Transport Topics

SPECIAL REPORT:
Electric Trucks Charge Forward

Trucking's Electric Future Begins to Take Shape

The promise of electric trucks for the environment and our industry is enormous. We need those big dreams to inspire change. But it's conviction and leadership that are making it happen.

In 2017, the eMobility program at Daimler Trucks North America was established. It's not that the idea was new to us. It's that the time was right, the pieces were in place, and we were poised to make real progress not just on paper, but on the road.

Breakthroughs in battery technology and electric powertrain engineering are obvious hurdles to clear in eMobility, particularly for a truck. But we bring something else to the game beyond technical innovation: more than 75 years of experience building trucks for the real world.

We know what a truck goes through every day, the wear and tear that each component endures. We empathize with the operators by designing trucks that are comfortable, easier to operate and safe. We created a vast network of service centers because expert maintenance is a necessity, no matter how advanced the truck. And we test the entire system—not just a battery—before giving it the green light.

Delivering zero emissions is one thing. Doing it while delivering for customers in the real world is quite another.

Richard.

Richard Howard
Senior Vice President,
On-Highway Sales & Marketing

FREIGHTLINER

John Sommers II for Transport Topics

Electric Trucks Charge Forward

J.B. Hunt


Volvo Trucks

Seth Clevenger — Transport Topics

Trucking Takes Initial Steps Toward a Zero-Emission Future

By Seth Clevenger
Managing Editor, Features

Diesel has long reigned as commercial trucking's primary fuel, due in large part to its abundant availability, widespread fueling infrastructure and reliance on mature technology.

Today, there's no question that diesel is king, but it is becoming clearer with each passing year that electric is the heir apparent.

Although significant hurdles remain, recent advances in electric-vehicle technology and the broader movement to reduce carbon emissions are creating market conditions that are increasingly favorable for electrification.

In 2020, truck manufacturers and their key suppliers continued to expand testing and development of battery-electric models and componentry, with many also investing in complementary hydrogen fuel cell technology.

And fleet customers are beginning to line up.

Some major corporations have pledged to adopt electric vehicles in the years and decades ahead as part of their sustainability goals.

Meanwhile, a growing number of trucking companies have begun piloting small numbers of electric trucks in their operations. These vehicles have been moving freight while also logging miles that will help fleets and manufacturers alike build knowledge and pave the way for broad deployment.

At the same time, government incentives and new regulation, particularly in California, are playing a significant role in jumpstarting this new segment of the commercial vehicle market.

Together, these developments make it increasingly likely that

CNW Group/Walmart Canada

New competitors such as Tesla are targeting the emerging market for electric-powered commercial trucks.

the future of trucking will be powered by electric vehicles.

"All of the arrows are pointing in the same direction," said Glen Kedzie, energy and environmental affairs counsel at American Trucking Associations. "The only thing we're lacking right now is how to overcome the different barriers."

Those challenges include the higher upfront cost of electric trucks, limitations on vehicle range and payload capacity, validating how these vehicles perform in real-world fleet applications and building out the charging infrastructure.

Major Fleets Commit to Electric Vehicles

Several major companies with large fleet operations have announced bold plans to roll out electric vehicles as a key element of reaching their corporate sustainability targets.

Walmart, the world's largest retailer, announced in September that it intends to electrify all of its vehicles, including longhaul trucks, by 2040 on its journey toward its stated goal of achieving zero emissions within its global operations.

"These goals are ambitious, and we will need innovation and infrastructure to get there," CEO Doug McMillon said in a statement.

With a fleet of 7,400 tractors, Walmart ranks No. 3 on the Transport Topics Top 100 list of the largest private carriers in North America.

In alignment with the corporation's global sustainability goal, Walmart's Canadian division announced it was tripling its reservations of the battery-electric Tesla Semi to a total of 130 trucks.

Walmart Canada also said it has committed to converting 20% of its fleet to electric power by the end of 2022 and aims to power its fleet using 100% alternative energy by 2028.

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"[We] are putting safety, innovation and sustainability at the forefront of our logistics network," John Bayliss, senior vice president of logistics and supply chain at Walmart Canada, said in a statement.

As part of its own sustainability pledge, e-commerce giant Amazon.com Inc. has ordered 100,000 fully electric delivery vans from Rivian, a zero-emission vehicle manufacturer based in Plymouth, Mich.

The first of these customized vehicles will begin making deliveries to Amazon customers in 2021, the company said.

