



## Explainer

# Financing Fleet Electrification: Government-Backed Loan Guarantees Can Unlock Bank Financing by Mitigating Risk

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## Executive Summary

Since passing the Inflation Reduction Act, the Biden administration has taken significant steps to unlock financing for low-carbon technologies. For example, the Treasury Department formed the Climate Hub with a mandate to “[leverage] financial risk mitigation to [confront the threat of climate change](#).” Similarly, the Department of Energy Loan Program Office’s authority to extend loans to emerging clean energy technology companies [increased by tenfold in 2022](#), from \$40 billion to \$400 billion. Finally, in April 2024, the federal government announced a [\\$5 billion award of funds to the Coalition for Green Capital](#), which represents state and local green banks nationwide, to finance qualifying clean technology projects and companies.

Yet, financing of clean commercial transportation remains sorely underdeveloped—while around \$4 billion has been invested in the sector, more than \$60 billion is needed by 2030 to reach mass-market adoption. Commercial banks have low credit risk tolerance and, in the absence of electric truck resale price data, make the highly conservative assumption that electric trucks will hold little value by the end of their financing term. This “Residual Value (RV) risk” is broadly hindering electric truck fleets from accessing at-scale, low-cost loans—a major bottleneck for mass-market electric adoption.

CALSTART recommends that green banks and federal and state agencies implement an innovative financing tool to overcome RV risk and accelerate the financing of electric trucks: loan guarantees. A government-backed loan guarantee for banks and lenders offering loans to electric fleets achieves three outcomes:

1. Enables fleet electrification solution providers to access low-cost capital to deploy more electric trucks.
2. Protects early investments from first-mover lenders willing to finance the electric trucks sector.
3. Educates banks on extending self-sustained loans for electric trucking companies in the long term.

## Fleet Electrification Has Emerged as a Promising Solution to Transportation Decarbonization

There are two business models in the fleet electrification sector. First, some large corporations follow the more traditional business model of owning, maintaining, and operating their own in-house electric trucks. This includes companies like Amazon Logistics, PepsiCo, Frito-Lay, Best Buy, and other larger corporations. Second, some businesses offer electric truck-as-a-service (eTaaS) to B2B customers using Class 2b to 8 battery-electric trucks. This includes a range of full-service eTaaS providers as well as trucking and charging only providers. Examples of eTaaS companies include Einride, WattEV, Terraline, Forum Mobility, and Zeem Solutions, to name a few, whose fully bundled and turnkey electric trucking and charging services allow customers to go fully electric and reduce their carbon footprint by paying a simple subscription payment to the service provider. Due to the novelty of the technology and the complexity inherent in not just purchasing ZE vehicles but also new additional responsibilities including configuring supporting infrastructure, navigating and securing grant funding and incentives, and managing electricity consumption, the eTaaS model has emerged as a compelling alternative to lock in economies of scope and scale and significantly simplify fleet electrification.

Commercial fleet electrification has grown alongside rapid technological advancement of electric trucks. Today there are more than 140 battery-electric truck models available from 40+ OEMs, and [more than 17,500 electric truck deployments as of June 2023](#). These early successes in this sector have yet to be realized into mass-market adoption. Paired with low-carbon electricity generation, eTaaS companies have the potential to abate significant greenhouse gas emissions by replacing medium- and heavy-duty diesel trucks, which—thanks to [the runaway pace of trucking freight activity from e-commerce](#)—constitute one of the highest and fastest-growing sources of emissions in U.S. transportation, with zero-emission trucks.

### Commercial Fleet Electrification Faces a Sizeable Financing Gap

Now that many technology barriers for electric trucks have been largely overcome and thousands of early deployments are in place, alleviating financing barriers is of utmost importance to achieving wide-scale market adoption. Currently, there is a massive shortfall of financing for commercial fleet electrification. There has been between \$3 million and \$4 billion of investment in the U.S. electric trucks sector to date. However, CALSTART analysis finds that this amount lags far behind the \$60 billion or more needed to deploy enough battery-electric trucks to meet the U.S. EPA's Phase III emission standards for medium- and heavy-duty vehicles.

### Commercial Bank Loans Can Play a Significant Role in Closing This Financing Gap

The financing gap for electric trucks is immense, and it can only be narrowed if commercial banks—the largest and lowest-cost providers of capital—develop underwriting processes for extending commercial vehicle loans for financing electric trucks. Currently, eTaaS is financed primarily through private equity and venture capital, corresponding to limited capital access at high cost, which inhibits rapid scaling of this sector.

