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Business, Environmental Interests Push For Renewable Natural Gas As Near-term Solution For Cleaner Air

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What if we could capture the gases naturally produced by landfills, water treatment plants, dairy farms and other sources of organic waste, strip out the majority of associated greenhouses gases and toxins, and convert the gases into a renewable, clean fuel?

What if we could use that fuel source to power the infrastructure and vehicles that cause pollution at local ports years before zero-emission electric technology will be required?

And what if doing all this would create more than 100,000 high-paying jobs in the state and generate an estimated $14 billion in economic impact?

Four members of the Coalition for Renewable Natural Gas recently stopped by the Business Journal to discuss how expanding the use renewable natural gas through policy making would not only have environmental benefits, but also act as an economic stimulus. Pictured, from left are: Greg Roche, vice president, sustainable trucking, of Clean Energy; Jason Johnston, corporate communications manager of Clean Energy; Robert Viers, vice president of SCS Energy; and Raymond Huff, vice president of SCS Engineers. (Photograph by the Business Journal's Larry Duncan)

This is the vision championed by the Coalition for Renewable Natural Gas, an organization representing 90% of all renewable natural gas (RNG) producers in the United States and Canada. As the San Pedro Bay ports work together to revise the emissions requirements of infrastructure and vehicles operating within their scope under a new version of their joint Clean Air Action Plan (CAAP), the coalition is pushing to see this vision incorporated.

"The ports for many years have had the admirable goal to get zero emissions in operations around the port," Greg Roche, vice president overseeing sustainable trucking for RNG Coalition member Clean Energy, a leading provider of natural gas fuels and fueling stations, told the Business Journal.

According to Roche, the discussion of zero-emission technologies in relation to port operations typically revolves around electric-powered equipment and vehicles. When it comes to heavy-duty trucks, however, that technology is not yet available and may not be for some time.

"And that means you have got to kind of look out and push things off into the future because it doesn't really exist yet," Roche said. "We can't get ahead of ourselves from a technology standpoint, so we can just kind of talk about very long-term goals."

The CAAP draft discussion document proposed a 2035 goal of converting all trucks at the port to zero-emission technology. The document also proposed requiring all cargo-handling

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equipment to be zero-emission by 2030. “But from an actionable document of what happens between now and 2035, it lacks detail,” Roche said.

The RNG Coalition, in addition to other groups like the California Natural Gas Vehicle Coalition and the Coalition for Clean Air, are advocating that the ports include a 2023 benchmark in CAAP that would require trucks and perhaps terminal equipment to operate at zero-emissions equivalent, or near zero-emissions.

The previous iteration of CAAP required all trucks operating within the port area to be 2007 or newer models by 2012. However, Roche and other members of the RNG Coalition, who joined him in a meeting at the Business Journal’s office on May 10, argue that requiring use of newer RNG-fueled trucks could help the ports further reduce air pollutants and greenhouse gas emissions.

A 2017 report by the University of Riverside’s College of Engineering-Center for Environmental Research and Technology found that 2010 diesel trucks equipped with emission control systems (the cleanest available diesel trucks today) that operate in the ports emit up to five times more nitrogen oxide (NOx) emissions than the Environmental Protection Agency’s (EPA) certification standard. When these trucks were operating at slower speeds, such as while idling or in stop-and-go traffic, NOx emissions increased.

Emissions of NOx cause particulate matter and ozone and are associated with various health conditions such as asthma and heart disease.

In contrast, the university found that the cleanest heavy-duty natural gas engine available produces emissions that are 90% cleaner than the EPA standard and also fall below the more stringent California Air Resources Board standard for NOx emissions. In fact, they operate at near-zero emissions.

“This is a little bit of guess work because commercial fuel cell and electric battery trucks don’t exist yet. But people have looked at them, and the ratio is four times the cost of the natural gas truck,” Roche said. “So from an emissions standpoint [and] cost effectiveness, the renewable natural gas technology is by far the lowest cost way to get to where we want to go.”

RNG is a non-fossil fuel-based natural gas that is derived from organic material. According to Robert Viers, vice president of SCS Energy, the fuel is usable not just for transportation but also across a variety of industries. SCS Energy, a division of Long Beach-based SCS Engineers, specializes in designing and operating biogas-fueled power plants.

“SCS designed and built, and we currently operate, the only digester gas-to-pipeline quality natural gas plant in California,” Viers said. RNG is created by capturing and cleaning the natural gas given off by the decomposition of organic material. SCS’s anaerobic digester at the Point Loma Wastewater Treatment Plant captures gas from the raw activated sludge filtered out by the plant and converts it to fuel for delivery into the natural gas supply pipeline.

