



This is Freightliner eMobility

Rustam Kocher / Daimler Trucks North America / July 16, 2020



Run Smart™

Michigan Welcomes First Electric School Buses

By Ryan Gray - September 13, 2019



Daimler Trucks sets up E-Mobility Group. Two electric trucks for the U.S. market presented

Daimler Trucks establishes a global market for that also a new management p Market & Technology Days in the ... new, fully-electric trucks by it

APRIL 24

Daimler to r converted F

Phil Dzikiy - Apr. 24th 2019 4:37 pm



erial electric truck producti--

TRIC TRUCKS | EM2 | FREIGHTLINER | OREGON | PORTLAND

ler Trucks North America (DTNA) announced its plan to c and plant in Oregon for the production of electric trucks in er next year. Serial production of the eM2 and eCascadia in in 2021.

decision fell in favour of Portland because of its proximity to ornia, Daimler Trucks said. In addition to production, the Po host a battery storage facility and an electric vehicle co-creat e the team will work with customers. The idea is to help tran truck," states DTNA.

rst time in mid-2018. As far as the technical details of the two liner eCascadia is an electric offshoot of the Cascadia long-hau kW. The 550 kWh battery used in the truck should be recharg total weight of over 15 tons.



Daimler Trucks Delivers Its First Electric Freightliner to Penske

December 21, 2018 by Susan Carpenter, @CarpenterWheels



Daimler delivers its first electric Freightliner eCascadia to US customers



The big truck makers are starting to take electric trucks seriously

Katie Fehrenbacher Thursday, April 25, 2019 - 2:00am



Daimler Trucks CEO Roger Nielsen speaks at the ACT Expo on electric trucks

Dominion chooses 50 electric Thomas Built Buses powered by Proterra

The new electric school buses are part of a pilot program with a goal to integrate 13,000 Virginia buses into the state's power grid as an energy storage resource.

DECEMBER 17, 2019 JOHN WEAVER

BATTERY BUSINESS ENERGY MANAGEMENT SYSTEMS ENERGY STORAGE ENERGY STORAGE MARKETS PROCUREMENT PRODUCTS UNITED STATES VIRGINIA



Daimler will convert Portland factory to make electric trucks

Updated Apr 24, 2019; Posted Apr 24, 2019



Daimler's eCascadia electric truck.

... innovation fleet', ... electric Freightlin, ... Thomas Built Buses ... using Corporation as part ... similar, one of the world's largest truck makers, has been feeling the pressure from Tesla's electric truck - going as far as saying ... if the claims Tesla is making about its electric semi truck are ... they are breaking the laws of physics.

