WORKING PAPER

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Battery electric commercial vehicle pricing in the United States

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SUMMARY

This working paper analyzes real-world pricing data for commercial vehicles sold in the United States and other markets. The analysis found that prices for battery electric Class 5 vehicles and smaller are decreasing in the United States. The median price of battery electric Class 8 tractor trucks increased 27% since model year 2020 in the United States, with the largest price increase of 40% occurring between 2020 and 2021. Despite this trend, median prices since model year 2020 have fallen in 2 out of the past 5 years.

At the same time, battery electric commercial vehicle prices have generally decreased in the European Union. The median price of battery electric N3 (Class 7–8 equivalent) tractor trucks and straight trucks decreased by 32% and 23% respectively since model year 2020.

The median price of battery electric Class 8 transit buses in the United States increased by 13% from model year 2020 to 2025. Battery electric transit buses also have high price variability, with some vehicles costing two times more than others in the same model year. Between model year 2020 and 2024, the median prices of battery electric Type A and Type D school buses increased by 13% and 3%, and prices for battery electric Type C school buses decreased by 5%.

Commercial vehicle prices are often not publicly available. In the United States, incentive programs at the state level can improve price transparency in the market. A sustained effort to make such data public can put downward pressure on battery electric commercial vehicle prices and accelerate technology adoption.

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INTRODUCTION

Zero-emission commercial vehicles have a price premium compared with internal combustion engine vehicles in many regions (Sharpe & Basma, 2022). However, the cost of batteries, which represent a substantial part of the upfront cost of battery electric vehicles (BEVs), is declining. Lithium-ion battery pack prices decreased by 20% to $115 per kilowatt-hour from 2023 to 2024 (Catsaros, 2024). The sustained decrease in battery cost is reflected in an ICCT cost analysis which projects across-the-board reductions in upfront vehicle prices for medium- and heavy-duty trucks in the United States over the next decade (Xie et al., 2023).

Cheaper upfront prices will make zero-emission products more accessible to fleet customers. Importantly, lower purchase costs amplify the total cost of ownership advantages of zero-emission commercial vehicles compared with internal combustion engine options. Analysis by Energy Innovation and the ICCT found that battery electric technologies can bring cost savings in major heavy-duty vehicle (HDV) segments by 2030 in most U.S. states (Busch et al., 2025).

Yet information shared by fleet purchasers and government regulators in the United States indicates the prices of some zero-emission commercial vehicles are not declining. In a 2024 memo, a California Air Resources Board (CARB) official wrote that prices of Class 8 battery electric tractors in California increased by $86,000 since 2021–22 and are close to $90,000 more expensive than equivalent trucks in Europe (Cliff, 2024). A subsequent comparison of Class 8 truck prices published by CARB found that the incremental zero-emission vehicle price in the United States is about $57,000 more than in the European Union (EU; CARB, 2024). During this time, ICCT staff learned independently about rising battery electric truck prices in the United States from charging-as-a-service providers and fleets.

Validating these price trends is challenging. While some manufacturers publish the manufacturer suggested retail price (MSRP) of their light-duty commercial vans and pick-up trucks, prices of most new heavier trucks and buses are not advertised (Ford Pro, n.d.). In addition, no publicly accessible repository of historical prices exists.

Prices that customers pay consist of both direct manufacturing costs of the vehicle powertrain and chassis and indirect costs. While manufacturing costs can be somewhat straightforward, indirect costs such as depreciation and amortization, research and development, and general and administrative expenses can be hard to ascertain and quantify (Slowik et al., 2022).

Real-world pricing information is necessary to support vehicle fleets and financing institutions with purchasing decisions. Policymakers also need to understand forces that affect real-world commercial vehicle prices to shape policies like greenhouse gas emission standards or purchase incentives. To this end, the ICCT developed an international database of electric Class 2B–8 commercial vehicle prices and analyzed the trends across markets, vehicle segments, and powertrain types. In doing so, we serve multiple goals:

- bringing transparency to the market to support vehicle fleets and financing institutions with purchasing decisions.
- identifying new research areas that can better inform the design of policies intended to drive down the price and drive up the sales of zero-emission commercial vehicles.

Our analysis presents commercial vehicle prices and identifies key trends based on empirical evidence. Determining the causes for price increases is outside the scope of this study, but we offer theories that industry and government stakeholders have shared with us. The objective of this paper is to inform the public about trends in the pricing of battery electric trucks to support the growth of a healthy and self-sustaining zero-emission vehicle market.

METHODS

DATA SOURCES

This analysis relies on diverse sources of data to cover the zero-emission commercial vehicle market and pricing information from different geographies: commercial databases; government data from incentive program records, public procurement records, or other aggregated pricing information; data from industry consultants with expertise in commercial vehicle pricing; and data from fleet customers. The data sources used for this paper are listed in Table 1.

Our data collection revealed the opaque nature of commercial vehicle pricing information in many regions. Much of the data used in this study are not publicly available. Private fleets, dealers, and manufacturers are reluctant to openly share pricing data. Because vehicle pricing data are treated as a commercially sensitive subject, granular data from private sources was difficult to obtain. We also obtained little data from private fleet customers who financed zero-emission commercial vehicle purchases without government subsidies.

Table 1
Data sources for this study

Region	Private commercial database	Official government data	Independent research organizations	Fleet customers
Canada		British Columbia GoElectric Rebates Program Aggregated data from Transport Canada		
United States	Price Digest - Truck Blue Book[a]	California Department of General Services California Hybrid and zero-emission truck and bus Voucher Incentive Project (HVIP) Colorado Department of Public Health and Environment Massachusetts Offers Rebates for Electric Vehicles (MOR-EV) New Jersey Zero Emission Incentive Program Oregon Department of Environmental Quality New York Truck Voucher Incentive Program North Central Texas Council of Governments	World Resources Institute Electric School Bus Initiative[b]	Charging-as-a-Service providers and private fleets
European Union		Aggregated data from government agencies in France, Germany, and the Netherlands	Interact Analysis	Member of European Clean Trucking Association
China	360che.com[c]	China Center of Government Procurement[d]		Fleets from previous ICCT research[e]
India		Aggregated data from Ministry of Heavy Industry		

a Price Digests by Fusable (n.d.)
b Wang et al. (2024)
c 卡车之家 [Home of Trucks] (n.d.)
d 中国政府采购网 [China Government Procurement Website] (n.d.)
e Mao et al. (2023); Niu & Zhu (2024)

Data from European governments, Transport Canada, Interact Analysis, and Ministry of Heavy Industry of India are aggregated and do not contain information about vehicle makes, models, or other detailed specifications. We contracted Interact Analysis, which, through a combination of primary and secondary methods, collected representative internal combustion engine vehicle (ICEV) and zero-emission medium- and heavy-duty vehicle (MHDV) prices in the EU. Data from state and provincial incentive programs and commercial databases are more detailed, with most providing vehicle weight class, make, model, and some battery capacity specifications. Finally, data from private fleets are anonymized to protect the identity of fleets.

Depending on the region and sources of data, pricing information included in this analysis refers to MSRP, delivery price, prices in purchase orders and contracts, or average prices in cases where aggregated data was shared. Taxes and fees were excluded from the prices. Unless otherwise specified, all price and incentive amounts are in 2022 U.S. dollars, adjusted for local inflation rates using consumer price index data from December of each year, and then converted to 2022 U.S. dollars using exchange rates on December 31, 2021. The price level and exchange rate data are summarized in Table 2.

Table 2
Values of inflation and foreign exchange rate data in this study

Inflation data, year-on-year consumer price index percentage changes					
	EU[a]	Canada[b]	China[c]	India[d]	United States[e]
2019	1.6	2.3	4.5	7.35	2.52
2020	0.3	1.6	0.2	4.59	1.40
2021	5.3	3.2	1.5	5.66	4.86
2022	10.4	6.1	1.8	5.72	6.55
2023	3.4	3.8	-0.3	5.69	4.16
2024	2.7	2.0	0.1	5.22	3.64
Local currency to U.S. dollar exchange rate[f]					
2022	1.18318	0.797833	0.157011	0.013527	1

[a] Eurostat (2025)
[b] Statistics Canada (2025)
[c] Trading Economics (n.d.-a)
[d] Trading Economics (n.d.-b)
[e] Federal Reserve Bank of St. Louis (2025)
[f] For Chinese Yuan: Xe (n.d.). For all other currencies, OFX (n.d.)

VEHICLE CLASSIFICATION

China, the European Union, India, and North America have different vehicle classification systems based on a combination of weight class (measured in tonnes or pounds), axle configuration, and vehicle application. To make international comparison possible, this analysis follows the simplified vehicle classification scheme summarized in Table 3. China and India follow the EU classification system. For comparison within the North American market, this analysis refers to the numerical weight class system. To align the mismatches between U.S. and EU weight class systems, U.S. Class 2B to Class 6 are considered N2-equivalent (medium-duty) and both U.S. Class 7 and 8 are considered N3-equivalent (heavy-duty).

Table 3
Vehicle weight classification system

<table>
<tr><th>Gross vehicle weight rating in pounds</th><th>U.S. system weight class</th><th>EU system weight class</th><th>Classification</th></tr>
<tr><td>6,000</td><td>1</td><td rowspan="3">N1</td><td rowspan="3">Not included</td></tr>
<tr><td>6,001–8,500</td><td>2</td></tr>
<tr><td>8,501–10,000</td><td>2B</td></tr>
<tr><td>10,001–14,000</td><td>3</td><td rowspan="5">N2</td><td rowspan="5">Medium-duty</td></tr>
<tr><td>14,001–16,000</td><td>4</td></tr>
<tr><td>16,001–19,500</td><td>5</td></tr>
<tr><td>19,501–26,000</td><td>6</td></tr>
<tr><td>26,001–33,000</td><td>7</td></tr>
<tr><td>> 33,000</td><td>8</td><td>N3</td><td>Heavy-duty</td></tr>
</table>

DATA COVERAGE AND QUALITY

In total, this analysis includes 4,160 price data points from all markets: 2,699 battery electric, 134 hydrogen fuel cell electric, 1,295 diesel, 30 gasoline, and 2 plug-in hybrid electric vehicle prices. The model year distribution is shown in Figure 1. The earliest year with available pricing data was 2020, and the dataset also included 22 entries for model year 2026 vehicles.