Amazon plans to have 10,000 of the electric vans operating in the United States and Europe by early 2022 and expects all 100,000 to be on the road by 2030.

"We hope our custom electric vehicle helps create a sense of urgency in the industry to think big about embracing sustainable technology and solutions — whether you're a package delivery company, a logistics company, an ice cream manufacturer, or almost anyone else with vehicles on the road," Ross Rachey, director of Amazon's global fleet and products, said in an October statement.

Amazon.com Inc.

Amazon plans to deploy 100,000 fully electric delivery vans by 2030 in partnership with vehicle manufacturer Rivian.

Electric Trucks Hit the Road

A growing number of major trucking and transportation companies have begun testing electric vehicles.

Fleets such as NFI Industries, Penske Truck Leasing and Dependable Highway Express have been among the first to deploy heavy-duty electric trucks in their operations, and an expanding list of trucking companies has been joining them.

Knight-Swift Transportation Holdings has deployed its first battery-electric vehicle, a Freightliner eCascadia tractor, in the Los Angeles area.

The truckload carrier also announced in September that it has set a goal to cut its carbon emissions in half by 2035.

"While we have made significant strides in improving our environmental footprint over the years, we believe that setting an ambitious public goal to reduce carbon emissions generated by our fleet by 50% over the next 15 years quantifies our commitment," Knight-Swift CEO Dave Jackson said in the statement.

The fleet said it intends to achieve that goal with a range of tractor and trailer technologies, including battery-electric and hydrogen fuel cell trucks, along with cleaner diesel vehicles.

"While we will likely have to take some risk, we believe that being environmentally responsible and being profitable are not mutually exclusive," said Dave Williams, Knight-Swift's senior vice president of equipment and government relations. "We expect these technologies to reduce emissions and to be cost-effective."

Knight-Swift, based in Phoenix, ranks No. 7 on the Transport Topics Top 100 list of the largest for-hire carriers in North America.

Regulators Push for Electrification

A regulatory framework for electric-powered trucks has begun to emerge, primarily at the state level.

In June, California's Air Resources Board approved the state's Advanced Clean Trucks regulation, which mandates that 5% of all Classes 7-8 tractors sold be zero-emission vehicles starting in 2024. That percentage increases with each new model year, rising to 40% by 2032. The rule also includes rising zero-emission sales mandates for light-duty commercial vehicles and medium- and heavy-duty straight trucks.

California also is one of 15 states, plus the District of Columbia, that has signed an agreement to work together to advance the electric truck market, with a goal of achieving 100% zero-emission medium- and heavy-duty truck sales by 2050.

Those states account for about 50% of the U.S. economy and nearly 40% of the value of goods moved by truck, ATA's Kedzie said.

Looking ahead, Kedzie anticipates that the push for electric trucks also will accelerate at the federal level under President-elect Joe Biden's administration, either through the U.S. Environmental Protection Agency or a new "climate czar" position at the White House.

Truck Makers Launch Electric Models

As the appetite for electric trucks grows, manufacturers and Tier 1 suppliers have been investing in making these vehicles a reality.

All of North America's largest truck makers, as well as electric-vehicle manufacturers such as BYD, Nikola and Tesla, are targeting this emerging market.

Early pilots by trucking companies have been helping to pave the way for commercialization.

Daimler Trucks North America announced in November that its fleet of 38 battery-electric Freightliner eCascadia and eM2 pre-production models has logged more than 500,000 miles in customers' real-world freight operations.

"Real customers running real freight against the rigors of multiple scenarios is the only path to an electric future," said Richard Howard, DTNA's senior vice president of on-highway sales and marketing.

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35
Fleets Operating Trucks.
The toughest tests that a truck will encounter happen in the real world. So we put 38 of our electric trucks to work in real customer fleets. That's real-world schedules, real-world traffic, real-world drivers and real-world challenges. With more than 500,000 miles driven, it adds up to an enormous real-world head start.
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Series production for the heavy-duty eCascacia and medium-duty eM2 is slated to begin in 2022, DTNA said.

Some truck makers have begun taking orders for their first battery-electric truck models, generally aimed at local pickup and delivery, refuse, drayage and regional distribution applications.

Volvo Trucks North America began selling its Volvo VNR Electric regional-haul model in December 2020.

The truck maker said it will begin producing the battery-electric truck at its manufacturing plant in Dublin, Va., in early 2021.

Sister company Mack Trucks has delivered a pre-production LR Electric model to Republic Services for use in real-world refuse operations ahead of production, slated to begin in 2021.

