

Drive Electric PA Coalition Meeting

April 15, 2021

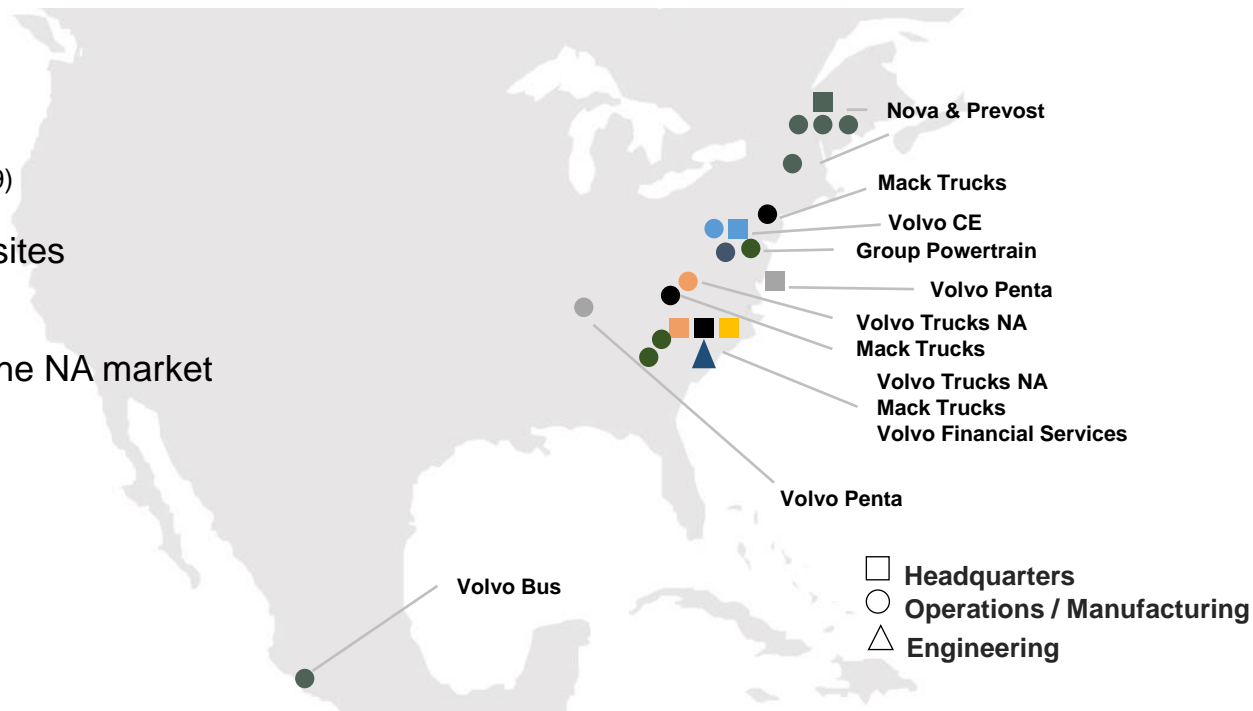
Dawn Fenton

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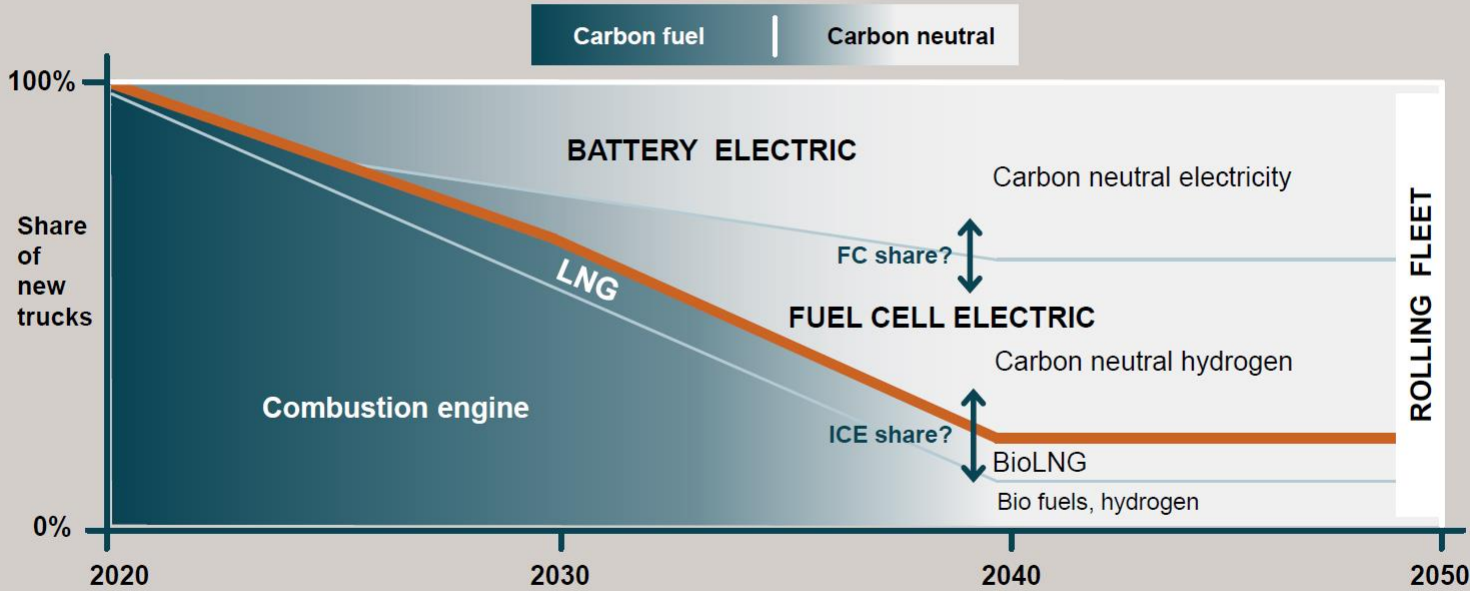


