Natural gas trucking fleet could benefit economy, but has mixed environmental effects

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Switching from diesel fuel to natural gas may hold advantages for the nation's heavy-duty trucking fleet, but more needs to be done to reach the full environmental benefits, according to a report released today from the Institute of Transportation Studies at the University of California, Davis, and Rice University.

With the so-called "shale revolution," the recent emergence of natural gas as an abundant, inexpensive fuel in the United States has raised the possibility of a larger shift in the level of natural gas used in transportation. The report examines the economic and environmental viability of such a shift, and whether it could enable a transition to lower carbon transport fuels.

"On a resilience basis, an energy security basis, and on an economic basis, there can be advantages to switching to natural gas in key locations," said lead author Amy Myers Jaffe, executive director for Energy and Sustainability at UC Davis and an affiliate at ITS-Davis. "But to have an environmental advantage for reducing greenhouse gas emissions would take significant policy intervention."

The report identifies California, the Great Lakes and mid-Atlantic areas as places that are well-positioned to launch a small, initial natural gas transportation network for heavy trucking due to their proximity to high-volume travel corridors. In California, the report said, a profitable

natural gas network could be launched for less than $100 million.

Such a network could:

- Enable a faster transition to renewable natural gas, biogas and waste-to-energy pathways.
- Improve energy security and weather-event resiliency by diversifying the geographic fuel supply.
- Potentially lower the cost of national freight supply chains, which could enhance global U.S. competitiveness by lowering domestic fuel costs for long-distance trucking in the United States.

However, stricter efficiency standards for natural gas heavy-duty trucks and stronger regulations of methane leakage along the natural gas supply chain are necessary for natural gas to advance California's climate and air quality goals as a trucking fuel. The most economical natural gas engine technologies have a lower level of climate performance.

"It takes more natural gas than diesel fuel to go the same distance," Myers Jaffe said. "So unless you're using the best technology for the natural gas truck, you lose some of the benefit of it being a cleaner fuel."

The report, "Exploring the Role of Natural Gas in U.S. Trucking," is from ITS-Davis' NextSTEPS program. Research and modeling activities that contributed to the report were supported in part by funding from the California Energy Commission and GE Ecomagination.

More information: The report, "Exploring the Role of Natural Gas in U.S. Trucking," is available online: steps.ucdavis.edu/files/02-18- … 5-Public-Release.pdf

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