Kenworth and Peterbilt, the operating companies of truck and engine maker Paccar Inc., have opened order boards for several battery-electric models.

This fall, Peterbilt began taking customer orders for its all-electric Model 579EV tractor and Model 520EV electric refuse truck. The company plans to begin producing those trucks by the second quarter of 2021.

Peterbilt also has been taking orders since August for its medium-duty Model 220EV, designed for local pickup and delivery and short regional-haul operations.

Kenworth, meanwhile, has launched its battery-electric T680E Class 8 truck, which will enter production in 2021.

Kenworth also is taking orders for its K270E Class 6 and K370E Class 7 battery-electric vehicles, with initial customer deliveries expected to begin by the end of the year.

Truck makers also are expanding their partnerships with a range of suppliers.

Navistar's electric-vehicle business, NEXT eMobility Solutions, has signed an agreement with electrification company In-Charge Energy to provide charging infrastructure and consulting services to the truck maker and its electric-vehicle customers.

Fuel Cell Investments Ramp Up

As more battery-electric trucks begin to reach the market, manufacturers also are ramping up investments in fuel cell technology. Fuel cells, which use hydrogen gas to generate electricity, offer another potential pathway to zero emissions, especially for trucks that travel longer distances and haul heavy loads.

Global truck manufacturing rivals Volvo Group and Daimler Trucks have agreed to form a 50-50 joint venture to develop and commercialize fuel cell systems for heavy-duty trucks. The transaction is expected to close in the first half of 2021.

Volvo and Daimler's shared goal is to begin customer tests of fuel cell trucks in about three years and to begin series production during the second half of this decade.

In October, Hino Trucks and Toyota announced agreement to jointly develop a Class 8 fuel cell electric truck for the North American market by combining the Hino XL Series chassis with Toyota's fuel cell technology.

Toyota also has collaborated with Kenworth to develop 10 zero-emission T680s powered by Toyota hydrogen fuel cell electric powertrains.

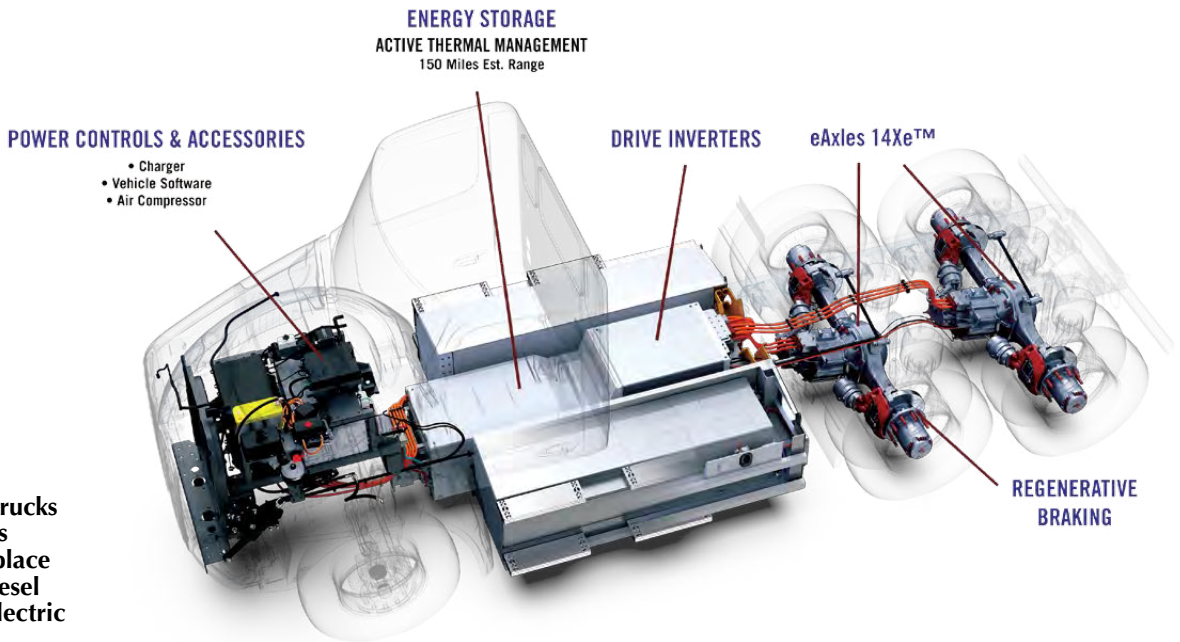
Meanwhile, Navistar and engine maker Cummins Inc. have agreed to work together to develop their own Class 8 truck powered by hydrogen fuel cells in a project partially funded by a grant from the U.S. Department of Energy.