The Motivation for Battery-Electric Fleets



Environmental
Factors



Cost of
Ownership



Policy &
Regulations

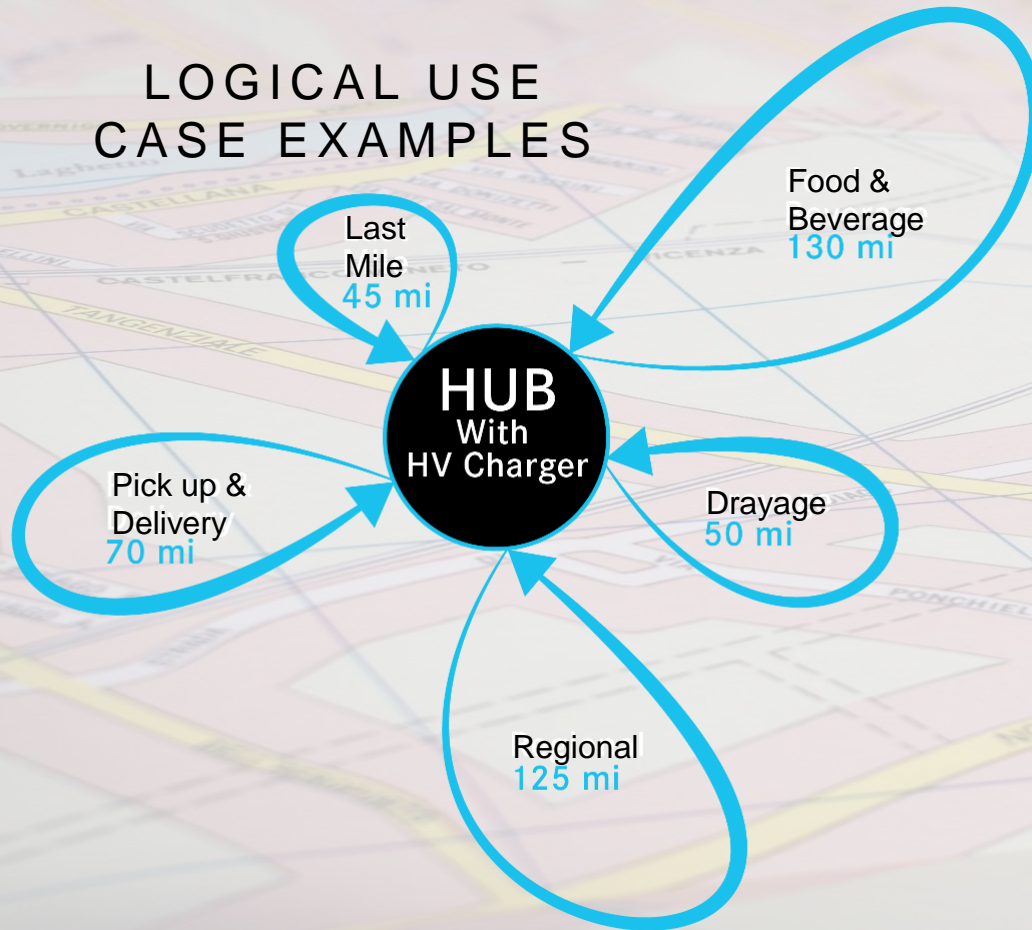


Leading the Charge, Gaining Knowledge and Global Production Network to “Electrify” the Future



First Target Application: Dedicated, Repeatable Routes

LOGICAL USE CASE EXAMPLES



Benefits:

- Reduce noise/air pollution & greenhouse gasses at tailpipe
- Specific regional advantages i.e. taxes, incentives, parking
- Innovative vehicles with sustainable technology
- Improved driver experience and increased driver retention

Specification targets for series production vehicles in 2021



eM2

Designed for Pick-Up and Delivery Application

Range	230 miles	GVWR	26K to 33K lbs
Battery Size	Up to 315 kWh	Horse Power	300 hp (224 kW)
Recharge Time	60 min for 80% SOC	Truck Class	6-7



eCascadia Day Cab

Designed for Distribution Application

Range	250 miles	GCWR	80,000 lbs
Battery Size	Up to 475 kWh	Horse Power	525 hp (391 kW)
Recharge Time	90min for 80% SOC	Truck Class	8

*Vehicles pictured are not representative of final series-intent design

Deployment of eTrucks goes beyond the vehicle – the entire electrical eco-system needs to be developed

HV Safety Organization



Charging Infrastructure



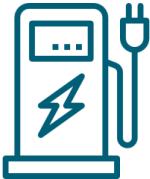
Customer Use Cases

Use Case	Vehicle Model	Capacity	Range	Platform
Use Case 1	Freightliner eTruck	100 kWh	200 miles	e-Canter
Use Case 2	Freightliner eTruck	100 kWh	200 miles	TBR Jouley
Use Case 3	Freightliner eTruck	100 kWh	200 miles	M2-e
Use Case 4	Freightliner eTruck	100 kWh	200 miles	FCCO MTRX
Use Case 5	Freightliner eTruck	100 kWh	200 miles	Other

Regulatory & Incentives



Key considerations in your fleet electrification planning



Electric Truck

Charging Infrastructure

Incentives

Maintenance & Operations

Which routes can I electrify (load, range)?

Which depots/warehouses are best suited?

Which charging infrastructure should I use?

