Should Yellowstone's Supervolcano be used for energy?

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The striking colors of the landscape make it easy to forget that Yellowstone National Park springs is a supervolcano way past its eruption due date. Photo: Russell Pearson/Barcroft Images/Barcroft Media via Getty Images

Yellowstone National Park is boiling. The Wyoming park is filled with hot springs, geysers and steam vents. All are fueled by a bubbling supervolcano.

Yellowstone sits on top of a huge chamber below the Earth's surface filled with hot fluid called magma. Scientists agree that the Yellowstone supervolcano is not likely to blow anytime soon. However, if it does erupt, it would be a disaster. The eruption would shoot out enough rock and ash to cover most of the United States. There could be so much smoke that the sun would be hidden, plunging Earth into a volcanic winter.

In 2017, NASA scientists began trying to figure out a way to stop a future super-eruption. The study was led by Brian Wilcox. His team came up with the idea of drilling a series of wells around the edge of the park and pumping cold water down into the hot rock. This would cool the boiling rock and prevent a disaster.

Doing this would have one other big advantage. It would unleash enough geothermal energy to power the entire country.

Scientists Say Geothermal Energy Makes Sense

Geothermal energy is built up and stored beneath the surface of the Earth. It can be used to create electricity and to heat buildings.

Geothermal power is an excellent alternative to oil and gas. These two energy sources are called fossil fuels. Fossil fuels create greenhouse gasses, which are a major cause of global warming. Geothermal energy can be made all the time, unlike other environmental energy sources like solar power and wind power. It's even cheap, once a power plant is up and running.

However, Wilcox's plan is unlikely to happen anytime soon. Power plants and drilling are not allowed in Yellowstone or other national parks. They are banned to make sure the parks remain unspoiled.

Many geothermal experts agree that Yellowstone should remain untouched. Geothermal energy has many benefits, but it also comes with serious risks. One is the possibility of causing damage to the environment.

Two Countries, Two Different Results

Take the case of New Zealand. The island nation's Wairakei Basin once had 70 geysers that fired jets of water into the air. Then in 1958, a geothermal power plant was developed nearby.

Today, Wairakei does not have a single geyser. The power plant destroyed all 70 because it took water from underground. It interrupted the geysers' natural processes. The region is now silent and cold.

However, supporters of geothermal energy use argue that scientists have learned how to prevent such damage. Scientist Helen Robinson points to Iceland as an example. It has been able to use volcanic power with little environmental harm. Roughly 90 percent of Icelanders live in geothermally heated homes. Twenty-five percent of the country's electricity is produced by geothermal power.

Robinson says this has been possible because Iceland's geothermal power companies carefully consider where to drill. They keep wells far away from geysers.

In addition, there are now new approaches to geothermal engineering that avoids water systems altogether. Engineers drill tens of thousands of feet until they hit hot bedrock where there is no water. Then they inject cold water to make steam. In turn, that steam creates geothermal power.

Power Plants Are Not Welcome At Yellowstone

Engineers could use that approach at Yellowstone. If they did, they would not damage the park's geysers and hot springs, says geothermal energy expert Maria Richards.

Even so, Richards does not want a power plant anywhere near Yellowstone. Her reason is simple. The power plant would be ugly, she says. It would turn a beautiful park into an factory zone, crisscrossed with power lines. For that reason alone, many people oppose the idea.

Even Wilcox is not sure what to think.

"I've been to Yellowstone many times myself — I love it," he says. "I certainly would like to see my grandchildren have the same experience that I had."

At the same time, Wilcox wants to prevent the supervolcano eruption. This would not just destroy the park but have lasting effects on the whole world.

Quiz

1 Read the following paragraph from the article.

> *Today, Wairakei does not have a single geyser. The power plant destroyed all 70 because it took water from underground. It interrupted the geysers' natural processes. The region is now silent and cold.*

How does this paragraph support the MAIN idea of the article?

(A) It explains why many scientists support drilling for geothermal energy in Yellowstone National Park.

(B) It describes how using geothermal energy is safer than using fossil fuels for energy.

(C) It highlights a potential danger of using Yellowstone National Park for geothermal energy.

(D) It shows the importance of releasing the heat that builds under the ground to prevent larger volcanic eruptions.

2 Read the following paragraph from the article.

> *Yellowstone sits on top of a huge chamber below the Earth's surface filled with hot fluid called magma. Scientists agree that the Yellowstone supervolcano is not likely to blow anytime soon. However, if it does erupt, it would be a disaster. The eruption would shoot out enough rock and ash to cover most of the United States. There could be so much smoke that the sun would be hidden, plunging Earth into a volcanic winter.*

Which statement BEST summarizes the paragraph?

(A) The supervolcano in Yellowstone National Park is very powerful but scientists do not believe that an eruption will happen soon.

(B) Scientists are focused on finding ways to safely manage the supervolcano that exists below Yellowstone National Park.

(C) Scientists are concerned that the supervolcano below Yellowstone National Park will change life on Earth as we know it.

(D) Yellowstone National Park is home to a supervolcano that could erupt at any second.

3 According to the section "Two Countries, Two Different Results," how do scientists ensure geothermal power plants do not hurt the environment?

(A) by building geothermal power plants in secluded areas where very few people live

(B) by injecting cold water directly into geyers to create steam and then safe geothermal power

(C) by carefully selecting the location to drill and in some cases not drilling near existing water systems

(D) by drilling close to geysers and other superheated water sources to limit the distance power needs to travel

4 What is the relationship between the supervolcano beneath Yellowstone National Park and geothermal power?

(A) Drilling in Yellowstone for geothermal energy is safer and cleaner than using fossil fuels for power.

(B) Geothermal power plants would ruin the natural beauty of the Yellowstone supervolcano.

(C) Drilling for geothermal power could cause the supervolcano to erupt prematurely.

(D) The magma from beneath the supervolcano could be used to create geothermal power.