The prototype Class 8 fuel cell truck will be integrated into truckload carrier Werner Enterprises' fleet for use in local and regional delivery operations out of Fontana, Calif.

Today, electric trucks still are in their early days, with only small volumes of these vehicles on the road.

Diesel's dominance will continue for years to come, especially in longhaul, irregular-route trucking operations that require the range and flexibility currently provided by internal combustion engines.

But in the decades ahead, battery-electric and fuel cell electric trucks are the leading contenders to eventually overtake diesel and power the next era of commercial trucking.



Peterbilt Motors Co.

Battery-electric trucks such as Peterbilt's Model 579EV replace the traditional diesel engine with an electric drive system.


469
Locations.
A network of parts and service centers doesn't pop up overnight. Yet having one is essential to a fleet's uptime. With 469 Freightliner dealership parts and service locations across North America, our network is a big reason why our eMobility program is poised for success from the start. After all, without a world-class network of support to back you up, an electric truck is not much more than a science project.
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Report Highlights Ideal Regions For Electric Truck Deployment

By Roger Gilroy
Senior Reporter

While favorable locations for electric truck deployments exist across the United States, the North American Council for Freight Efficiency has identified several regions that show particularly high potential for these vehicles in regional-haul applications.

In a guidance report issued in August, "Potential Regions for Electric Truck Deployments," NACFE found that the following locations are especially well suited to electric truck adoption: Northern and Southern California, Texas' four largest urban centers, the Northwest, the Northeast and the Front Range of the Rocky Mountains.

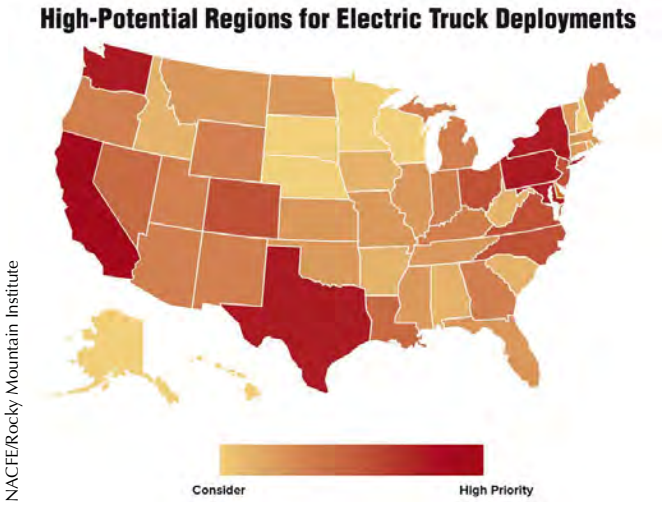
In a November update to the report, the organization added parts of Canada to the high-priority regions, namely the greater Toronto and Montreal areas, as well as Vancouver.

These regions are ideal for electric trucks due to key traits such as relatively mild weather, lower electricity prices, high levels of freight movement, a pressing need to improve air quality and supportive policies and incentives.

The report recommended that fleets running regional-haul routes of about 230 miles or less per shift per day within these high-priority regions should immediately begin planning for electric truck deployments, at least on a pilot-project scale.

"The regional-haul day cab is such a large, fertile ground for electric trucks on dedicated routes [within 300 miles]. That's where we think the focus should be to really help scale," Mike Roeth, executive director of NACFE, said during a virtual press conference.

The NACFE report provides a proposed framework to help prioritize the necessary steps in regions where electric trucks make the most sense and are likely to be the most successful. Produced in conjunction with the Rocky Mountain Institute, the report emerged from large national fleets seeking more information on deployment options.



NACFE/Rocky Mountain Institute

John Sommers II for Transport Topics

Lion Electric's Lion8 model at a trade show. Incentives for electric truck adoption vary significantly by region.

The report's framework is grounded on identifying the regions that are most favorable to the unique attributes of electric truck technology, the regions that have the greatest need for the technology and the locations that provide the most support for the technology.

"We are confident that there will be a significant, early wave of electric tractors in regional haul," Roeth said in the report. "For success, they need to be deployed in the regions where they will be most successful. This comprehensive framework is a strong start."