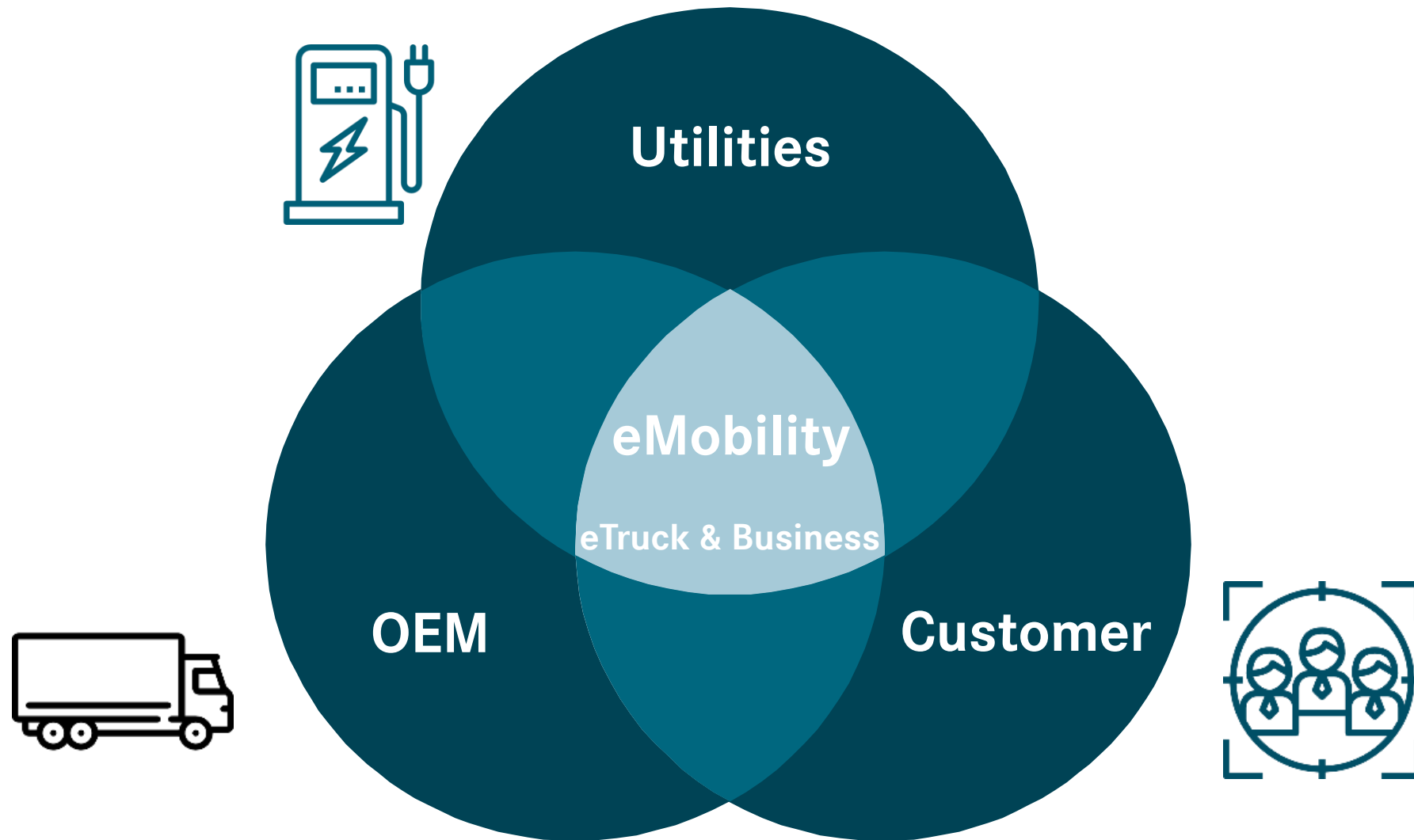
What is my utility's lead time to install infrastructure?

What incentives are available to me (purchase/operation)?

When do I have a payback?

Who maintains the truck and where?

Approach: co-creation to develop the best product



Various challenges still need to be overcome on the road to battery electric truck deployment



