U.S. DEPARTMENT of ENERGY | Office of Energy Efficiency and Renewable Energy

Geothermal Technologies Office

GTO Awardee Press Release Examples

Contents

West Virginia University

Example of a press release highlighting a GTO-funded project start. A similar structure could be used for highlighting project ground-breakings, community engagement, or other successes.

WVU announces drill date for first geothermal, carbon capture and storage data-collection well in West Virginia

Drilling for the new WVU geothermal data-collection well is set to begin during the second week of May. The well is located at an existing well pad operated by Northeast Natural Energy in the Morgantown Industrial Park. Core samples at shallower depths will be collected to study the potential for underground carbon storage. (WVU Photo/Jennifer Shepard)

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Drilling will start on the West Virginia University geothermal and carbon capture data-collection well during the second week of May, marking a significant step forward in [renewable] energy research in West Virginia.

This will be the first-of-its-kind geothermal study in West Virginia and will collect core samples and temperature data down to a depth of 15,000 feet, critical to testing the potential of geothermal energy in the region. Data also will be gathered on the potential for underground carbon storage in the Appalachian basin — another scientific first in the state.

The project is a collaboration first spearheaded by the WVU Energy Institute with WVU faculty and experts at Northeast Natural Energy LLC and the U.S. Department of Energy, with support from the West Virginia Geological and Economic Survey and Hewitt Energy Strategies.

The DOE provided approximately $9.1 million in funding from the Geothermal Technologies Office and the Office of Fossil Energy and Carbon Management. Northeast Natural Energy, WVGES and WVU contributed $2.76 million in cost-share funding.

“The successful partnership between DOE, industry and academia to test the potential of both geothermal and carbon sequestration in the state is a significant step towards creating new economic opportunities in [renewable] energy diversification,” said Shikha Sharma, geology professor in the WVU Eberly College of Arts and Sciences and the project’s principal investigator.

Drilling will be located at an existing well pad at the Morgantown Industrial Park operated by Northeast Natural Energy, a West Virginia-based energy company.

“It’s exciting for Northeast Natural Energy to be able to use its scientific and operational expertise to help better understand the geothermal energy and carbon capture potential of our great state,” said B.J. Carney, vice president of Geoscience and Innovation at Northeast Natural Energy.

This is the second drilling research project that Northeast Natural Energy has partnered on with WVU. The first was the Marcellus Shale Energy and Environment Laboratory for which WVU coordinated with academia, government and industry partners that started in 2015. MSEEL scientists used multiple Northeast Natural Energy wells near Morgantown to research new technologies to improve well production and minimize environmental impacts during unconventional natural gas development projects.

“We look forward to partnering with the researchers at WVU and the DOE to lead the way in the Appalachian Basin toward establishing additional [renewable] energy sources,” Carney said.

“We are also eager to understand the feasibility of capturing and storing CO2 in the subsurface to ensure a sustainable future for our vast natural gas resources already in place. These types of projects fit with Northeast Natural Energy’s focus on providing energy of all types to serve our communities and improve their quality of life,” Carney added.

"To be clear, instead of producing energy, this well will produce data," said Sam Taylor, assistant director of Strategic Partnerships and Technology at the WVU Energy Institute. "The goal is to gather enough data to decide if geothermal reservoirs in the region can be a cleaner energy source for parts of West Virginia and mid-Appalachia, along with collecting data on possible carbon storage."

"We're excited that the test well will provide WVU students with hands-on experience in the field, working with industry professionals while collecting data, providing them with invaluable, real-world experience as a part of their academic studies at WVU," Sharma said.

"This is the sort of community and University engagement and collaboration the WVU Energy Institute promotes," added James Wood, Energy Institute director.

Another notable first of this research is that no entity had ever requested a deep geothermal science well drilling permit in West Virginia. Northeast Natural Energy worked closely with the West Virginia Department of Environmental Protection, Office of Oil and Gas, to make sure all appropriate permits were in place.

"We are very grateful for the outstanding cooperation of the Office of Oil and Gas in moving this project forward," said Brett Loflin, vice president of Regulatory Affairs for Northeast Natural Energy. "We are very fortunate to have a regulatory agency willing to work with us on what we believe will be an important scientific endeavor."

House Bill 4098 was passed in 2022 and gave the Department of Environmental Protection regulatory oversight on geothermal energy. Taylor was invited to provide expert testimony to state delegates when the bill was reviewed.

"This project is a significant milestone in the testing of geothermal energy potential, not only in the state, but also in 70% of the U.S. where lower subsurface temperatures have prevented its use," Sharma said.

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Geothermal Technologies Office

University of Nevada, Reno

Example of a press release highlighting GTO-funded project successes.

Nevada in hot water: Geothermal industry gets boost with discoveries of 'blind' systems

College of Science team successful with new exploration methods for renewable energy

Impact & student success | May 21, 2019

Nevada Bureau of Mines and Geology, a public service unit in the College of Science at the University of Nevada, Reno, has had two successful discoveries of geothermal systems in the Great Basin.

Geothermal power potential in Nevada is heating up – with two successful discoveries in the Great Basin by the Nevada Bureau of Mines and Geology using a previously untried method for finding unknown, hidden geothermal resources.

Both discovered systems are blind – meaning there are no surface indications of hot water – and there had been no exploration previously in one of these areas and only minor previous exploration in the other. Geologists at the Nevada Bureau of Mines and Geology at the University of Nevada, Reno, used a number of other surface and subsurface clues in their methodology developed as part of their Department of Energy funded Play Fairway project that has been underway since 2014.

"The exploration, the mapping, the analysis, all led us to the top two spots – of perhaps hundreds of potential sites – to drill geothermal wells," Jim Faulds, director of the Nevada Bureau of Mines and Geology, said. "Success at two sites provides an initial validation of the methodology we developed, and opens up new possibilities for power generation sites by the industry."