Other key findings of the report:

- Fleets should think about deploying electric trucks at the regional level rather than by individual states.
- Policies and incentives to support electric truck adoption vary drastically by region.
- Policymakers and advocates looking to increase adoption of medium- and heavy-duty electric vehicles in their regions should consider which of the framework criteria they can change.
- As the technology develops further, NACFE expects additional regions to become more favorable for electric trucks.
- Fleets should work with policymakers, regulators, utilities and other stakeholders in their region to advance zero-emission trucks.

"In considering where to deploy electric trucks, there's a lot to think about — everything from charging infrastructure to which climates the technology operates the best in to where the most funding and incentives are available," Patrick Browne, director of global sustainability at UPS Inc., said in the report. "This framework helps not just fleets, but utilities, OEMs, policymakers, and others think through the many considerations to ensure that wherever they deploy electric trucks that they're a success."

The report is available in the resources section at nacfe.org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Goal: Safety.
It's easy to get caught up in the excitement of electric trucks. But at Freightliner, safety will always be our priority. Our industry-leading Detroit Assurance® safety systems are designed and tested to protect our drivers as well as everyone else on the road. eMobility may grab the headlines, but our commitment to safety keeps driving us forward.
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Fifteen States Set 2050 Target For Zero-Emission Truck Market

By Eric Miller
Senior Reporter

Fifteen states and the District of Columbia have pledged to work together to advance and accelerate the market for electric medium- and heavy-duty trucks.

The group signed a joint memorandum of understanding in July with the goal of ensuring that 100% of all new medium- and heavy-duty truck and bus sales be zero-emission vehicles by 2050, and an interim target of 30% zero-emission vehicle sales by 2030.

"Each signatory state will report, within its available capabilities and on a schedule agreed to by the states, medium- and heavy-duty vehicle registration data needed to track progress toward meeting these targets," the group said.

California, Connecticut, Colorado, Hawaii, Maine, Maryland, Massachusetts, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont and Washington signed the agreement.

"Nationwide efforts to decarbonize freight transportation are moving at warp speed," said Glen Kedzie, environmental affairs counsel for American Trucking Associations. "In what was merely considered a pipe dream 10 years ago, truck electrification is now looking more and more like the chosen technology future of freight movement. While our industry supports fleet choice in purchasing new equipment, we are concerned when companies are dictated as to how to make their capital expenditures."

The states will give consideration to needs ranging from financial vehicle and infrastructure incentives to addressing vehicle weight restrictions that are barriers to zero emissions in large trucks.

"The MOU comes at an important transition point for the industry as investment in zero-emission vehicle technology for the medium- and heavy -duty sector continues to ramp up," the signers said in the statement.

They added, "Apart from the public health benefits and avoided health care costs zero-emission trucks and buses provide, by 2030, the total cost of ownership for many common commercial vehicles is projected to reach parity with conventionally fueled vehicles."

To provide a framework and help coordinate state efforts to meet these goals, the signatory jurisdictions will work through an existing multistate task force facilitated by the Northeast States for Coordinated Air Use Management to develop and implement an action plan for zero-emission trucks and buses.

NESCAUM, a nonprofit association of air-quality agencies in the Northeast, provides scientific, technical, analytical and policy support to air-quality programs. Its board of directors includes air directors of the six New England states — Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont — as well as New Jersey and New York.

"Now is the time to act regionally to protect the health of our residents and our climate by reducing emissions from medium- and heavy-duty trucks," Democratic Connecticut Gov. Ned Lamont said in a statement. "I am looking forward to working with partner states through this agreement to leverage private sector ingenuity with smart public policy to transition to zero-emission vehicles."

A Volvo VNR Electric model in California, one of 15 states to sign the agreement on electric trucks.

Volvo Trucks North America

The group's schedule mostly follows a plan by the California Air Resources Board to require that all trucks be electric by 2050.

"California is proud to be joined by 14 other states and the District of Columbia in a push for clean, zero-emission trucks," Democratic Gov. Gavin Newsom said in a statement. "Our efforts in California will be magnified through the efforts of this multistate coalition to reduce emissions and improve air quality, especially crucial in communities where our most vulnerable citizens live. By working together, we can move toward a cleaner future."

Going Electric Without Going It Alone

Zero emissions. Quiet performance. Loads of torque. While there's a lot to like about electric trucks, there's also a lot of uncertainty. There are questions about charging, financing and incentives, vehicle maintenance and more. Even for the most experienced fleet owners, the world of electric trucks is entirely new. That's why Freightliner is helping to take the guesswork out of electrifying your fleet.

eConsulting Services.