Volvo Group North America

- 30% of Group's net sales (2019)
- Approx. 17,000 employees (2019)
- Fourteen major manufacturing sites
- Only heavy-duty truck group with 100% U.S. production for the NA market
- Global HQ for Mack Trucks, Volvo Financial Services



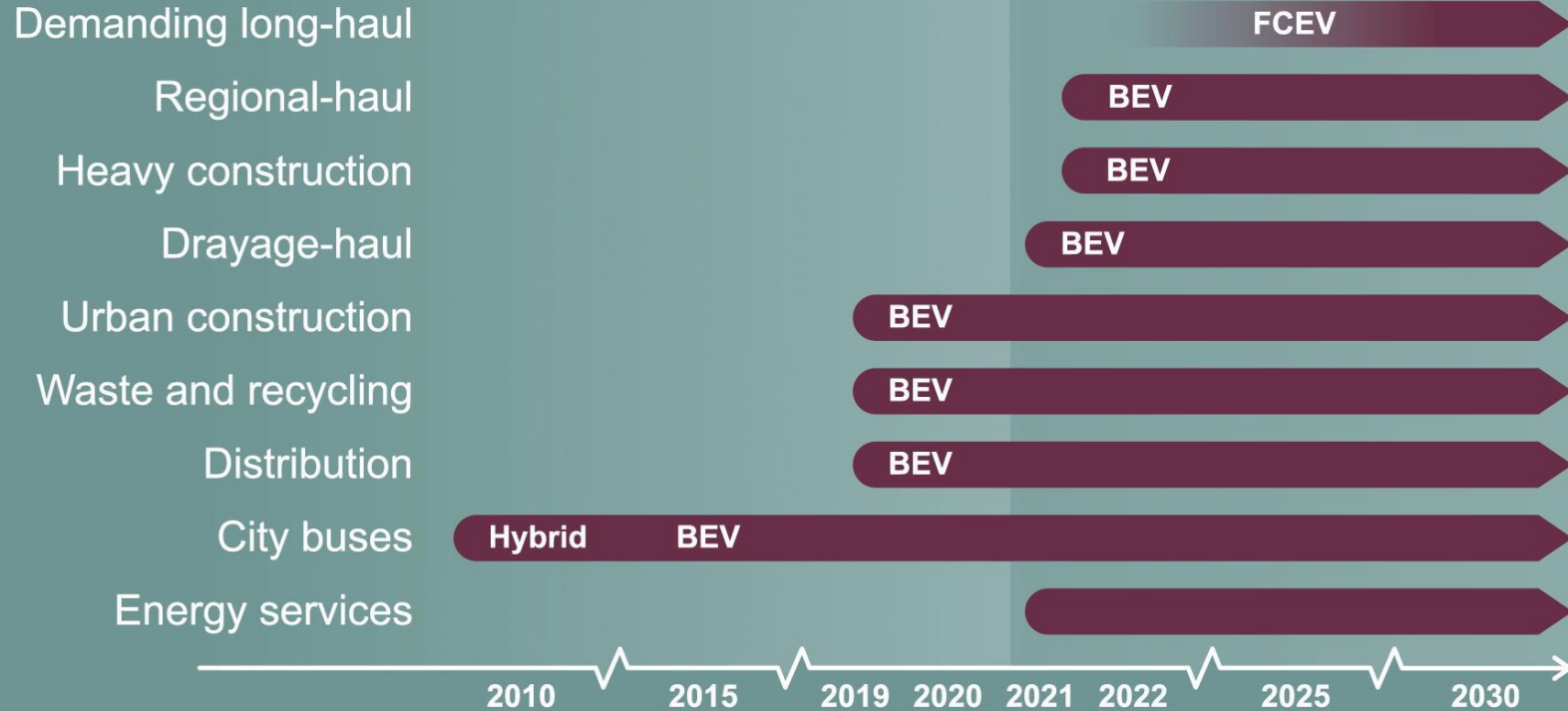
100% fossil free Volvo Group vehicles from 2040



