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Global Warming Dimensions of the ACSF Natural Gas Leak and a Potential Multi-Billion Dollar Liability for Sempra

The first article from the Los Angeles Times describes what could be a multi-billion dollar liability for Sempra, the leaking SS-25 well in the Aliso Canyon Storage Field (ACSF.) Comparisons are drawn regarding the almost two billion dollar PG&E liability for the San Bruno natural gas pipe explosion. The second article is a press release from UC Davis describes the unique methane (natural gas) measurement capabilities of their specialized aircraft. The cumulative leakage is estimated. A photograph included in the press release shows the proximity of ACSF to the expensive Porter Ranch residences. The third article from The Sacramento Bee provides additional details regarding the UC Davis aircraft and its pilot. The unprecedented natural gas leakage from SS-25 exacerbates anthropogenic global warming.

I recommend that the draft version of the 2015 IEPR should be revised prior to 10 February 2016 to place greater emphasis on the abundant emission-free reasonably-priced electric power generated by Diablo Canyon Power Plant as California seeks to reduce its greenhouse gas (GHG) emissions. DCPD avoids about 13 million metric tonnes (MMTs) of CO₂ annually.

I believe that the most cost-effective way to compensate for the increase in California's GHG emissions caused by the ACSF natural gas leak would be to expend the modest cost necessary to bring San Onofre Nuclear Generating Station (SONGS) back online, rather than constructing more solar energy collection facilities or wind farms. As a consequence of both generating means having capacity factors around 20%, considerable natural gas must be combusted to back up those so-called "renewable" energy sources. One year's operation of SONGS would avoid the production of about 13 MMTs of Carbon Dioxide. Since the estimated total CO₂ emissions for the ACSF natural gas leak are currently equivalent to about 7 MMTs, per the EDF analysis, about 1/2 year of SONGS operation would avoid the current carbon burden of the ACSF natural gas leak. SONGS operation would continue to provide significant carbon avoidances during each year it was producing power again.

Additional submitted attachment is included below.

Los Angeles Times

Claims in Porter Ranch gas leak could cost utility billions of dollars



Crews work on a relief well to stop a leak at the Aliso Canyon natural gas storage facility above Porter Ranch in December. (Dean Musgrove / Associated Press)



Ivan Penn Contact Reporter

January 7, 2016 8:29 PM PST

<http://www.latimes.com/business/la-fi-socalgas-liability-20160108-story.html>

With ailing residents, displaced neighborhoods and a potential decline in property values, the leak at Southern California Gas Co.'s Aliso Canyon storage facility could cost the utility billions of dollars, some legal experts say.

So far, the gas company has spent more than \$50 million combating the leak that began Oct. 23, according to a securities filing Thursday. More than 25 lawsuits have been lodged against the utility; "the cost of defending the lawsuits, and any damages, if awarded, could be significant," the filing stated.

The utility has told the [U.S. Securities and Exchange Commission](#) that it had "at least four types of insurance policies that it believes will cover many of the current and expected claims, losses and litigation ... associated with the natural gas leak at Aliso Canyon," which has forced thousands of people from their homes. Those policies, the utility said, have a combined limit available "in excess of \$1 billion."

But legal experts and lawyers for residents in the Porter Ranch community near the natural gas storage facility argue that \$1 billion might not come close to what the utility will need.



Part of the reason, they say, is that the company has yet to plug the gas leak.

Even the devastating 2010 Pacific Gas & Electric natural gas pipeline explosion in the Bay Area city of San Bruno, which killed eight people, didn't have the ongoing hazard that Aliso Canyon does. That explosion has cost [PG&E](#) more than \$2 billion in penalties, with the cost of litigation continuing to mount.

"I'm unaware of anything of this magnitude that has happened before," said Brian Panish, an attorney for some of the homeowners. "There's no study to know what the long-term effects are. What about some of these children? Do you think people's homes are going to be worth the same?"

The Los Angeles utility is a subsidiary of San Diego's Sempra Energy, which has seen its stock price fall more than 15% since the leak was discovered at the facility in the northern part of the San Fernando Valley.

Most Wall street analysts that follow the stock have a "buy" recommendation on Sempra, which also is the parent of San Diego Gas & Electric. But some say they are reviewing the leak's financial impact for possible updates to their stock opinions.

Even after recruiting several of the world's leading experts to stop the leak, Southern California Gas' efforts have faltered. The company began drilling a relief well to help stop the leak but that is expected to take three to four months.

The utility says it does not believe it is possible at this time "to accurately measure the amount of natural gas being lost from the leak."



A Porter Ranch resident describes her family's experience as they relocate from their home during the holidays. A massive natural gas leak has sickened residents in the area since October.

