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# REFRIGERATED & FROZEN FOODS

## **Austin Technology Incubator partners with new Geothermal Entrepreneurship Organization to develop new sources of CO2-free energy**

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*December 12, 2019*

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The Austin Technology Incubator (ATI), Austin, Texas, is a partner in a new \$1 million initiative to spur geothermal innovation and commercialization that could lead to vast new sources of clean, CO2-free energy.

With a \$1 million grant from the U.S. Department of Energy, ATI's Cockrell School of Engineering launched a unique initiative that aims to make The University of Texas at Austin (UT) a national hub for geothermal energy expertise and startups. The new Geothermal Entrepreneurship Organization (GEO) will bring together engineers, researchers and entrepreneurs to develop technologies and launch companies to help advance the geothermal energy industry.

The effort will engage all groups with relevant expertise within the Cockrell School, UT's Jackson School of Geosciences, the Bureau of Economic Geology, the College of Natural Sciences and the university's more than 20 energy research centers.

"It's a straightforward concept. Drilling technically complex, high-temperature and high-pressure wells is a core strength of the oil and gas industry. Let's use all of that learning and expertise to drill for heat — tapping a vast CO2-free, clean energy source," says Jamie Beard, clean technology leader of Cockrell School's Innovation Center. "We want to take advantage of Texas' existing intellectual capital and leadership in geosciences and drilling to build the future of energy. By leveraging technologies and methodologies developed here over the past century and building upon them with new innovations, Texas can pioneer our clean energy future. And, doing this won't require a moonshot. We can make geothermal energy a ubiquitous utility within a decade."

Geothermal energy is produced by converting heat emanating from the Earth's core into electricity. Countries such as Iceland, where there is heavy volcanic activity, have been using geothermal energy for over a century. But, they can access geothermal heat sources with relative ease because very high temperatures are encountered close to the surface. UT's GEO is focused on developing and commercializing advanced high-temperature and high-pressure drilling tools that will enable geothermal energy production worldwide, which means developing drilling technologies that can economically reach depths of up to 30,000 feet and operate at temperatures exceeding 350°C. The goal is to enable reliable production and use of geothermal energy anywhere in the world.

"Geothermal energy offers an avenue for oil and gas companies to reinvent themselves as sustainable energy providers, while doing what they do best — drilling the most difficult wells in the world," says Eric van Oort, professor in the Hildebrand Department and co-investigator in GEO. "Moreover, the oil and gas industry has a large amount of experience in drilling deep high-temperature, high-pressure wells that can be straightforwardly leveraged into deep geothermal drilling and well construction. This is not a blue-sky ambition. This can happen in the near term with incremental developments based on existing technologies in use today."

"We already know what we need to do," Beard says. "We may not have the technology to do it yet, but a more focused research approach would inevitably lead to the innovations we need. Access to widely available baseload geothermal energy will also require significant capital investment in far greater amounts than what is being spent at present. Still, throwing money at a problem doesn't guarantee a solution. That's why the entrepreneurial part of the initiative is critical."

The GEO will foster an entrepreneurial ecosystem in tandem with focused research, so that new tools can make it to market efficiently and industry can start making progress quickly.

"We have to be sure that relevant technologies get field-tested and quickly commercialized," says Bob Metcalfe, GEO's principal investigator. "The 'valley of death' that technologies experience when they emerge from research labs is deep in the context of drilling technologies because the technologies need to be relatively mature before they can be field-tested. That makes startups and commercialization an essential part of our effort. We will create clusters of geothermal startups based on technologies developed at UT to infuse the industry with fast and impactful innovation that is mature enough for industry to immediately leverage."

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