



# National Grocer Reduces Costs and Emissions with eTRUs



## Charging ahead with eTRUs

As one of the nation's largest grocery store chains, Albertsons has continuously evolved its sustainability goals through the years. At one of the company's large food distribution service centers in Tracy, California, even more is being done to reduce emissions from its fleet of more than 750 refrigerated trailers and reduce air pollutants for the residents of the disadvantaged community which surrounds it. Currently, 280 of those are equipped with electric transport refrigeration units, or eTRUs.

A majority of the eTRUs are Carrier Transicold models, a hybrid unit with electrically driven refrigeration components that can be powered by an on-board diesel generator, or through electric power if plugged into a charging port. Stationary charging through on-site infrastructure significantly reduces emissions and noise, which can negatively affect the residents of the Northern California city that hosts the distribution center.

## Background

Distribution and delivery fleets have large and diverse fleet operations that can take advantage of the growing number of electric vehicle and equipment product offerings, while meeting corporate sustainability goals and getting ahead of looming regulations. One such clean air goal is Governor Newsom's Executive Order, which requires 100% zero emission from off-road vehicles, equipment and operations by 2035. This includes transport refrigeration units (TRU), part of which could go into effect by 2023.

While the California Air Resources Board's (CARB) eTRU regulation is still in development, as it currently stands, all truck TRU fleets must phase in full zero emission units at 15% each year over seven years beginning in 2023. CARB will develop strategies to transition all trailer TRUs, domestic shipping container TRUs, and TRU gensets to zero emission in a second rulemaking targeted for 2023-2024.

This fleet sector is targeted by air quality regulators as an important source of mobile pollutants to convert to zero emission technology because of its impact on the communities that surround the distribution facilities. More than 19% of the toxic air contaminants from the state's goods movement industry come from TRUs.<sup>1</sup> As many of the state's distribution centers are based in disadvantaged communities, transitioning to eTRUs will benefit residents who suffer from a greater combination of economic, health, and environmental burdens than most.

## Setting the right goals

When beginning the project, Albertsons set a trio of goals for its electrification program: demonstrate a lower total cost of ownership (TCO) compared to diesel, reduce emissions caused by idling, and gain a better understanding of the deployment of eTRUs at scale and the impact on its operations. To realize these goals, the grocer partnered with PG&E's EV Fleet program; Hansen Rice, a construction company with extensive experience working the grocer; Carrier Transicold for the eTRUs; and SafeConnect Systems, which manufactures UL-certified high-voltage connection ports and receptacles.

## Constructing charging infrastructure

The project team began with installing 25 SafeConnect eTRU ports as a pilot stage to test the efficiency of the charging infrastructure location. After testing the equipment, they determined the chargers should be installed at the site's busiest loading docks to maximize the amount of charging time for the eTRUs. This would also help determine best practices for Albertsons' plans to increase the amount of on-site charging infrastructure.

Several steps were involved with the construction of the chargers, including replacing the switchgear and running wiring and conduits to a total of 15 docks. As well as wiring and conduit across the parking facility to the staging area for five additional SafeConnect dual-port units. This alone required 300 feet of trenching.

The construction team also had to install protective mounting systems for the units and a pair of Eaton Power Xpert Multi-Point submeters to monitor power use from each port individually. The charging ports were electrified and operational beginning in November 2019.



## Albertsons Companies project at a glance

- Located in Tracy, California
- 2.2 million square foot distribution center
- 750 total refrigerated trailers
- 280 trailers equipped with Carrier Transicold eTRUs
- 25 SafeConnect eTRU ports
- Single-port chargers installed at 15 loading docks
- Dual-port chargers installed at 5 staging areas
- 8 months to build infrastructure

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## Lessons learned with eTRUs

To ensure a more fluid installation process, Albertsons' team realized there needs to be a standard for eTRU connectors for dock ports and trailers – making it more timely and costly to retrofit various models of existing equipment.