Figure 1
Distribution of price data by model year

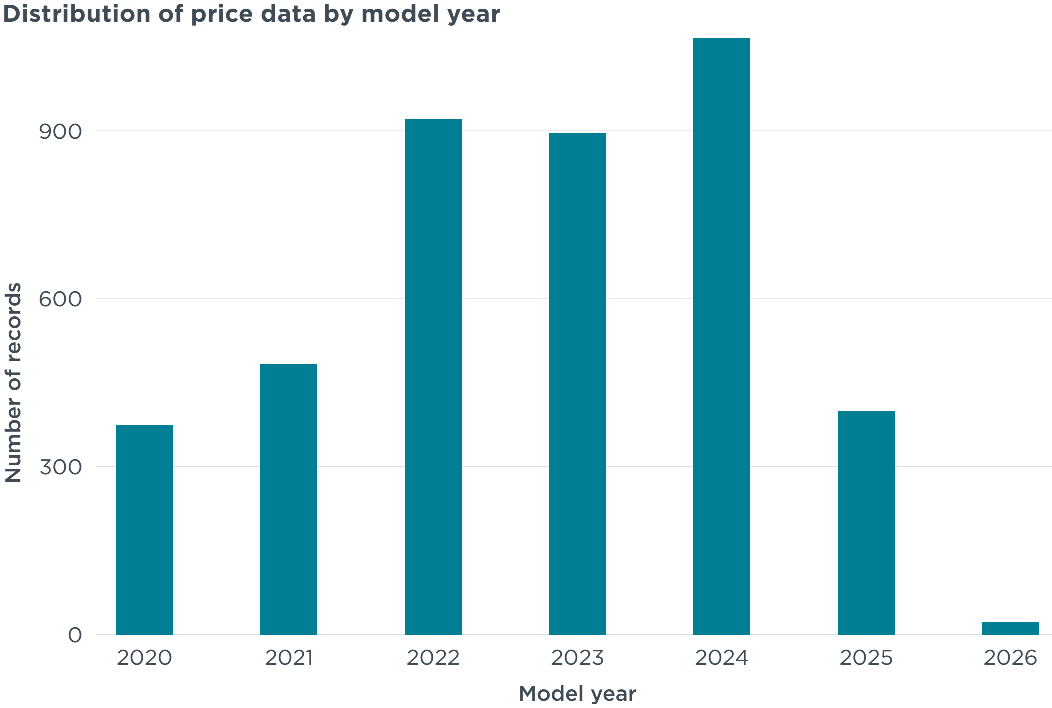

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Table 4 shows the distribution of data points by country and state or province. Of the total price data, 86.5% comes from the United States, 6.1% from Canada, 3.7% from China, 3.6% from the European Union, and 0.1% from India. Specific transaction data of a vehicle with known manufacturer and model information make up 93.6% of the data points, and the remaining 6.4%, mostly from the EU and Indian markets, are aggregated averages by segment because individual data points were not available.

Table 4
Distribution of price data points by country and state/province

Region	Subregion	Number of data points	Share in dataset
United States	**California**	814	19.6%
	New York	794	19.1%
	West Virginia	303	7.3%
	Others	1683	40.5%
Canada	**British Columbia**	234	5.6%
	Federal	21	0.5%
China	**Shandong**	11	0.3%
	Fujian	6	0.1%
	Jiangxi	6	0.1%
	Others	134	3.2%
European Union	**Germany**	24	0.6%
	France	7	0.2%
	Netherlands	4	0.1%
	Others	113	2.7%
India	**National**	6	0.1%

There were more data points for buses than trucks in our database (Table 5). Type A, C, and D school bus prices, provided by the World Resources Institute's Electric School Bus initiative, accounted for more than 1,800 records of bus prices in the United States and 68.3% of all bus price data (Wang et al., 2024). For trucks, most price points are Class 2B–6 medium-duty straight trucks, followed by Class 7–8 tractor trucks. "Other trucks" includes niche use cases like yard tractors and refuse trucks and account for slightly more than 10% of all truck price datapoints.

Table 5
Distribution of price data points by segment

Bus (2,414 data points)		Truck (1,746 data points)	
Segment	**Share in dataset**	**Segment**	**Share in dataset**
Type C school bus	41.9%	MD straight truck	34.8%
Type D school bus	21.4%	HD tractor truck	21.2%
HD transit bus	20.4%	MD van	20.2%
HD school bus	5.7%	HD straight truck	12.1%
Type A school bus	5.0%	HD other truck	8.9%
MD school bus	4.3%	MD other truck	2.8%
HD coach bus	0.9%	–	N/A
MD transit bus	0.5%	–	N/A

Table 6 lists the total number of original equipment manufacturers (OEMs), the 10 largest OEMs for trucks and buses with the greatest number of data points, and their percentage in the data set. There are more truck OEMs than bus OEMs in the dataset, meaning the truck price data came from a wider group of manufacturers. As a result, the top 10 truck OEMs account for slightly less than 53% of all data points.

Table 6
Bus and truck OEMs in the study

Buses (45 unique OEMs)		Trucks (69 unique OEMs)	
OEM	**Share in dataset**	**OEM**	**Share in dataset**
Thomas Built Bus	24.6%	Lion Electric	8.7%
Blue Bird	23.4%	Freightliner	7.0%
IC Bus	15.7%	Volvo	6.7%
New Flyer	9.1%	BrightDrop	6.5%
BYD	5.5%	Xos	5.4%
Micro Bird	2.8%	Battle Motors	4.4%
Lion Electric	2.0%	SEA Electric	4.0%
Proterra	2.0%	Cenntro	3.5%
GreenPower	1.8%	Peterbilt	3.3%
Collins Bus	1.5%	BYD	3.3%
Others	11.6%	Others	47.1%

Figure 2 shows the data coverage by model year, market, and four vehicle segments. We collected the most amount of data from the United States, primarily through state incentive programs. The best represented segments are medium-duty straight trucks, heavy-duty transit buses, and heavy-duty tractor trucks, which have more than 10 distinct data points throughout model years 2020–2025. While Europe has fewer data points compared with the United States, they are aggregated from different sources and reflect industry averages broadly without offering much detail. School buses were not recorded outside of the United States or Canada and are, therefore, not shown in the figure. There were also vehicle segments for which we have no data, such as historical prices of heavy-duty tractor trucks in India and heavy-duty straight truck prices in China.

Figure 2

Price data coverage across model year, market, and vehicle segment

Vehicle segment - region	2020	2021	2022	2023	2024	2025	2026
MD Straight truck - US	43	70	36	49	97	114	5
MD Straight truck - India					2		
MD Straight truck - EU	6	13	13	7	6	6	
MD Straight truck - China					72		
MD Straight truck - Canada			10	13	17	22	3
HD Transit bus - US	12	46	203	108	53	12	
HD Transit bus - EU	3	3	3	3	3	3	
HD Transit bus - China	7	3	10	11	6		
HD Transit bus - Canada			3	1			
HD Tractor truck - US	11	13	41	69	92	24	
HD Tractor truck - India					2		
HD Tractor truck - EU	3	7	6	6	4	5	
HD Tractor truck - China	1	1		1	45		
HD Tractor truck - Canada			6	7	12	9	2
HD Straight truck - US	36	43	2	14	46	8	
HD Straight truck - India					2		
HD Straight truck - EU	3	7	6	4	7	3	
HD Straight truck - Canada			3	5	11	6	3

Model year

Count: 0 50 100 150 200

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Figure 3 shows the relative variability of price data measured as the coefficient of variation. It is derived by dividing the standard deviation of prices by the mean price, expressed as a percentage. The higher the coefficient of variation, the darker the color and the greater the variability of prices. Segments and markets with only one observation in one model year have been excluded. Medium-duty straight trucks in the EU in model year 2021 and heavy-duty straight trucks in Canada in model year 2023 have the highest relative variability of greater than 75%, possibly due to outlier price points. Price variability was lowest among heavy-duty transit buses in China and the United States and heavy-duty tractor trucks in Canada. Price variability also does not always decrease over time; while the relative variability of heavy-duty tractor trucks in the United States decreased from 63% in model year 2020 to 32% in model year 2026, relative price variability of medium-duty and heavy-duty straight trucks increased in the United States during the same period.

Figure 3

Price data variation across model year, market, and vehicle segment

Vehicle segment - region	2020	2021	2022	2023	2024	2025	2026
MD Straight truck - US	34%	47%	44%	40%	34%	58%	0%
MD Straight truck - India					1%		
MD Straight truck - EU	49%	78%	49%	41%	43%	41%	
MD Straight truck - China					19%		
MD Straight truck - Canada			33%	34%	39%	32%	11%
HD Transit bus - US	20%	32%	20%	23%	26%	15%	
HD Transit bus - EU	49%	48%	48%	47%	46%	44%	
HD Transit bus - China	10%	26%	9%	18%	34%		
HD Transit bus - Canada			4%				
HD Tractor truck - US	63%	57%	33%	26%	24%	32%	
HD Tractor truck - India					15%		
HD Tractor truck - EU	59%	40%	44%	37%	44%	39%	
HD Tractor truck - China					19%		
HD Tractor truck - Canada			25%	15%	16%	14%	4%
HD Straight truck - US	21%	27%	26%	39%	20%	45%	
HD Straight truck - India					4%		
HD Straight truck - EU	51%	52%	57%	55%	32%	44%	
HD Straight truck - Canada			6%	97%	16%	24%	20%

Model year

Coefficient of variation: 0% 25% 50% 75% 100%

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Batteries contribute substantially to the upfront cost of BEVs. Therefore, battery capacity information is an important metric in understanding cost changes. Unfortunately, of the approximately 2,700 BEV price records, only 36% have battery capacity information. As we discuss later, missing battery capacity information meant we were unable to control battery sizing in subsequent analysis.

RESULTS

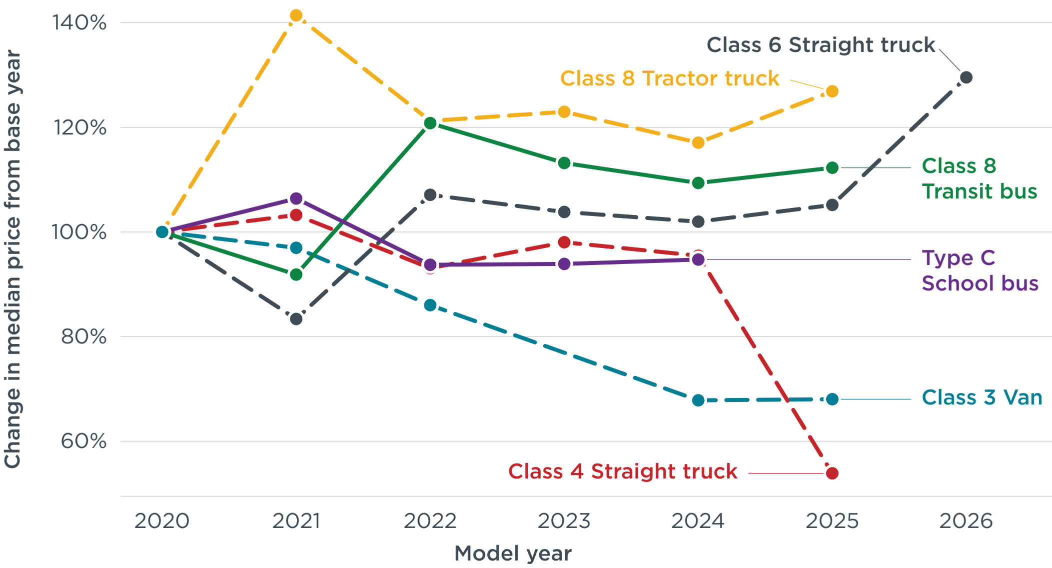
This section presents trends in battery electric commercial vehicle pricing from a variety of perspectives. First, it presents a comparison of relative price changes over time across vehicle segments in the United States and international markets. Next, it compares the vehicle type and weight class between OEMs and U.S. states. It then illustrates changes to state incentive program funding and their relationship to prices.

COMPARING PRICE CHANGES IN THE UNITED STATES AND OTHER MARKETS

This section shows relative price changes in major MHDV segments in the United States. Figure 4 shows the relative changes in median vehicle price in each model year for six segments compared with model year 2020, the earliest year for which all vehicle segments are first captured in the dataset. These segments were chosen to reflect the diverse vehicle weight classes and types that are well represented in the database. Price data points in 2022 U.S. dollars are normalized to their median to minimize potential effects of extreme outliers and because the dataset lacks sales volume to calculate sales-weighted average prices.