Banks have the unique potential to provide at-scale financing to electric truck fleets as a direct extension of their existing loan product offerings. There are three reasons that commercial bank loans are uniquely positioned to finance electric truck fleets. First, banks underwrite large loan amounts, ranging from \$25 million to multiples of \$100 million, which translates to sizeable capital access for electric trucking providers. Second, in a competitive economic environment, banks can offer narrow credit spreads, which translates to lower interest rates and lower cost of capital for fleet electrification companies.

Third, banks' lending protocols offer commoditized loans to a broad selection of borrowers with similar business models, making it easy to scale lending broadly across the fleet electrification sector. Specifically, banks' vehicle financing, equipment financing, or general business loan product verticals are compatible with the electric truck asset class. Bank loans have immense potential for accelerating the deployment of electric trucks.

## **Residual Value Risk Hinders Bank Confidence in Extending Loans to Electric Truck Fleets**

Despite this potential, CALSTART-led interviews have revealed that most of the major [U.S. commercial banks currently lack a strategy or history of lending to electric truck fleets](#). Banks have cited Residual Value (RV) risk as one of the central reasons for not lending toward electrified fleets.

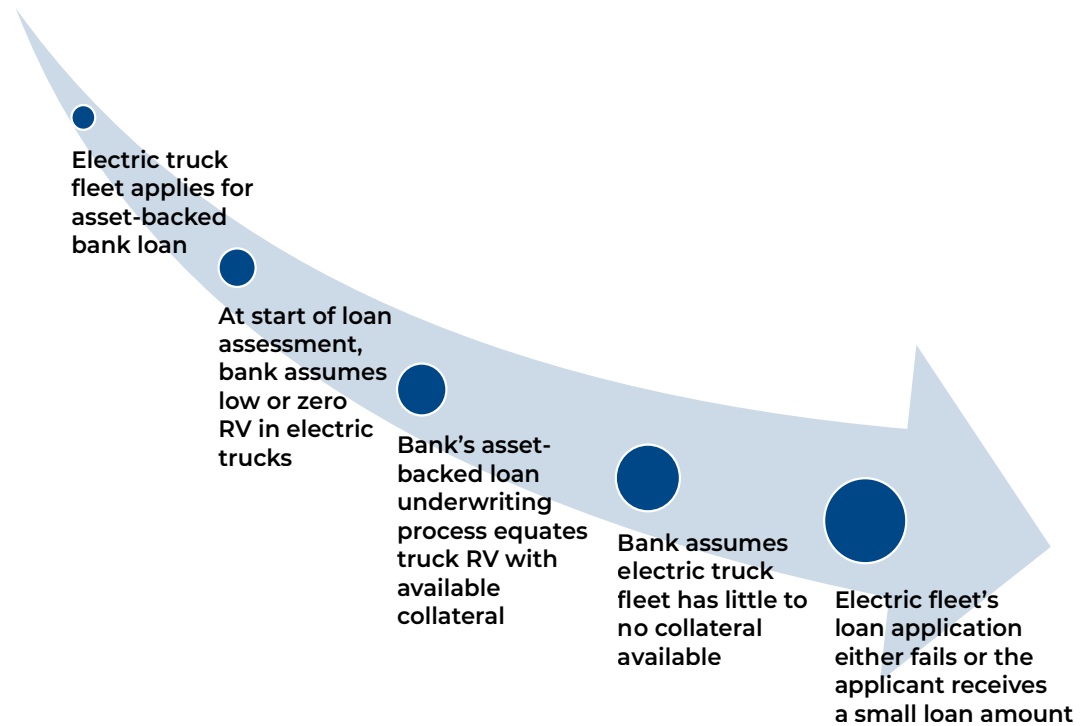
RV is the estimated value of a vehicle throughout its financing term. Vehicle financing, equipment financing, and asset-backed general business loans are all extremely sensitive to RV, because the truck's RV serves as collateral. A bank lending for a truck must ensure that the truck's RV is sufficiently high at all times of the financing term. This criterion ensures that, in the event of borrower default, the truck collateral can fully cover the bank's principal repayment.

