Air district solicits developers of natural gas engines

Staff reports
The (Fresno) Business Journal, Wed., June 12, 2013

The San Joaquin Valley Air Pollution Control District is putting up funding to support the development of ultra-clean natural gas engines for heavy duty vehicles.

The funding is part of a $9-million initiative to spur the technology throughout the San Joaquin Valley and Southern California in order to meet clean air goals.

Besides the Valley Air District, other funding partners include the South Coast Air Quality Management District, the California Energy Commission and the $500,000 from Southern California Gas Co.

Financial assistance will go to contractor teams to develop natural gas engines for heavy duty vehicles that emit almost zero nitrogen oxide (NOx) pollutants.

The partners are now calling on interested companies with a request for proposals now online at aqmd.gov/rfp/index.html. Proposals are due by July 24.

More information about the initiative can be found on the site. Otherwise, those interested can listen in during a webinar being held June 12 from 10 to 11:30 a.m.

Registration for the webinar can be completed at naturalgastrucks.eventbrite.com.

Cleaner ways emerge to turn cow dung into electricity

By Ricardo Lopez, Los Angeles Times
Sacramento Bee, Thursday, Jun. 13, 2013

Dairy farmer Ron Koetsier's 1,200 cows produce roughly 90 tons of manure daily, and for the past three decades, he has tried unsuccessfully to turn the stinky dung into energy to power his 450-acre farm in Visalia, Calif.

He installed a nearly $1 million renewable energy system in 1985 that used the methane from manure to create electricity for his farm. In 2002, he replaced that system with newer technology, but he hit a snag when air-quality standards called for expensive retrofits to reduce air pollution; he eventually shut down the system in 2009.

In a few weeks, however, Koetsier's renewable-energy efforts will get a reboot as a new company replaces his current system with one that is expected to satisfy strict air standards in the highly polluted San Joaquin Valley.

A decade or so ago, dozens of California dairy farmers built million-dollar systems called methane digesters that convert manure into power. Then, unexpected pollution problems, regulatory roadblocks and low rates of return killed most such digester systems, leaving only a handful in operation.

All that could be changing as renewable energy companies develop new ways of running digesters to boost profits. They're improving technology to meet tough smog-control rules. At the same time, the state is trying out a streamlined permitting process to help remove costly regulatory hurdles.

Koetsier will be the first dairy farmer to install a digester under the state's program. He said he is optimistic that this go-around - his third attempt to make a system work - will finally pay off.

After hearing of the technological and other advances, he decided to "give it another whirl," Koetsier said.

State officials are pushing to reduce greenhouse gas emissions, and that is causing utilities to pursue more renewable energy sources. Experts say digesters show particular promise in California, the top dairy-producing state with 1.8 million cows.

"If these digesters run properly, they can reduce odors associated with manure, stabilize nitrogen and have a number of environmental benefits," said John Blue, climate change advisor for the California Environmental Protection Agency.

The systems "add to California's goal of renewable power generation. We'd like to see dairy digesters as part of the mix."

One California renewable energy company, CH4 Power Inc., said it plans to build more than 40 digester systems over the next year. It's set to begin construction on its first digester on Koetsier's dairy in the coming weeks. Other firms are expected to follow.

The challenge, however, may be trying to persuade weary dairy farmers to give digesters another try, especially after some tough years in the dairy industry.

Dairy farmers have plenty of manure lying around to convert to energy. A typical cow can produce as much as 150 pounds of dung daily. That presents a continuing challenge for farmers to dispose of waste and control the methane - a greenhouse gas - produced by decomposing manure.

Digesters seemed like the perfect solution only a few years ago. Manure is fed into a digester, which extracts methane from decomposing organic material, removes impurities and burns it to produce energy.

But many farmers ran afoul of air pollution regulations because their generators emitted nitrogen oxide, or NOx, a component of smog.

Retrofitting digesters with catalytic converters was expensive, costing about $150,000, and put additional strain on the engines that run the systems.

The current generation of digesters has improved technology that should alleviate that concern, experts said.

With those advances in mind, officials are trying to kick-start new projects by turning to a consolidated permitting program on the books since the mid-1990s but never used.

It took the collaboration by the state Department of Food and Agriculture, Cal/EPA, and local air and water quality boards to figure out how to permit new digesters.

