

DOCKETED

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PROTERRA



REVOLUTIONIZING TRANSIT™

EXPERIENCED TRANSIT AND TECHNOLOGY LEADERSHIP TEAM



Ryan Popple
Chief Executive Officer



Gary Horvat
Chief Technology Officer



JoAnn Covington
Chief Legal Officer



Amy Ard
Chief Financial Officer



Josh Ensign
Chief Operating Officer



Matt Horton
Chief Commercial Officer



BUILDING A GREAT PLACE TO WORK IN CALIFORNIA



HIGH-QUALITY, ADVANCED MANUFACTURING IN CALIFORNIA FOR RAPID EV ADOPTION AT SCALE



Burlingame, California

Battery Manufacturing

Company HQ

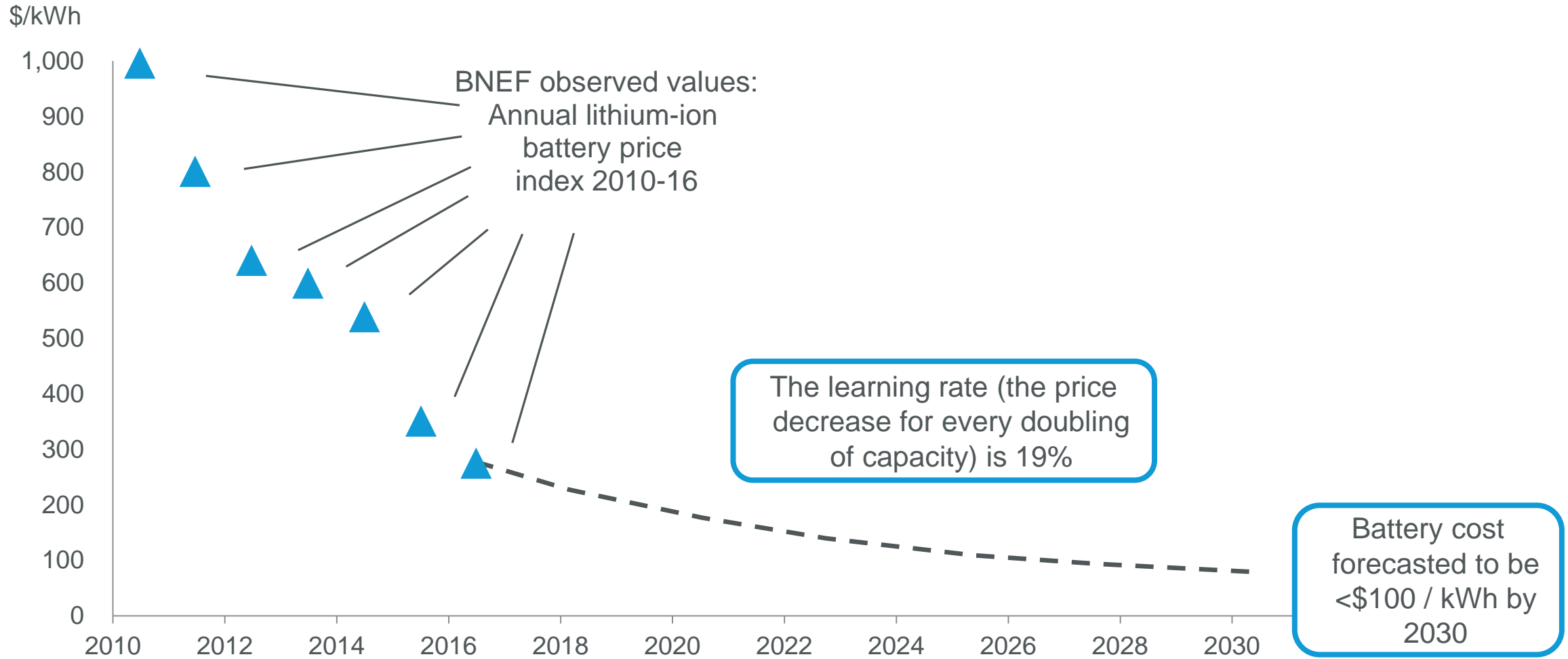


Los Angeles County

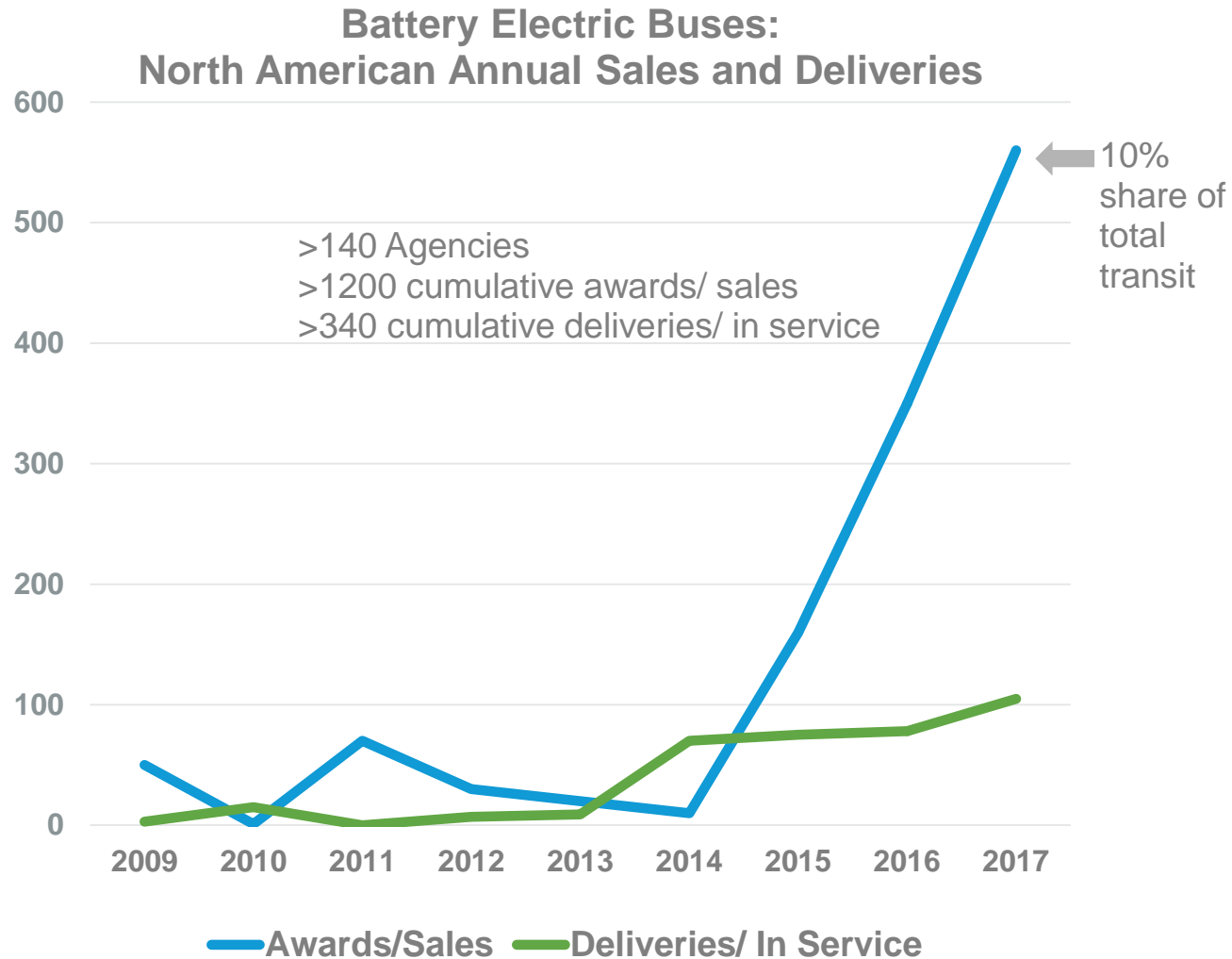
Bus Manufacturing

West Coast Operation

BATTERY PRICES HAVE FALLEN SIGNIFICANTLY, MAKING EV BUSES COST EFFECTIVE



Source: Bloomberg New Energy Finance, June 2017












Source: CTE Center for Transportation and the Environment

- **Greater industry adoption**
- **Proven technology**
 - Improved range
 - Charging standardization
 - Sharp decline in battery costs
 - Service-proven performance