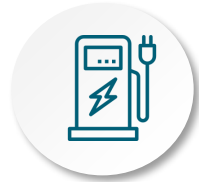
Route Assessment



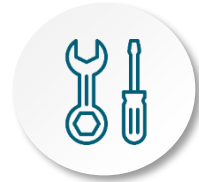
Economic Feasibility Analysis



Finances



Charging Infrastructure Deployment



Maintenance & Operations



Fleet Management

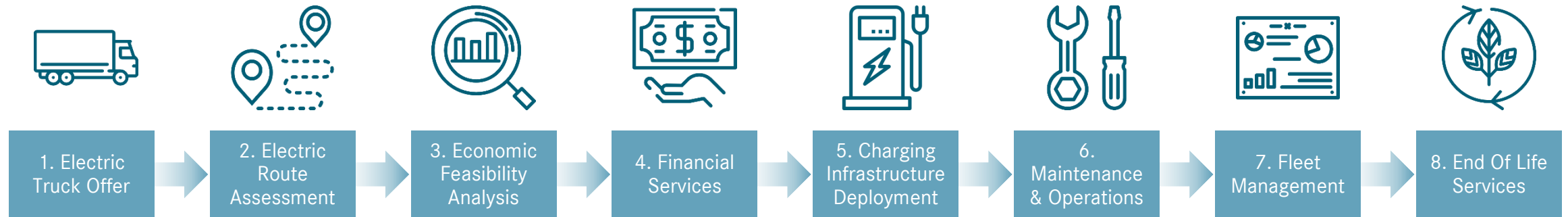


End Of Life Services

Value Chain Fleet Charging – 360 View



Daimler will provide support through the entire electric truck life cycle



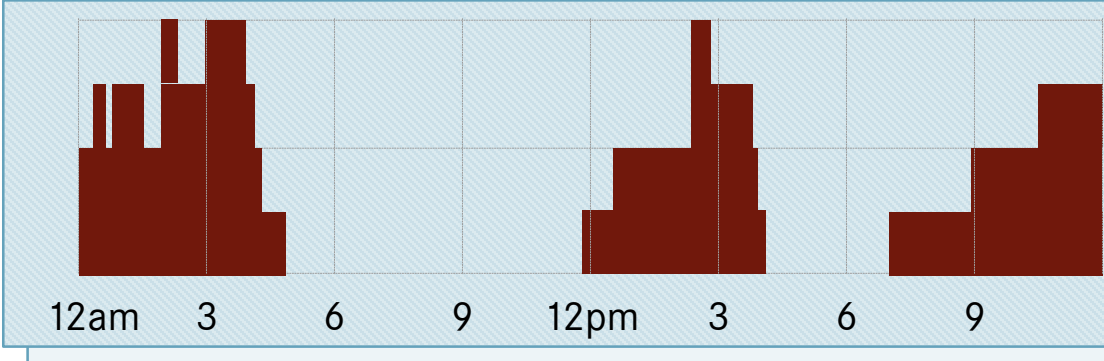
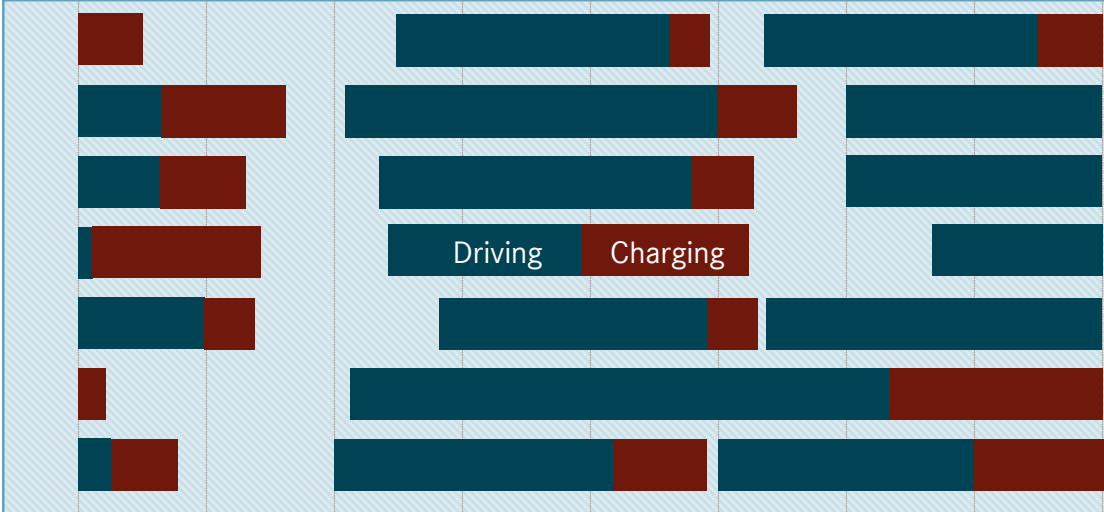
DTNA will create a full ecosystem consulting service

- | | | | | | | | |
|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • eM2 • eCascadia | <ul style="list-style-type: none"> • Detroit connect Electric truck route assessment app | <ul style="list-style-type: none"> • TCO tool incl. regional incentives | <ul style="list-style-type: none"> • New financing offers for trucks, batteries & infrastructure | <ul style="list-style-type: none"> • Infrastructure consulting support | <ul style="list-style-type: none"> • Service operations through strong dealer network | <ul style="list-style-type: none"> • Fleet management consulting for utility cost optimization | <ul style="list-style-type: none"> • Extended life for electric trucks. • Recycling, remanufacturing and second life application |
|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|