In the meantime, the site of the leak, about a mile from the closest homes, forced the utility to relocate thousands of families through the holidays to hotels as winds caused fumes to waft through neighborhoods. Residents complained of respiratory problems, headaches, nausea, nosebleeds and other short-term ailments. Health officials have said the fumes pose no serious long-term health risks.

Aliso Canyon is one of four such storage facilities the utility operates. The company says its Playa del Rey natural gas storage facility is the only other one that sits close to homes.

Southern California Gas declined to talk about its liability because of the pending lawsuits. The utility prefers to focus on what it is doing to reduce the adverse impact the leak is having on neighborhoods.

"We are working with families who want to move to temporary accommodations until the leak is stopped, and we've also established a claims process for anyone who feels they've suffered harm or injury as a result of this incident," said Trisha Muse, a utility spokeswoman.

Loretta Lynch, a lawyer and former president of the California Public Utilities Commission, said the gas company ultimately will have to respond to two sets of issues: its responsibility as a regulated utility under California law and its liability for damages as determined by the courts as a result of pending lawsuits.

Under state law, Lynch said, utilities are required to provide adequate and safe service to customers at a reasonable cost. The Aliso Canyon leak coupled with the ongoing inability to stop it raises questions about how the gas company is performing its job.

"I think the utility has failed in its central duty," Lynch said.

The gas company is likely to argue that the state standards are poor or insufficient, which could be a winning position before the PUC, she said. The best recourse for consumers may be to sue the utility, Lynch said.

"These homeowners are going to go through the very painful dance of tort liability," Lynch said. "Both as a lawyer and a former PUC president, I believe these homeowners will get better justice from the courts than this PUC."

When determining a utility's responsibility in cases such as the Aliso Canyon gas leak, the PUC in general reviews whether the utility gave proper notification about the problem and performed regular maintenance of the facility. **In addition, the commission assesses the cost of the problem — an expense that usually is borne largely by ratepayers rather than company shareholders.**

The PUC can issue fines of up to \$50,000 per violation per day for violations of the California Public Utilities Code, CPUC General Orders and the Federal Code of Regulation involving safety in natural gas transmission and distribution, commission spokeswoman Terrie Prosper said. State law requires that those funds be deposited into the California general fund.

Prosper said the PUC can order additional penalties, such as refunds of ratepayer costs through their energy bills. There is no cap on additional penalties, and they vary by case.

The commission, however, "does not get involved in civil litigation and any compensation that a utility may pay directly to the impacted members of a local community," Prosper said.

In April, the current five-member PUC issued a record \$1.6-billion fine against PG&E for the San Bruno pipeline explosion.

Browne Greene, a former president of the California Trial Lawyers Assn., said he believes that Southern California Gas is looking at significant penalties for the ongoing leak.

"I would think that they would be looking at a huge fine in terms of endangering the public," said Greene, who has practiced law for some 50 years. But that's where he and others believe that compensation from the PUC for residents harmed by the leak will largely end.

"I think effectively they're much more lenient toward SoCal Gas and any of these other utilities that are dealing with them all the time," Greene said.

“I can't go outside and play baseball with my sons. I can't go on walks with my family. My youngest son has been moved to another school...I get headaches, stomach aches and I have thrown up multiple times.”

That leaves residents to battle the utilities in court.

"If you really want to hold people accountable and you want to get to the truth and you want to avoid the politics of regulators, you've got to use the court system," said Frank Pitre, a lawyer who represented residents in the San Bruno gas pipeline explosion and is representing some Porter Ranch residents.

Pitre declined to put a figure on the harm that the Aliso Canyon leak is causing. But where the San Bruno explosion was a single incident that led to hundreds of millions of dollars in damages, Aliso Canyon continues with unknown issues of health and safety, he said.

"Every case is unique," Pitre said. "In the PG&E case, there were people who were killed. There were people whose homes were destroyed. Those are perhaps different damages than, say, Porter Ranch."

Of the likelihood that there will be loss in property value, "there's simply no question," said Randall Bell, chief executive of Landmark Research Group, who specializes in real estate damages. "Porter Ranch has been in the news so much, potential buyers are going to be aware of that."

"Having worked on these cases all over the country and all over the world, really, if I were a property owner there, I would be very concerned," Bell said.

The gas company's \$1 billion in insurance may end up looking more like a floor than a ceiling, Panish and Greene said.

"This would be promising because it looks like there's a lot of insurance," Greene said. "But there's a deeper pocket ... the gas company behind it."

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Here's an article about quantifying the ACSF Natural Gas leak:



Aliso Canyon methane leak emissions sky-high, UC Davis pilot scientist found

http://news.ucdavis.edu/search/news_detail.lasso?id=11428

January 7, 2016

A UC Davis scientist flying in a pollution-detecting airplane provided the first, and so far only, estimates of methane emissions spewing from the Aliso Canyon Natural Gas Storage Facility in Southern California since the leak began on Oct. 23, 2015.