RV risk specifically hinders electric trucks, because electric truck RVs have a heightened degree of uncertainty and lack of data. On the contrary, effective financial mitigants, such as predictable residual estimates and banks' internal loan loss reserves, have been effectively operationalized over decades of financing for the relatively stabilized diesel trucking sector (even though these may evolve as diesel trucks may suffer from potential stranded asset risk in the future). For traditional diesel trucks, an established history of resale pricing and low market volatility has historically supported banks' confidence in truck RV. This has translated to ubiquitous access to asset-based loans for diesel truck fleets.

Contrastingly, the newer battery-electric truck asset class does not share similar RV confidence from banks. Due to currently low volumes of resale transactions and unique depreciation considerations compared to diesel trucks, highly risk-averse commercial banks do not have visibility into an electric truck's RV, and therefore assume the worst case that electric truck RV will drastically decline during its financing term. They speculate that this dramatic decline in RV could occur due to competitor price cuts, superior model rollout, product obsolescence of older electric truck models in particular due to declining new battery costs and technology improvements, or rapid product wear and tear. Assuming aversion to this credit risk, banks indicated to CALSTART that, in the absence of empirical data on electric truck resale prices, their internal lending policies require them to assign electric trucks with low RV outlooks (often even zero RV) during their loan assessments—translating to low/no collateral availability for asset-backed loans. Thus, RV risk makes it nearly impossible for banks to provide asset-backed loans to electrified fleets. When banks do provide financing for electric trucks, they are often limited in size due to banks assuming that very limited collateral value will be available. This limit on accessible loan amounts makes it complex for electric truck fleets to raise their required financing, often requiring them to raise more equity to purchase equipment.

Figure 1 showcases the status quo of asset-backed loan application processes in banks, and likely outcomes for electric truck fleets.

Figure 1: Typical bank underwriting process cites RV risk as the main barrier for extending loans to electric truck fleets.



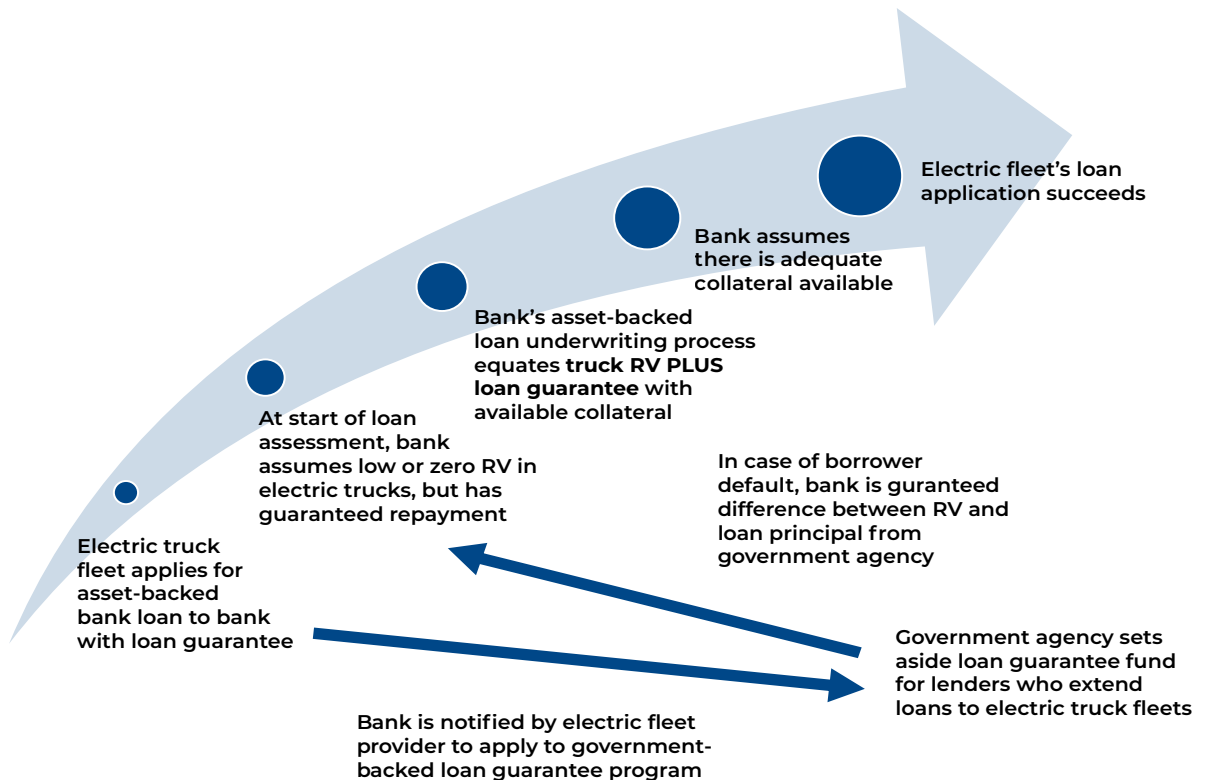
## Government-Backed Loan Guarantees Can Unlock Bank Loans for Electric Truck Fleets