Freightliner and Detroit have always been big on preparation. Combined, the eCascadia® and eM2 trucks have racked up more than half a million miles in real-world fleet testing, giving them a big advantage over the competition. To date, the eConsulting program has performed 30 site visits and assessments to support fleet owners, ensuring they are just as prepared as the trucks.

eCONSULTING INCLUDES

- **Basics of electrification and charging infrastructure**
- **Route analysis and optimization training**
- **Demonstration and hands-on charging hardware and electric trucks**
- **Financing and incentives support**
- **Hands-on shadowing and partnering with a coach**

Get Plugged In.

The most common question about electric trucks has to do with charging, and the eConsulting team can help. Their expertise is indispensable in determining what's right for your location, particularly when construction is needed for grid and infrastructure upgrades. The team provides guidance on scheduling and can help connect you with utilities and contractors. If you have questions on dwell time, utility rates, charging hardware and parking layouts, they've got solutions.

Go Green and Save Some, Too.

The long-term benefits of electric trucks are undeniable. Freightliner can help you find some of the shorter-term benefits as well. An eConsultant can assist with grant writing for local and regional incentives that might be available. They can also help you track down additional incentives on the federal and state levels. These incentives are often based on where an electric truck will be deployed and not where it is purchased, so their expertise can really pay off.

Keep Things Humming Along.

As the industry leader in trucking, Freightliner is well versed in partnering with customers to help them succeed. The transition from diesel to electric will be no different. And while adding an electric truck to a fleet isn't as easy as plugging in an extension cord, Freightliner's team of experts is ready to support you at every turn.

FREIGHTLINER®

Learn more at **Freightliner.com/electric**

Hyliion's Electrified Powertrain Underscores Larger Transition

By Roger Gilroy
Senior Reporter

The emergence of products such as Hyliion's long-range electric powertrain for Class 8 trucks may herald the beginning of a transition period with multiple alternative powertrain options.

Hyliion's powertrain, which has batteries that are charged by an undersized natural gas engine, could prove to be an important step toward carbon-free over-the-road transportation, industry experts said.

Mike Roeth, executive director of the North American Council for Freight Efficiency, said the trucking industry is entering "the messy middle," a period of transition when there will be multiple fuel choices, expanding infrastructure and more innovation and maturation for alternative power sources.

"If this technology proves accurate in real-life testing with payloads, it certainly could be a unique option for a lot of folks," said Daniel Gage, president of NVGAmerica, which has 200 members promoting the use of natural gas and biomethane as transportation fuels.

Hyliion

Hyliion says its Hypertruck Electric Range Extender will be compatible with most major Class 8 truck chassis.

Hyliion founder and CEO Thomas Healy used to feel like he was on the sidelines of trucking's electric playing field. That changed after the company announced in June its electric Class 8 powertrain, which promises a range of 1,000 miles between refueling with natural gas at a network of 700 existing public stations.

That would be more range than stated for battery-electric trucks developed by manufacturers such as Tesla and Nikola Corp.

At the same time, demand for Hyliion's earlier hybrid electric axle is building, Healy said, and its partnership with Dana Inc., a Tier 1 supplier, is expanding.

This fall, Hyliion Inc. completed a merger with Tortoise Acquisition Corp., a special purpose acquisition company, clearing the way for the combined company to be renamed Hyliion Holdings Corp. and its common stock to be listed as HYLN on the New York Stock Exchange on Oct. 2. Hyliion's market capitalization stood at $1.1 billion on the first day of trading.

Hyliion calls its longhaul, electric powertrain the Hypertruck Electric Range Extender, or ERX. Fleet demonstration vehicles will ship in 2021, with volume production scheduled in 2022, according to the Austin, Texas-based company, which was founded in 2015.

Logistics provider Agility placed pre-orders for up to 1,000 trucks equipped with the ERX powertrain.

The ERX platform is compatible with most major Class 8 truck chassis, the company said. Under the hood, a downsized natural gas-fueled engine charges the batteries that power the electric powertrain. Dana is supplying the inverter and electric motors to drive the rear axles.

"We are becoming a full powertrain provider and will work with the existing truck makers to deliver a powertrain in their truck as opposed to taking the Nikola and Tesla approach of developing the full vehicle from the ground up," Healy said. "We are going to leverage Dana's manufacturing facilities in order to actually assemble our Hypertruck product, then ship it directly to the modification centers or the truck makers right from Dana's facilities to be installed on a brand new truck."