MAJOR CITIES ARE COMMITTING TO 100% ZERO EMISSION BUSES



City	Agency	Buses in Fleet	100% Electric by:
New York, NY		4,600	2040
Los Angeles, CA		2,900	2030
Seattle, WA		1,700	2034
San Francisco, CA		1,100	2035
West Covina, CA		370	2030
Santa Monica, CA		180	2030
Los Angeles, CA		135	2030
Stockton, CA		70	2025
Park City, UT		30	2022

Sources: National Transit Database; agency websites

German cities consider diesel ban
A blow to the country's auto industry which will be forced to spend billions to upgrade or replace millions of cars



We pledge to transition to Fossil-Fuel-Free Streets by: 1) procuring, with our partners, **only zero-emission buses from 2025** and 2) ensuring a major area of our city is zero emission by 2030

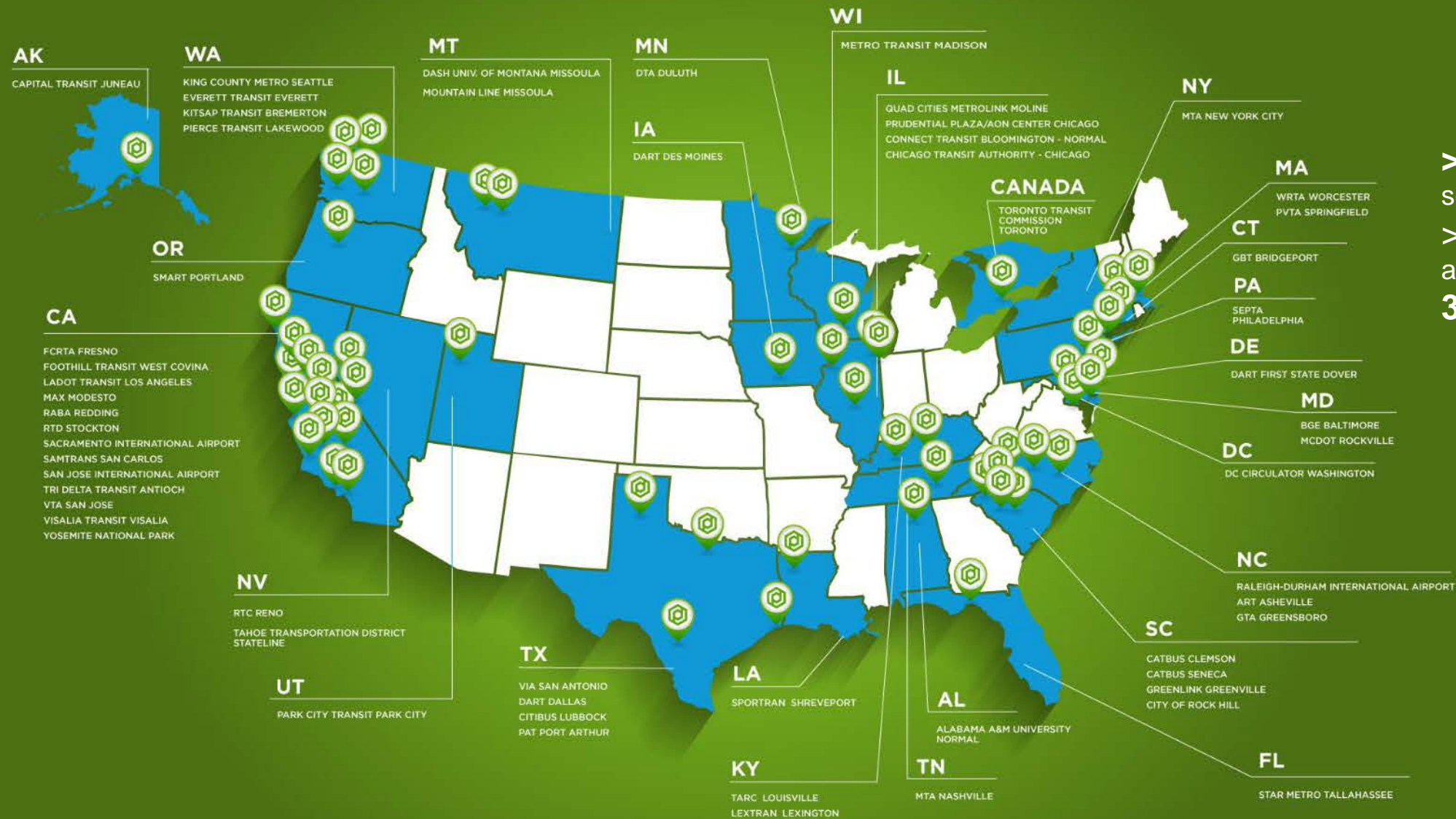
Rome to ban diesel cars to combat air pollution by 2024

