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Potential Jobs Impacts Expected with EPA Rule

We anticipate substantial "pre-buy/no-buy" and employment impacts if EPA proceeds to implement CARB-like standards starting with the 2027 model year (MY). ACT Research (ACT) has described the "pre-buy/no-buy" market response at issue, as follows:

> A "pre-buy" occurs when industry participants initially reject a regulation-driven change in product, in this case HDOH commercial vehicles, and instead buy as much of that product as possible in the years before the new regulation takes effect. A "no-buy' occurs in the initial years after the new regulation is implemented, when product demand, while not falling to literally zero, falls sharply. The trucking industry is naturally risk-averse and prone to avoid new regulations that may impact the reliability and operating costs of trucks, since operations reliability is so vital to industry participants ability to survive in a historically low-margin business.
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> Past experience, particularly the pre-buy that occurred in 2005-2006 ahead of EPA 2007 standards, demonstrates that emissions standards which significantly increase the cost and complexity of HHD tractors are likely to lead to pre-buying of equipment in the years leading up to the regulations. The trucking industry likely will have the ability to pre-buy in advance of the Omnibus [or Omnibus-like] Regulations taking effect. (ACT Report, March 19, 2020, p.13.)

ACT has concluded that "the proposed Omnibus [CARB] Regulations would precipitate the largest-ever pre-buy for medium-heavy and heavy-heavy trucks and tractors," and that the primary repercussions will be "two years of vehicle under-production in 2027 and 2028 to counter-balance the likely over-production in 2025 and 2026." (Id. at 14.) The ACT Report then gives a broader assessment of the adverse impacts from the expected pre-buy-no-buy:

> There would be significant costs for the OEMS and their employees in terms of the inefficiencies that come with a rapid ramp-up to meet an artificial demand bubble, followed by a demand collapse in the period of capacity rebalancing that would lead to layoffs and production cuts. In addition, the anticipated pre-buy, like the one that occurred ahead of EPA 2007 in 2005-2006, is likely to result in significant and unnecessary capital additions [i.e., more trucks] in the HDD trucking industry. A large portion of those truckers operate on a for-hire basis and are dependent on the market rates to move freight. The lower freight rates that will inevitably result from the regulation-driven over-capacity bubble will have a significant adverse financial impact on the nation's truckers, with an estimated impact of $6.5 to $8.6 billion at net present value. (Id.)

ACT's analysis assumes that the Omnibus Regulations would add approximately $35,000 per-truck (including increased tax impacts) to the cost of HHD vehicles in 2027 on a nationwide basis using a 7% discount ratio. (ACT Report, pp 16-17.) The ACT Report quantifies the expected pre-buy/no-buy response due to the cost impacts of the Omnibus Regulations in the following tables:

