

How to Deploy eTRUs in Food Distribution Fleets: 6 Keys to Success



It's no shock that food distribution fleets are among the early adopters of battery-electric vehicles (BEVs). Their battery range is well-suited to local and short-haul food deliveries, and they provide reliable temperature control with lower noise and less maintenance compared to conventional trucks and vans with small cargo areas.

Zero emissions refrigerated trailers present a bigger challenge than refrigerated trucks and vans as the transport refrigeration unit (TRU) has to maintain temperature for more freight in a larger cargo space. In addition, finding places to charge a battery can be difficult when the trailer does not return home at the end of its route. Because of these complexities, many fleets are waiting to see whether an electric TRU can deliver the expected performance without the emissions, noise or costs associated with a diesel engine.

For answers, Carrier Transicold conducted real-world evaluations of its Vector eCool<sup>™</sup> electric trailer refrigeration unit in partnership with nearly a dozen national and regional food distributors.

At the core of this battery-electric refrigeration system is Carrier Transicold's Vector TRU. The Vector TRU runs on energy stored in the onboard battery. The battery is optimally sized and recharged while in motion via proprietary electric wheel hub generators. The programmable subsystem captures energy and stores it in a high-capacity battery beneath the trailer. The Vector eCool system creates ample power to cool a single or multi-temp trailer. The Vector eCool system can also be paired with an electric tractor to produce no direct emissions.\*

Since February 2022, field trials of the Vector eCool refrigeration system have covered more than 550,000 miles, 3,300 trips and more than 17,000 TRU run-hours (electric); resulting in savings of more than 15,000 gallons of diesel fuel and 2 million PPM of NOx, 76,000  $\mu$ g/m<sup>3</sup> of PM and 260,000 PPM of CO<sup>2</sup>.

\*In North America, Vector eCool has an engineless option as well as an option with a back-up engine. The engineless option creates no direct emissions. Indirect emissions as well as refrigerant leaks are possible. Since 2022, field trials of the Vector eCool refrigeration system have covered

/i\ 550,000+ miles



and saved **15,000+** gallons of diesel fuel The fleets involved shared valuable insight into what makes a successful eTRU deployment. Here are six points to consider as you evaluate eTRUs for your fleet:

# 1. Be proactive

Forward-thinking fleets are often at the forefront of sustainability initiatives. These fleets view electrification as part of a more significant commitment to reducing emissions and improving environmental impact, both locally and regionally.

Don't wait for regulations to force you to make changes. Early adopters are better positioned to scale electric TRUs and deploy them smoothly while reducing disruptions to their supply chains.

## 2. Choose a technology partner that knows your business

The right eTRU technology partner can help with decisions about battery-electric configurations, system components & options and charging solutions. Partnering with experienced suppliers who know the food distribution business can help streamline planning and implementation, ensuring you have access to expert support.

## 3. Be ready for operational changes

Transitioning from diesel-powered to electric units requires a shift in operational habits. Energy efficiency is critical. Starting every trip at 100% battery level, keeping trailer doors closed, minimizing loading and unloading times and testing different routes and scenarios are part of a well-planned deployment strategy to conserve energy and ensure that battery-electric TRUs can complete their trips with minimal downtime.

Fleets that embrace new technologies and are open to learning from early trials tend to achieve the best results.

## 4. Invest in charging infrastructure

Public charging networks are still expanding. Be prepared to install private charging stations at your facilities to ensure uninterrupted operations. It is advised to contact contractors as soon as you can to avoid delays due to contractor backlog and required permitting. Collaborating with technology providers will help you gauge the infrastructure you need.

### 5. Start slow and build from there

Starting small before scaling operations lets you refine your strategies and perfect your processes. For instance, beginning with one facility and a select team of employees gives you the space to troubleshoot challenges and create a polished operational plan. Once successful, these strategies can be replicated and enlarged (if necessary) across other locations, ensuring a smooth and efficient rollout.

# 6. Connect and protect

Incorporating Carrier telematic capabilities with your eTRU can bring confidence in using new or unfamiliar technology and give you the data and analytics you need to optimize your operations and drive to 100% zero emissions. Carrier Transicold's Lynx<sup>™</sup> Fleet telematics solution enables remote refrigeration unit monitoring, control and diagnostics, automatic "proof of temperature" compliance reports, data management and other value-added capabilities. Beyond collecting and monitoring location and temperature data, you can monitor door-opening events, use geofencing capabilities to trigger automatic location alerts and monitor battery levels and Vector eCool performance.

As zero emissions refrigerated trailers become more utilized in local and regional fleets, their range and cargo capacity present limitations. Food distributors can see that eTRUs represent a transformative opportunity to achieve greater sustainability, operational efficiency and cost savings.