Concept of Smart Charging Features - Example Load Balancing

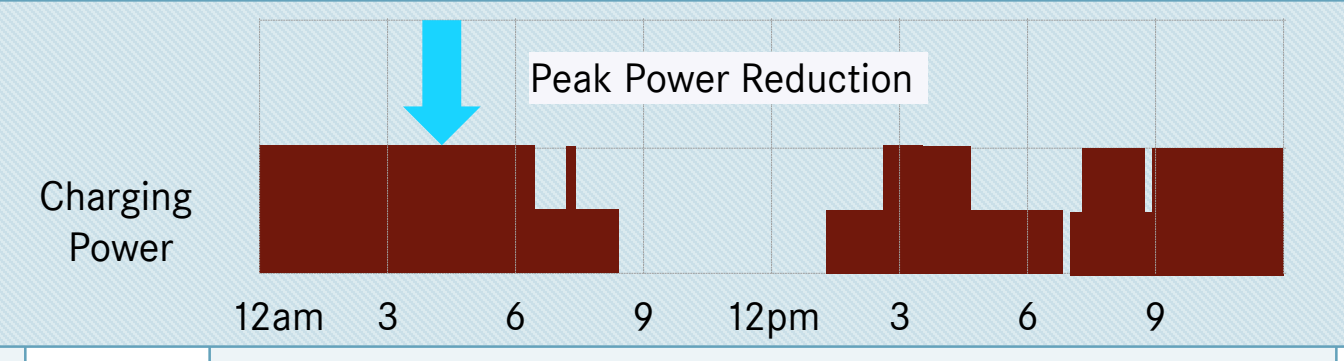
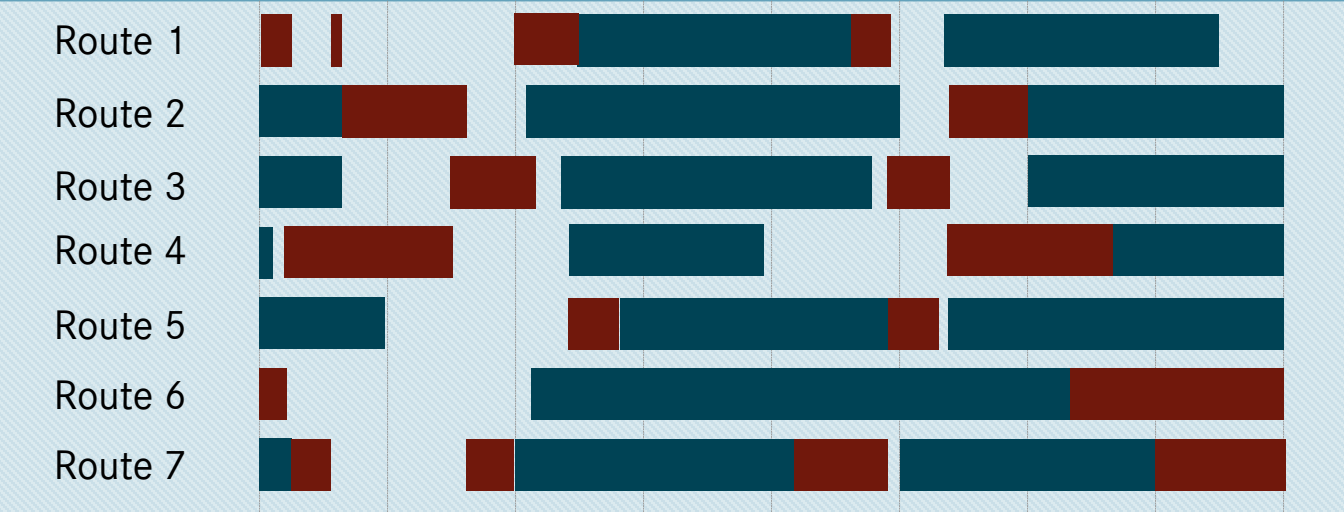
Uncontrolled Charging

(all trucks charge when plugged in)



Smart Charging

(truck charging time is optimized)