Volvo Group
Volvo Group Capital Markets Day, 2020
32 2020-11-05



Fast-paced introduction



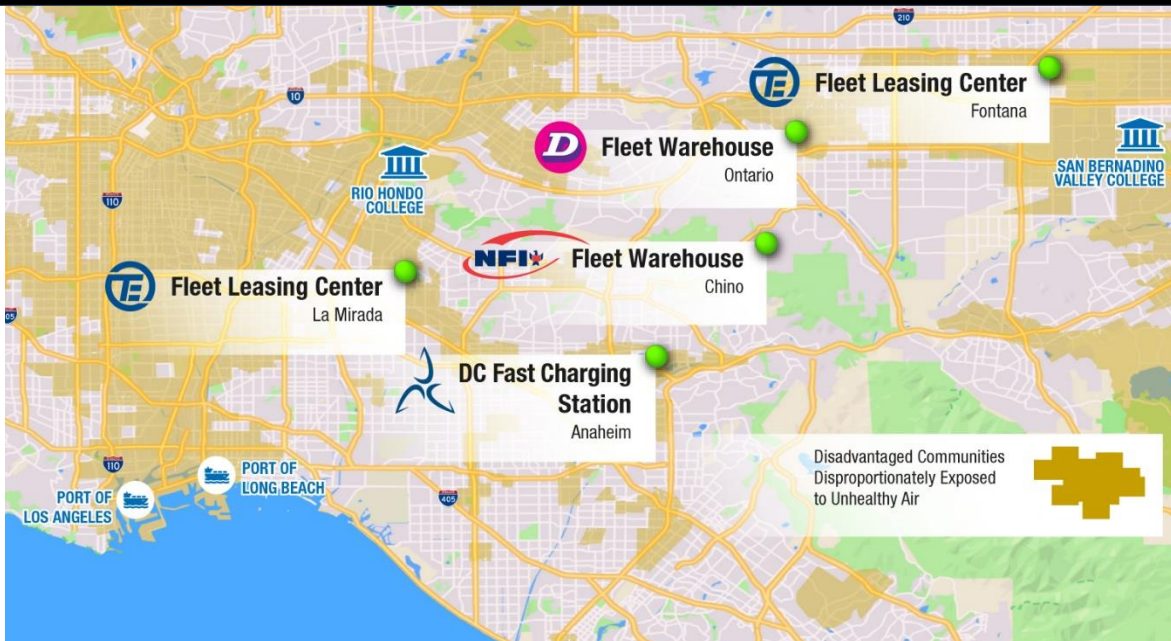


Demonstrating innovations critical to the commercial success of battery electric trucks and equipment for goods movement

LIGHTSproject.com



PROJECT PARTNERS



23 Battery Electric Heavy-Duty Trucks



29 Battery Electric Equipment



58 Public & Private Chargers



2 Colleges Designing Electric Truck Maintenance Programs



1.8 Million KWH Solar Energy Generation



2 Ports Providing Infrastructure Planning

VNR Electric

- Commercial launch on Dec. 3 2020
- Hundreds of VNR orders & deliveries in 2021
- Several fleets testing trucks through Volvo LIGHTS short term lease
- Current product: 150 mile range, 264kWh battery capacity, 70 min charge
- Latest order announced – 14 trucks to QCD, with public financial support





Mack Trucks Demonstrates Mack® LR Electric Model for New York City Department of Sanitation

01-09-2020

ALLENTOWN, PA (Jan. 9, 2020) – Mack Trucks today demonstrated the Mack® LR Electric, a fully electric version of the Mack LR refuse model, to officials from the New York City Department of Sanitation (DSNY) at the Allentown, Pennsylvania-based Mack Customer Center. Unveiled in May 2019, the Mack LR Electric will begin realworld testing in Q2 2020 in DSNY's demanding operations.

