

The Future is eNow

For electric- and solar-powered reefer trailers, technology is changing rapidly and for the better

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CONTRIBUTING WRITER



Cut reefer fleet costs by 30-50% with new, zero-emission, all-electric reefer trailers from eNow. Available in 48-ft and 53-ft lengths. Power units are currently 107 kWh for single- and multi-temp refrigerated applications. Substantial State and Federal incentive programs for zero-emission, electric TRUs are available.

While the trucking industry awaits a viable, affordable Class 8 electric truck, Jeffrey Flath has a simpler solution that is ready for the market: electric refrigerated trailers.

The president and CEO of Warwick-based eNow says his company will take orders now for his Rayfrigeration systems, with general delivery coming in the second, third and fourth quarters of 2022.

“Now is the time for electrification,” he said.

The trailers will come in two forms to start: an all-electric with solar, and a plug-in hybrid with solar. (i.e., electric with diesel standby). All versions will charge with shore power when parked. With the solar-powered version, 1/16th-inch solar panels will supply 30-40 percent of the energy needed to run the reefer, allowing for a smaller battery and longer delivery route. The company says the panels work in extreme weather conditions

and are not damaged by snow removal systems. As the panel produces energy, it heats up and melts the remaining snow.

eNow already has two solar-powered trailers on the road, one operated by the company and one operated by C&S Wholesale Grocers, the nation’s largest grocery supplier, in California. Flath said another 50 units will be delivered to prominent food-related private fleets in Q2 2022.

The company will install its systems on five trailer OEMs: Great Dane, Hyundai, Utility, Vanguard and Wabash National.

eNow’s refrigerated trailers will cost about double the cost of a diesel-powered trailer. But Flath said carriers can realize total cost of ownership savings of 20-30 percent on an eNow eTRU unit versus a diesel transport refrigeration unit. Trailers can run more than 12 hours electrically, producing monthly operating savings of \$300 to \$1,000. The company says asset life is 10-12 years versus

an average of 5-7 years for a diesel trailer.

The trailers are also eligible for significant government grants. The federal government’s Diesel Emissions Reduction Program (DERA) provides a 45 percent reimbursement for new all-electric trailers. The California Air Resources Board’s CORE program provides up to \$65,000 in incentives for clean-running equipment, plus \$3,000 per charging plug, for trucks running primarily in California. California also provides up to 50 percent reimbursement of new all-electric TRUs and trailers through the Carl Moyer Memorial Air Quality Standards Attainment Program. Unlike the CORE program, it requires older units to be scrapped.

eNow has a full-time environmental attorney on staff who can help carriers complete the voucher application process and prepare periodic reports, Flath said.

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Zero-emission Reefer Trailers from the Industry Leaders.



eNow and XL Fleet have teamed to deliver the most advanced all-electric reefer trailers in the industry.

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eNow's all-electric reefer solution can cut fleet operating costs up to half compared to traditional diesel reefers. They also have an asset life of 10-12 years vs. diesel's 5-7 years.

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4. XL Fleet's rugged power infrastructure for reliable charging performance under all conditions.



Federal and State voucher incentives are available.

Refrigerated fleets can receive substantial voucher incentives to cover part of their new equipment costs. Current DERA rules provide for a 45% reimbursement of new all-electric TRUs and trailers. The Federal Diesel Emission Reduction Act (DERA) is a nationwide program. Some states also offer incentives.



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eNow trailers will help carriers stay current with emissions regulations being enacted in California and other states. The trailers create no direct emissions of carbon dioxide, nitrous oxide and particulate matter and also reduce noise. An electric trailer running 10 hours a day, 52 weeks a year reduces carbon dioxide emissions by 30 metric tons per year versus a diesel-powered trailer, which can consume a gallon of diesel fuel per hour of operation.

Flath said electrification costs will fall as the company scales up and produces more units. Meanwhile, he predicts diesel costs will increase while the emissions regulatory climate gets tougher.

The company is breaking into a potentially huge market with 50,000 refrigerated trailers sold annually. Even if eNow only captured 10 percent of the market, that would generate sales of 5,000 units per year. But Flath is hoping for more.

“I don’t want to predict, but I believe that there’s an opportunity to capture 20 percent of the market over the next three to five years,” he said.

The company recently announced a partnership with XL Fleet Corp, another provider of vehicle electrification systems

whose customers include Coca-Cola and Verizon. eNow and XL Fleet were already collaborating before formalizing the partnership. XL Fleet will supply the third generation high-capacity integrated lithium-ion battery and power electronics systems for the first 1,000 electrified refrigerator trailers. eNow will integrate the technology into its solar and other designs.

The agreement included a \$3 million investment by XL Fleet with the right to acquire eNow at a predetermined valuation, according to a press release from the two companies.