Those estimates were provided to the California Air Resources Board in November. Pilot and UC Davis project scientist Stephen Conley continues to measure emissions from the still uncontrolled leak, which has displaced thousands of residents in the affluent Porter Ranch neighborhood in northern Los Angeles. On Jan. 6, Gov. Jerry Brown declared a state of emergency in the

community.

To date, Conley estimates that the leak has emitted nearly 80,000 tons of methane, or about 1,000 tons per day.

'This is big'

In early November, Conley took his first three flights downwind of the facility in his specialized airplane. He was astounded by the figure he recorded:

Roughly 1,200 tons of leaked methane per day, or more than 100,000 pounds an hour.

"To put this into perspective, the leak effectively doubles the emission rate for the entire Los Angeles Basin," Conley said. "On a global scale, this is big."

The California Energy Commission contracted with Conley to do the initial flights under an existing contract with UC Davis. The airplane belongs to Conley through his private business, Scientific Aviation, a research flight company.

Those flights took place Nov. 7 and Nov. 10. Emissions were mapped from as low as 200 feet above the ground to the top of the methane plume.

Not just any airplane

The terrain of the facility is choppy and inaccessible at points for ground vehicles, and even satellites are limited in being able to pinpoint the levels of emissions escaping from the source. Measuring the emissions from the air proved an ideal method to get a reliable estimate.

"We have a fully equipped airplane, and this work is perfectly suited for it," Conley said.

It's not just any airplane. Aboard the aircraft is a greenhouse gas analyzer that measures methane plumes in real time. A differential GPS system provides precise wind readings, which is vital for quantifying sources of greenhouse gases, including methane.

The most recent flight was Dec. 23, when Conley recorded approximately 30 tons, or 60,000 pounds, of methane per hour.

Background

Methane is a powerful greenhouse gas and roughly 25 times more potent than carbon dioxide. Porter Ranch residents downwind from the plume have complained of headaches, nausea, dizziness and nosebleeds.

Southern California Gas Co., which owns the Aliso Canyon storage facility, announced in late December that it does not expect crews to plug the leak until at least late February or March.

The Aliso Canyon facility is the largest underground methane storage facility in the western United States.



Aerial image of Aliso Canyon natural gas storage facility shot by UC Davis scientist Stephen Conley from his research airplane, which provided the first and, so far, only estimates of methane emissions from an ongoing leak at the facility in the San Fernando Valley. (Stephen Conley/UC Davis photo)

Measuring Methane: Estimating the Scale of the Aliso Canyon Methane Leak

A natural gas leak at the Aliso Canyon underground storage field in Los Angeles County continues to emit large amounts of natural gas into the environment. SoCal Gas, the facility owner, has so far been unable to stop the leak.



Estimating Emissions



SKY-HIGH RESEARCH:

University of California, Davis, scientist Stephen Conley used a pollution-detecting airplane to measure emissions from the uncontrolled leak.



ANALYZING DATA:

Conley used the collected data to provide the first – and so far only – estimate of methane emissions released by the leaking well.



MONITORING UPDATES:

Conley will continue gathering aerial data with a specialized aircraft that utilizes an on-board greenhouse gas analyzer and advanced GPS to measure methane plumes in real time.



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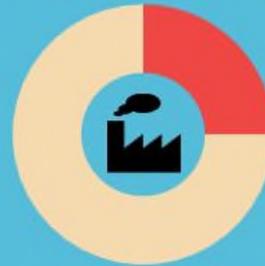
MONITORING UPDATES:
Conley will continue gathering aerial data with a specialized aircraft that utilizes an on-board greenhouse gas analyzer and advanced GPS to measure methane plumes in real time.

MEASURING THE IMPACT



UC Davis scientist Stephen Conley uses a plane equipped with specialized instruments that are able to detect leaks several miles downwind from the source.

2015 California Methane Emissions



In just one month, the Aliso Canyon leak released the equivalent of one quarter of California's total methane emissions for all of 2015. To date, the Aliso leak has emitted nearly 80,000 tons of methane – approximately 1,000 tons per day.

UC DAVIS
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Created by Chris J. Nicolini | University of California, Davis

More information on the Aliso Canyon natural gas leak is available via this URL: <http://bit.ly/10REPWX>

Additional information:

- [Air Resources Board report using Conley's measurements.](#)
- [Press kit of images, b-roll \(2012 footage of Conley flying\).](#)
- [Related: "Pollution-detecting aircraft surveys PG&E pipeline for gas leaks" \(2012\)](#)

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<http://www.sacbee.com/news/local/environment/article53629265.html>

Environment

January 7, 2016 6:05 PM

UC Davis scientist key to measuring massive methane leak at Aliso Canyon

Highlights

Only a few in the country are trained to measure methane in the atmosphere

The first measurements by Steve Conley were so large that he thought his instruments were broken

Conley says a rapid response protocol for massive leaks is needed

Photo Caption: UC Davis atmospheric scientist Steve Conley checks data in front of the single engine plane he is using to measure the extent of the massive methane leak at Aliso Canyon.