Figure 4

Battery electric commercial vehicle price trends in the United States



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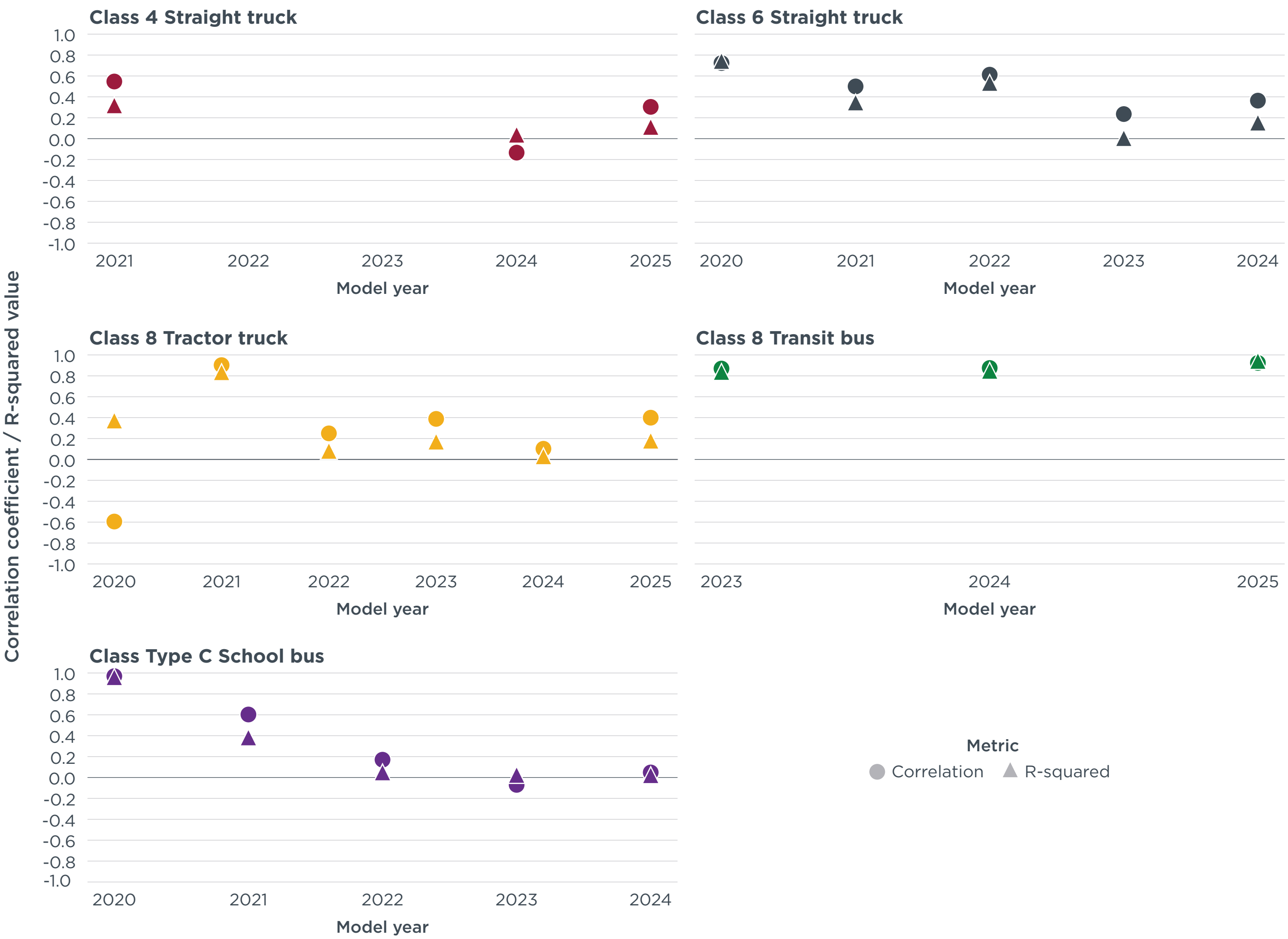
Compared with model year 2020, Class 6 straight trucks, Class 8 tractor trucks, and Class 8 transit buses have higher median prices in model years 2025/26. The largest increase was in Class 6 straight trucks, due to a price jump of more than 20% from model years 2025 to 2026. Three segments have lower median prices today than in model year 2020: Type C school buses, Class 3 vans, and Class 4 straight trucks. The median price of battery electric Class 4 straight trucks in 2025 is 60% of the price in model year 2020, showing the greatest level of reduction. The median price of Class 3 vans has fallen consistently, unlike other segments.

Changes in price over time may reflect changes in battery sizes offered. To test this, we first assessed if vehicle retail prices have a positive, linear correlation with battery sizes within each model year. Figure 5 shows the correlation coefficient and R-squared value between retail price (in 2022 U.S. dollars) and battery capacity (in kWh) for five commercial vehicle segments in the United States between model years 2020 and 2025. A correlation coefficient close to 1 indicates a strong and positive linear relationship between price and battery capacity, whereas a R-squared value close to 1 indicates that a large proportion of price variability within each model year can be explained by battery size.

Figure 5

Correlation between price and battery capacity for battery electric commercial vehicle segments in the United States



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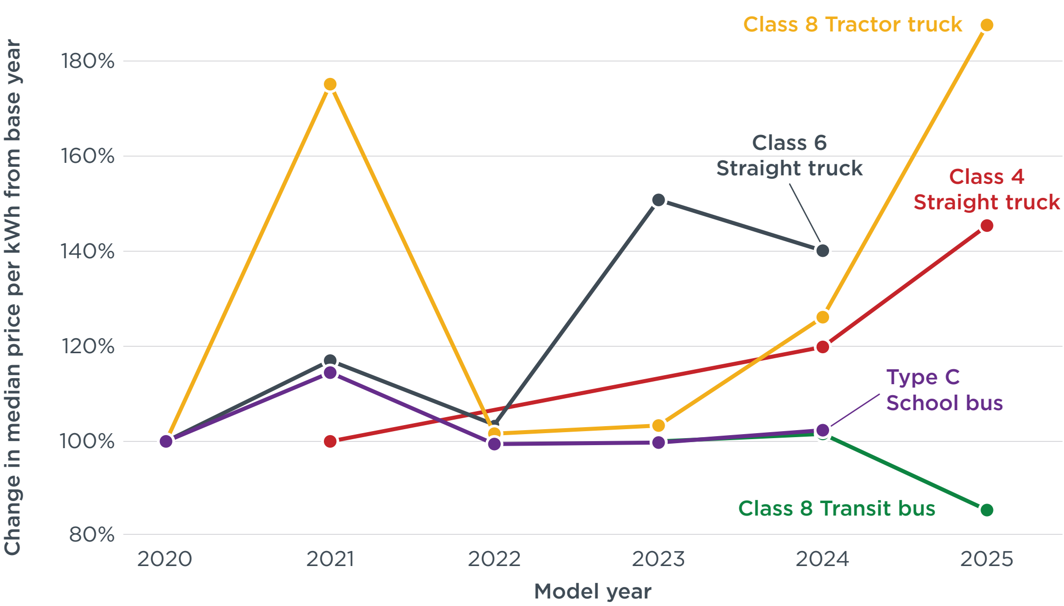
Based on the correlation coefficient and R-squared values shown in Figure 5, Class 8 tractor truck prices in our dataset do not have a strong and consistent correlation with battery capacity. Neither do Type C school buses and Class 4 straight trucks. A linear, positive correlation between vehicle retail price and battery capacity is observed for Class 6 straight trucks and Class 8 transit buses. This means that prices in our dataset rise with battery capacity, and price variations each year can be partially explained by battery size differences for these two segments.

With this information in mind, Figure 6 shows the normalized median price of vehicle segments in Figure 4 on a per kWh of battery capacity basis. The data points shown reflect vehicle categories with at least three observations. Normalizing for battery size leads to different trends in relative median price. Class 4 straight trucks, Class 6 straight trucks, and Class 8 tractor trucks rose in median price per kWh. In particular, the per kWh median price of Class 4 straight trucks increased when the retail prices declined. The battery sizes of Class 4 straight trucks in our database did not change much between model year 2021 and model year 2025; therefore, it is likely that despite rising battery costs, manufacturers priced their vehicles more competitively over time to secure market share. In contrast, Class 8 transit buses prices fell. This could suggest that battery costs are falling, and that rising median prices reflect larger batteries being sold. Type C school bus prices were relatively constant before and after normalizing for battery size, which likely suggests that retail prices changed in tandem with battery costs.

Figure 6

Battery electric commercial vehicle prices per kWh in the United States



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Next, we compare price trends in the United States with other markets. The absolute prices of vehicles in different markets can differ significantly; in our database, the median price of a model year 2024 battery electric heavy-duty tractor truck in the United States is $379,800, and in China, the median price of the same class and type of vehicle is $119,600. Since manufacturers are not producing these vehicles for export, we choose to compare the relative price changes between markets.

Figure 7 shows the relative changes in median prices of battery electric heavy-duty (i.e. Class 7–8) tractor trucks in Canada, China, the EU, India, and the United States. Like Figure 4, values on the y-axis show the percentage change in median price in subsequent model years relative to model year 2020. Median prices grew in all markets from model years 2020 to 2021. Divergence between the EU and the United States began to emerge in model years 2023–2024, when the median price in the EU decreased precipitously through model year 2025, while the median price in the United States slightly increased. Median price in Canada (a market like the United States in terms of OEM makeup and product offerings) did not rise as much as it did in the United States in the same period. The contrast between Class 8 tractor truck price changes in the EU and the United States reinforces the findings of CARB's 2024 pricing memo, that battery electric Class 8 tractor truck prices were moving in opposite directions in the United States and Europe.

Figure 7

Battery electric heavy-duty (Class 7–8) tractor truck price trends across regions

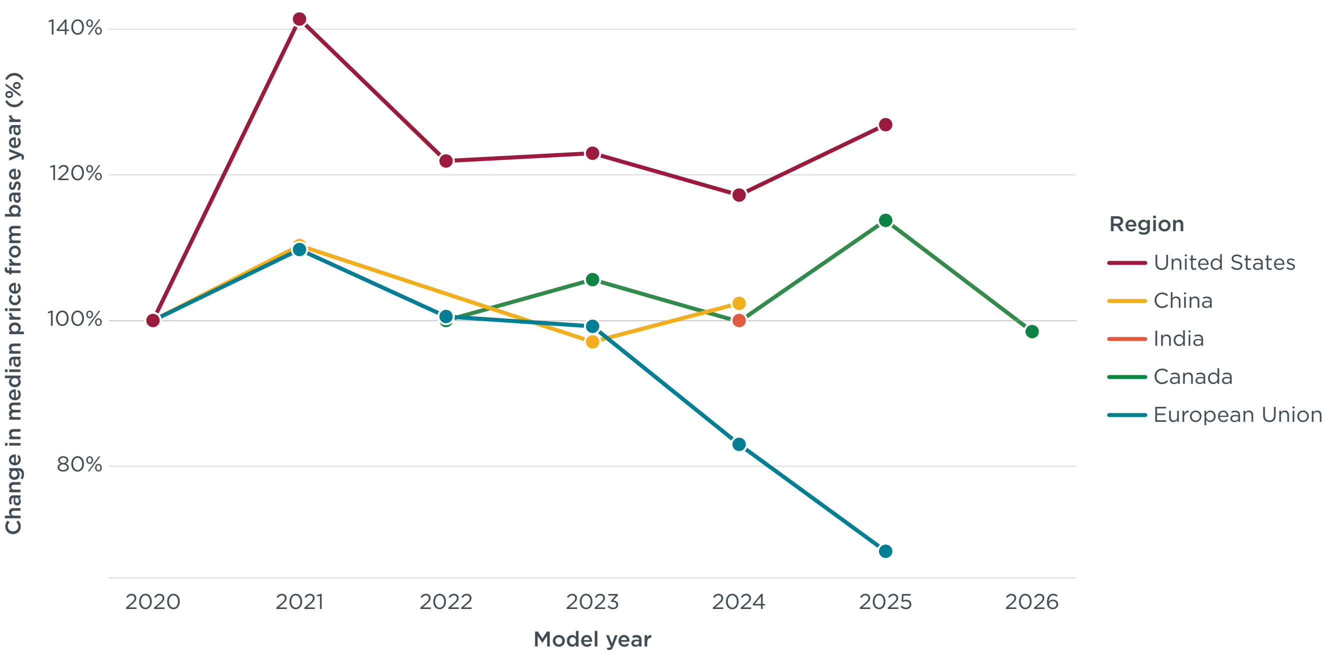

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Figure 8 shows the relative changes in median prices of battery electric heavy-duty (Class 7–8/N3) straight trucks in Canada, the EU, and the United States. Median prices fell in all three regions by model years 2025 and 2026 compared with the base year. Price fluctuations in the United States and Canada were less volatile compared with the EU, which had year-on-year changes to median prices of more than 60% between model years 2020 and 2022. Because most EU data had no battery capacity information, we are unable to determine if the sudden changes were due to changes in battery capacities.

