

Officials mull seismic tests near US nuclear plant

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In this Sept. 20, 2005 file photo is the Diablo Canyon Nuclear Power Plant in Avila Beach, Calif. State and federal officials are juggling concerns over endangered whales and other marine life with public safety as they mull over plans to use massive air canons to create new earthquake fault maps in two state marine reserves off the Central Coast. Pacific Gas & Electric Co. wants to use the canons to make maps of shoreline fault zones recently discovered near its Diablo Canyon nuclear power plant. (AP Photo/Michael A. Mariant, File)

(AP)—Plans to use an array of powerful air cannons in an undersea

seismic study near a Central California nuclear power plant have federal and state officials juggling concerns over marine life with public safety.

Pacific Gas & Electric Co. wants to use big air guns to emit strong sound waves into a large, near-shore area that includes parts of marine reserves to make three-dimensional maps of fault zones, some of which were discovered in 2008, near its Diablo Canyon nuclear power plant.

But a state study, mandated by a bill signed into law in 2006, found the project is likely to have "unavoidable adverse effects" on marine life and the environment. Biologists, environmental groups and fishermen have opposed using the high-energy air guns, saying the blasts have potential to harm endangered whales, California sea otters and other creatures frequenting these waters.

"I am very concerned about impacts to marine mammals, especially some of the large whales including blue, fin, and humpback whales," said John Calambokidis, an Olympia, Washington state-based marine biologist who has studied Pacific Ocean whales for decades. "There are many uncertainties on the impact of this type of operation on whales, especially since we have not seen this type of large air gun survey off California for a long time."

The \$64 million, ratepayer-funded effort to understand seismic threats to the plant has intensified since the disastrous 2011 Tohoku quake and tsunami, which disabled reactors at Japan's Fukushima Dai-ichi [nuclear power plant](#). Quake experts were surprised by the 9.0-magnitude quake on a fault that scientists did not believe would produce a quake stronger than 8.0.



In this Nov. 3, 2008 file photo, Pacific Gas and Electric's Diablo Canyon Power Plant's nuclear reactors are seen in Avila Beach, Calif. State and federal officials are juggling concerns over endangered whales and other marine life with public safety as they mull over plans to use massive air canons to create new earthquake fault maps in two state marine reserves off the Central Coast. Pacific Gas & Electric Co. wants to use the canons to make maps of shoreline fault zones recently discovered near its Diablo Canyon nuclear power plant. (AP Photo/Michael A. Mariant, File)

Although the Japan disaster demonstrated that predicting the strength of a quake on a given fault is an inexact science, PG&E wants to know if the newly discovered faults near San Luis Obispo are connected to existing ones that have already been studied. Seismologists typically use a fault's length to estimate the maximum possible earthquake it can produce.

"People need to understand, we're living in the world post-Fukushima, so

we need to go back and review everything we think we know about the seismic threat situation around important structures like this power plant," said Bruce Gibson, a former seismologist who now serves as a San Luis Obispo County supervisor.

"Unfortunately, from an environmental impact standpoint, the only real way to get the images is to put high energy sound into the earth."

If the project gains approval from myriad agencies, scientists would tow up to 18 air guns behind a boat and blast loud sound into the water over a 530-square-nautical-mile area. Hundreds of sensors would be placed strategically on the seafloor, picking up the reverberations and allowing computers to create three-dimensional maps in technology similar to an ultrasound.

The air guns and sensors would be dragged through an area that includes two state marine protected areas—Cambria and White Rock—and is adjacent to the Monterey Bay National Marine Sanctuary. Dozens of endangered and threatened species use these waters.

A similar seismic survey is being planned near the state's other nuclear plant at San Onofre, in San Diego County to the south.

A State Lands Commission environmental impact study found on Aug. 20 there would be "unavoidable impacts" to marine life in the area during the San Luis Obispo testing.

But the commission also concluded the "benefit of the project outweighs the unavoidable adverse impacts," said Jennifer DeLeon, a senior environmental scientist at the commission.



In this Dec. 12, 2011 photo, workers lower equipment off the marine research vessel Bluefin to carry out a seismic ocean survey near Avila Beach, Calif. State and federal officials are juggling concerns over endangered whales and other marine life with public safety as they mull over plans to use massive air canons to create new earthquake fault maps in two state marine reserves off the Central Coast. Pacific Gas & Electric Co. wants to use the canons to make maps of shoreline fault zones recently discovered near its Diablo Canyon nuclear power plant. The massive reverberations caused by the air canons is picked up by sensors placed in the water, allowing scientists to gain detailed data about the makeup of the seafloor and faults. (AP Photo/The Tribune (of San Luis Obispo), David Sneed) MAGS OUT

While similar high energy seismic surveys have been done on the Pacific Coast—most recently off Washington state—PG&E said monitors there did not observe harm to whales or other marine mammals.

The powerful cannons used in these projects can be fatal to animals that

stray too close to them. Also, biologists said the loud noises could drive migrating whales and their calves apart, and that mortally wounded whales often sink in the ocean, so it is difficult to see how the tests affect the creatures.

Efforts to mitigate such impacts will reduce, but not eliminate, harm to animals, according to the company and earth scientists.

"The sound source for the PG&E imaging project is a type that has been used for several decades by scientists and industry," Donna Blackman, a geophysicist at Scripps Institution of Oceanography in San Diego, said in an email. "Known cases of possible impacts on marine mammals are very few. An integral part of using this type of system is to have continuous monitoring for whales within close range of the ship."

PG&E said it is spending \$8 million on monitoring for the project, said Mark Krausse, a PG&E director.

"If the ship is coming within 1.1 mile (1.77 kilometers) of any mammal, not just a marine or listed, but any mammal, we have to shut down," Krausse told the California Fish and Game Commission on Monday.

PG&E wanted to start work Nov. 1 and continue through Dec. 31—a time window believed to have lower whale traffic off the Central Coast. But the company has asked for an extension of its hearing before the California Coastal Commission, and other agencies are not expected to approve testing permits by then.

Major environmental groups such as the Sierra Club and Natural Resources Defense Council oppose the plan, saying that too little is understood about potential long-term impacts of the air guns on the marine environment.

"The marine protected areas were created (so) marine wildlife could thrive without human interference," said Amanda Wallner of Sierra Club California. "We share concern over earthquake risk at Diablo Canyon. However, we don't believe this is the best way or the only way to determine seismic risks."

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