

Environmental concerns raised by rocket flights over San Diego County

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Plans by SpaceX and other companies to boost the number of rocket launches sometimes seen streaking across San Diego County's skies have prompted the California Coastal Commission to question the

environmental effects.

Residents near Vandenberg Space Force Base, on the state's Central Coast, say the launches shake their homes and rattle their nerves. People don't know when to expect them because the lift-off time varies and can be delayed by weather conditions.

"I find it difficult to believe that there are no impacts on (wildlife) species due to SpaceX launches," said Carpinteria resident Rebecca Stebbins in an April 5 letter to the Coastal Commission.

"I, along with thousands of other residents of the South Coast, am significantly impacted with each launch, including being woken up from a deep sleep on occasion, while my dogs are terrified, my house shakes, and the [sonic booms](#) are felt physically, with a deep shock."

Conservationists say the noise disturbs [native wildlife](#) such as red-legged frogs, the western snowy plover, seals and sea lions, and it interferes with commercial and recreational fishing. Nearby public beaches and fishing grounds are often closed during the launches.

"The launches are extremely loud and destructive," said Mandy Sackett in San Diego, senior California policy coordinator for the Surfrider Foundation.

"Sound impacts are grossly underestimated," Sackett said, and she urged the Coastal Commission to "pump the brakes" on the increase.

Another downside are the latex weather balloons released before every flight to check atmospheric conditions. The balloons carry batteries and electronics that reach the stratosphere and then burst from the pressure before falling back to earth or into the ocean, where the equipment sinks with little chance of being recovered.

As many as 30 balloons were released before each launch until recently, a Vandenberg official said. A launch now needs as few as 10, and the number is decreasing as technology improves.

Space companies pay mitigation fees of \$10 for each pound of unrecoverable debris they create, and the money goes into a fund for the collection of lost fishing gear such as monofilament line and nets. But commissioners, at their meeting Wednesday in Long Beach, said that amount may be insufficient.

"A battery is hazardous waste," said Commissioner Kristina Kunkel. "It's not comparable to fishing gear."

Air quality may be the first concern of anyone who has seen the rocket's long trail of vapor, yet the reported emissions are well below applicable state and federal standards. The fuel is rocket-grade kerosene combined with liquid oxygen. When it burns, it produces a negligible amount of soot and nitrogen oxide in the exhaust.

The U.S. Space Force and SpaceX, owned by electric-car magnate Elon Musk, have asked the Coastal Commission to approve an increase to as many as 36 launches a year at Vandenberg. The SpaceX launches averaged six annually over the past five years, although they have been increasing steadily, reaching a total of 19 in 2022 and 28 in 2023.

The company has been ramping up launches as it builds a network of nearly 42,000 Starlink satellites to provide worldwide direct-to-cell internet service. Each Falcon 9 rocket carries up to 22 satellites.

SpaceX also uses bases in Texas and Florida, and as of March had launched more than 5,500 satellites. The company has a roster of other launch customers, including NASA and the Pentagon.

The Coastal Commission reached no decision on the request Wednesday. Instead, the commissioners voted to postpone the matter so staffers can look further into the cumulative effects of the launches and return with more information in a month or longer.

Other private companies and federal agencies also launch rockets at Vandenberg. Last year, there were 37 launches in all, said Space Force Col. Bryan Titus, operations vice commander at the base.

"We're asking for 36 right now (for SpaceX alone), and we do plan to ask for more later," Titus said at Wednesday's commission meeting. The base has the capacity to do as many as 110 launches a year, which could increase with plans to build an additional launch platform.

The launches are allowed based on the Coastal Commission's previous determination that the environmental effects of the events are relatively insignificant. Also, there are questions about whether the state agency can regulate actions by the federal government that Titus said are vital to national security.

"All launches support the Defense Department and our allies," Titus said.

About 25% of all SpaceX rockets include a Defense Department payload, he said. The United States also benefits from the company's Starlink system of satellites.

"Starlink has been absolutely critical in the situation in Ukraine," he said, referring to the U.S. support of the country in its war with Russia.

Landings of the rocket's reusable first stage also will increase under the SpaceX plan, another concern for Central Coast residents.

While the launch of the rocket creates a thunderous roar, it does not create a sonic boom, Titus said. Only the return of the first stage, less than 10 minutes after liftoff, creates a sonic boom that can be heard from 80 miles away or farther, depending on atmospheric conditions.

The rocket stage can return to Vandenberg, or, if that's too far, it can land on a floating platform at sea. SpaceX also is asking the Coastal Commission to allow an expansion of the ocean landing zone to cover an area beginning at least 31 miles from the coast and extending out as far as several hundred miles, anywhere between the latitudes of Los Angeles and the middle of Baja California.

At sea, landings occur on a barge-like drone ship that is towed to the general area. Once there, it can remotely adjust its position.

Some of the commissioners questioned the need for so many launches, especially when most of the profits go to private companies such as SpaceX and Firefly Aerospace, a Texas-based aerospace company.

Some of the commissioners said they would prefer to see statistics for all the launches, including those by NASA, the Defense Department and private companies. They also noted that no one representing SpaceX was present at the meeting.

"I am concerned about the piecemealing of this," said Commissioner Ann Notthoff. "We can't really assess what this exponential growth is. We have to get a handle on that."

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