happens to be another source of power in the briny brew that generates it. The brine contains many types of minerals, including lithium — a key component in the batteries the power everything from electric cars to cellphones to robotic vacuum cleaners and hearing aids.

So mining companies will set up shop next to the geothermal plants. In simplest terms, they'll extract lithium from the plants' brine, then refine it to make it battery-grade. EnergySource Minerals of Carlsbad is among the companies planning to build a processing plant.

"We believe that if we get one project in lithium extraction up and running there will be a second one, there'll be a third one, and all of them are going to need engineers," said Carmen Rene, ESM's chief financial officer. "We would like to be able to hire our entire team from individuals who have grown up and want to be" in Imperial County.

Many of ESM's workers will train at the SDSU STEM center, which is preparing to help aspiring chemists and engineers, as well as pipe-fitters, control-room operators and logistics experts.

The ESM plant could be up and running in about three years. Rene estimates that when it is at capacity it will produce 20,000 tons of refined lithium annually — enough to help power about 500,000 electric vehicles.

And it has told the public that such a venture could produce \$720 million in local tax revenue over 30 years.

That kind of talk is causing giddiness in the Imperial County business community, whose members wonder if this new "Lithium Valley" could become as well-known as Silicon Valley farther north.

There are a lot of cautionary notes attached to this.

County officials say they aren't sure how much local tax revenue a healthy lithium industry would produce. The U.S. Department of Energy says the extraction method that's been proposed appears sound, but they're not sure, because it is an emerging technology.

There also are questions about commercial viability of this type of operation — partly due to what it will cost to finance the construction of billion-dollar plants.

Companies know that it will take a lot of water to process the lithium, but they've yet to work out the particulars. Obtaining more water could become an issue, because access to the Colorado River is strictly controlled and supply can be deeply affected by prolonged droughts.

And if the industry does get off to a fast start, the county will still have to figure out how to provide something it doesn't currently have — a large stock of affordable housing.

SDSU also has a lot on the line. The state gave it \$80 million with the expectation that its training center will become indispensable. It sits on a 200-acre parcel of land that was donated to the university by an unnamed Imperial Valley family that clearly foresees expansion in the future.

Wilcock is a strong proponent of the industry. But he was circumspect recently while sitting in his pickup truck near Calipatria.

"We're going to have to move carefully, step by step," he said. "This will be a long-term process, not something that happens overnight."