The goal is to involve all the various permitting agencies in the beginning of the process to ensure there are no surprises later, Cal/EPA's Blue said.

Ray Brewer, president of CH4 Power, drew Koetsier back to the digester concept with the promise of a new, potentially less risky way of doing business: Instead of Koetsier running the operation, CH4 will lease the land where the system will be installed and buy Koetsier's manure.

CH4 technicians will be able to monitor it remotely and will be readily available if it breaks down, Brewer said.

Brewer said he tested his system in other states, such as Wisconsin and Idaho, before shopping it around with California dairy farmers, whom he said were very skeptical.

He eventually signed his first contract with Koetsier - "Talk about apprehensive," Brewer recalled. "That was a little bit of an understatement."

Brewer's business model, in which farmers lease their land and sell their animals' waste to third-party operators, seemed less of a financial gamble, Koetsier said.

It's a model dairy farmers will be more comfortable with, experts said. That way, a dairy operator can focus on producing milk, not running a small power plant.

"You have a lot of dairy farmers who put these things on and found themselves willy-nilly in the energy business," said Stacey Sullivan, policy director at Sustainable Conservation, a San Francisco environmental group. "There are few people who have managed to make it work."

Sullivan said the technology has advanced to meet air- and water-quality standards, but the missing piece of the puzzle is whether utilities will set rates economically favorable to farmers.

Others, however, are skeptical and waiting to see how others, such as CH4 Power, fare.

Mark Moser, president of RCM International Inc., stopped installing digesters in California four years ago.

Moser said the biggest hurdle isn't the rates utilities pay for energy produced - it's state environmental regulations. He said the last time he installed a digester in California it took 18 months to get it permitted. In Pennsylvania, where he also installs his machines, it took three months.

"The air rules are impossible," he said.

About 10 years ago, there were a couple of dozen digesters in California. Now there are just 11, and six of them are Moser's. He has since moved staff and his manufacturing out of the state.

It's unclear whether CH4's bet will pay off, but observers, such as Cal/EPA's Blue, are paying close attention.
"I suspect if we can get one project through the process successfully, then we'll have more," Blue said. "Everyone wants to be second in line with these types of things."

Emission cuts lead to cleaner Calif. air

By Peter Fimrite, staff writer
S.F. Chronicle, Wed., June 12, 2013

Cuts in diesel emissions have drastically reduced the amount of pollutants in the air that cause global warming in California, potentially valuable information in the fight to save the world's climate from a predicted catastrophe, a study by University of California and government researchers said Wednesday.

The study found that regulations limiting emissions from diesel-powered trucks, buses and off-road vehicles have taken the equivalent of 4 million cars off California roads every year since the late 1980s.

"We are all breathing cleaner air because of regulations in diesel combustion, but this study shows there was a huge co-benefit of mitigating climate change," said the lead researcher, Verrabhadran Ramanathan, a scientist with the Scripps Institution of Oceanography and UC San Diego. "I'm now very, very interested in taking this message to the rest of the planet, because if the California experience can be replicated around the world, then we can make a substantial dent in climate change."

The study, paid for by the California Air Resources Board, was the first regional assessment of the effect on the atmosphere of black carbon, the soot particles from burning diesel fuel. Black carbon is the primary ingredient in smog, the clouds of soot that for decades turned the air in Los Angeles and other places brown.

Besides causing health problems, black carbon has been identified as the second-largest contributor to global warming behind carbon dioxide.

Tailpipe emissions have been regulated in California since 1967, when the Air Resources Board was established. Diesel truck engines today are about 90 percent cleaner than the models used before emissions were regulated.

Ramanathan and his team of researchers from UC Berkeley, the Lawrence Berkeley National Laboratory and the Pacific Northwest National Laboratory in Richland, Wash., analyzed measurements of black carbon taken from aircraft, satellites and ground monitors dating back to the 1980s, and used a computer model to compare them with emission-reduction regulations that the state issued over the years.

Ramanathan said the reductions in warming pollutants were much more dramatic than expected. The clean air regulations, he said, removed the equivalent of 21 million tons a year of carbon dioxide from the atmosphere - the amount spewed by 4 million cars.

Over the past 45 years, the total level of black carbon in California's air has decreased about 90 percent while diesel fuel consumption has quintupled, according to the study.