Table 8: Prebuy Size Estimates in Units and Percent

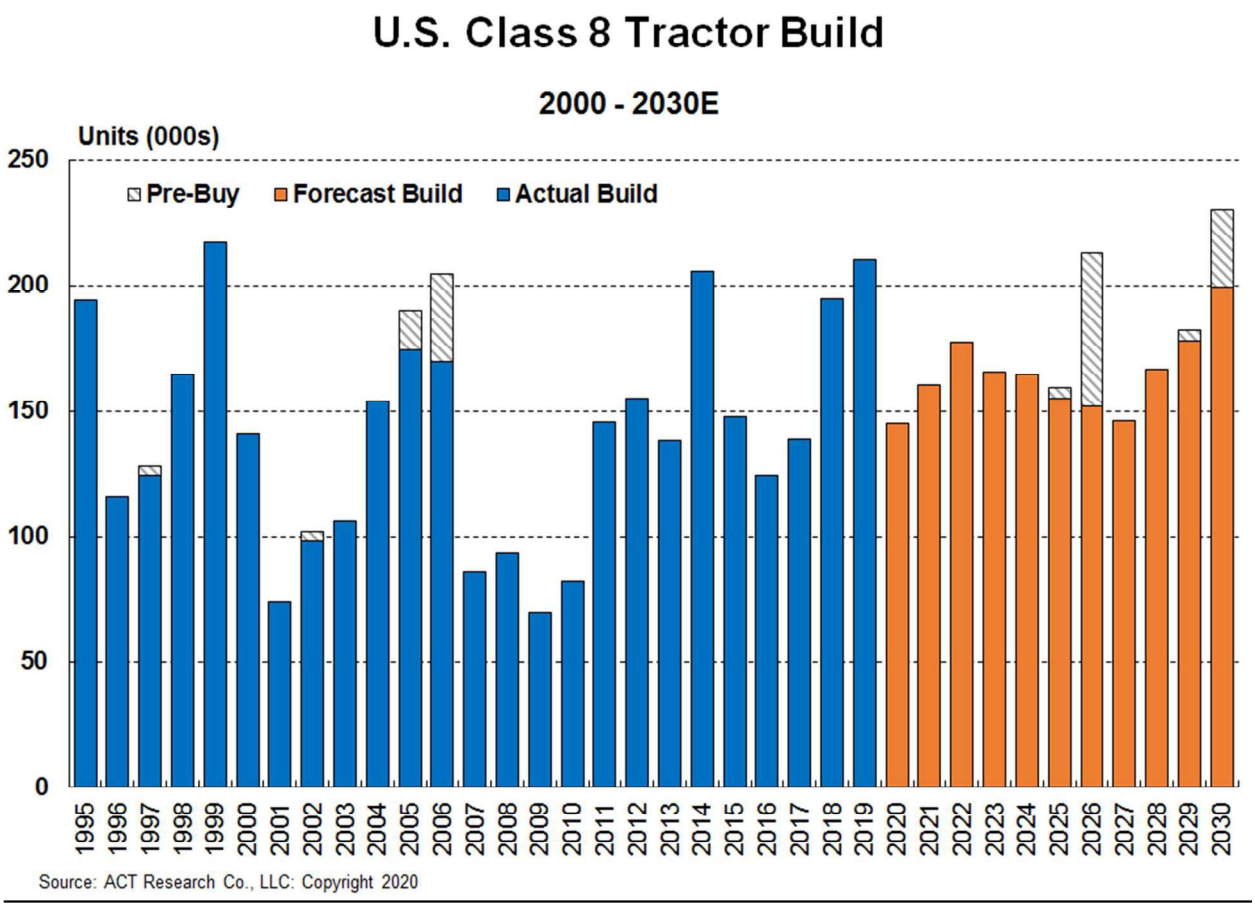
	MY2027 $ Change Op. Costs	MY2027 % Change Op. Costs	Anticipated Prebuy: 2025	Share of new Market	Anticipated Prebuy: 2026	Share of new Market
US Class 8 Tractor	$ 35,103	18.3%	4,219	2.7%	60,622	39.9%
US Class 8 Vocational	$ 35,190	14.6%	2,620	4.7%	22,667	36.9%
US Total Class 8			6,838	3.2%	83,290	39.0%
Source: ACT Research Co.,LLC: Copyright 2020						

	MY2031 $ Change Op. Costs	MY2031 % Change Op. Costs	Anticipated Prebuy: 2029	Share of new Market	Anticipated Prebuy: 2030	Share of new Market
US Class 8 Tractor	$ 12,491	6%	4,234	2%	26,717	13%
US Class 8 Vocational	$ 14,536	6%	2,344	4%	9,236	14%
US Total Class 8			6,578	3%	35,953	14%
Source: ACT Research Co.,LLC: Copyright 2020						

From the foregoing, ACT projects that the industry will pre-buy 64,800 additional HDD tractors and 25,300 vocational trucks in 2025-2026 ahead of the MY 2027 Omnibus regulations. That adds up to 90,100 total Class 8 vehicles over the two-year pre-buy period. In addition, in advance of the cost increases associated with the proposed increased useful and emission warranty provisions in the 2031 MY, ACT projects that there will be another pre-buy of 35,000 HHD tractors and 11,600 vocational trucks, for a total pre-buy of 46,600 vehicles in 2029-2030.

Table 9 from the ACT Report (reprinted below) depicts in bar-chart format the projected pre-buy/no-buy impacts at issue:

Table 9: Retail Sales and Pre-Buy History and Forecast in the U.S. Class 8 Tractor Market



Ricardo has conducted a similar assessment of the likely pre-buy/no-buy impacts from implementing the CARB Regulations on a nationwide basis starting with the 2027 MY. Ricardo's cost analysis, which was more detailed than ACT's cost assessment, calculated an incremental per-truck cost increase of approximately $21,000 in 2027, and approximately $35,000 in 2031. (See Ricardo Cost Impact Study, p. 3.)