CARB is considering a new state regulation called the **Innovative Clean Transit rule** that would require zero-emission vehicles to make up at least 25 percent of transit agency bus purchases by 2020, and **100 percent of all new purchases by 2029**

PROTERRA ELECTRIC BUS CUSTOMERS (2015)



OUR CUSTOMERS



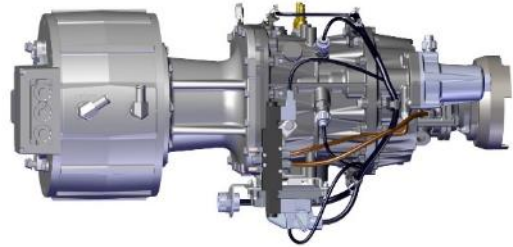
>625 buses
sold to
>70 customers
across
32 states/ provinces

PROVEN ON THE ROAD

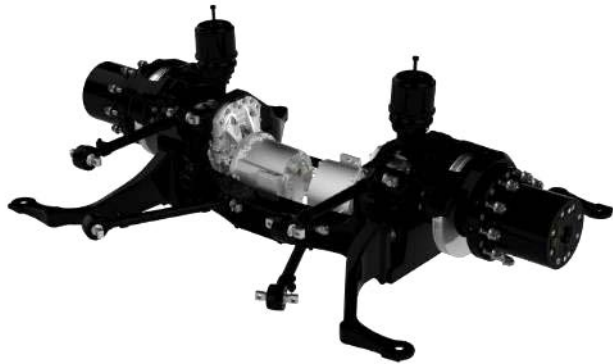
Over 5,500,000 miles of revenue service and more than 30,000,000 pounds of CO2 emissions avoided



Designed for **efficiency, power** and **durability**, Proterra's drivetrains deliver unparalleled performance.

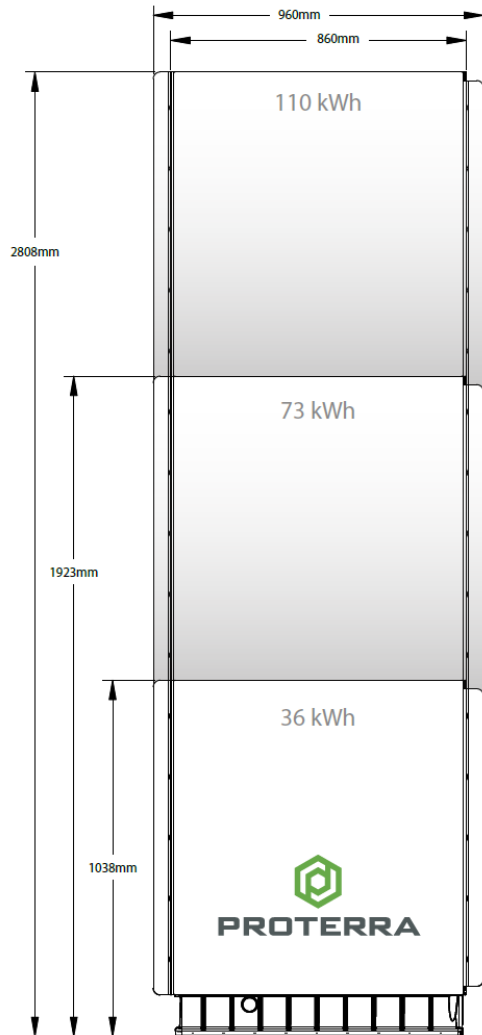


ProDrive (Gen 1)



DuoPower (Gen 2)

PERFORMANCE COMPARISON	Catalyst® E2 with ProDrive Drivetrain	Catalyst® E2 with DuoPower™ Drivetrain
ENERGY (kWh)	440	440
NOMINAL RANGE (miles) Total energy/projected Altoona Efficiency	251	305
EFFICIENCY (MPGe)	21.5	26.1
PEAK HORSEPOWER	295	510
ACCELERATION TIME @ SLW (seconds)		
0-20 MPH	6.7	4.5
20-50 MPH	32.8	15.5
MAX HILL CLIMB	20.0%	26.0%