The findings could serve as ammunition for the state as it moves forward with plans to stiffen emissions rules for trucks and buses. Engine emissions control systems and filters are being developed that could reduce exhaust pollution even further.

"The message, particularly for metropolitan areas in California, is that if you clean up the air to improve air quality you will also protect climate," Ramanathan said. "It is a hopeful message because, in the area of climate mitigation, we have gotten into a funk. But now we know we can do something about it."

Study: State rules have cut black carbon

By Deborah Sullivan Brennan
San Diego United Tribune, Wednesday, June 12, 2013

State diesel rules aimed at improving public health have also reduced levels of black carbon, a potent contributor to climate change, according to a new report commissioned by the California Air Resources Board.

The study was led by Veerabhadran Ramanathan, a professor of climate science at the Scripps Institution of Oceanography in La Jolla who collaborated with the Department of Energy's Lawrence Berkeley National Laboratory and the Pacific Northwest National Laboratory in Richland, Wash.

California has targeted diesel pollution for decades, including a series of measures starting in 2000. One of the most controversial diesel mandates was approved in 2008, focusing on diesel-powered trucks and buses, as part of a sweeping set of regulations designed to meet federal air-quality standards and cut down on cases of respiratory illness and premature death. Supporters have hailed it as a major tool for battling asthma and cancer, while opponents have said it's an overly aggressive measure that has cost many jobs.

Ramanathan and his colleagues said their conservative estimate shows the diesel requirements may slow climate change by curbing the equivalent of 21 million metric tons of carbon dioxide annually. That's about the same as taking more than 4 million vehicles off the road every year, the report concluded.

"Diesel is a toxin and is high on our list of dangerous emissions, so we're really getting a global warming benefit as well as a public health benefit as a result of reducing diesel exhaust," said San Diego County Supervisor Ron Roberts, who has also served on the Air Resources Board during its years of discussion about diesel pollution.

There's general consensus among scientists that the Earth's climate is warming and that fossil-fuel combustion is likely the leading cause. While carbon dioxide is the main contributor, black carbon produced by diesel exhaust and other emissions is No. 2, Ramanathan said.

His globe-trotting work, from China to California, has examined short-lived greenhouse compounds including black carbon, which lasts two weeks in the atmosphere, compared to carbon dioxide, which can persist for centuries. So cutting diesel emissions can swiftly reduce the rate of climate change, he said. "If this can be replicated worldwide, we can reduce projected global warming by as much as 15 percent over the next 30 years," Ramanathan said.

The Air Resources Board commissioned the report through a competitive-bid process, selecting Ramanathan and his collaborators.

To conduct the study, Ramanathan said, the scientists examined decades of black-carbon measurements. "From the 1980s, black carbon had come down 50 percent," he said. "Since the 1960s, the amount of soot we put out came down by 90 percent."

Diesel use rose three- to four-fold during the same period, he said, but improved fuel formulations and engine filters slashed the amount of black carbon emitted.

Early on, concentrations of black carbon dropped in California because of state rules controlling tailpipe emissions and the burning of trash and coal, said Melanie Turner, a spokeswoman for the board. Upcoming phases will address diesel exhaust from agricultural equipment, she said.

When the Air Resources Board voted unanimously in 2008 to adopt the diesel rules pertaining to diesel-powered vehicles, it sided with the agency's research and a history of past studies by others linking diesel pollution to various health problems.

At the time, advocates of the regulations said the mandate to replace or retrofit up to 1 million trucks and buses would prevent tens of thousands of asthma cases and save up to $68 billion in lost work days during the next 15 years.

Industry officials didn't dispute the health connections, but said the state's actions were extreme because they didn't adequately account for the economic impact on a wide range of businesses that use diesel-powered vehicles, from beekeepers in North County to long-haul truckers based in the San Joaquin Valley. They pointed to a widely agreed-upon projection that the rules would cost industry an estimated $5.5 billion by 2023.

The divisiveness grew about a year later, when the agency confirmed that the lead author of internal research about diesel pollution's effects on public health had exaggerated his academic credentials. That individual was demoted but the Air Resources Board stayed its course, saying the fundamental health analysis remained sound.

Diesel technology pioneered in California could be readily adopted by industrialized nations, pollution experts said, but may be harder to introduce in developing countries, which rely on less-efficient diesel-fueled cars and motorcycles.