Photo Caption: UC Davis atmospheric scientist Steve Conley talks about the specialized plane he flies to measure leaks from gas and oil pipelines. He was key to alerting authorities to the enormous size of the methane leak from the Alison Canyon underground natural gas storage facility. Edward Ortiz

By Edward Ortiz eortiz@sacbee.com

The true size of what's likely the largest methane leak in U.S. history may not have been known if not for the niche specialty of Steve Conley, an affable 51-year-old pilot and an atmospheric scientist at UC Davis.

Conley's arcane specialty is measuring leaks from gas and oil pipelines with sophisticated instruments installed on a single-engine, two-seat airplane that he flies. Most of the time, the work of such scientist-pilots goes unnoticed. But that all changed on Nov. 7 when Conley was contracted by the California Energy Commission to fly over the Aliso Canyon gas facility owned by Southern California Gas Co.

During that two-hour flight, while tracking atmospheric data in real time, Conley discovered the enormity of what he was measuring from an underground natural gas storage facility. "At first I thought my instruments were broken," he said.

Using Conley's measurements, the California Air Resources Board estimated the Aliso Canyon facility was releasing 44,000 kilograms of methane per hour, or the monthly equivalent of the greenhouse gases released by more than 200,000 cars.

He's completed five more flights since then and is helping to establish whether steps taken by Southern California Gas to stop the ongoing leak are helping.

To date, the environmental disaster has sickened and displaced thousands of residents in the affluent Porter Ranch neighborhood in northern Los Angeles. On Wednesday, Gov. Jerry Brown declared a state of emergency in the community.

"What Conley does gives us a very clear picture of what's going on," said Dave Clegern, spokesman for the California Air Resources Board. "Without him, we would not have any good overall numbers."

The board's data show the methane releases are diminishing – to 30,300 kilograms per hour on Dec. 22. Still, it's adding tons of greenhouse gases into the atmosphere, and much of Porter Ranch remains evacuated.

"Emissions of this is what we absolutely do not want to see," said Clegern. "Methane is a powerful climate pollutant. ... We've not seen anything like this before and we have records on methane that go back 30 years."

The Bee talked to Conley about the difficulty of his flights at Aliso Canyon and his advocacy for new responses to large and potentially catastrophic gas leaks.

Q: I understand you're one of the only pilots in the county that measures methane releases?

A: There are maybe three or four aircraft like ours in the U.S. I'm the only one on the West Coast.

Q: Why are you such a rarity?

A: It is really expensive to outfit an airplane like mine. The analyzers on the plane run \$300,000, and the plane itself runs \$300,000. It takes a year of work to modify a plane like this according to (Federal Aviation Administration) permission. And then there is insurance.

Q: How difficult has it been to do these flights over Aliso Canyon?

A: These flights have been the hardest flights I've ever done, and I have 1,500 hours doing them. At Aliso Canyon there is a lot of turbulence at the site, and the methane smell is pretty bad. It's so bad that every single person I've brought on six flights – every one has gotten sick. I feel it when I fly through the plume. It gives me a headache. But what really makes people sick is the turbulence.

Q: Is the turbulence from the leak?

A: No. It's because of the way we have to fly in. We have Los Angeles airspace on one side and a mountain on the other. The winds that come over the mountains really start screwing around with the plane. We have to make pretty sharp turns at each side, so you're feeling a lot of G force.

Q: What was your reaction to the numbers you were seeing on your first flight over the canyon?

A: I thought something was wrong with the instruments. I thought they had stopped working because I'd never seen measurement that large before.

Q: So you were not expecting anything significant?

A: No. We did not know if it would be a large measurement. It was a small mystery.

Q: It seems like your measuring this giant leak happened almost by happenstance?

A: Well, the California Energy Commission just happened to have a contract with me. If they hadn't, no one would have known how big this was. We got lucky this time. That's the reality.

Q: Some would say we have gotten really good at measuring and reacting to such leaks. True?

A: In a country that is so focused on climate issues, we do not have a rapid response plan for these kinds of things. We do not have anything in place to measure giant leaks like this, or to watch them to solve issues. The wellhead in Aliso Canyon is 61 years old. Is it a shock that it failed?

Q: What would solve that problem?

A: On a national level we need to have contracts ready where whoever can do this kind of measurement is ready to go. Where as soon as a leak is spotted you are given a go order and two hours later you're measuring a leak.

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Related content

- Video: UC Davis scientist measures massive Aliso Canyon methane leak
- Jerry Brown declares emergency around Southern California gas leak