Attachment D:
LIUNA Letter Exhibit D

THIS PAGE INTENTIONALLY LEFT BLANK

Exhibit D in its entirety is considered Comment 10

EXHIBIT D

businessfleet

GREEN FLEET

Commercial Electric Vehicles: What's the Real Timeline?

November 26, 2020 • by Denise L. Rondini •

There is a lot happening in the electric vehicle space, especially in the lighter commercial vehicle classes. But news on vehicle testing and splashy vehicle introductions does not foretell eminent production.

Photo via NoyaFields/Flickr.

A day does not go by when there is not some news about a new development with electric vehicles, and all the news is not just about the latest car from Tesla. There is a lot going on with electric medium-duty trucks, step vans, and pickup trucks, which have taken longer to develop than passenger cars because of their varied duty cycles, payloads, and towing needs.

Yet two of the biggest concerns for the widespread deployment of electric vehicles — range and charging infrastructure — are less of a concern for vehicles in these weight classes, as they tend to travel less than 150 miles a day and return to base each evening.

This fits the projected range of most electric commercial vehicles on their way to market, meaning they do not have to worry about recharging during normal operating hours and charging stations can be set up at their headquarters locations for off-hours charging.

There will be a significant cost premium for these new electric commercial vehicle models — an issue for another full article. Here, we'll focus on all those announcements that these vehicles will be in production and on the roads soon. But what does "in production" mean?

Defining "In Production"

You might be surprised to find that it is not as straightforward as you think. There is no hard and fast definition for a vehicle being in production. The only agreement is that "production" is a point in time when a new product comes off of a production line and is commercially provided to an end-user customers, according to a Defining Production report by the North American Council for Freight Efficiency (NACFE).

The sticking point, according to the report, is that the "maturity of the product at that point may vary significantly between [vehicle manufacturers.]"

NACFE concluded that it is relatively easy to create "low-volume prototypes for limited track and road testing as a judicious application of money, priority, and people can get one to a few built in six weeks to six months. Commercial production trucks, however, to be legally and safely classified as 'production,' can take years (four to six years is common)."

To delve a little deeper, in doing research for the report NACFE found 14 definitions of in production. The definitions are specific, such as "first vehicle off low-rate production tooling, limited content available" to "first commercially sold vehicle but with limited trained field support and limited parts availability" to "first vehicle to be ordered via the production ordering process" to "first vehicle in customer commercial use, high uptime," and everything in between.

It can be difficult to know which of those definitions vehicle manufacturers are using when they says their vehicles are in production, making it difficult for a business owner to make a decision about whether to explore and invest in the technology.

Every new vehicle starts as an idea that then needs to be validated. Once there is proof of concept, a prototype vehicle is built and tested. This is followed by the building of additional prototype vehicles where vehicle operation is validated.

Design tweaks are made based on experience with these prototypes. The next step is a low rate of production of vehicles for real-world testing and validation. Only when engineers are satisfied does the vehicle go into full production.

But as we all know, that does not mean the vehicle is free from "bugs." We've all heard stories of issues with brand new vehicles and the number of recalls on relatively new vehicles. This means that despite their best efforts, vehicle makers don't always get it right on the first full production pass.

Today's Market

There is a lot happening in the electric vehicle space, especially in the lighter commercial vehicle classes. But news on vehicle testing and splashy vehicle introductions does not foretell eminent production.

Here is a glance into production timelines, by no means a comprehensive analysis of market activity:

In October, Amazon revealed a bit of information on the electric delivery truck it is designing and building in partnership with Rivian. Amazon says the vehicle is slated to launch as early as 2022. While Amazon announced an array of amenities and safety

technologies the vehicle will have, what was missing from the announcement was any detail about the battery or the drivetrain — two things most business owners contemplating a purchase will want a great deal of detail about.

An important point to note, initially Amazon said these vans would be ready in 2021 but now has pushed that date back. The latest announcement said Amazon committed to having 10,000 electric delivery vehicles on the road "as early as 2022." That leaves room for the actual availability to be later.

Early this year UPS announced a minority investment in Arrival, a manufacturer of EV platforms and purpose-built vehicles. UPS also committed to purchasing 10,000 electric vehicles. Information on the Arrival website said the vehicles "will be rolled out over 2020-2024."

Hino Motors also recently introduced its Project Z zero-emissions commercial vehicles, ranging from Class 4 to 8. Project Z will consist of demonstration vehicles in the first half of 2021, customer demonstrations in 2022, and production "prior to 2024."

Freightliner Custom Chassis is collaborating with Proterra to develop the MT50e, electric delivery truck chassis. In February, FCCC said the vehicle would be production-ready in 2020. We've reached the end of the year, though neither company has released an update to the timeline.

Kenworth's Class 8 electric T680E model is ready for order, "with production in 2021." However, charging infrastructure is prohibitively expensive in the heavy-duty realm, and there is no infrastructure yet. There may only be a handful of this model on the road next year.

The electric pickup segment is hot, with seven fully electric pickup models racing to come to market in less than two years.

Those include independents such as Lordstown Motors' Endurance model, geared for fleets, due by next summer. Rivian's R1T pickup (not for fleets) was to first put buyers behind the wheel in the fourth quarter of this year, but production delays due to the coronavirus pandemic pushed the release until 2021 — though no timeframe within the year has been announced.

With Nikola's recent high-profile problems, the release of its Badger pickup, originally planned for 2022, is very much in question.

Reality Check

While clearly battery- electric powered vehicles are under development, "The fact of the matter is, as of Q4 2020, there are no series-production electric trucks, either light-duty or heavy-duty, available for immediate retail or fleet sale," says Edward Sanchez, senior analyst, Global Automotive Practice, Strategy Analytics.

He adds, "There are some late-stage prototypes, and some limited real-world trials, but the 'electric truck revolution' is not yet upon us. Most of the activity in the space is likely to happen starting in 2022-2023. Whether all of the announced entrants in the space will even make it to full-scale production is far from a foregone conclusion. Nikola is a perfect example of this."

Sanchez identified what he calls some "sure bet" players in the space including the Tesla Cybertruck, Ford F-150 EV, and Rivian R1T in the light-duty segment, and in the heavy-duty space, the eCascadia, and probably the Tesla Semi.

However, he is quick to add that there is still a lot of work to do between now and those vehicles reaching full production.

"The Hummer EV has gotten a lot of attention and chatter lately, but its six-figure price point makes it a strictly niche proposition," Sanchez says. In the Class-8 segment, he expects the initial deployment of electric trucks will be in the short-haul market.

"There are still a lot of unknowns deploying EV Class-8 trucks for long-haul, not the least of which is charging infrastructure, which even Tesla, which is usually way ahead of the game in this area, is only starting to build out, by all indications," Sanchez says.

Bottom Line

While all truck makers — not just those manufacturing electric vehicles — make claims about when their new models will be available, when it comes to completely new technology it can be difficult to separate out fact from marketing hype.

When evaluating which EV might be right for our operation, make sure to ask specific questions on where the manufacturer is in the development process. Do not just accept a blanket statement like "We will be in production next year." Ask them to explain what that means and where they are in the process. Are they still in the prototype stage? Have they moved to low production volume? Are they in full production?

They answer will give you a better idea of when you will actually be able to order, take delivery and put electrics vehicle in operation in your fleet.

Related: Fleet Forward Experience Wrap: IoT, Electric Infrastructure, and the Supply Chain

---

THIS PAGE INTENTIONALLY LEFT BLANK