RV risk poses a substantial financing barrier for fleet electrification in terms of accessing bank loans, especially when many of these companies have no previous credit history. CALSTART urges agencies within the federal and state governments with a climate finance mandate, including state green banks, to establish a loan guarantee program to backstop banks who offer asset-backed loans to fleet electrification companies.

Loan guarantees work as credit enhancements for banks who offer loans to qualifying companies. In a loan guarantee agreement, a third party, such as a government agency or green bank, agrees to hold a set amount of collateral in a loan guarantee account and, in the event of borrower default, agrees to take funds out of this account to repay a lender for the loan's principal amount. By overcoming the RV risk's effect on the status quo loan application process shown in Figure 1, loan guarantees can result in successful bank loan applications for electric truck fleets.

The effect of a government-backed loan guarantee on a bank's underwriting process for loans to electric truck fleets is depicted below in Figure 2.

Figure 2: By guaranteeing collateral in case of borrower default, a government-backed loan guarantee acts as an effective risk mitigant for RV risk facing electric trucking companies, and enables banks to successfully underwrite asset-backed loans.



## California's Loan Programs Have a Proven History of Supporting Clean Truck Adoption

Government agencies have historically provided loan guarantees to encourage banks to extend loans to companies who may not otherwise qualify for these loans, or who may not receive favorable loan terms. For instance, to support the financing of California's fast-emerging electric trucking sector, the California Air Resources Board (CARB) is launching the Zero-Emission Truck Loan Pilot Project. In its pilot stage, this program will allocate \$5 million toward a similar "loan loss reserve" account. In the event of a qualifying loan default, the [lender can request reimbursement for the principal loss](#) from the program, and the amount is deducted from the lender's loan loss reserve account. The pilot program was recently developed and has officially been launched in May 2024 by CARB.

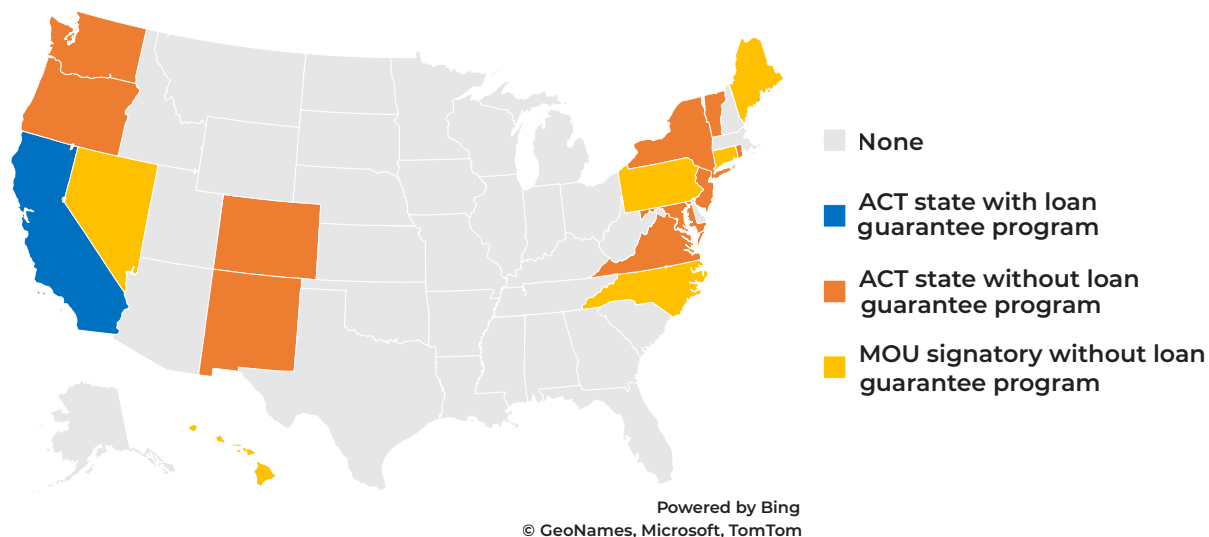
California's Zero-Emission Truck Loan Pilot Project follows a [decade-long history of success](#) of the state offering loan guarantees for trucking fleets to access loans to buy cleaner trucks. Under the Truck Loan Assistance Program administered by the California Capital Access Program between 2009 and 2022, California offered small business fleet owners loan guarantees for upgrading their fleet with cleaner trucks (albeit most often diesel-fueled) that were compliant with the now-terminated In-Use Truck and Buses Regulation.