Figure 8

Battery electric heavy-duty (Class 7–8) straight truck price trends across regions

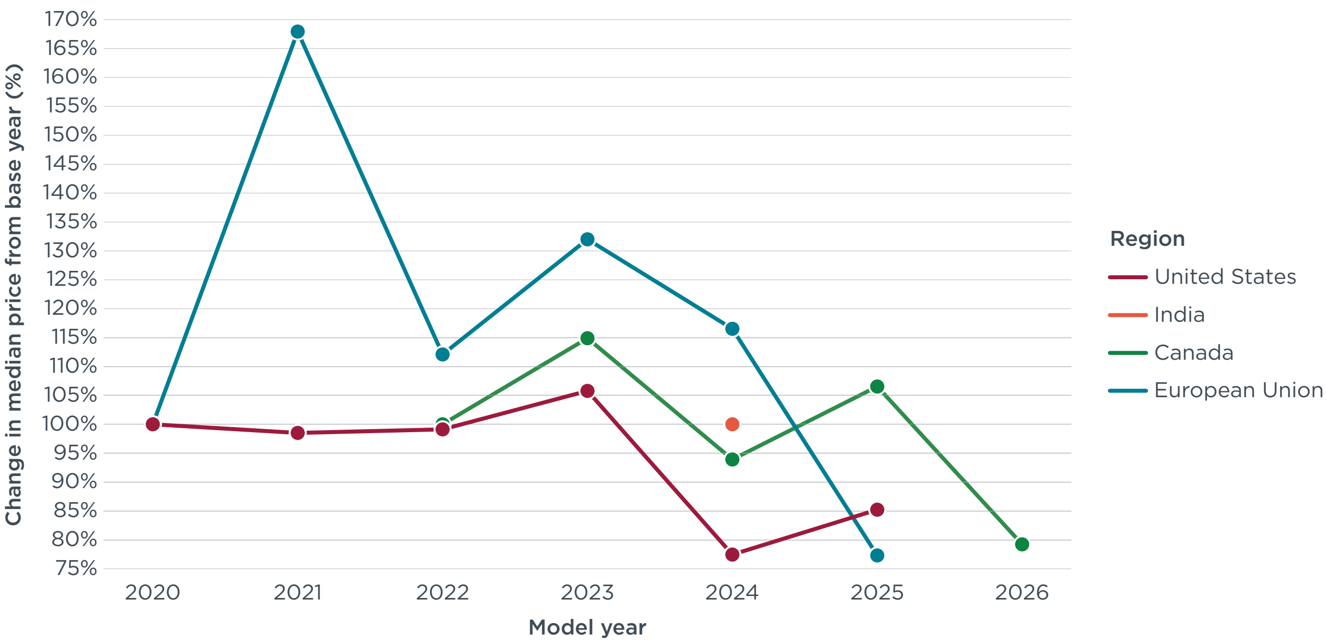

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Figure 9 shows the relative changes in median prices of battery electric medium-duty (Class 2B–6) straight trucks in Canada, the EU and the United States. In Canada and the EU, prices were relatively stable, with the last model year's median price within 20% of the first model year's median price, and year-on-year changes of less than 30%. In the United States, the median price decreased sharply from model years 2024 to 2025 and then increased sharply in model year 2026. The volatile decrease and increase are caused by changes in the weight class constitution of medium-duty straight truck prices in those two years; there were more Class 2B, 3, and 4 data points in model year 2025, and in model year 2026 the only vehicle prices were of the more expensive Class 6 straight trucks. The trendlines are strongly influenced by the vehicle classes represented by the data points.

Figure 9

Battery electric medium-duty (Class 2B–6) straight truck price trends across regions

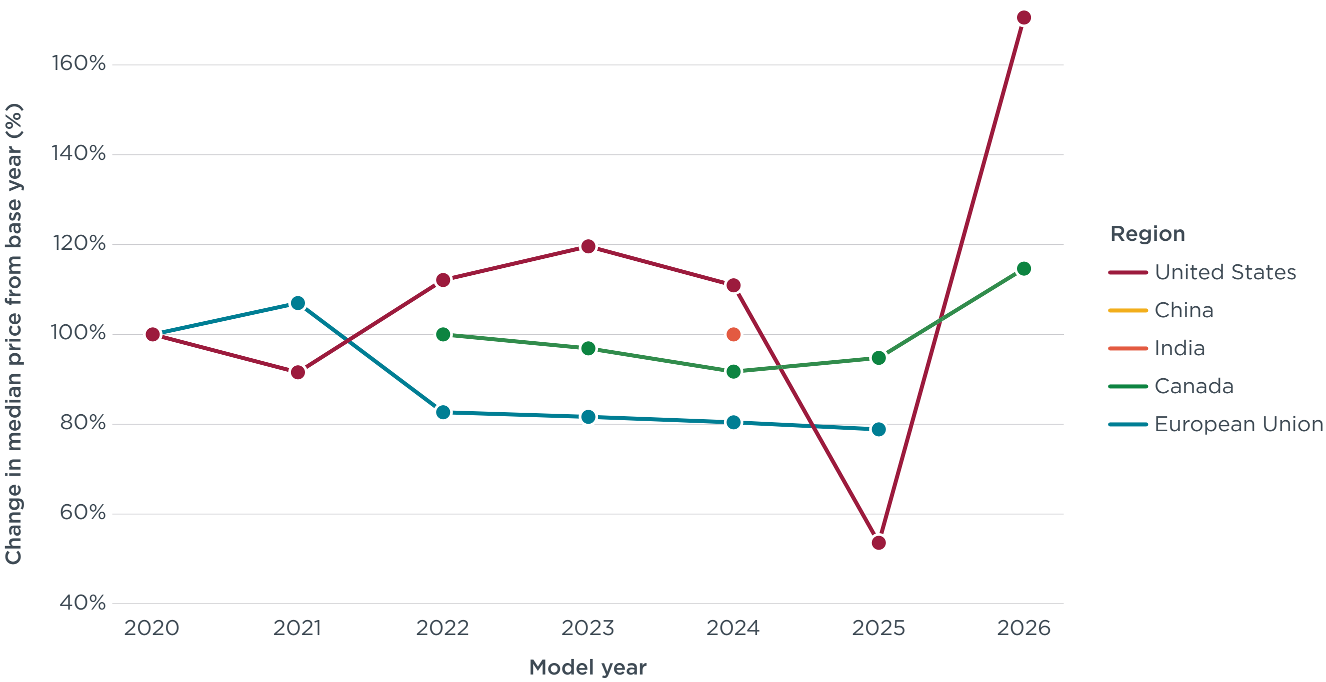

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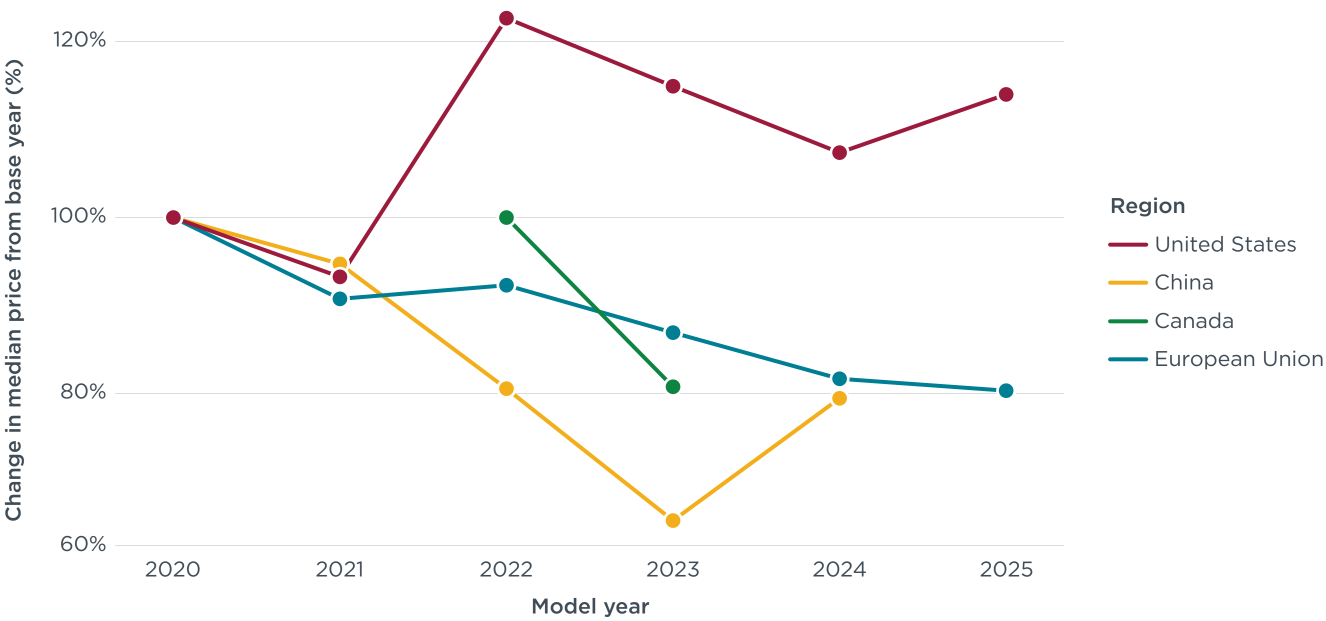
Figure 10 shows the relative changes in median prices of battery electric heavy-duty transit buses. Compared with trucks shown in earlier figures, buses have less drastic changes in median prices. Price movements in the EU and the United States mirror the trends seen in heavy-duty tractor trucks: between model years 2020 and 2025, EU prices decreased, and U.S. prices increased. The latest available median price in China also decreased to about 80% of model year 2020 levels.