Proterra battery packs are **safe, lightweight, compact and powerful**

- Standard energy per pack: 110kWh
- Industry leading gravimetric and volumetric energy density

Top design priorities are **safety, quality, durability**

- Liquid-cooled
- Multi-layered passive and active safety systems
- Stranded Energy Management – ability to remotely shed energy in an emergency
- Compliance with international safety and quality standards
- Durability and environmental testing designed to exceed 12 years of operation

Proterra battery packs enable **industry-leading range**

- Demonstrated 1,101.2 miles on test track
- Nominal range up to 350 miles

Modular battery pack enables use across **multiple commercial vehicle platforms**

- 110kWh battery made up of 15 modules
- Proterra can offer 36-110kWh battery packs to enable packaging across platforms

SMARTER CHARGING PROTERRA POWER CONTROL SYSTEMS



INTELLIGENT

Automated and rules-based vehicle charging

UNIVERSAL

Standards-based, OCPP 1.6 open communications protocol-compatible

REMOTE

Can be located up to 492 feet from dispenser

SCALABLE

Can be installed side-to-side and back-to-back for high-density charger banks

60KW

For fleets with longer available charge times.

Catalyst E2 charge time:
~6 hours, w/ J1772-CCS plug-in



125KW

For fleets with high uptime requirements

Catalyst E2 charge time:
~3 hours, w/ J1772-CCS plug-in



500KW

For fleets with extended operating hours and high mileage requirements

Catalyst FC+ charge time:
~38 miles per 10 minutes, w/ J3105 overhead



COMPATIBLE CONNECTIONS



PANTOGRAPH



INVERTED PANTOGRAPH



UNIVERSAL PLUG IN



Open source communications protocol



Bi-directional V2G



Smart Grid Ready



Telematics-enabled



Solar Roof Concept, Inverted Pantograph

CHARGING AT SCALE

Proterra works closely with you to create the ideal charging solution for your fleets and facilities today and into the future as you scale and your demand for charging increases.

PROTERRA ENABLES:

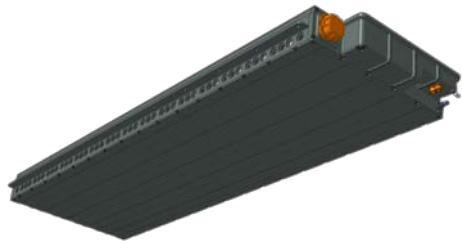
- Efficient charge speeds
- Dynamic power sharing
- Driver-friendly stations
- Cost-effective operations
- Universal compatibility
- Serviceability
- High availability
- Low maintenance costs

OUR EXPERTS HELP WITH:

- Fleet Modeling
- Energy Planning
- Site Design
- Construction Management

Proterra Core Technologies

High Voltage Battery Packs



High Power/Efficiency Drivetrain



Bi-Directional Power Control Systems



Proterra Transit Vehicles



Heavy Duty Vehicle Electrification



Fleet Infrastructure



Stationary Storage



PROTERRA AND VAN HOOL ANNOUNCE ELECTRIC COACH PARTNERSHIP

Overview

Oct 9, 2017




PROTERRA
E2 battery



VANHOOL
CX45E & CX35E



Van Hool selected Proterra's heavy duty energy storage platform to power its first all-electric motor coach in North America

Highlights

- Proterra and Van Hool will co-brand both CX45E & CX35E coaches
- CX45E to be the most-efficient and highest performing long range eCoach offered in the U.S.
- Testing will begin in late 2018, deliveries to begin in 2019

“

Van Hool is truly excited and proud to partner up with Proterra, a pioneering company in the development and production of battery technology

- Filip Van Hool, CEO of Van Hool

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Entering the motor coach market and electrifying more fleets alongside Van Hool, a proven market leader, is a key milestone for Proterra and for the heavy-duty electric transportation industry