Flath said the companies have been working together for about a year to design the battery pack. XL Fleet has the capabilities to manufacture the product that otherwise would have been outsourced to another company.

Flath said he has known XL Fleet’s founder and president, Tod Hynes, for five or six years. The two met at a trade show when their booths were adjacent to each other.

“They were right next to us,” he said. “We got to know them and figured out that they had the capability and qualification to do this, and that the two companies together could

create a force in the industry,” he said.

Flath said XL Fleet’s capital investment and technical capabilities will help eNow bring its product to market. Another plus: XL Fleet’s corporate headquarters are in Boston only 45 minutes from eNow’s. That proximity makes it easier to have a working relationship.

Together, the companies plan to sell complete systems including the charging infrastructure. eNow currently uses a 480 volt 3-phase plug, which produces a higher output than a typical plug used at home. Fleets will be charging the trailers on their own property and at public facilities. Charging the battery can take 8-10 hours. For fleets that can’t wait that long, such as over-the-road fleets, the company is offering its plug-in hybrid version. Also available – but not yet widely used – is DC fast charging that can charge a trailer in 30 to 60 minutes.

The partnership will help eNow enter the Class 2-6 market, which XL Fleet has focused on, while helping XL Fleet enter eNow’s Class 7-8 market. The Class 7-8 purchases will be made through eNow, while the smaller classes will be purchased through XL Fleet.

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eNow 330 Watt Solar Battery Charging System



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“We live here. We’ve been here for 30-plus years. We wanted to do something to benefit business in Rhode Island. I think it’s a great voice for the state of Rhode Island that we developed technology that can be used worldwide, and it’s going to have a major benefit, not only for the state of Rhode Island but for every other state and every other country in the world.”
—Jeff Flath, CEO, eNow

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Together, the two companies have developed a last-mile delivery vehicle that will roll out by the fourth quarter of this year. The product uses the same concept as a truck developed in 2017 by eNow for Challenge Dairy, but this new version takes energy from the XL Fleet’s proprietary electric driveshaft, in addition to the previous version that took energy from solar power and the grid. XL Fleet developed the drivetrain technology, while eNow engineered the refrigerant technology.

“We’ll be able to show customers that they’ll save costs just in fuel from driving to point A to point B, and we’re offering them to provide the capability to run the refrigeration unit without having to run the diesel engine,” Flath said.

The relationship with XL Fleet also allows the company to provide a program management system that monitors the reefer system, provides maintenance and repair services, provides fleet and infrastructure financing, and manages and optimizes electricity use. Through XL Fleet, eNow can also offer real-time data monitoring and analytics.

Flath founded the company in 2011. Previously, he had been president and chief operating officer of another Rhode Island-based firm that produced flexible composites such as single-ply roofing. In 2009, the company developed a 100 percent solar-powered

billboard for Ricoh that was the first of its kind installed in Times Square in New York City.

Flath was looking at other applications for solar power, but his employer believed it was a fad, so they parted ways and he founded eNow in 2011. Flath wanted the company's focus to be on commercial transportation because of the wide variance in costs between power generated by fossil fuel engines and power generated by the electric grid.

Initially, eNow developed other solar-powered systems for the marketplace, including auxiliary power units, solar powered liftgates, and telematics products. So far, it has sold more than 4,500 units to customers including Walmart, Ryder and Penske, among others. Then it began developing technologies for refrigeration, including the straight truck product used by Challenge Dairy starting in 2017. That truck has had no issues in maintaining temperatures, even in 100-degree weather. The company moved into the Class 8 market in 2018. Refrigerated trailer applications are now the company's primary business. eNow installed solar technology on a trailer hauled by a Navistar Super Truck Program Demonstration vehicle. That project demonstrated that solar energy could be created and stored, eliminating the work normally done by a fossil fuel engine.

Flath said the trucking industry is conservative and needs to see that a product works. The concept of electric-powered vehicles has been proven by Tesla in the passenger car market. Electric trucks are coming, but they're not here yet. In the meantime, he can offer a simpler solution that's ready now. While electric trucks are being developed by huge, tech-heavy manufacturers with experience in integrating systems, a vendor like eNow can provide that service to major trailer manufacturers.

While eNow is currently working with several Canadian-based fleet customers, it's not otherwise doing anything internationally – yet. However, he said he's providing a worldwide solution, so the company will consider partnerships where it supports other entrants into the market.

eNow is based in Rhode Island and is a member of the Rhode Island Trucking Association. The company received a grant from the state early in the process.

"We live here," Flath said. "We've been here for 30-plus years. We wanted to do something to benefit business in Rhode Island. I think it's a great voice for the state of Rhode Island that we developed technology that can be used worldwide, and it's going to have a major benefit, not only for the state of Rhode Island but for every other state and every other country in the world." 🌐



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