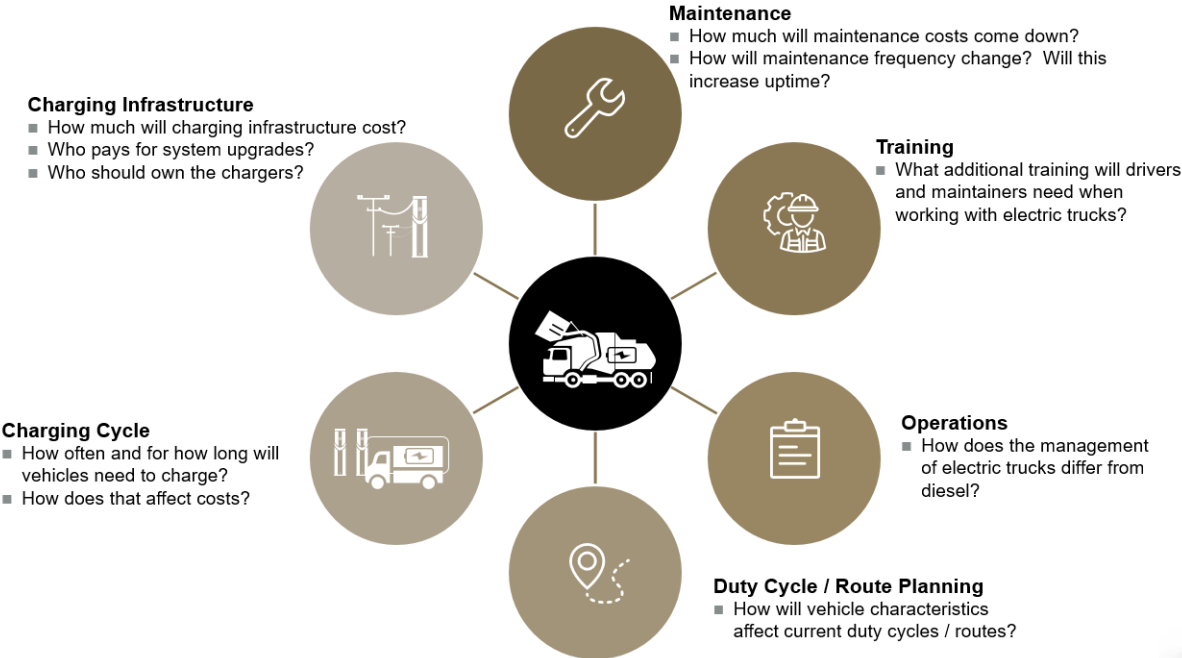


Mack Trucks Delivers Mack® LR Electric Model to Republic Services to Begin Real-World Trials

GREENSBORO, NC (Oct. 6, 2020) – Mack Trucks has delivered a pre-production Mack® LR Electric model to Republic Services to begin in-service trials in the demanding refuse segment. Mack will use key learnings from the trials to further refine the LR Electric as it prepares to accept orders for the truck in Q4 2020, with production

Commercializing LR Electric

**It's not just about the truck.
It's the whole ecosystem.**



■ News

SOUTH COAST AQMD AWARDS VOLVO CONSTRUCTION EQUIPMENT \$2M TO TEST ELECTRIC HEAVY EQUIPMENT IN CALIFORNIA

4/22/2020

By Press Information

Volvo Construction Equipment (Volvo CE) was awarded a \$2 million grant for a commercial pilot of the company's electric, zero-emissions excavator and electric wheel loader in California. The grant, administered by the South Coast Air Quality Management District (South Coast AQMD), is funded by the U.S. Environmental Protection Agency's (EPA) Targeted Air Shed Grant Program which helps agencies develop plans and conduct projects to reduce air pollution in areas with the highest level of smog and soot in the United States. South Coast AQMD is responsible for attaining state and federal standards by improving air quality in the South Coast Air Basin of California.



- Accelerate deployment of zero emission off-road mobile equipment
- Development and demonstration of ECR25 compact excavator and L25 loader
- Deployment through pilot dealers in late 2021
- Can be charged with standard AC connections or BEV charging stations
- Investing in technical training expansion in PA manufacturing plant.

Electric Trucks Pose New & Unique Fleet Considerations

- Fleet ownership of property is key to facility planning and investments
- Implications of charging costs/duty cycles/range/payload
- Staff time and new skills required to manage vehicle adoption
- Importance of uptime and lack of control over operations



Early Lessons Learned from Volvo LIGHTS

- Engage utilities and local officials early in the infrastructure design process
- Charging infrastructure is complicated, site specific and takes longer than expected
- Partner priorities are not always aligned
- New paradigm shift – lack of familiarity contributes to delays
- Consider identifying a dedicated point of contact within your organization



Government Support Needed

- Funding incentives for charging infrastructure and vehicles are absolutely critical (*ie. point-of-sale rebate; make-ready programs; market enabler – LCFS*)
- Prioritize grant funding – loans will have little influence on ZEV truck purchase decisions
- Consolidate purchase incentive and charging infrastructure funding into a “one-stop portal” for fleets to mitigate stranded assets
- Develop a strategy for the electrification of medium- and heavy-duty vehicles to align the various state public agencies
- Synchronize state/local support with state/local requirements



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Thank You & Stay Well