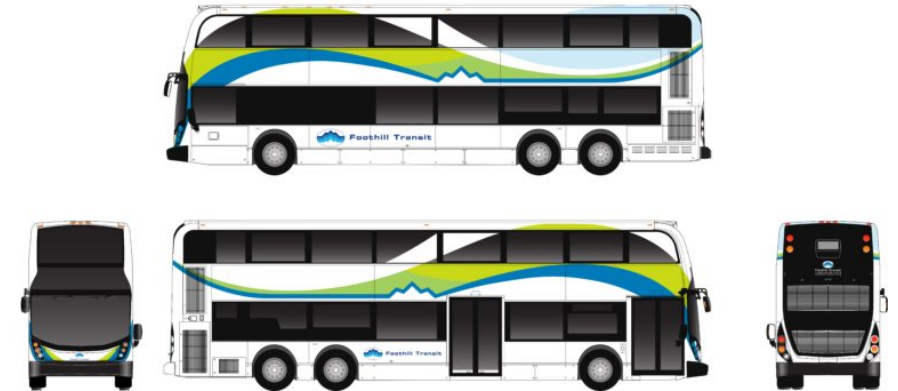
- Ryan Popple, CEO of Proterra

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ALEXANDER DENNIS SELECTS PROTERRA TO POWER NORTH AMERICA'S FIRST ELECTRIC DOUBLE DECK TRANSIT BUS



- Global double deck bus market leader Alexander Dennis chose Proterra's highly efficient E2 battery technology for its next generation Enviro500 platform in North America
- Foothill Transit in California has ordered North America's first electric double deck bus order for a public transit agency, which will enter service in 2019
- In addition to Proterra E2 batteries, vehicles will be equipped with Proterra charging hardware and battery thermal management to ensure optimal vehicle performance
- Announced on July 12, 2018



“

As congestion intensifies across Southern California, every inch of road space matters, so increasing passenger occupancy while maintaining comfort and a singular bus footprint is a public transit solution we're really excited to introduce.

- Doran Barnes, Executive Director at Foothill Transit

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- High level of automation
- Co-located with engineering and validation activities
- Manufacturing Capacity:
500,000 kWh / yr



Our batteries are tested in our state-of-the-art Silicon Valley lab with tests designed to provide product with the highest safety and optimal energy levels, including crash testing, excessive moisture, extreme temperatures, and vibration.



- Grand Opening July 2017 – Gov Jerry Brown



From this.

To this.



- Proterra investors include major corporate investment groups and venture capital funds which have supported major capital intensive efforts.
- Winning the CEC grant for advanced manufacturing in 2015 that supported the establishment of the factory in SoCal and battery manufacturing in NorCal.
- Development of its own battery and drivetrain team and resultant ruggedized technology. The completion of its battery pack manufacturing facility with significant production capability.
- The ability to transfer our technology into other sectors and capitalize on the overall acceptance and growth of transportation electrification in the heavy duty sector.

- Proterra has already exceeded its stated job creation goals in the grant agreement. These jobs are full time jobs with competitive benefits, on-the-job training for career advancement, equity ownership in the company, matching 401K plan, PTO and 10 paid holidays.
- All employees are owners of Proterra.
- Proterra has already exceeded its financial match commitment in the grant agreement.
- Proterra has significantly scaled operations to meet customer demand by opening its west coast facility.
- Proterra is considering further growth in LA County to meet demand in bus sales and technology transfer sales.

- Take advantage of all the programs/opportunities possible that CA offers.
- Everything takes longer and costs more than you think so proactively communicate with the CEC.
- Aggressive goals are good but commitments should be conservative.
- Winning grant money at the state and federal level sends a positive message to investors and potential investors. Access to capital in advance of need and on fair terms can make the difference between success and failure.
- Supply chain coupled with rapid growth will be challenging despite careful planning.
- There will be workforce challenges. Recruiting employees needed yesterday vs developing the employees you need tomorrow. Even when you locate in an area that had previously experienced job losses there will be challenges.
- **Build and perfect what the customer wants; secure their input!**

- Proterra must continue to scale manufacturing through a combination of workforce and automation. Human capital and equipment capital expenditures will increase and continue respectively. Specifically:
 - Sustainability through increased vertical integration of supply chain components.
 - Wiring harnesses built offshore can be manufactured in CA.
 - Lift assist machinery for enhanced safety and increased bus production.
 - Additional battery pack manufacturing equipment and upgrades to existing equipment and facilities to increase production.
 - Paint shop and metal fabrication - tube bending and brackets.
- New product manufacturing planning and development.
- Workforce of the future development. Work with CA to develop regionalized streamlined programs.