

# 2021 Geothermal Rising Conference

*San Diego, California | October 3 - 6, 2021*



## Geothermal Heating & Cooling at U.S. Department of Energy

Dr. Alexis McKittrick

Geothermal Technologies Office (DOE)

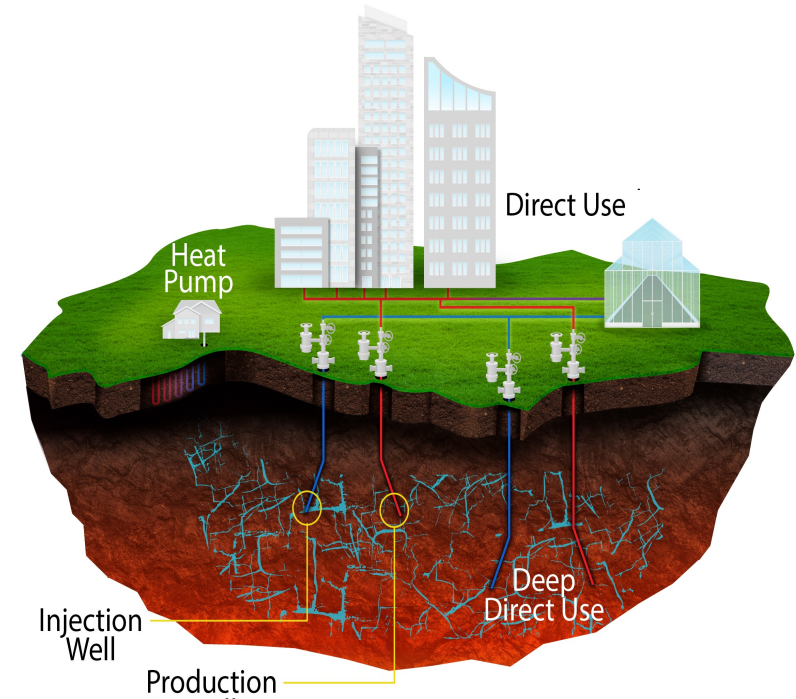
# Three Uses of Low-Temperature Geothermal Technologies

Geothermal Heat Pumps	Direct Use and Thermal Energy Storage	Electric Power
	80-300°F	
Ranges from shallow trenches to wells hundreds of feet deep	Hundreds to thousands of feet deep	

**Entering Water Temperature**

**Well Depth**

**Facilities**



# GTO-Funded Deep Direct-Use Feasibility Studies

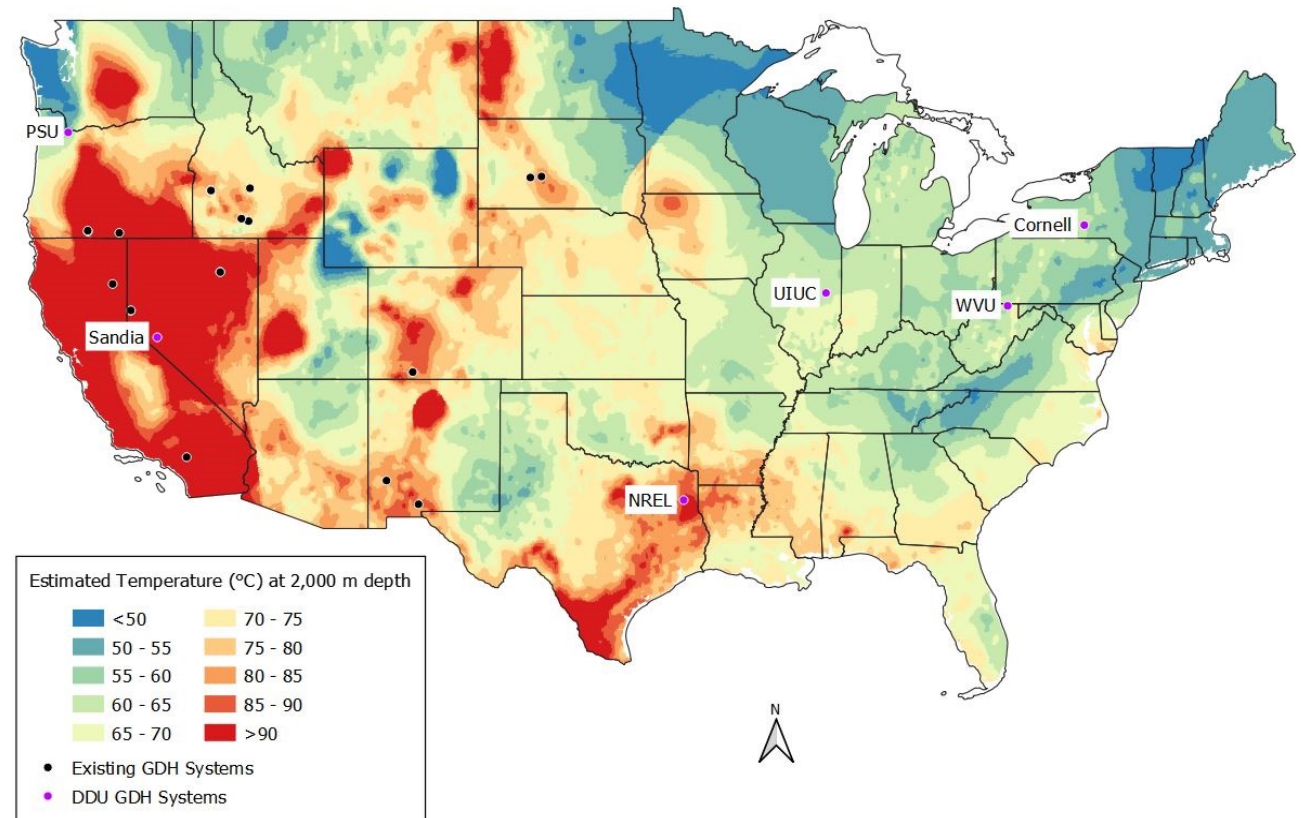
- Benchmark studies **conducted 2017-2019** at six locations across the U.S.
- The results showed that **DDU can be cost-competitive**, in addition to offering benefits such as low environmental impact, high reliability, and high resiliency.
- However, **various barriers exist** including high upfront cost (drilling), long permitting timelines, limited financial incentives, low public awareness, and perceived risk of induced seismicity.