Figure 10

Battery electric heavy-duty (Class 7–8) transit bus price trends across regions



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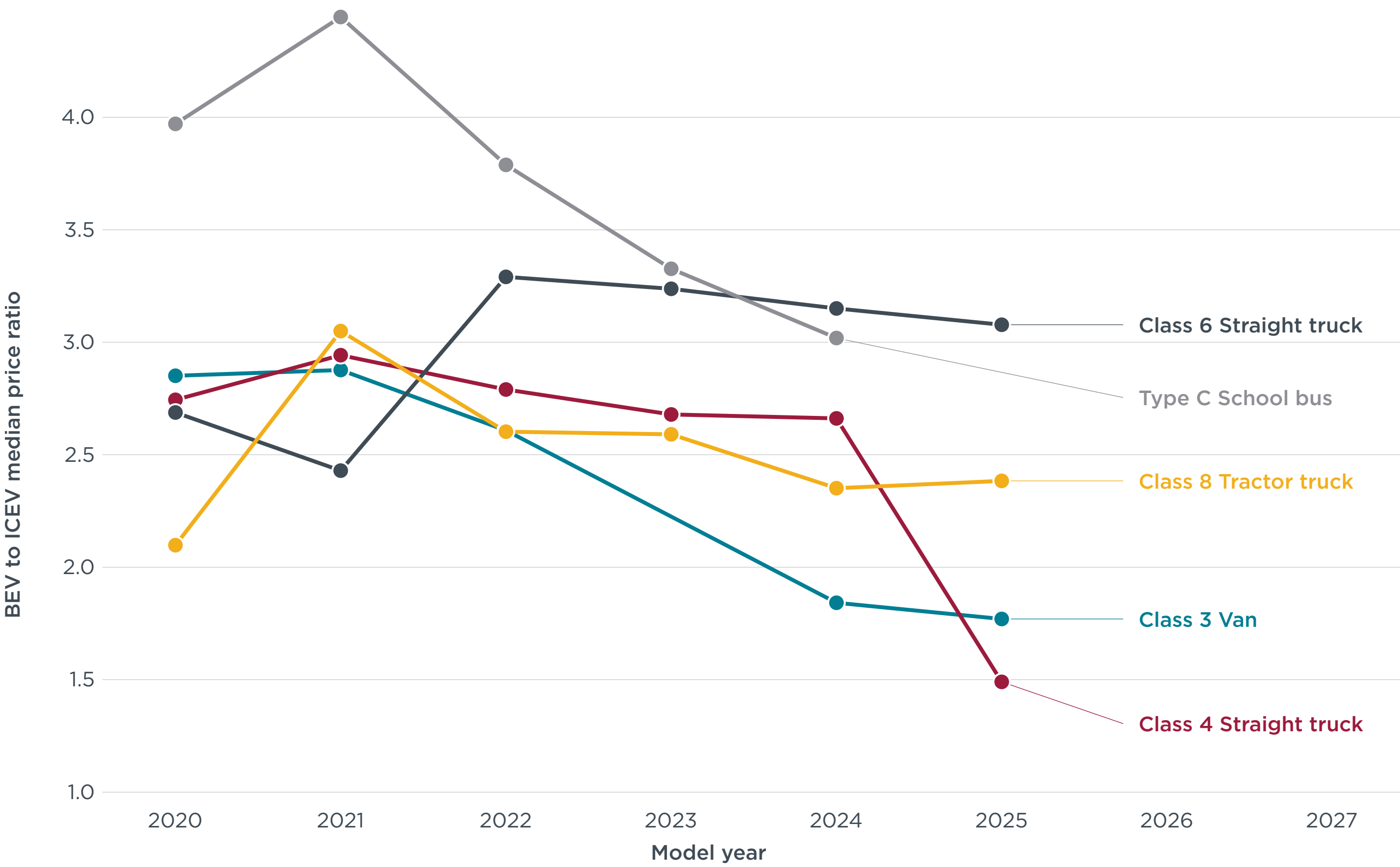
To compare relative prices, we divided the median price of BEVs by the median price of ICEVs. This metric reveals the price premium of battery electric powertrains (including batteries) and is an alternative to analyzing incremental pricing between BEVs and ICEVs (CARB, 2024). A ratio closer to 1 signals BEVs approaching purchase price parity. Figure 11 shows the ratios of median BEV to ICEV prices in the United States for five commercial vehicle segments in our database for which both BEV and ICEV prices were available.

Figure 11

Ratio of median BEV to ICEV prices in the United States



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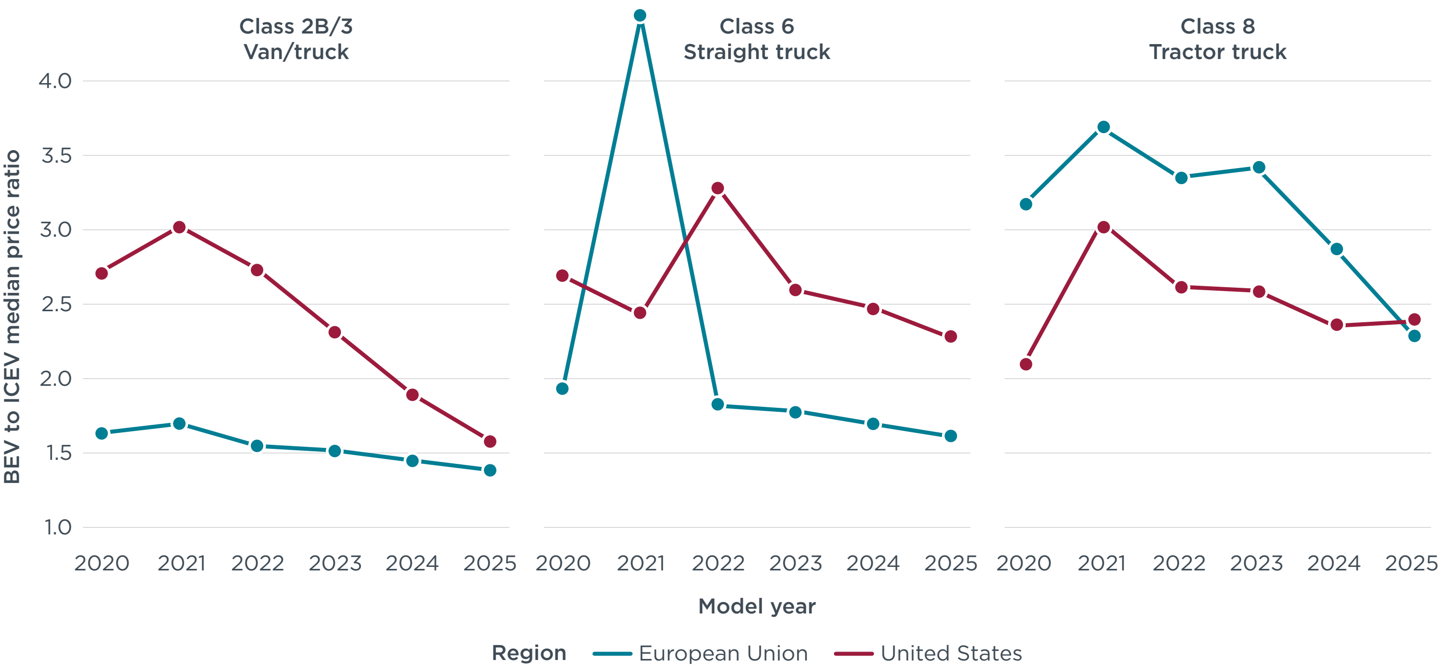
Three out of five segments have a lower BEV-to-ICEV median price ratio in model year 2025 than in model year 2020: Type C school buses, Class 3 vans, and Class 4 straight trucks. The other two segments, Class 6 straight trucks and Class 8 tractor trucks, have higher BEV-to-ICEV median price ratios today than in 2020. For Class 8 tractor trucks, the ratio in model year 2020 was the lowest at around 2.0 due to low BEV prices recorded that year, before a large increase in model year 2021. Overall, there seems to be a bifurcation of the ratios based on available data. Commercial vehicle segments above Class 6 (Type C school buses also often fall into this weight category) have ratios higher than 2, and those below Class 6 have ratios below 2.

In Figure 12, we compare the BEV-to-ICEV median price ratios in the United States with those in the EU. Because the EU data lack Class 4 straight truck and school bus prices, we only focus on U.S. Class 2B/3 and Class 6 equivalent straight trucks and Class 8 equivalent tractor trucks.

Figure 12

Ratio of median BEV-to-ICEV prices in the European Union and the United States



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In model year 2020, the median price ratio between BEVs and ICEVs for Class 2B/3 vans and trucks in the United States was higher than in the EU. The ratios in both markets have converged to around 1.5 in model year 2025. For Class 8 tractor trucks, the ratio in the EU market was higher than in the U.S. market in model year 2020, and the ratios again converged over time to about 2.5 in model year 2025. Class 6 straight trucks do not follow this pattern; ratios in the United States were generally higher than in the EU, except for model year 2022 when the European data contained abnormally high prices. The convergence of ratios in both regions may suggest that manufacturers in both markets have settled on a price for their battery electric Class 2B/3 vans and trucks and Class 8 tractor trucks of 1.5 times and 2.5 times, respectively, the price of internal combustion engine products.

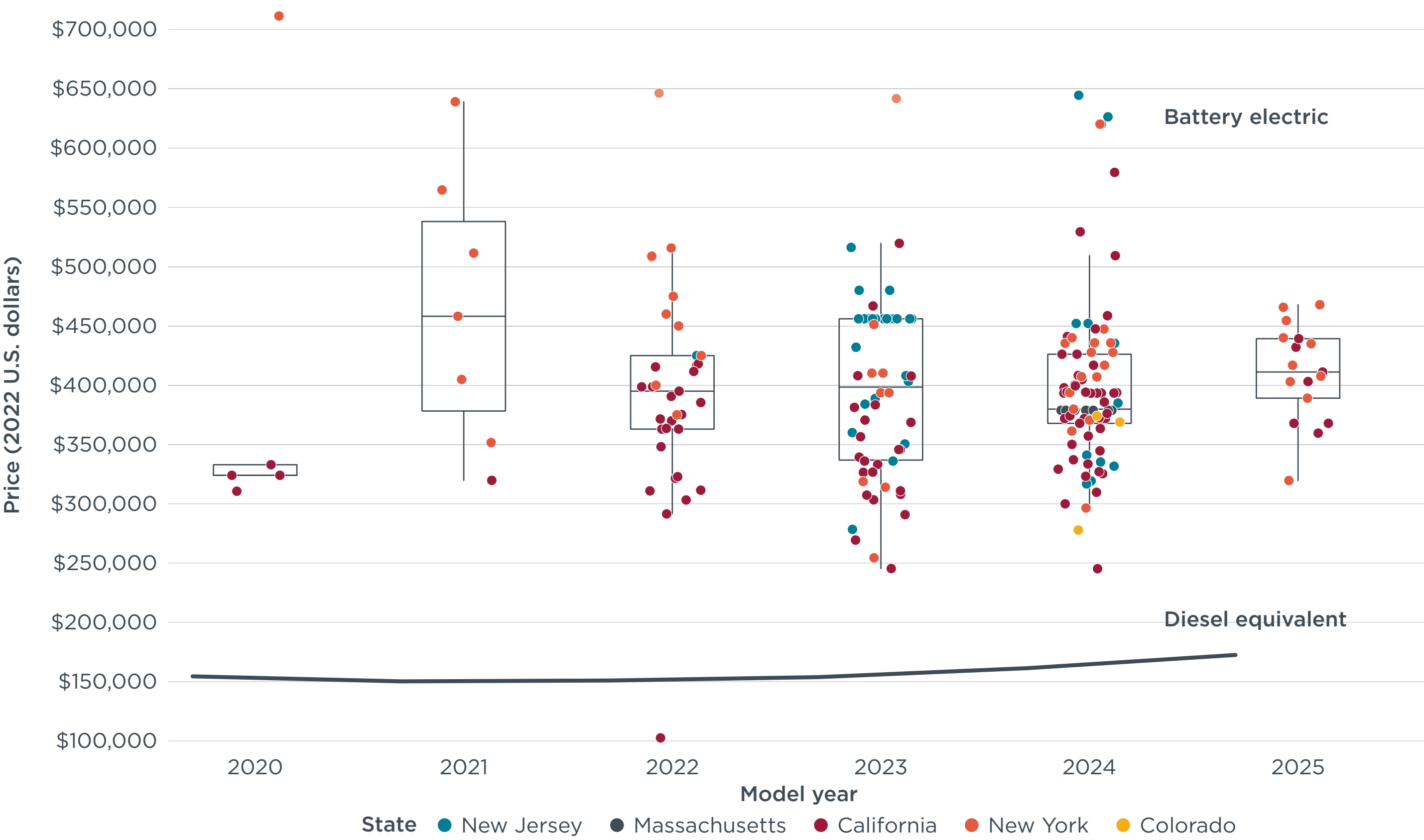
PRICE DISTRIBUTION OF COMMERCIAL VEHICLES IN THE UNITED STATES

Class 8 tractor trucks

U.S. price data for battery electric Class 8 tractor trucks are shown by state in Figure 13. The equivalent median price of diesel Class 8 tractor trucks is drawn as the grey curve.[1] The median price of a battery electric vehicle in the most recent model year, 2025, is $411,200, while the median price of a diesel equivalent is $172,500. All price data in this section are inflation-adjusted to 2022 price levels.