The powertrain produces electricity at about 30% less than the average grid cost, the company said. It also will provide 25 miles of pure electric vehicle range in cities adopting zero-emission zones.

The software modules and efficiency-improving algorithms Hyliion developed for the hybrid axle product carry forward on the Hypertruck as well, he said. "The foundational software platform allows us to continue iterating and improving the product on both."

Meanwhile, the cost of natural gas as a fuel is less than that of diesel or hydrogen, and the powertrain can run on renewable natural gas, he added.

By leveraging renewable natural gas, it "allows a net carbon-negative emissions profile for the truck," Healy said.

RNG is primarily methane from decomposing organic matter. Using methane as a fuel reduces its presence as a greenhouse gas in the atmosphere.

Gage said 39% of all on-road compressed natural gas used in 2019 was RNG. In 2018, it was 34%.

The Word On the Street Is Electric

The Freightliner eCascadia® and eM2 are gearing up for full production, and the customer reviews are already pouring in.

"This thing is whisper quiet."
"The handling is what I really like."
"I was surprised by all the power."

These quotes are from real working drivers and owners. Career truck drivers who have put more than 500,000 miles of real-world testing on the vehicles. "There are no shortcuts to delivering safe, reliable, dependable trucks," says Richard Howard, senior VP, on-highway sales and marketing for Daimler Trucks North America (DTNA). "Real customers running real freight against the rigors of multiple scenarios is the only path to an electric future."

Green. With Envy.

There's a lot to love about these trucks beyond the environmental benefits, including the overall driving experience. The placement of the truck's batteries creates a low center of gravity, making for a more stable, comfortable ride. Drivers report being less fatigued at the end of the day. With the high rate of driver turnover in the industry, fleet owners know that a happy driver is more likely to stick around.

"Other drivers ask about it. They can't believe it."

Protecting Everyone on the Road.

Safety has long been an area where Freightliner shines, and its electric trucks are no exception. The Detroit Assurance® Suite of Safety Systems is among the most innovative safety systems in the industry and will be integrated for real-world use in the eCascadia and eM2. Further, Freightliner designs and tests its batteries to withstand crash simulation, water submersion, fire resistance and more. It's all intended to help keep everyone safe on the road.

Driving a Truck Is Not Easy. But It's Never Been Easier.

Instant torque available at the wheels and smooth handling. Comfortable seating and ergonomically designed interiors. Freightliner is a driving force behind innovations that are shaping the future of trucking and giving truck owners and operators plenty of good things to talk about.

FREIGHTLINER®

Learn more at **Freightliner.com/electric**

Early Adopters of Battery-Electric Trucks Say Planning, Partnerships Are Essential

By Seth Clevenger
Managing Editor, Features

Truck makers are beginning to introduce battery-electric models, but successfully deploying this new breed of commercial vehicle requires fleets to manage a bevy of new considerations, including installation of charging equipment, coordination with utility companies and exploring government incentives.

Fleet and OEM executives addressed these important aspects of electric truck adoption during an Oct. 22 educational session at American Trucking Associations' Management Conference & Exhibition, held virtually this year due to the ongoing coronavirus pandemic.

Paul Rosa, senior vice president of procurement and fleet planning at Penske Truck Leasing, encouraged fleets interested in deploying electric trucks to "plan, plan and plan again."

As one of the first steps, fleets must identify locations to install their charging stations and envision how the electric vehicles will interact with existing operations.

Infrastructure design, permitting and construction all can be time consuming, so it's important to engage with municipalities and utility companies very early in the process, Rosa said.

"Don't wait for the trucks to be here to start your infrastructure discussion," he said. "If you do, you'll be way behind."

Fleet electrification is far more complex than today's process of simply ordering new diesel trucks and placing them in service several months later, said Jim O'Leary, vice president of fleet services at NFI Industries.

Daimler Trucks North America

NFI Industries is among the first trucking companies to deploy the battery-electric Freightliner eCascadia model.

Deploying electric trucks requires engagement with many partners and dealing with new contracts for items such as engineering and load-management software, he said.

Together, Penske and NFI have been operating 30 battery-electric Freightliner eCascadia and medium-duty eM2 models through a partnership with Daimler Trucks North America.

Several West Coast Utilities Offer Plan For Charging Stations Along Interstate 5

Penske Truck Leasing

By Roger Gilroy
Senior Reporter

Several West Coast utilities have proposed a phased-in approach to electrifying Interstate 5 in an effort to reduce commercial vehicle emissions along the major freight corridor.

