Global Commercial Vehicle Drive to Zero

A Strategy for Zero Emission Commercial Vehicles to Dominate Global Sales by 2040
CALSTART Provided Technical Support in Developing CARB 3-Year M/HD Investment Plan

- Strategy for targeted key Medium- and Heavy-Duty Vehicles (M/HDV) investments to drive transformation
- Extensive analysis of segments based on vehicle use, economics, supplier base
- Focused on segments where tech most likely to succeed – called “beachheads”

https://www.arb.ca.gov/msprog/aqip/fundplan/proposed_1718_funding_plan_final.pdf
Beachhead Significance

**beachhead meaning**: an area of land near the sea or a river that an attacking army has taken control of and from where it can move forward into enemy country – Cambridge Dictionary

- The Allied Forces successfully executed a beachhead strategy on D-Day – eventually leading to Victory in WW II

- For the purposes of this program, the enemy is defined as greenhouse gas emissions that have the potential to negatively impact the earth’s climate and its inhabitants
Strategic Transformation
“Beach Head” Framework

• Identify and leverage key early medium- and heavy-duty vehicle (M-HDV) markets where technology can be successful; use as launching point to then support additional applications

• Success comes from growth of core supply chain, transferring similar powertrain and components

• Beachheads help establish first success cases
  – As technologies mature, they can expand in application and get more affordable

• Each succeeding market builds greater volume
Global Commercial Zero Emission Commercial Beachhead Program

- Establish partners to coordinate activities and accelerate growth of beachhead markets in key regions around the world
- Countries, states, provinces, and cities can learn from and be inspired by each other
- CALSTART would serve as the Executive Secretariat to coordinate global effort
- Use Global Climate Action Summit to launch initiative – Sept. 11 workshop
Example: Beachhead Market leads to Additional Applications and Larger Markets

**BEACHHEA**

**D**

First Application Market

- Steadily build volumes and infrastructure, business case, performance confidence
- Similar drivetrain and component sizing can scale to early near applications

Secondary Market

- Application 2

Secondary Market

- Application 3

Tertiary Market(s)

- Application 4(+)

Expanded supply chain capabilities, price reductions enable additional applications
M-HDV Zero Emission Beachhead, Pathways

**XR** = Extended Range with FC or engine

**XO** = Extended Operations with FC or engine

**BEACHHEAD**
- BEV Transit Bus
- BEV & FC Forklifts
- EV GSE

**BEV**
- BEV Shuttle, School Bus
- FCEV Transit Bus
- BEV Delivery

**Series Drive Engine and FC Range Extender Tech Demos**

**BEV & BEV XR**
- M/HD Delivery

**EV, PHEV & EV XR**
- Regional HD Delivery

**Electrification at Terminals, Facilities**

2017 Steadily Expanding Climate “Wedges” of Increasing Volume, Impact
REGIONS WITH POTENTIAL FOR CONCURRENT BEACHHEAD LAUNCHES

DRIVING GLOBAL VOLUMES FOR COMMON SUPPLY CHAIN, PRODUCTS
Goal is to focus on both vehicle types/beachheads and geographic areas/beachheads
“Tools in the Toolbox” - Draft

• Urban exclusion zones
• Purchase incentives
• Favorable electricity rates
• Low Carbon Fuel Standard
• ZE/NZ truck rules (i.e. ZET mandates)
• Utility investment in infrastructure
• Zero Emission truck only lanes
Exclusion Zones are creating demand for zero emission medium- and heavy-duty vehicles.
Initiative Activities

- Identification, analysis, and sharing of best practices
- Annual reports on progress by region of beachhead markets
- Organize meeting to bring key stakeholders from target nations/states to share information and plan strategies
- Facilitate constructive engagement between global manufacturers, national/sub-national policymakers
Global Commercial Vehicle Drive-to-Zero Workshop

September 11th | Bay Area Metro Center | San Francisco, CA
# Global Commercial Vehicle Drive to Zero - Partners (to Date)

## Government
- California Air Resources Board
- South Coast Air Quality Management District
- Bay Area Air Quality Management District
- Los Angeles Department of Transportation
- Foothill Transit

## Cities
- Los Angeles - Mayor Eric Garcetti
- New York – GCAS
- Oslo - Governing Mayor Raymond Johansen
- Sacramento - Mayor Darrell Steinberg
- Stockton - Mayor Michael D. Tubbs

## Industry (Manufacturers, Fleets, Organizations)
- Auto Research Institute
- AxleTech
- Ballard Power Systems
- BYD
- Chanje Energy
- Effenco
- Lightning Systems
- Mayor USA
- Mitsubishi Fuso Truck
- Motiv Power Systems
- New Flyer Industries
- Orange EV
- Prospect Silicon Valley
- Proterra
- Ryder
- Siemens
- The Lion Electric Co.
- Southern California Edison
- TransPower
- Unique Electrical Solutions LLC
- US Hybrid
- Viatec
- West Valley Construction Company
- Workhorse
- XL
- Coast to Coast Smart e-Mobility
- Zenith Motors
Oslo Mayor, Raymond Johansen

Signing Agreement
Coast-to-Coast E-Mobility (right)

Drive to Zero Supporters – Global Climate Action Summit Affiliate Event 9-11-18 (right)
By 2025, 100% of transport for customer deliveries and services to use electric vehicles (EV) or other zero-emission solutions.
100% Last Mile Deliveries by 2020 in 5 Large Global Cities

Amsterdam
Los Angeles
New York
Paris
Shanghai
Recent Post Global Climate Action Summit Announcements
Paris Solicitation for 1,000 Electric Buses – Commits to 100% Electric by 2025

- Bus strategy complements plans to restrict vehicle access to the city center
- Buses will start service in 2020
- Big transition – Paris has >5000 buses, 25 depots
FedEx to deploy 1,000 Electric Delivery Vans in California in 2019
Consider becoming a Global Commercial Vehicle Drive to Zero Supporter

http://globaldrive2zero.org/aboutus/

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