The third and final phase of the project involved temperature-gradient drilling generally to approximately 500 foot depths. Data from all three phases of the project has been analyzed and will help guide industry to the most favorable sites to generate renewable energy in the large study area, which covers about one-third of the state of Nevada. Measurements from the new geothermal wells have been completed, the wells capped and waiting for industry to step in. Now that these blind geothermal systems have been discovered, it's up to the geothermal industry to conduct additional drilling for possible development of a geothermal power plant.

Graduate students sample for geochemistry in warm well in Granite Springs Valley

Geothermal energy is one of the more stable types of alternative energy, with the system extracting hot water from underground, bringing it to the surface exchanging the heat to create electrical power, then returning it to the deep underground aquifer. This is a 24/7 process that isn't reliant on sunshine, wind or battery technology.

New Geothermal Systems Ready for Industry

"It's gratifying to demonstrate positive results of applied science here at the Bureau," Faulds said. "After several years of research, mapping and analysis, we've identified many promising areas that have great

potential for geothermal power. Funds only allowed for test drilling at two sites, but there are dozens of other promising sites that I'm excited about across the region. The two sites, one in southeastern Gabbs Valley and the other in at northern Granite Springs Valley, are now ready for industry to decide on their economic viability."

McGinniss Hills, currently the largest geothermal system in Nevada northeast of Austin, produces about 140 megawatts of electrical power and is also a hidden geothermal system with no surface hot springs or steam vents. The newly discovered system in southeastern Gabbs Valley system is probably not as large as that at McGinniss Hills, but Faulds thinks that it is likely that many other systems as large as McGinniss are yet to be discovered.

"There is potential in the Great Basin for much greater amounts of geothermal energy than the current 720 MW of capacity from about 25 power plants already in place," Faulds said. "The geothermal wealth of this region can be attributed to its active faulting and thinning of the crust, which allows hot fluids to rise more quickly to levels accessible through drilling. The Play Fairway project provides a catalyst for accelerating geothermal development in the region.

"The industry is now looking at Gabbs. It's not our job to develop the resource, but rather to assess geothermal resources and identify the systems, so industry can take over and develop energy for Nevada and neighboring states."

The play fairway method includes the study of many geological and geophysical attributes of a region, including the location of earthquake faults. In Gabbs Valley, there is a major subsurface fault intersection. Most geothermal systems in the Great Basin are affiliated with Quaternary faults, faults that have been recognized at the surface and that have moved in the past million years or so, a portion of the Quaternary time period.

Nevada Bureau of Mines and Geology Director Jim Faulds gives a field lecture about geothermal resources

After determining the best places to drill in 2018, Faulds and his team worked with a crew from the U.S. Geological Survey to drill a series of wells across the geothermal system. Six holes each were drilled at both the Gabbs and Granite Springs Valley sites.

“We bracketed the system with drilling to better define its size and potential power capacity,” Faulds said.

The Granite Springs site is not as well defined as Gabbs.

“It wasn’t a bullseye like Gabbs, finding the center was harder,” Faulds said. “It might require more drilling to pinpoint, but both systems are quite hot at relatively shallow depths, 124 degrees Centigrade (255 degrees Fahrenheit) at 500 feet at Gabbs and 95 degrees Centigrade (203 degrees Fahrenheit) at similar depths for Granite Springs Valley. Geochemical data suggest higher temperatures for each site at greater depths.”

Much of the Gabbs Valley project was carried out by Jason Craig for his master’s thesis. This project was a great collaborative effort, Faulds said, between several Bureau of Mines and Geology faculty and graduate students at the University, as well as several other organizations, such as the U.S. Geological Survey.

This project was funded by a Department of Energy grant through their Geothermal Technologies Office. Collaborations with the geothermal industry, including Ormat, Nevada Inc. and U.S. Geothermal were also beneficial to this study.

The DOE has funded multiple play fairway analysis studies throughout the United States, going back to 2014, and several institutions around the west have developed their own play fairway methods. The DOE program started with about 10 separate funded projects, and five were selected to continue work in the final third phase, including the Bureau of Mines and Geology at the University of Nevada, Reno.

Machine-Learning for Geothermal Exploration

As part of their analysis, Faulds and his team used a few basic machine-learning techniques during the play fairway project, and now have plans to step up this effort with a newly funded project from the DOE. The project is intended to apply artificial intelligence and machine-learning techniques to geothermal exploration to identify previously unrecognized connections between the various datasets.

“This is like icing on the cake of our very successful geothermal play fairway project,” Faulds said. “This new project is aimed at facilitating additional discoveries of geothermal systems in Nevada using machine learning methods and builds on our previous efforts on geothermal play fairways in the region.

“This machine learning project is hopefully the first phase of a long-term, multi-phase program. This first phase is funded at $500,000.”

For this project, Faulds has assembled a team of scientists from the Nevada Bureau of Mines and Geology, USGS and experts in machine learning from MIT and the oil industry. Machine learning is a technique that teaches computers to analyze data, learn from the data and improve their performance through adaptation. The hope is that there will be higher success rates in geothermal exploration leading to greater efficiency and lower costs for geothermal exploration and development.

The mission of the Nevada Bureau of Mines and Geology is to provide the citizens of Nevada with geologic information on geologic hazards and natural resources both to protect the public and facilitate, diversify and enhance Nevada's economic future. NBMG is a statewide public service unit that applies its expertise to the entire state as a division of the University of Nevada, Reno and resides in the Mackay School of Earth Sciences and Engineering in the College of Science. Since its inception in 1929, it has served as the State Geologic Survey of Nevada and a Bureau of information and analysis for geologic data throughout the state.