

Researchers create tool to evaluate water use for responsibly sourced gas operations

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The components of responsibly sourced gas. Credit: Project Canary

Colorado State University engineers have partnered with third-party assessor Project Canary to develop a method for measuring freshwater usage by natural gas operations to help evaluate operators on sustainability. A handful of third-party assessors monitor oil and gas operations for methane, but CSU and Project Canary have developed the first freshwater analysis for responsibly sourced gas certification.

Achieving RSG certification benefits gas operators through financial incentives. Natural gas suppliers, such as Xcel Energy and French utility Engie, are willing to pay a premium for responsibly sourced gas.

CSU researchers and Project Canary hope their new metrics will incentivize water stewardship by clearly defining oil and gas companies' water management for the public, stakeholders and industry. The metrics compare operational impacts to local water supplies and give oil and gas companies data to improve operations or validate efforts toward sustainability.

"Natural gas is going to be here for the foreseeable future, so we need programs like this to make it as sustainable as possible," said Ken Carlson, a professor in the Department of Civil and Environmental Engineering and director of CSU's Center for Energy Water Sustainability.

The metrics evaluate water use by the overall operation, including oil and gas extraction, but the certification applies to natural gas, which is a cleaner fuel source than others used for similar purposes, such as coal. As greener alternatives to oil scale up to meet demand, Carlson and his colleagues expect oil to be phased out in the coming decades.

Carlson and his team worked with Project Canary, a Denver-based [data analytics](#) and environmental assessment company dedicated to minimizing the environmental impact of energy production, to develop what they call the Freshwater Replacement Ratio (FR²). This tool provides an overview of how oil and gas operators manage water by evaluating all positive or sustainable water uses versus the amount of fresh water withdrawn.

The metrics consider water scarcity, scoring operations based on a community-specific water stress index. Companies are credited for

recycling water, using brackish water or other noncompetitive sources, or mitigating consumption through restoration projects.

"The information we're collecting on freshwater management allows the impact on water sustainability to be quantified," Carlson said. "This is an attempt to put real numbers to what people are doing."

More than just greenwashing

Project Canary initially developed its RSG certification to help companies reduce methane emissions from oil and gas operations. The certification rewards natural gas producers for preventing methane leaks, which are a significant contributor to climate change.

"Natural gas traders are increasingly interested in RSG, and a paradigm shift is expected where uncertified gas may not be as marketable in the future," Carlson said. "The RSG certification industry has grown tremendously to a point where it has a defined market and demand for its products."

Investors are also more willing to invest in companies that meet environmental, social and governance (ESG) objectives.

More than 10 companies have voluntarily participated in the [certification](#), and the program is expected to grow as more [natural gas](#) is produced and exported.

"With the FR² tool, we're setting the industry standard for freshwater stewardship," Josh Zier, head of certifications at Project Canary, said in a press release. "This gives our customers, and all stakeholders, deeper insight into one of the most critical components of operational performance."

This tool is outlined in the *Journal of Water Resource and Protection*.

More information: Finlay Carlson et al, Technical Analysis of Freshwater Use as Part of a Responsibly Sourced Gas ESG Strategy, *Journal of Water Resource and Protection* (2022). [DOI: 10.4236/jwarp.2022.143014](https://doi.org/10.4236/jwarp.2022.143014)

Provided by Colorado State University

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