The program targeted truck owners that fell below conventional lending criteria and were typically excluded from traditional financing for purchasing new models of trucks. The program succeeded for over 13 years: It committed \$260 million in the government's loan guarantee account and leveraged \$3.1 billion in private sector financing for newer trucks. It financed 45,000+ clean vehicles and enabled approximately 42,000 bank loans. While this program ended in 2023 due to California prioritizing zero-emission trucks, the Truck Loan Assistance Program proved that government loan guarantees can help leverage bank loans to help modernize the trucking sector.

## There is a Significant Gap for Financing Zero-Emission Trucks In 17 States and D.C.

While California's new Zero-Emission Truck (ZET) Loan Pilot Project is expecting to mitigate RV risk and make low-cost bank financing accessible for electric truck fleets in this state, a similar loan guarantee is unavailable for the rest of the U.S. electric trucking market. This includes 11 other states that have formally adopted California's Advanced Clean Trucks (ACT) regulation, as well as 6 other states and D.C. that have signed a Memorandum of Understanding (MOU) for accelerating the market for zero-emission medium- and heavy-duty vehicles. These jurisdictions, which formed the [Multi-State Zero Emission Vehicle \(ZEV\) Task Force](#), together represent a major market. But in 18 out of these 19 states, adequate financing mechanisms for electric trucks currently fall short. A summary of loan guarantee availability by leading U.S. markets is shown in Figure 3.

Figure 3: Loan guarantees are currently only available in 1 out of the 18 leading markets for zero-emission trucks, representing a significant gap in the sector's ability to overcome RV risk.



## **CALSTART Recommends a Government-Backed Loan Guarantee Pilot Program to Accelerate Financing of Electric Trucks Nationwide**

**CALSTART urges green banks and federal- and state-level government agencies to implement loan guarantee pilot programs in the immediate term to support electric truck companies and accelerate adoption of fleet electrification.**

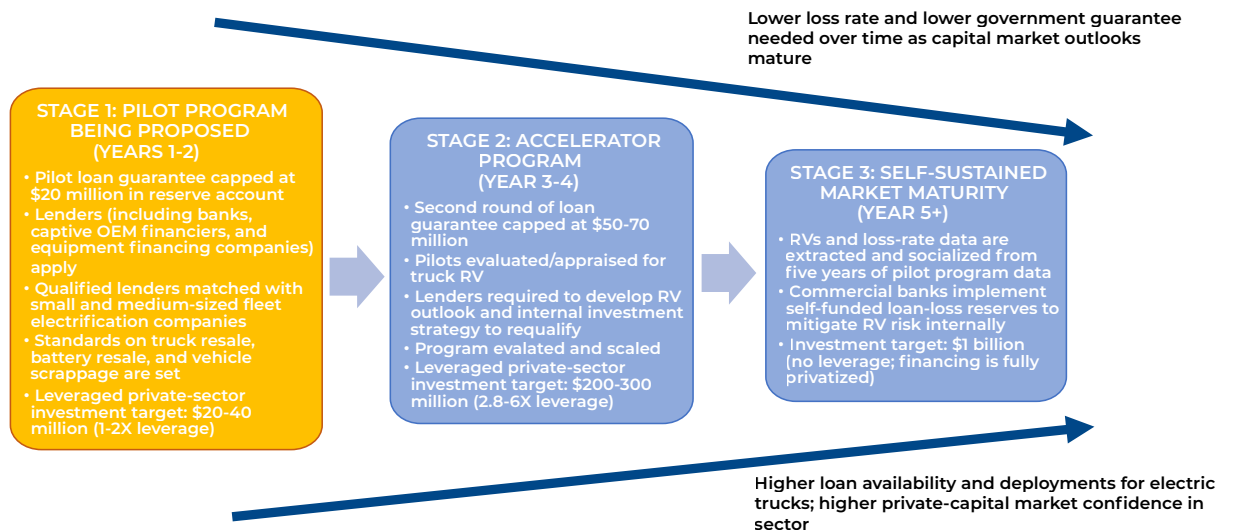
Considering the highly risk-averse financing outlook that commercial banks currently hold toward electric truck fleets, largely due to RV risk, there is a clear need for innovative financing solutions in this sector. CALSTART's recommended loan guarantee pilot program for electric truck fleets will set in motion the development of critical financial risk mitigation strategies needed for banks to start offering asset-backed loans to companies in the electric trucking sector. By providing loan guarantees for banks that lend to electric trucking providers across the U.S., government agencies can play a critical role in overcoming RV risk and accelerating the adoption of electric truck fleets nationwide.