Charging Plugs and Standardization

DAIMLER

DC Fast-charging in the US



CCS1

Standard among US and European manufacturers

Typical power: 50-150kW
Max power: 500 kW
Max voltage: 200 – 1000 V
Max current: 500 A



CHAdeMo

Used by Japanese and Korean manufacturers

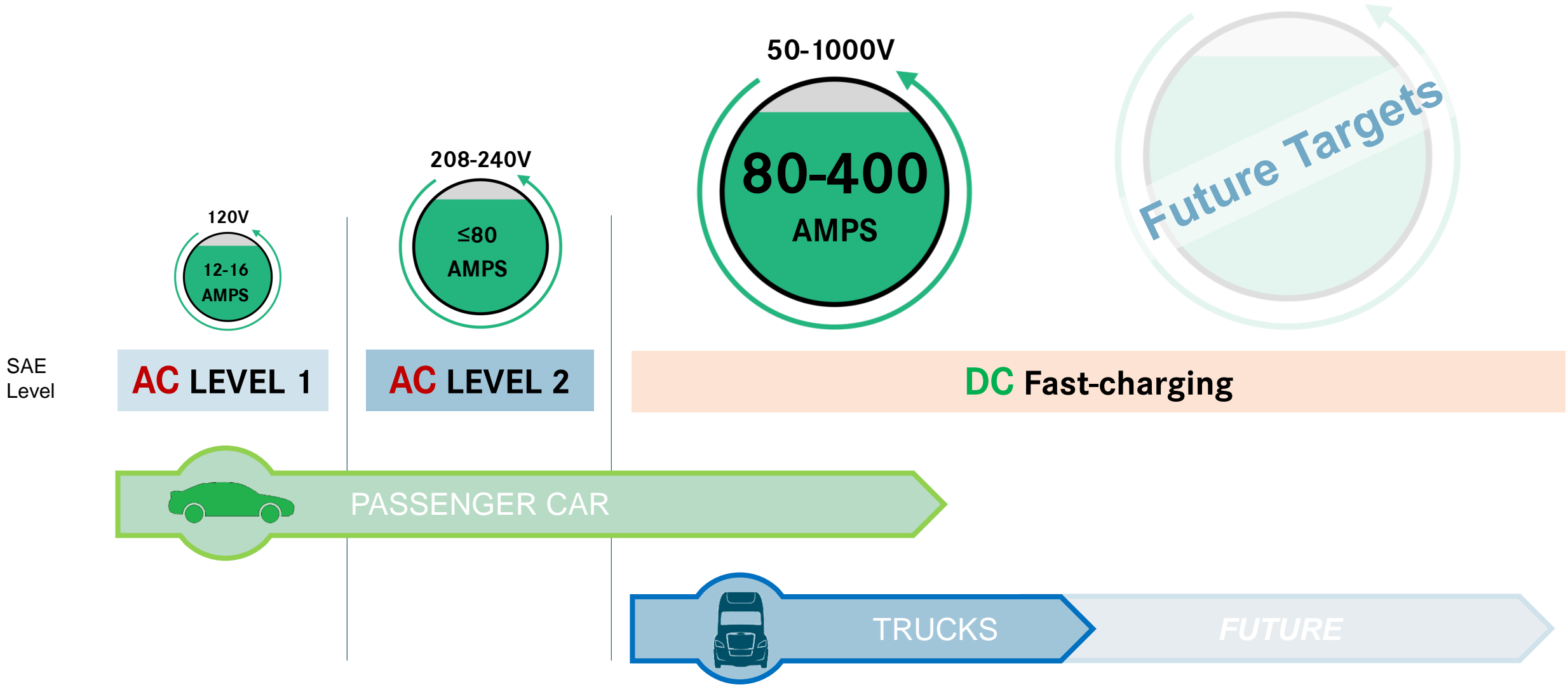


Tesla Supercharger
Proprietary Solution



Daimler leads a taskforce in the international consortium CharIN to expand high power charging beyond current specifications based on CCS1 to ensure maximum interoperability & standardization.

SAE Charging Levels



THANK YOU.

eCASCADIA

A close-up, low-angle shot of the front of a white Freightliner eCascadia truck. The focus is on the 'eCASCADIA' badge, where the 'e' is blue and the rest is silver. To the right, an amber turn signal is illuminated, casting a warm glow. The background is a plain, light-colored wall.