## Evaluating the feasibility of geothermal deep direct-use in the United States

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# West Virginia University Deep Direct-Use Project

**GTO is...**investing in a **West Virginia University R&D project** to investigate the deep direct use of geothermal resources to heat and cool the 2,000-acre Morgantown, West Virginia, campus.

- Dr. Nagasree Gararpati is leading a team of WVU researchers in drilling and gathering data from a deep geothermal exploratory well (~15,000 ft).
- This project will:
  - Conduct field testing to **prove geothermal reservoirs can be a viable energy source** for West Virginia and Mid-Appalachia, and
  - Evaluate shallow geologic formations **appropriate for thermal energy storage.**
- Drilling will use state-of-the-art oil and gas drilling techniques.
- This research supports the GTO goal of deploying low-temperature geothermal energy technology in the eastern U.S.



Credit: West Virginia University

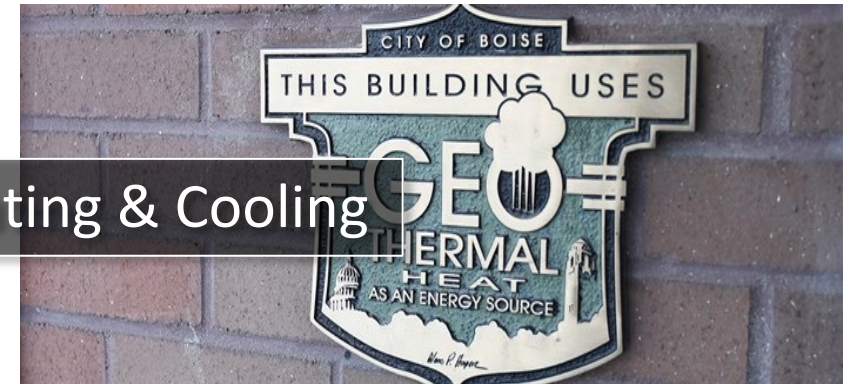
# DOE GTO Low Temperature Portfolio – New Initiatives in FY22!

Low Temperature Geothermal Technologies are constructed and operated directly within communities and homes, and thus have the potential to make direct impacts on consumers and customers. GTO, along with DOE, will continue to include principles of **energy equity in our RD&D portfolio development and selections.**



## Federal Geothermal Partnerships

## Community Geothermal Heating & Cooling



## Next-Generation Connected Communities

**Thank You!**



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the new monthly newsletter from GTO!**

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**Interested in serving as a merit reviewer for GTO  
RD&D projects?**

*Send us your resume or CV:*

[doe.geothermal@ee.doe.gov](mailto:doe.geothermal@ee.doe.gov)