

Innovative concepts from people right here in the valley

By Cassandra Melching

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When it comes to innovative ideas and technology, the San Joaquin Valley Air Pollution Control District is at the forefront.

Achieving attainment of EPA's increasingly stringent ambient air quality standards will require significant additional emissions reductions in the valley and the development and deployment of transformative zero and near-zero emissions technology over the coming decades, particularly in the mobile source sector.

Through the Technology Advancement Program, the district has been actively working with technology providers, other agencies and valley stakeholders to identify and support the next generation of transformative technologies necessary to achieve the district's clean air goals. Since its inception, TAP has opened four rounds of funding and received over 137 proposals for clean-technology projects. The district has selected 35 of these projects for funding, totaling \$12.6 million.

Funding provided through TAP has allowed innovative companies to put into operation many new demonstration projects, including California's first zero-emission transport refrigeration unit this past year. TRUs are refrigeration units mounted on trucks — that are traditionally powered by high-polluting small diesel engines — to provide the needed cooling to transport chilled products.

This project involved the development, testing and demonstration of a zero-emission solar- and electric-powered TRU to replace conventional diesel-driven TRUs. Testing from the new Challenge Dairy Products delivery truck indicated a dramatic decrease in harmful emissions of nitrogen oxides, particulate matter and carbon dioxide compared to the typical diesel-powered TRU.

This innovative TRU system is also expected to reduce operation and maintenance cost by 90 percent.

The district also leveraged \$1 million in district-match funding toward a \$16 million project to demonstrate the first-of-its-kind high-efficiency opposed-piston diesel engine technology capable of meeting the near-zero 0.02 g/bhp-hr NOx emissions standard. This will be the first demonstration in the U.S. of a high efficiency and low-NOx engine powertrain vehicle in Class 8 applications.

If successfully commercialized, this near-zero diesel engine technology will provide significant fuel savings while taking advantage of existing diesel fueling infrastructure, which has been a significant challenge in the broad deployment of other zero and near-zero technologies in long-haul applications that make up a large portion of the valley's emissions.

TAP project successes have also led to new industry projects, including a demonstration project with Philip Verwey Farms, a dairy in Hanford that converted several elements of its feeding operation from diesel power to electricity.

The project was successful in demonstrating that diesel emissions could be significantly reduced at dairies and other animal feeding operations throughout the district in a cost-effective manner and subsequently throughout the valley. As a result, the district worked closely with the agricultural industry and technology providers, to develop the Dairy Feed Mixing Electrification Program and allocated \$4 million to expand the installation of electric feed mixing equipment and further reduce diesel emissions from mobile equipment at valley dairies and other confined animal feeding operations.

This year, the district will be conducting a request for proposal to solicit and support additional clean technology projects suited to the valley's needs. If you have an innovative clean technology idea, please visit www.valleyair.org/grants/technologyadvancement.htm or contact the nearest district office (Bakersfield, 661-392-5500; Fresno, 559-230-5800; Modesto, 209-557-6400).

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