"In developing countries, it's always more of a challenge," said Michel Boudrias, a professor of marine science and environmental studies and director of sustainability for the University of San Diego.

The equipment comes at a price, adding about $10,000 to the $100,000 price tag of a big-rig truck, said Allen Schaeffer, executive director of the Diesel Technology Forum, a trade organization based in Washington, D.C.

Such an expense is still less of a barrier than the availability of the right fuel, he said. New filters require more refined diesel formulations that aren't found in developing countries, he explained. "The technology is widely available in the U.S. and available for export, but it's very difficult to achieve the gains we've had in the U.S. without cleaner fuel," he said.

Despite disagreements about global feasibility and economic hardships, Dave De Haan, a University of San Diego chemistry professor who has researched particulate pollution, said the new report leaves little doubt about the need to rein in diesel emissions.

"This study was kind of a third strike against burning diesel in engines without emission controls," he said.

State Investments in Clean Technology Yield Many Benefits

By Mike Simon, *president and CEO of TransPower*
San Diego United Tribune, Thursday, June 13, 2013

America is the land of free enterprise. But government investments in infrastructure and technology have fueled private business growth since the dawn of our republic: the interstate highway system, the Internet, and advanced oil and gas drilling technologies all benefited from strategic government investment.

In each case, the investments addressed a societal need while also enabling private business growth. Such investments are a win-win.

In the last few years, California has been making forward-thinking investments of its own to address air quality needs here in the Golden State. This includes investments in clean, advanced transportation technologies through an advanced vehicle and fuel incentive program known as AB 118, which was originally proposed by San Diego's Christine Kehoe.

Proposed legislation to extend these incentives to 2023 is now before the legislature in the form of SB 11 and AB 8. On May 29, the state Senate bill passed with a bipartisan 32-5 vote. Assembly Bill 8 is up for vote this week.

Thanks in part to this program, next-generation vehicles and fuels are finally gaining a foothold in the market, helping to clean our air, diversify our fuel supply and again positioning California to become a world leader in the clean-tech revolution. "In-state" companies are growing, hiring, and developing a wide variety of clean and innovative solutions for the transportation sector.

A very large and diverse coalition of mainstream business and industry groups, advanced technology companies, public health advocates, and other stakeholders is urging the legislature to approve this extension. Let's hope our legislators in Sacramento are listening, as we all stand to benefit from the clean air and California jobs these programs provide.

My company, TransPower, is one example. TransPower is a local startup technology company selling zero-emission electric trucks. Our vehicles will soon be hauling large shipping containers in and out of the ports of Los Angeles and Long Beach, and we have other projects in the works throughout the state, including in the heavily polluted Central Valley. We are supporting the local economy through the purchases of motors, batteries, inverters, custom enclosures, and more from other California companies.

Innovative small businesses like mine are the engine that powers the California economy. However, we would not be where we are today without California's clean air incentive programs. It was a grant from AB 118 that allowed me to hire my first two employees. We have leveraged this initial funding with matching investments and additional business.

We recently celebrated our second anniversary in our Poway facility and now employ 25 people. We are continuing to grow and hope to be deploying increasing numbers of clean, zero-emission trucks throughout the state and the nation in the coming years. Success in our mission would benefit not just TransPower and the local economy, but California as a whole.

The story of my company is just one example, but it highlights the fact that California's investments in this sector are paying off. In the San Diego area alone, companies are leveraging this funding to install electric vehicle chargers and build natural gas refueling stations. Local companies are moving forward with advanced biofuels development and facilities. And we are seeing more and more zero-emission cars and trucks on our roads.

Statewide, the program has supported more than 7,600 California jobs and trained nearly 6,000 workers to date, according to California's air and energy agencies. It has provided seed funding for small manufacturers and startups to expand plants and assembly lines. It has also attracted more than $105 million in federal funding and nearly $600 million in private sector investments. All of the companies and technologies supported by these investments are helping to reduce pollution and improve public health here in California. This is money well spent.

Unfortunately, this successful program is set to expire soon, unless the Legislature approves an extension. We cannot afford to let the clock run out on this program. More than 90 percent of Californians live in areas with unhealthy air, due in large part to pollution from cars and trucks. Meanwhile, unemployment remains high and the economic recovery is fragile at best. We deserve better. Our children deserve cleaner air, and our residents need the jobs created by smart government investment programs like AB 118.