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## **Valley Air District Helps Fund Development and Demonstration of Zero-Emissions Transport Refrigeration Unit**

*Air officials gather to showcase cutting-edge technology*

The Technology Advancement Program (TAP) is the Valley Air District's strategic approach to encouraging innovation and development of new emission reduction technologies. The TAP consists of an ongoing review of new technology concepts, interagency partnerships, funding for technology advancement programs, and collaborations to build and expand local capacity for research and development in the San Joaquin Valley. TAP supports technology development in critical areas which will assist the San Joaquin Valley in meeting stringent air quality goals.

"Despite major reductions in emissions, the Valley continues to face difficult challenges in meeting federal air-quality standards", stated Seyed Sadredin, the Executive Director / Air Pollution Control Officer of the Valley Air District. "It is virtually impossible for the Valley to attain the new standards for ozone and particulates without these significant advancements in low-emission technologies through TAP projects."

Together with eNow Inc., Great Dane-Johnson Refrigerated Truck Bodies, Emerson, and Challenge Dairy Products, Inc., the Valley Air District and EPA Region 9 officials celebrate the ongoing successful demonstration of California's first zero-emissions transport refrigeration unit (TRU). TRUs are refrigeration units mounted on trucks and are traditionally powered by high-polluting small diesel engines to provide the needed cooling to transport chilled products. This project involves the development, testing, and demonstration of a zero-emissions solar and electric-powered TRU to replace conventional diesel-driven TRUs.

"eNow is proud to be part of this important collaboration, and to put our solar technology to use in this new application" says Jeff Flath, President & CEO of eNow. "With more than 4,000 systems installed, eNow systems provide power to transportation applications such as in cab-heating and cooling, liftgates, safety lighting, and refrigeration for long-distance hauling. This project represented the perfect opportunity to demonstrate the power of the eNow system to also meet the demands of refrigerated deliveries in an urban environment."

The prototype TRU is the first to market for commercial use and has been installed on a Challenge Dairy Class 7 truck for testing on actual urban delivery routes. Designed to transport medium temperature refrigeration applications, this new refrigeration system employs two forms of energy storage: eutectic medium (cold plates) and a unique lightweight high-capacity auxiliary battery system. The cold plates and auxiliary batteries are initially charged from utility power delivered to the vehicle when it is plugged in at its "home base" overnight. When the truck is operated on a delivery route, additional electrical power is provided by roof-mounted solar photovoltaic (PV) panels. The auxiliary battery is designed to be charged exclusively by solar and utility power. The project partners hope to commercialize the technology for wide-spread use, including throughout the San Joaquin Valley.

Testing from the new Challenge Dairy delivery truck has indicated a dramatic decrease in harmful emissions of nitrogen oxides, particulate matter, and carbon dioxide compared to the typical diesel-powered TRU. This innovative system is also expected to reduce operation and maintenance cost by 90%.

“As the first testers of the solar-powered TRU, we are humbled to play a part in this technology that will enable foodservice companies worldwide to have minimal impact on our planet,” said Tom Ditto, Vice President of Foodservice at Challenge Dairy Products, Inc. “For more than a century, Challenge has prided itself on delivering the freshest and highest quality products, and through Rayfrigeration, we can hold true to our values, while keeping our customers happy and protecting our planet.”

“Emerson is committed to designing solutions focused on air quality and sustainability, and this partnership afforded us a unique opportunity to contribute to a groundbreaking system that tackles both,” said Keith Browning, Vice President and General Manager -- Transportation Solutions, Emerson Commercial and Residential Solutions. “Our line of refrigeration compressors and overall approach to providing customers with solutions that address environmental and energy standards has positioned us well to offer equipment that would help reach this zero-emission goal.”

“We are very happy to be part of this project which showcases the efficiency and reliability of Cold Plates using an All Electric refrigeration system. This technology, coupled with the eNow solar power system, Emerson 48VDC condensing unit, and the composite construction of the truck body provides a complete thermal efficient solution for food distributors”, stated Eduardo Navarro, Director of Business Development at Great Dane, Truck Bodies. “The refrigerated transport industry and especially our communities can benefit from knowing that the distribution of their refrigerated products was completed using clean and efficient energy which burns no diesel in the refrigeration process. Having an All Electric system like the Johnson AE system provides food distributors a reliable alternative to diesel power units as they look to meet their cold chain demands efficiently and at a low operating cost”.

“EPA is proud to be a part of this innovative project,” said Alexis Strauss, EPA’s Acting Regional Administrator for the Pacific Southwest. “Through this public-private partnership, we are advancing cleaner technologies to reduce diesel emissions and bring cleaner air to our communities.”

The total cost of this project was over \$1.2 million, with the Valley Air District providing \$400,000 through the Technology Advancement Program, funded in part through EPA Region 9. The remainder was provided by in-kind contributions and cost-sharing by the project partners: eNow Inc., Great Dane-Johnson Refrigerated Truck Bodies, and Challenge Dairy Products, Inc.

To learn more about the Valley Air District’s Technology Advancement Program, please visit [www.valleyair.org/TAP](http://www.valleyair.org/TAP) or call program staff at 559-230-5800.

**About the Partners**

“eNow is an innovative, clean-technology company specializing in renewable energy systems. Our goal is to provide industry specific solar solutions to companies that embrace profit, planet and people. eNow’s proprietary, patent-pending solar systems economically convert, store and distribute electricity, and strike the perfect balance between sustainability, regulatory compliance and significant return on investment. Learn more at [enowenergy.com](http://enowenergy.com).”

“Celebrating over 100 years in business, Great Dane has built an enviable reputation as an industry leader in technology, innovation, quality and customer service. Headquartered in Chicago, Illinois and with additional corporate offices in Savannah, Georgia, Great Dane is the transportation solutions leader delivering innovative products and exceptional service to its customers. In addition to traditional trailers, Great Dane offers a complete line of refrigerated and dry freight truck bodies, including the legendary ‘Johnson Series’ which is the industry’s most durable fiberglass composite, temperature-controlled truck body. The Johnson composite product line and the Johnson All Electric refrigeration systems (AE) are manufactured in Rice Lake, WI.”

The San Joaquin Valley Air District is a public health agency whose mission is to improve the health and quality of life for all Valley residents through efficient, effective and entrepreneurial air quality management strategies. Our Core Values have been designed to ensure that our mission is accomplished through common sense.