Figure 13

Class 8 battery electric tractor truck prices in the United States by state



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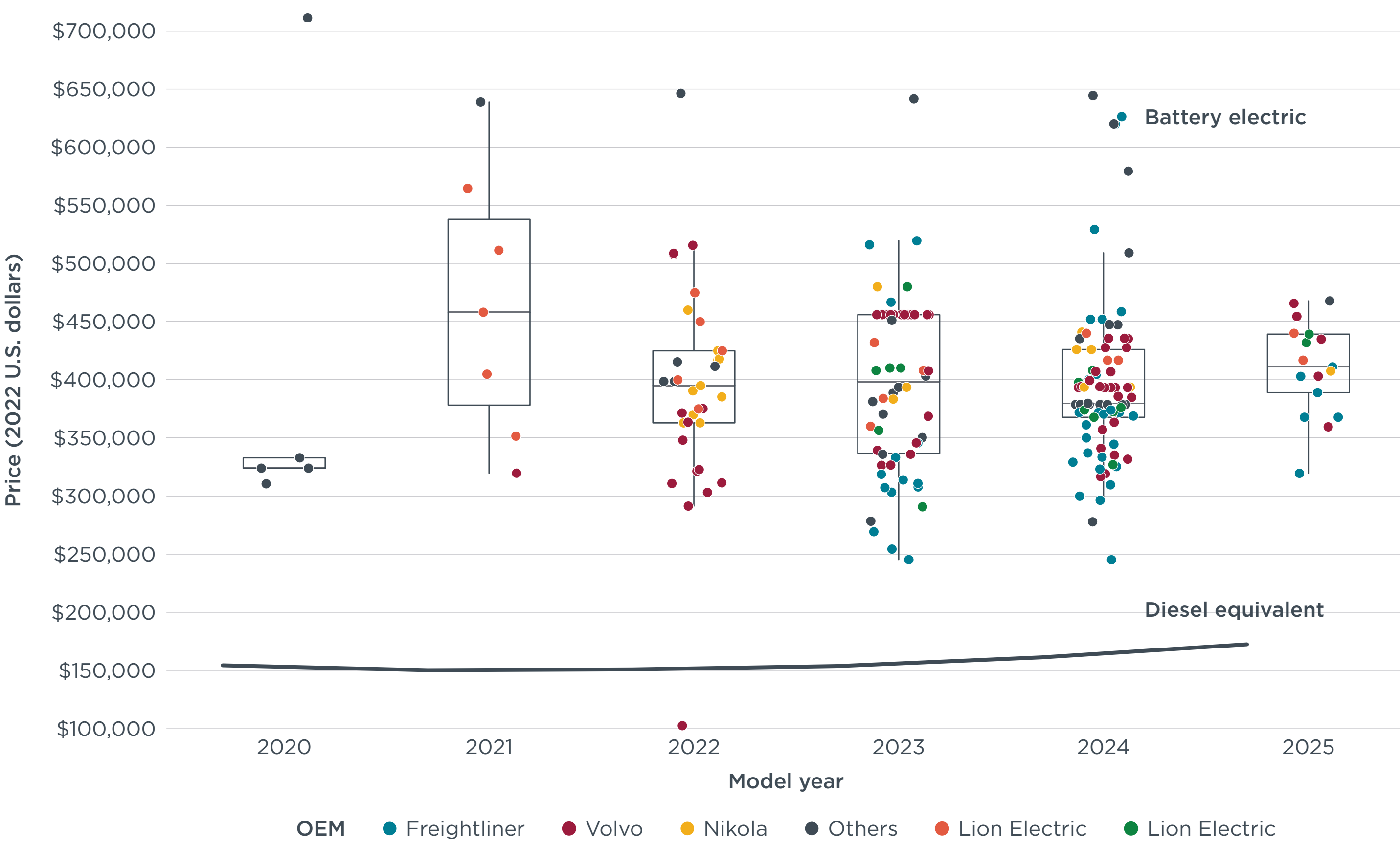
1 Prices for ICEVs are from Truck Blue Book. Equivalent diesel trucks are day-cab tractor models from major OEMs with similar specifications as the battery electric ones.

All battery electric heavy-duty tractors in the database were Class 8. The median price of battery electric Class 8 tractor trucks increased by 27%, or $87,100, between model years 2020 and 2025. In model year 2020, four out of five data points for battery electric heavy-duty tractor trucks were BYD trucks from California, which may explain the lower median price in that model year and the low BEV-to-ICEV price ratio seen in Figure 11. Overall, battery electric prices rose more sharply compared with comparable diesel trucks, whose median prices increased by 12%, or $18,000. We are unable to account for the effect of potential changes in battery sizes over time because most transactions in our database do not contain battery capacity information.

The prices of battery electric Class 8 tractor trucks in the United States are highly variable in our dataset. The standard deviation of battery electric prices was more than 50% the median price in model year 2020 and gradually decreased over time as the number of data points increased to about 10% of median price in model year 2025. Prices that were more than double the median price value were recorded in New York, California, and New Jersey in model years 2022, 2023, and 2024. The lack of separation of data points in each model year in suggests that fleets are not consistently paying more or less for the trucks in any U.S. state. Similarly, in Figure 14, there is no strong pattern with regards to certain OEMs having higher prices than others.

Figure 14

Class 8 battery electric tractor truck prices in the United States by OEM



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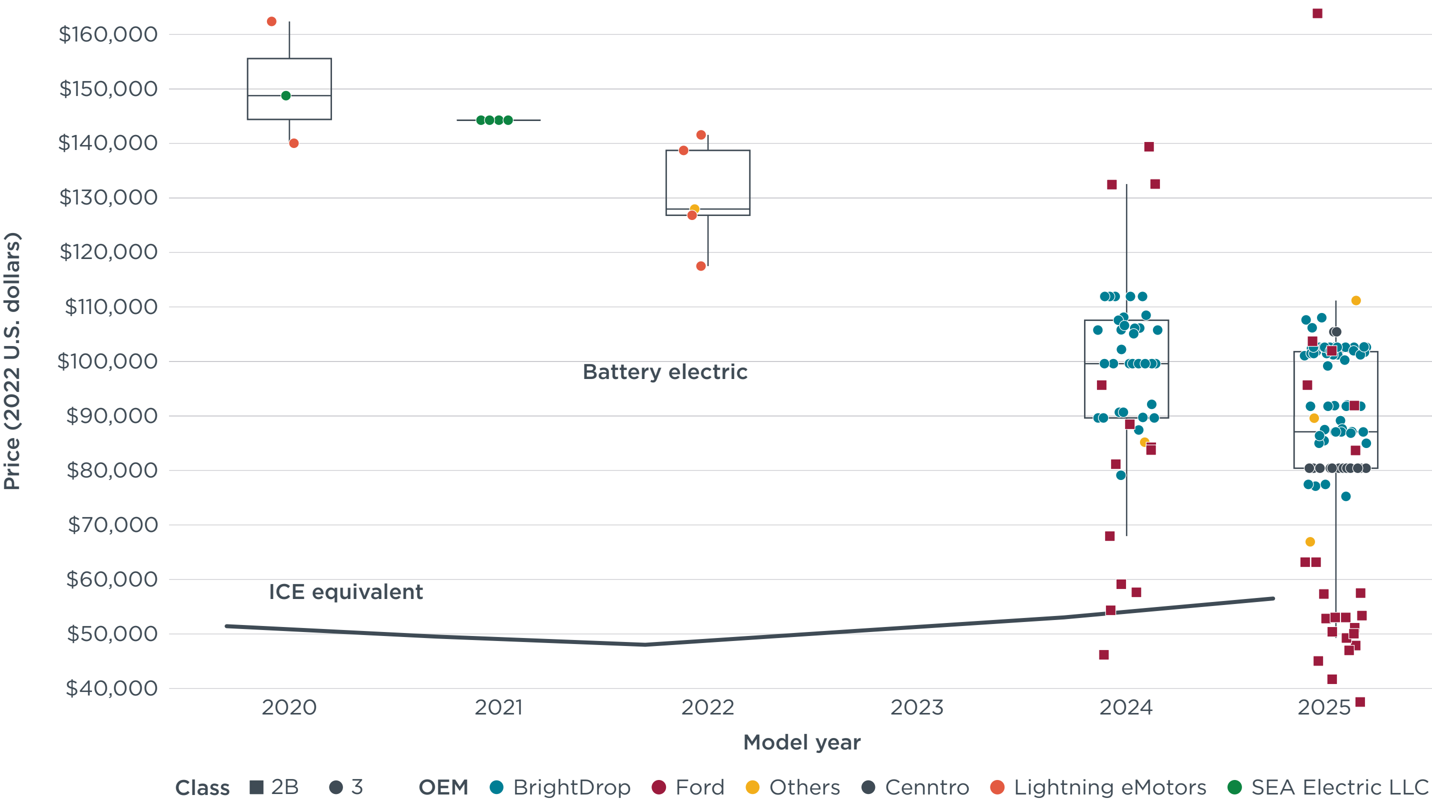
Class 2B/3 trucks and vans

On the opposite end of the weight class spectrum, Figure 15 shows the distribution of prices of Class 2B and 3 trucks and vans in the United States. In 2025, the median price of a Class 2B/3 van/truck in the dataset is $87,100 for a battery electric model and $57,900 for an internal combustion engine model (shown as the separate grey curve). The median price for BEVs decreased by 42% to $87,100 from model year 2020 to 2025, while the median price for internal combustion engine equivalent vehicles increased by 10% to around $56,500. In the first few years, price data represented Class 3 products from OEMs that only manufacture zero-emission vehicles, such as Lightning eMotors, SEA Electric, and Cenntro. Battery electric models from Ford and Chevrolet BrightDrop became available in model year 2024 and dominate the data points in subsequent years. Some battery electric Class 2B price data points were lower than the internal combustion engine counterparts. The dataset did not contain any Rivian vans, which were sold exclusively to Amazon and did not participate in state incentive programs until February 2025 when orders opened to other fleet customers (Hawkins, 2025). According to data from CALSTART, there were more than 44,000 cargo Class 2B vans deployed in the United States between December 2022 and December 2024; the large volume of these vehicles may explain the reduction in prices we observed from our dataset (Richard, 2025).