### **Government-Backed Loan Guarantees Can Mature the Financing Outlook for Electric Trucks**

CALSTART expects that a government-backed loan guarantee pilot will have self-reinforcing, long-term benefits for accelerating the financing of commercial fleet electrification and helping this critical sector reach financing maturity. Figure 4 depicts the potential long-term concept following a federal government-backed loan guarantee for electric truck fleets, but it can be scaled down in size for state-specific programs offered by state governments or green banks. As shown in Figure 4, the proposed pilot loan guarantee program is a cost-effective self-sustaining concept in the long term, wherein a finite and maximum amount of government funding, held and reserve and only used in cases of borrower default, can help attract increasingly larger amounts of private sector investment for electric trucks. The long-term benefits of such a loan guarantee program are threefold:

1. Protecting early investments from commercial banks. This loan guarantee will encourage commercial banks—the largest source of capital—to underwrite loans with higher principal amounts, and at reasonable rates, for electrified fleets.
2. Enabling electric truck companies' growth. This loan guarantee will unlock a new tier of investment for a sector, unlocking growth for a sector critical to U.S. transportation decarbonization.
3. Educating capital markets on how to invest in electric trucking companies. This loan guarantee will reveal data RVs across electric truck classes and use cases, which is critical for banks to appropriately allocate self-funded loan-loss reserves as they eye future investments in the sector.

Figure 4: A pilot program for a federal government-backed loan guarantee has the long-term potential to rapidly mature the financing sector's outlook for electric truck fleets nationwide. This same model can be scaled down for application by a state agency or state green bank.



## Case Study: Despite Einride’s Innovative Debt Facility, Its Loan Structure Necessitated Additional Equity Financing

The pervasiveness of RV risk is hindering even the most prominent fleet electrification companies in their efforts to raise efficient capital. Einride, a leading provider of eTaaS, builds and operates heavy-duty electric vehicle (HDEV) charging infrastructure and offers a digital freight operating system that streamlines logistics for efficiency and sustainability. Einride’s global suite of customers includes PepsiCo, Heineken, GE Appliances, the Maersk Group, Oatly, and more. In response to a need for capital to deploy more electric trucks, the company [secured \\$500 million in financing](#). This included a \$300 million debt facility signed with Barclays Europe, representing the [largest asset-backed debt facility to date](#) for HDEVs. However, Einride still needed to contribute significant equity into the facility to fully cover the value of the trucks. Thus, RV risk impacted the efficiency of financing. Experts at Einride agree that if a senior bank lender had a government-backed loan guarantee, it would inevitably facilitate improved financing to Einride. In an ideal scenario, RV guarantees or backstop protection from government agencies or OEMs could have significantly improved the market both in terms of interest rates achieved and loan-to-value (LTV) on the vehicles themselves. This in turn would reduce the equity raise required for the company to purchase trucks, accelerating the pace of transition to electric trucks. A loan guarantee to mitigate RV risk would allow for Einride’s equity raises to focus further on growth and potentially faster expansion of the business.



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## About CALSTART

A mission-driven industry organization focused on transportation decarbonization and clean air for all, CALSTART has offices in California, Colorado, Florida, Michigan, New York, and Europe. CALSTART is uniquely positioned to build the national clean transportation industry by working closely with its member companies and building on the lessons learned from the major programs it manages for the State of California. CALSTART has more than 280 member companies and manages more than \$500 million in vehicle incentive and technical assistance programs in the United States.

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