Due to the nature of food distribution logistics it is not always possible to ensure an eTRU trailer is matched with an electrified docking port, additionally the docks typically have shorter loading times than staging areas. To increase higher utilization rates of the eTRUs and charging equipment at the loading docks, the team identified the need to install charging ports on either all trailers or electrify all loading ports.

Finally, to enable both scalable and repeatable deployments, Albertsons found that implementing automated and simplified data collection processes, along with proper monitoring of granular power metered data for every port, is critical to accurately measure energy usage.

As with all its operations, the safety of its employees is paramount to Albertsons. The combination of varying experience amongst drivers and dock workers, tight operation schedules, and the use of both diesel TRUs and eTRUs, necessitated safety features for new ports and signage to protect drivers from creating electrical arcs during accidental drive-offs. As electrical safety procedures will always be important, the incorporation of more education and training on how to properly operate eTRU ports could increase staff comfort and utilization.

While the project took about eight months for Albertsons to complete, by implementing these lessons learned, they anticipate the project would take about four months to complete on a new site. This case study serves as a starting point to understanding the installation process and challenges eTRU fleets may encounter, which in turn may help other fleets taking on this type of electrification project.



## Cost savings and emissions reductions

Albertsons' project saw actual cost savings from its participation in the EV Fleet program. The overall projected savings of the program add up to approximately \$62,000 per year when charging at the \$0.16 per kilowatt-hour utility rate, compared to diesel technology. Emissions reductions also showed promise with a 77% reduction of greenhouse gas (GHG) emissions and a 98% reduction of nitrogen oxides (NOx) per hour of usage. The new technology has also shown TCO in terms of maintenance, as none of the eTRU ports have required repairs.

While the emissions reductions were only calculated at the Tracy facility for this project, the eTRU trailers can be used at any grocery store that has compatible charging ports. This would provide additional air quality benefits to both disadvantaged and non-disadvantaged communities during deliveries throughout the state.

## Albertsons savings by the numbers

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ANNUAL SAVINGS  
PROJECTED

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PER KILOWATT-HOUR  
UTILITY RATE

**77%**  
ESTIMATED REDUCTION  
OF GHG EMISSIONS

**98%**  
ESTIMATED REDUCTION  
OF NOX PER HOUR OF USAGE

## Citations and resources

California GHG Emissions

<sup>1</sup> California Greenhouse Gas Emissions for 2000 to 2018, California Air Resources Board:  
[https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000\\_2018/ghg\\_inventory\\_trends\\_00-18.pdf](https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2018/ghg_inventory_trends_00-18.pdf)

Webinar: Albertsons case study and eTRU regulation update  
<https://www.act-news.com/webinar/lessons-learned-from-etru-fleets/>

EV Fleet program overview and available incentives  
[https://www.pge.com/pge\\_global/common/pdfs/solar-and-vehicles/clean-vehicles/ev-fleet-program/PGE\\_EV-Fleet\\_Incentives-Summary\\_Distribution-Delivery.pdf](https://www.pge.com/pge_global/common/pdfs/solar-and-vehicles/clean-vehicles/ev-fleet-program/PGE_EV-Fleet_Incentives-Summary_Distribution-Delivery.pdf)

Summary of available funding for distribution and delivery fleets  
[https://www.pge.com/pge\\_global/common/pdfs/solar-and-vehicles/your-options/clean-vehicles/charging-stations/ev-fleet-program/PGE\\_EV-Fleet\\_Program-Overview\\_Distribution-and-Delivery.pdf](https://www.pge.com/pge_global/common/pdfs/solar-and-vehicles/your-options/clean-vehicles/charging-stations/ev-fleet-program/PGE_EV-Fleet_Program-Overview_Distribution-and-Delivery.pdf)

Additional resources for distribution and delivery fleets  
[https://www.pge.com/en\\_US/large-business/solar-and-vehicles/clean-vehicles/ev-fleet-program/distribution-and-delivery-fleets.page](https://www.pge.com/en_US/large-business/solar-and-vehicles/clean-vehicles/ev-fleet-program/distribution-and-delivery-fleets.page)



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