Figure 15

Class 2B/3 battery electric van and truck prices in the United States



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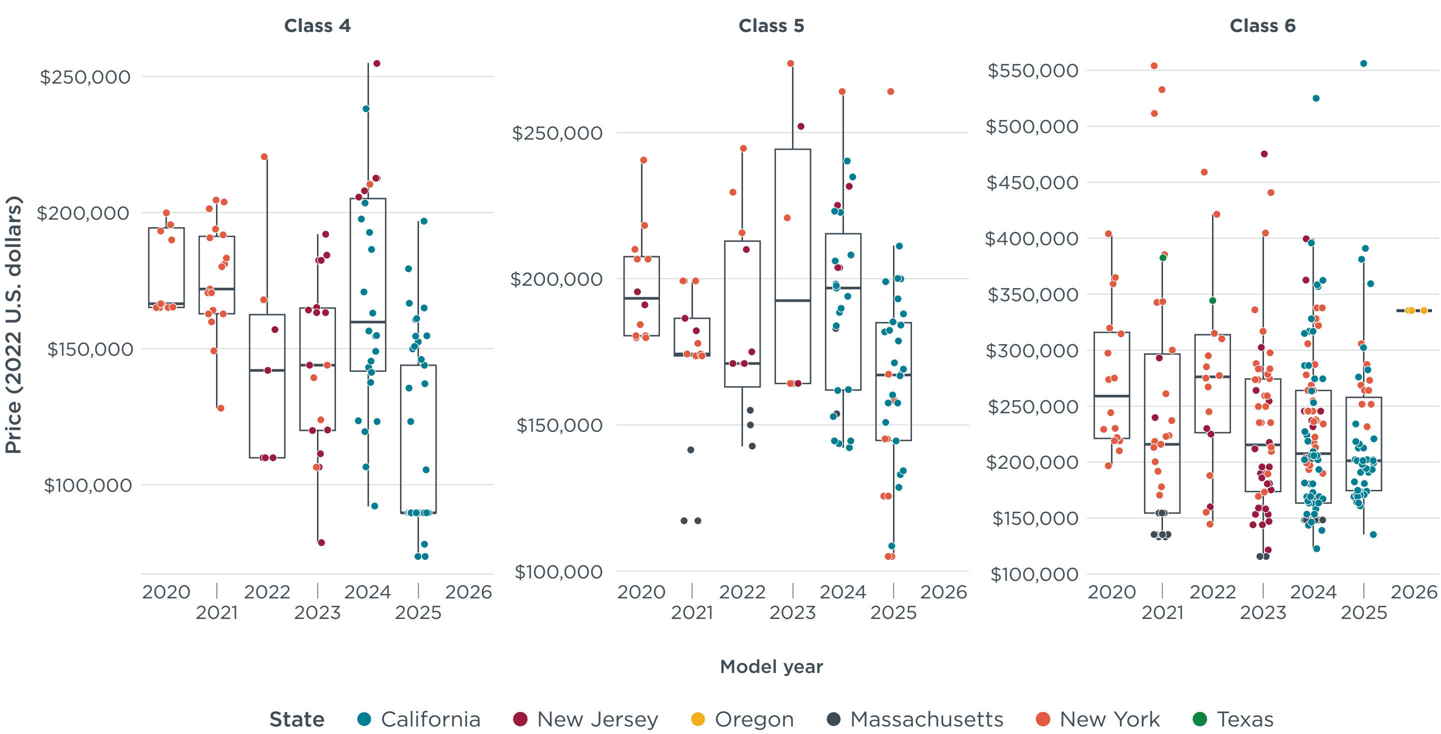
Class 4–6 straight trucks

For battery electric straight trucks in the Class 4–6 weight class range, price changes show a mixed picture (Figure 16). The median prices for Class 4 and Class 5 decreased by 46% ($76,800) and 14% ($26,200) respectively between model years 2020 and 2025, to $89,700 and $167,100, respectively. Class 6 median prices increased by 30% ($76,500) between model years 2020 and 2026, to $335,400. Data prior to model year 2024 mostly came from New Jersey and New York, while California data is concentrated in model years 2024 and later. This change in data composition may have contributed to price reductions in later years (i.e., lower prices in California were driving the national trend). There is also a high degree of price variability within each model year, with some high prices double or almost triple the lower prices in the same segment of the same year. This may be because Class 4–6 straight trucks are often used for vocational purposes and have diverse bodies and specifications that contribute to varying costs. For this reason, we did not pick diesel equivalent models to compare against these vehicles.

Figure 16
Class 4–6 battery electric straight truck prices in the United States



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Class 8 transit buses

The median price of battery electric Class 8 transit buses increased by $105,000, or 12%, from model years 2020 to 2025 (Figure 17). In model year 2025, the median price of a battery electric Class 8 transit bus in the United States is $958,800. In 2022, Van Hool and New Flyer had the highest priced vehicles, with median price above $1 million, while BYD's prices were on the lower end of the spectrum at $831,200. The most expensive vehicles can cost three times more than the least expensive vehicles, showing a great degree of variability in pricing. A high degree of customization exists in the transit bus market, a likely explanation for this high pricing variability.

Figure 17

Class 8 battery electric transit bus prices in the United States

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Type A, C, D school buses

For school buses, this analysis uses data collected and shared by the World Resources Institute's Electric School Bus Initiative. Prices of Type A, Type C, and Type D school buses, both diesel and battery electric, are illustrated in Figure 18. Unlike in other segments, price increases for diesel vehicles were greater than battery electric models: between model year 2020 and 2024, the median price of diesel Type A school buses increased by 48%, Type C by 25%, and Type D by 22%. The median prices of battery electric Type A and Type D school buses increased by 13% and 3%, respectively, and prices for battery electric Type C school buses dropped by 5%. Prices within each model year show a wide range, likely because of the different safety, accessibility, and other equipment required by different states and school districts.

Figure 18
Type A, C, and D school bus prices in the United States

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Daimler-affiliated battery electric vehicle prices

In Figure 19, we compare the prices of four types of BEVs manufactured by a Daimler-affiliated brand contained in the dataset. Daimler is one of the largest commercial vehicle manufacturer groups in the United States and has products in many segments and weight classes. We were interested to see if battery electric commercial vehicle prices from the same manufacturer group would follow the same pattern. They are the Class 6 utility/delivery van chassis eM50; the Class 7 straight truck eM2; the Class 8 tractor truck eCascadia, and the Thomas Built Saf-T-Liner Type C school bus. As the figure shows, not all types of vehicles experienced the same price changes in the past 5 years. The median prices of the Class 6 eM50 and Type C Thomas Built decreased over time, while median prices of Class 7 eM2 and Class 8 eCascadia increased. The inconsistency within the same parent OEM suggests that different subsidiaries and segments may rely on separate supply chains, and price changes in one segment do not necessarily mean similar changes in others.

Figure 19

Daimler-affiliated battery electric commercial vehicle prices in the United States

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U.S. STATE INCENTIVE PROGRAMS AND PRICES

Out of the more than 2,200 U.S. battery electric vehicle price entries in the database, 78% represented a vehicle purchased with the assistance of a state incentive program. Of these transactions, 84% include information about the incentive amount, which enables the analysis of incentive changes over time and correlation with incentive amounts. Figure 20 shows the median incentive value for BEVs. Incentive amounts generally did not increase across all vehicle categories, except for Class 8 tractor trucks in California where the median incentive value increased 48% from model year 2024 to model year 2025. California's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project provides larger amounts above a base value for applicants who meet targeted criteria. For example, public and nonprofit fleets with 20 or fewer vehicles and private fleets with 20 or fewer vehicles and less than $15 million annual revenue can receive a 100% increase (California HVIP, n.d.). Vouchers in model year 2025 could have gone to a greater number of targeted fleets, which would have increased median incentive amounts.