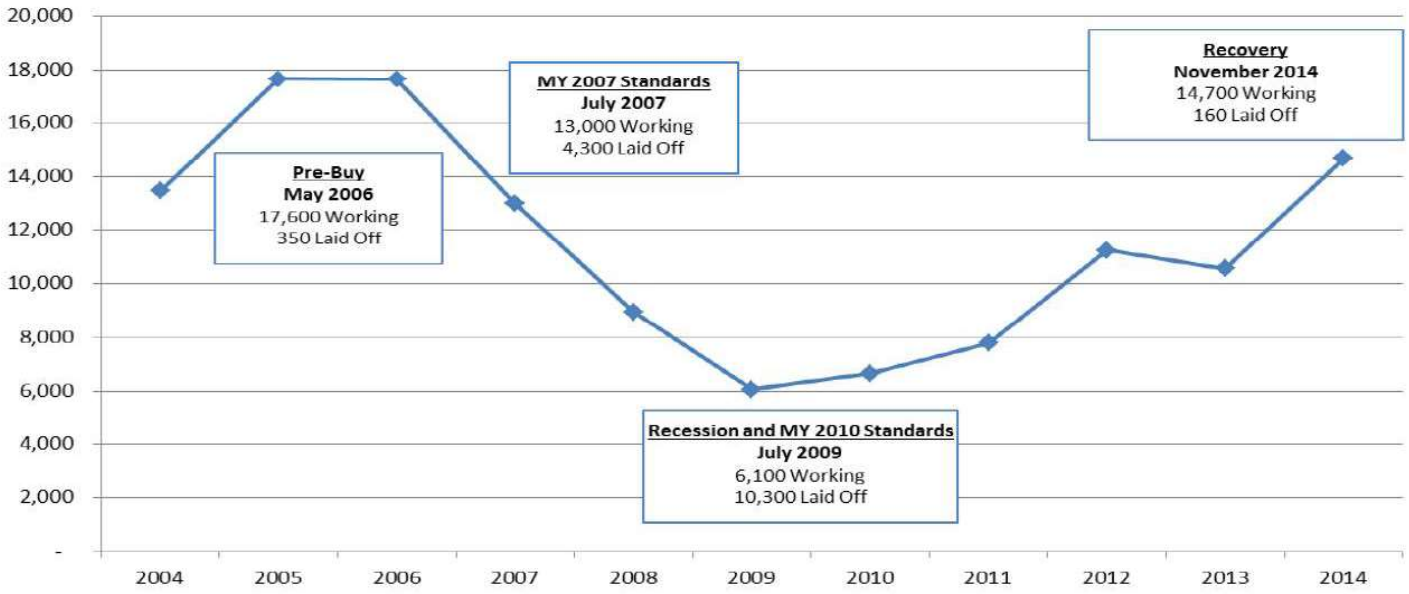
Using those cost projections, Ricardo's analysis concludes there will be a pre-buy impacting approximately 38% of the HDD market and 37% of the MHD market in 2025-2026, and an additional pre-buy impacting 24% of the HHD market and 5% of the MHD market in 2029-2030.

In terms of the number of HHD and MHD trucks that would be impacted, Ricardo determined that the 2025-2026 pre-buy would amount to 84,000 HHD and 45,000 MHD vehicles, for a total of 129,000 vehicles. For the 2029-2030 pre-buy, Ricardo determined that 55,000 HHD vehicles and 7,000 MHD vehicles would be pre-bought, for a total pre-buy of approximately 62,000 vehicles. (See Ricardo Cost Study, p.39.) Ricardo assessed the corollary low-buy impacts to be approximately 84,000 HHD vehicles and 45,000 MHD vehicles in 2027 (for a total of 129,000 non-purchased vehicles), and 55,000 HHD vehicles and 7,000 MHD vehicles in 2031 (for an additional total of 62,000 non-purchased vehicles). (See Ricardo Cost Study, p. 40.) Of note,

Ricardo's quantification of the aggregate expected pre-buy of HHD vehicles (84,000 + 55,000 = 139,000) corresponds well with the aggregate expected pre-buy that ACT quantified for Class 8 vehicles (90,100 + 46,600 = 136,700).