“So the fossil fuel-based natural gas actually has more contaminants than what we produce because we have gone through a very extensive cleaning process,” Viers said. “It goes through a membrane process or pressure string absorption process where all those contaminants are removed. So all that’s in our gas is methane, carbon dioxide and, depending upon the source gas, maybe a little bit of oxygen. That’s it. There’s nothing else.” RNG produced by anaerobic digesters removes all volatile organic compounds, water and sulfurs and removes all but 2% to 3% of carbon dioxide, according to Viers. “So what you have is basically a pipeline natural gas equivalent. It’s actually cleaner than pipeline gas,” he said.

Creating more renewable natural gas facilities at landfills, waste water treatment sites and even dairy farms would not only help produce clean-burning RNG, it would also help reduce contaminants and greenhouse gases entering the air, proponents argue.

“What’s happening right now at most every landfill and all the waste water treatment plants . . . [is] those gases are being created. There is nothing you can do about it, because it is part of the process,” Viers explained. “Most of the time up until probably the last 10 or 15 years, they were just flared off. They didn’t do anything with them at all. . . . And then they got the bright idea, well, let’s use that fuel.”

There are 36 plants in the United States that convert landfill gas to RNG, but none of these are in California, according to Viers. Requiring port truckers and operators to convert their equipment to RNG power would create the demand to change that, he noted.

“UC Davis did a study that said statewide, what are the available sources that could be used for renewable natural gas production? And they came up with about two billion gallons equivalent a year of fuel,” Roche noted.

“We have companies that are outside of California that are using renewable natural gas throughout the U.S. because we can deliver it to them at the same price as conventional

natural gas, but they have all the benefits of the carbon reductions," Roche said. While the process to clean up RNG is expensive, state and federal programs offset the cost, he explained.

The State of California has also passed requirements mandating that businesses recycle their organic waste, holding local jurisdictions responsible for creating programs to do so. One option would be through the creation of anaerobic digester facilities to manufacture RNG. "It's all part of the zero waste endeavor," Raymond Huff, vice president of SCS Engineers, noted.

Bill Magavern, policy director for the Coalition for Clean Air, pointed out that creating a 2023 implementation date to eliminate diesel trucks at the ports would help reduce harmful air emissions before the proposed 2035 mandate for zero-emissions operations. The organization dates back to 1971 and strives to improve air quality in California.

"We see a role for renewable natural gas in fueling natural gas vehicles in the heaviest sectors," Magavern said. Using the low NOx natural gas engines that are currently available in tandem with RNG would create "huge air quality improvements," he argued.

"You can look at the evidence that shows that the [Southern California coastal] area has the worst smog in the country," Magavern continued. "The American Lung Association recently released its State of the Air report, which confirms that in fact the Los Angeles area has the very worst smog in the United States, as it has for many years. In addition, the region is out of attainment for particulate matter. So in both those cases, cleaning up trucks and other freight equipment is an essential part of getting to clean air."

A report commissioned by the California Natural Gas Vehicle Coalition and the Coalition for Renewable Natural Gas found that requiring low NOx-emitting trucks fueled by RNG would create positive associated economic impacts in California.

"What's the economic impact? So it's 130,000 new jobs between 2018 and 2030," Viers said. "And those jobs will be high paying. You know, over $68,000 a year, which is twice the median average." The overall estimated economic impact to the state would be $14 billion, he said.

"And one of the fascinating things I thought was for every job created in this particular sector, two additional jobs get created from indirect sources," Jason Johnston, corporate communications manager for Clean Energy, noted.

The CAAP draft discussion document contained one mention of renewable natural gas, noting that the South Coast Air Quality Management District and Cummins Westport, Inc. are working to develop and demonstrate a larger low NOx-emitting truck engine than is currently available. That may be available as soon as 2018, according to the document.

The Coalition for RNG and the California Natural Gas Vehicle Coalition both submitted comments on the CAAP requesting a 2023 conversion from diesel trucks to low NOx-emitting RNG-fueled trucks be considered.

"We are pushing very hard. As hard as we can to make sure that our solution is part of their solution," Roche said.

Magavern pointed out that his coalition is not advocating for one fuel source alone as a solution to clean up the air. "We think that the ports need to move further, faster to reduce the pollution that comes from their operations, which includes the ships, the equipment at the terminals, the trucks, the trains," he said. "And we need to quickly move to the cleanest available technology in all of those sectors to reduce the pollution."

Magavern continued, "What we want to do is to see implementation of a guiding principle that is in the state's Sustainable Freight Action Plan, which we worked on for years. And the governor published it last July. The principle that I am talking about says that we should deploy zero-emission technology wherever it's feasible. And in those areas where zero-emission technology is not yet feasible, we should use near-zero emission technology combined with renewable fuels."

Port of Long Beach spokesperson Lee Peterson said that the ports are evaluating all comments and input on the CAAP and have not yet determined which recommendations to include in the CAAP update.

"The two ports are continuing to accept the community's input as we move to release the draft document this summer and bring the final CAAP to our joint board of harbor commissioners for consideration in the fall," Peterson said.