Figure 20

State incentive amount for battery electric vehicles by model year

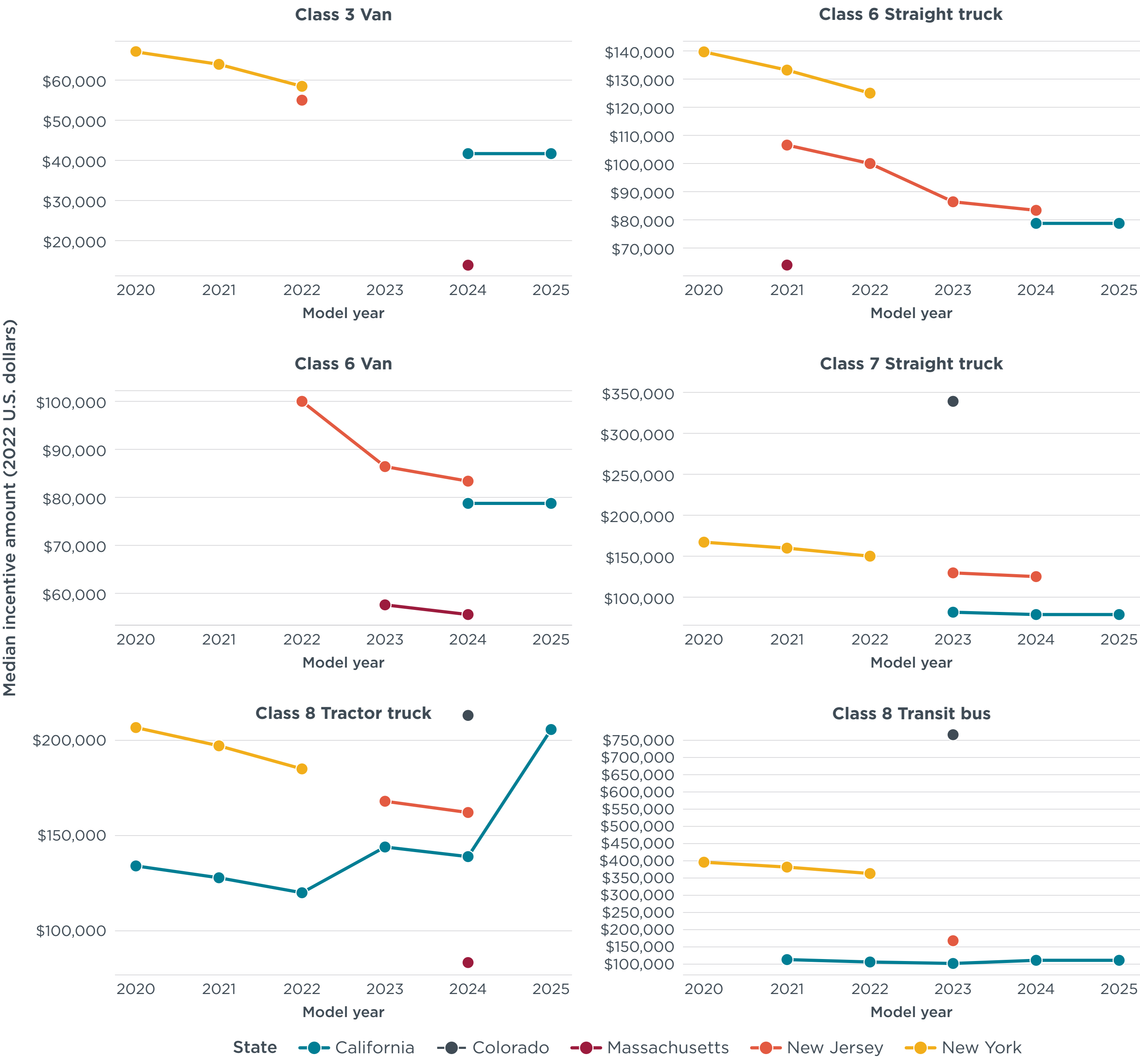

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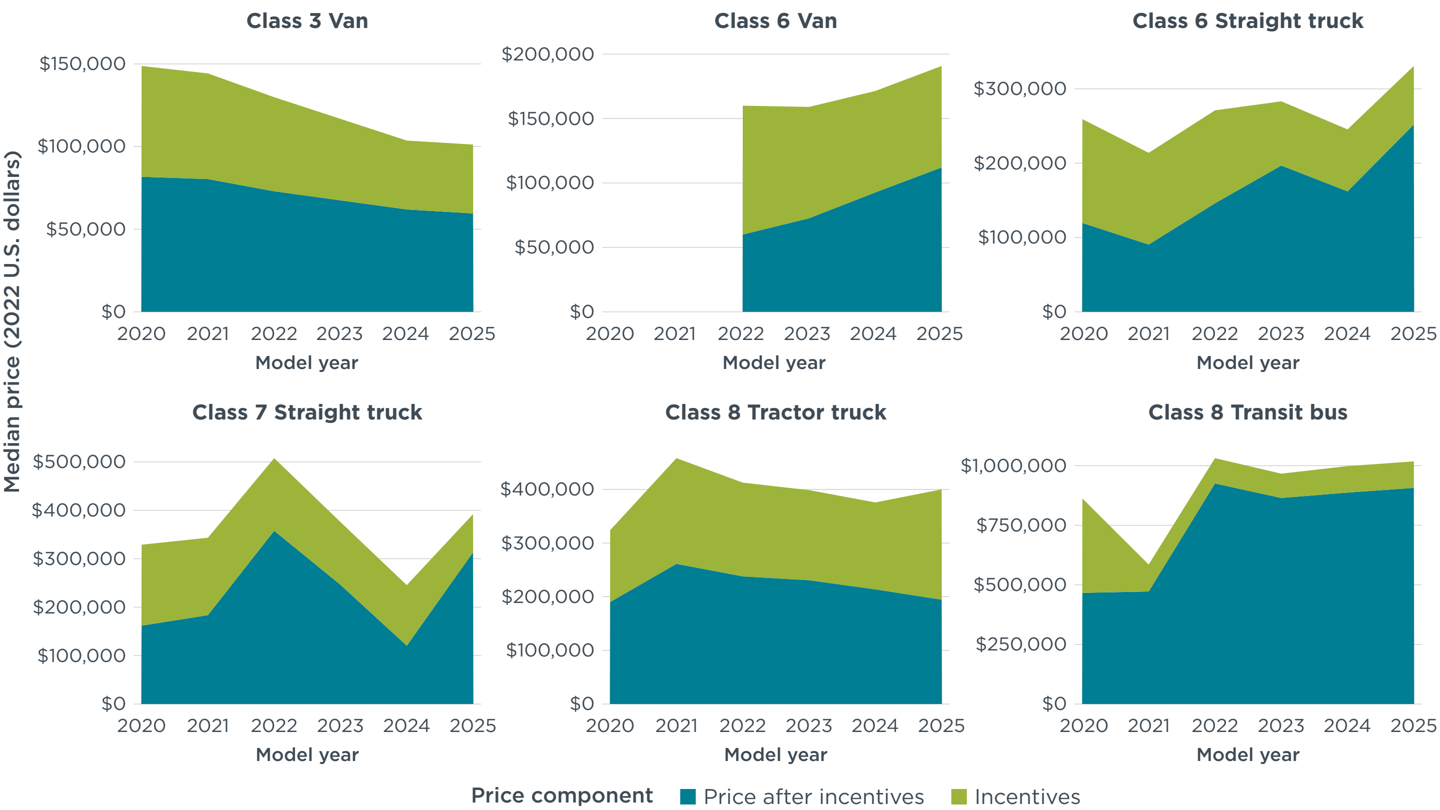
Figure 21 shows median vehicle prices for six segments in the United States and the median incentive levels each segment receives. For most segments, state incentives were responsible for a smaller proportion of the vehicle cost over time. By model year 2025, state incentive funding covers as little as 10% of the vehicle's median price (for Class 8 transit buses) and as much as 53.4% (for Class 8 tractor trucks). Fleet customers facing stagnant incentive amounts in the face of higher vehicle prices may either be paying more out-of-pocket or be able to utilize funding support from other incentive programs. These data do not provide clarity on whether incentive recipients are in fact paying higher amounts without more information.

Figure 21

Battery electric commercial vehicle state incentives and prices in the United States



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DISCUSSION

STAKEHOLDER REACTIONS

We presented preliminary findings to industry experts, including vehicle manufacturer representatives, fleet operators, independent research organizations, and state incentive program staff who provided data. Their feedback provided some theories to explain the pricing patterns we have shown.

Manufacturers offered a variety of suggestions. Some cited changes in raw material costs and higher demand for vehicle warranties as the cause for rising prices. Some pointed to differences in U.S. and European supply chains as the cause for differences in pricing patterns between the two markets. Differences in the timing of the introduction of next-generation products in the United States and Europe further explain to them the comparative differences across markets, since faster deployment of the latest generation of technology in Europe may deliver performance and cost advantages over the U.S. market. A manufacturer also explained that going forward, U.S. trucks will be consistently more expensive than European trucks because their longer driving ranges will require larger batteries.

We also received a few thoughts about pricing behavior. Within a single vehicle segment, one manufacturer explained that price variation in a single model year from a single manufacturer can reflect the nature of the customers served. From their perspective, a large fleet customer will be less price sensitive than a smaller one, leading to higher prices for larger customers. One manufacturer stated they only see the wholesale price of the vehicle and do not control the final price.

Trucking fleet representatives offered alternative perspectives. One did not agree with the view that dealers control the final price, as dealers operate on slim margins and are vulnerable to the allocations and pricing that manufacturers give them. In early years when the market was dominated by non-traditional manufacturers, the fleet representative viewed lower prices as reflecting an attempt to gain market share. Moreover, the entrance of legacy manufacturers into the market explains price increases, because these manufacturers have dominant market positions and loyal customers. One fleet representative explained they prefer to stick with a legacy manufacturer over a start-up company to avoid risks associated with access to service and parts. Fleet representatives also theorized that some pricing changes could reflect larger batteries designed to deliver greater range. Other purchasers declined to share the price they paid for their vehicles because they signed non-disclosure agreements with sellers.

Independent research organizations shared other suggestions. We heard that truck manufacturers have invested in new natural gas engine products at the request of trucking fleets, diverting research and development resources away from electrification and requiring higher prices on electric trucks to recover these development costs. We also heard that manufacturers in the Class 2B/3 segment behave differently from those in the Class 6–8 segment. Those in the smaller weight categories are selling products with a smaller cost differential compared with ICE vehicles, resulting in a stronger opportunity to sell these into the market. It was expressed that manufacturers of larger vehicles lack motivation to lower the price of Class 8 tractors. We also heard that large variability in prices can be due to upfitting, which is the practice of installing a custom body on the chassis and is common for transit buses and straight trucks in the United Stats. Regarding different sized fleet customers, independent research organizations shared that larger ones with more negotiating power can secure products with 10% to 30% lower prices, especially through large volume orders. Moreover, they shared that minimum zero-emission vehicle purchase requirements some manufacturers are placing on fleets may have an inflationary effect on the electric vehicle price.

Independent research organizations further shared perspectives that may help explain regional differences in price trends. We heard that Europeans are doing a better job standardizing transit buses than Americans, leading to lower transit bus prices in Europe. We also heard that vehicle customization can cause a difference of 30% above or below the median price of a vehicle. Additionally, it was stated that EU manufacturers priced their zero-emission products more competitively to sell more of them to meet the CO_2 emission standards, which require manufacturers to reduce emissions by 15% by 2025.

RECOMMENDATIONS TO IMPROVE PRICING DATA REPORTING

Private sources of commercial vehicle pricing data in the United States are plentiful, but they have several key constraints. For example, Truck Blue Book contains a robust database of new diesel truck prices but offers limited new zero-emission commercial vehicle prices and lacks bus prices. In addition, price data are not differentiated by state. Widely different practices exist between manufacturers in sharing vehicle pricing information. In the United States, manufacturers for lighter weight class vehicles like General Motors and Ford list MSRP values for their electric vehicles on their website. Manufacturers of larger vehicles like Kenworth, Daimler, and Volvo do not. Used commercial vehicle pricing is widely available on the websites of truck and bus dealers and other resellers, reflecting that a competitive market exists for used vehicles. However, a similar approach to new commercial vehicle pricing does not exist.

The absence of regular data reporting and standardization creates several limitations for the study. This work does not fully account for the difference in vehicle specifications and use cases in its comparison of prices across markets. Historical price data were not available in India and for some segments in China, so comparisons with these regions were limited. A future version of this analysis would benefit from more complete vehicle specification data that enables comparison of battery size normalized costs across markets.

To ensure a robust, fair, and competitive market for zero-emission commercial vehicles, policy efforts are necessary to bring greater access to new electric commercial vehicle pricing data. In the United States where many zero-emission commercial vehicles are purchased with public support, state incentive program managers are in a unique position to collect and report vehicle pricing information. Such a move could benefit consumers by improving the quality and amount of information available to them to negotiate lower prices. Several actions by state program managers could support this outcome. They include:

- Collecting vehicle specifications from the funding applicant, including gross vehicle weight rating, vehicle identification number, battery capacity, and motor power;
- Requiring applicants to report vehicle pricing information during and after procurement processes;
- Standardizing and coordinating the collection of these data with other states; and
- Making these data available to the public on a regular reporting schedule.

CONCLUSION

This study analyzed real-world pricing data for commercial vehicles sold in Canada, China, the EU, India, and the United States. We identified several pricing trends in our dataset.

In the United States, prices for battery electric Class 5 vehicles and smaller are decreasing. Meanwhile, the prices of battery electric trucks of Class 6 and larger are increasing more often than they are decreasing.

The median price of battery electric Class 8 tractor trucks increased 27% since model year 2020 in the United States, with the largest price increase of 40% occurring between 2020 and 2021. Despite this trend, median prices since model year 2020 have fallen in 2 out of the past 5 years. The median price of Class 2B/3 vans and Class 4 straight trucks fell 40% since MY2020, possibly due to high sales volumes.

In the EU, battery electric commercial vehicle prices have generally decreased. The median price of battery electric N3 (Class 7–8 equivalent) tractor trucks and straight trucks decreased by 32% and 23%, respectively, since model year 2020.

The median price of battery electric Class 8 transit bus prices in the United States increased by 13% from model year 2020 to 2025. Battery electric transit buses also have high price variability, with some vehicles costing 2 times more than others in the same model year. Between model year 2020 and 2024, the median prices of battery electric Type A and Type D school buses increased by 13% and 3%, and prices for battery electric Type C school buses decreased by 5%.

Almost 80% of U.S. price data in the study came from state purchase incentive programs. Improved pricing data collection could benefit consumers by improving the quality and amount of information available to them to negotiate lower prices. For example, states could collect key vehicle specifications from incentive program participants and report final vehicle transaction prices.

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