The bottom line from the ACT and Ricardo analyses is that nationwide Omnibus-like regulations will have pre-buy/no-buy impacts that will pull-ahead and dislocate more then 50% of the HDOH market, impacting the sale of approximately 150,000 HHD vehicles and 50,000 MHD vehicles.

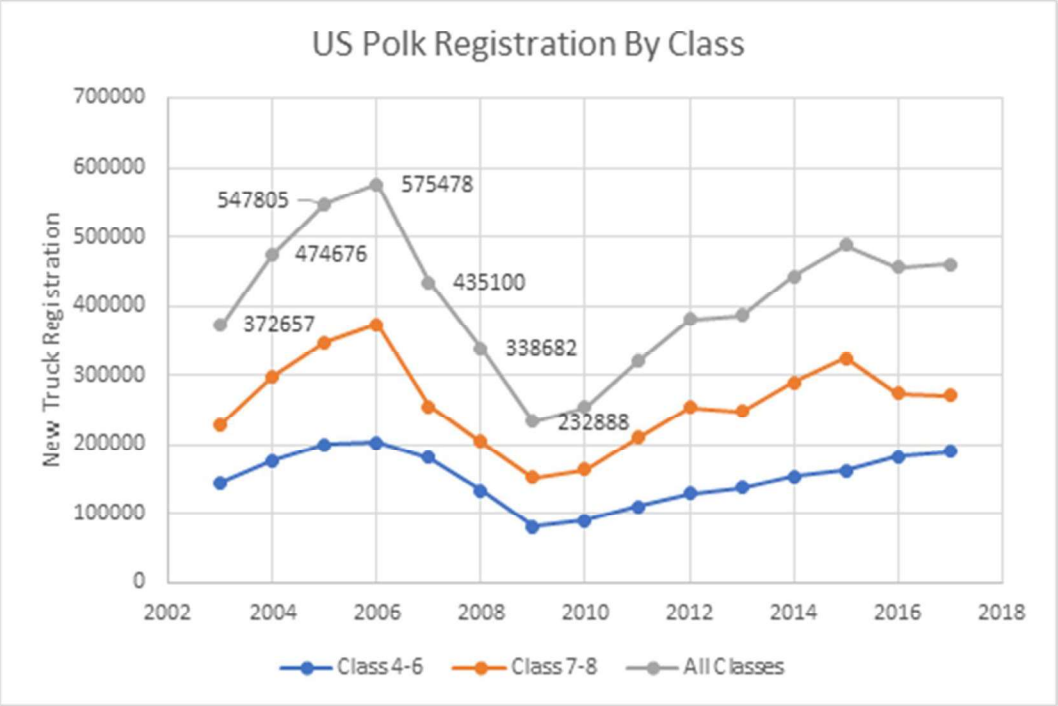
Prior analyses of the market's pre-buy/no-buy response to EPA's 2007 standards add support to the more recent projections that ACT and Ricardo have made. For example, in commenting on EPA's proposed "Phase 2" GHG standards in 2015, the United Auto Workers (UAW) noted that the pre-buy/no-buy response to EPA's 2007 HDOH standards resulted in lay-offs from the leading U.S. HDOH vehicle manufacturers of approximately 7,500 workers (before the impacts of the Great Recession in 2008 took hold).[1] For certain individual OEM's the workforce reductions due to the pre-buy/no-buy – looking at employment numbers in June of 2006 and June of 2008 – were closer to 50%. Those aggregate OEM workforce impacts are depicted in the chart below:



Other market analyses have revealed that 40% more HHD vehicles were sold in 2006 (284,000 units) than in 2004 (203,000 units), and that the market then dropped by a full 47% in 2007, falling to 151,000 units. Those sales impacts caused a cascade of adverse impacts, including the unemployment impacts noted above.

The relevant chart from Polk Automotive Solutions (reprinted below) shows the industry-wide impact that the 2007 standards had on Class 4 through 8 vehicle sales.

[1] UAW Comments, dated October 1, 2015 (RIN 2060-AS16).



From the relevant data and analyses, it appears clear that an implementation of CARB-like regulations on a nationwide basis would lead to the largest-ever pre-buy/no-buy response in the HDOH market.