The proposal, released in June, recommends adding electric vehicle charging stations for freight haulers and delivery trucks at 50-mile intervals along the interstate and adjoining highways.

Today, electric truck operators generally rely on charging stations installed at their terminals.

DTNA also has built eight additional electric trucks that it plans to rotate through a number of other fleet customers over the next two years so they, too, can gain hands-on experience with electric vehicles in their own freight operations.

That learning experience will help pave the way for full production and broader adoption, said Jed Proctor, DTNA's manager of customer consulting for e-mobility.

Government incentives for electric vehicle purchases, infrastructure installation and electric vehicle operation also can accelerate electric truck adoption by helping to offset the cost of the new technology, Proctor said.

Driver feedback on the electric trucks has been largely positive, according to the two fleets.

Rosa said the eCascadia has gotten high marks for vehicle performance, including torque, acceleration and drivability, especially in high winds due to the vehicle's low center of gravity with the batteries mounted under the frame rails.

Meanwhile, less obvious benefits such as quiet operation and less vibration can help reduce driver fatigue. Some drivers even remarked that they don't smell like diesel at the end of the day.

"They are thrilled with this technology and not eager to go back to diesel," said Craig Sieber, Penske's manager of new products.

Some drivers, however, have said they would like to see the same number of options and features that are available in diesel models, including more "creature comforts" in the cab or details such as automatically silencing the radio while backing up, for example.

Energy management is another core consideration for electric fleet operations.

"This can make a big difference in your total cost of ownership of electric vehicles," said Nate Hill, head of charging infrastructure at DTNA.

The cost of electricity is based not only on total power consumed, but also on peak demand charges.

Black Horse Carriers is operating an electric truck from Penske.

Penske Truck Leasing

One way to reduce expenses is through smart-charging software that can delay vehicle recharging until hours when prices are lower rather than incurring peak charges.

When designing charging stations for their depots or yards, fleets also will need to choose from many different types of charging equipment that come with a range of different installation costs, power capacity and charging times.

Fleets said they still are working to perfect the charging process by working through issues such as software updates preventing a truck from accepting a charge when plugged in.

"Any software updates need to be coordinated and tested immediately before we assume everything's good," Sieber said.

Even for an early adopter like Penske, there is still a long road ahead to prepare technicians, sales representatives and operations teams to work with these vehicles.

"This is a very exciting space," Rosa said. "We're really happy to be on this journey. It's coming, and it's coming fast."

I-5 runs 1,381 miles through California, Oregon and Washington, from Mexico to Canada.

The first phase would involve installing 27 charging sites at 50-mile intervals for medium-duty electric vehicles — such as delivery vans, by 2025 — according to the proposal. Later, 14 of the 27 sites would be expanded to accommodate charging for electric big rigs by 2030, when it is estimated that 8% of all trucks on the road in California could be electric.

The proposal emerged from the West Coast Clean Transit Corridor Initiative, a collaborative study commissioned by nine electric utilities and two agencies representing more than two dozen municipal utilities.

"The results of this study provide a road map for electric utilities in Washington, Oregon and California to help electrify transportation in a coordinated fashion," Katie Sloan, director of e-mobility and building electrification for Southern California Edison, said in a release. SCE is one of the study's sponsors.

Of the 27 proposed sites, 16 are in California, five are in Oregon and six are in Washington. An additional 41 sites on other highways that connect to I-5 are being proposed for electrification. Those highways include interstates 8, 10, 80, 210 and 710 and state routes 60 and 99 in California; Interstate 84 in Oregon and Interstate 90 in Washington.

Other sponsors of the study:

- Los Angeles Department of Water & Power
- Northern California Power Agency
- Pacific Gas and Electric Co.
- Pacific Power
- Portland General Electric
- Puget Sound Energy
- Sacramento Municipal Utility District
- San Diego Gas & Electric
- Seattle City Light
- Southern California Public Power Authority

Although plans for highway charging infrastructure are beginning to take shape, early adopters of electric vehicles generally will need to build charging stations at their own facilities.

"Our perspective is that depot charging is going to be first — so fleets owning the charging infrastructure," said Mike Roeth, executive director of the North American Council for Freight Efficiency.

Much of the push for electric vehicle infrastructure has been driven not only by going green, but also by economic development, he said.

"Utilities have to be looking at this as a huge opportunity for trucks to burn electricity instead of fuel," Roeth said.

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