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Exxon Mobil Plans to Produce Lithium in Arkansas

The move is the oil giant’s first foray in the production of a metal vital for electric vehicle batteries.

By Clifford Krauss
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Exxon Mobil said on Monday that it planned to set up a facility in Arkansas to produce lithium, a critical raw material for electric vehicles, which pose one of the biggest challenges to the company’s oil business.

Coming just a month after Exxon said it would spend $60 billion to buy Pioneer Natural Resources, the announcement signals that the large oil company intends to hedge its big bets on conventional fossil fuels with at least some investments in cleaner forms of energy that are needed to combat climate change.

The announcement does not represent a fundamental shift in corporate strategy, but it is an acknowledgment that battery-powered vehicles will increasingly compete with cars and trucks fueled by gasoline and diesel. It could also open the door for southern Arkansas to emerge as a major source of lithium. Most of the metal today comes from Australia and South America, and much of it is processed in China.

“Electrification is going to be a major component of the energy transition, and we bring highly relevant experience to the production of lithium,” Dan Ammann, president of Exxon Mobil Low Carbon Solutions and a former top executive at General Motors, said in an interview. “We see an opportunity to deploy that will be highly profitable.”

He said the project would “enable the continued reduction of emissions associated with transportation.”

Exxon announced that it would begin lithium production in 2027, with the goal of producing enough metal to supply more than a million electric vehicles a year by 2030. The company did not say how much it would invest in the project, but Mr. Ammann said the company was ready to spend “hundreds of millions” as a start and would look for “more opportunities” to expand lithium production.

An essential component of lithium-ion batteries, lithium has become a prize in a global race between American companies and businesses in China, Russia and elsewhere. The United States produces only a small amount of lithium, though mining companies are hoping to produce a lot more of it, including in California, Nevada and North Carolina.

Exxon executives say the company’s expertise in geology, drilling, hydraulic fracturing and chemical production will allow it to economically extract lithium from the soup of saltwater and minerals known as the “Smackover brine” found underground in Arkansas. Exxon added that thousands of depleted oil wells drilled over the last century could eventually be rehabilitated to produce lithium.

In recent years, Exxon has doubled down on oil and natural gas production in the Permian Basin, which straddles Texas and New Mexico, and in the deep waters off Guyana. Arkansas fits into its plans of concentrating its production close to home and away from the Middle East and Russia, where Western oil companies previously tried and largely failed to establish sustainable businesses.

Some other oil companies like BP, Eni and Equinor have invested in other forms of energy like solar, nuclear and wind, but Exxon has sought to increase its investments in fossil fuels while trying to ramp up efforts at capturing and burying carbon emissions from industry and producing hydrogen as a clean fuel.

In Arkansas, Exxon plans to use a process known as “direct lithium extraction,” a new technology that uses solvents or membranes and filters to produce lithium from brine. Engineers and executives that are pushing this method have said it is superior to open pit mines or evaporation ponds because it is faster and wastes less water. But nobody has successfully proved that the approach can produce enough lithium for millions of cars or stationary batteries.

Exxon, which purchased drilling rights on 120,000 acres in Arkansas this year, said it would pump leftover brine back underground, and convert the lithium it mined to battery-grade material nearby. China dominates the difficult business of turning lithium found in the earth into the concentrated material battery factories need.

Some energy experts are skeptical that direct extraction will work at large scales and have said Exxon’s effort may not increase the supply of lithium by much. Mr. Ammann said he was confident the technology would work.

Some environmentalists expressed halfhearted praise for Exxon’s lithium efforts.

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The Inflation Reduction Act, signed by President Biden last year, has helped spur efforts to produce lithium, make batteries and assemble electric cars with generous tax credits and other incentives.

Still, little new lithium production has come on line in the United States in recent years, and experts note that setting up mines and processing plants here could take many years. Some companies have been working for years to produce lithium from brine under the Salton Sea in California.

“It’s helpful, but it’s not going to be enough for critical metal independence to get away from China,” said Benny Freeman, a chemical engineering professor at the University of Texas at Austin who is active in lithium research. “But this, plus the Salton Sea, is a good start.”

Mining experts said Exxon had the expertise to find lithium but might need outside help to separate the metal through filtration or purification from the salty liquids.

Exxon has held discussions with Tesla, Ford Motor and other car companies to supply them with lithium. Other oil companies, including Chevron and Occidental, have also said they are looking at investing in lithium mining.

In a way, Exxon’s new venture in lithium is a return to its past. In the 1970s, an Exxon chemist played a leading role in developing the lithium-ion battery. Exxon even began manufacturing the batteries in 1976 but gave up after concluding that the market for the batteries was too small.

The price of lithium has been falling in recent months as new supplies have become available in various countries and the growth rate of electric vehicles has slowed in China, Europe and the United States. But many energy experts expect a shortage of the metal by the end of the decade, which could result in higher prices.