

The All-Electric Refuse Truck



 **LION ELECTRIC**

An all-electric commercial
vehicle manufacturer

Created for, and special
thanks to:



All-electric refuse truck



SAVINGS

Electric vs Hydraulic

50%

Reduction of energy consumption of an electric vs hydraulic on an electric chassis



ADVANTAGES

- 1,000 - 1,200 homes per day
- Integrated solution means less energy used so the truck can complete its route
- No hydraulic fluid or pumps
- All compaction and arm movements are powered by the Lion8 HV batteries that drives the electric motor
- Less weight than a hydraulic body

Who is Lion



300+ electric vehicles in operation



More than 6 million zero-emission miles driven



Manufacturing capacity of 2 500 electric vehicles per year, battery lab and battery manufacturing operations



R&D center in Montreal, with a total of 4 to be opened by 2022



Build a highly-automated US truck factory in 2021 with a total forecasted capacity of 12 250+ trucks



450+ employees (up to 500 within 1 year) / 95 R&D / 2 000 indirect jobs

Best-in-Class Product Line-up Available Today

Lion has 7
Vehicles
**Available
Today...**

...With
Purchases by
**Top
Customers**

ALL-ELECTRIC MEDIUM AND HEAVY-DUTY URBAN TRUCKS

LION6



Class 6

LION8



Class 8

LION8

Refuse



Refuse
Class 8

amazon



PARC SAFARI



ecomaine



MOLSON Coors



AGROPUR

WASTE CONNECTIONS, INC.



ALL-ELECTRIC BUSES

LIONM



Shuttle Bus

LIONA



Type A
School Bus

LIONC



Type C
School Bus

LIOND



Type D
School Bus



Broadest product line-up of all-electric medium and heavy-duty urban vehicles available for purchase and use today

Purpose-Built for Electric

100% In House

- Lion's vehicles are purpose-built for electric and entirely designed and assembled in-house
 - Lion built chassis, truck cabin and bus body
 - Proprietary battery technology, with modular energy capacity
 - 100% Lion software integration
 - V2G ready battery technology
 - Range up to 250 miles



TRUCK CABIN



BUS BODY



CHASSIS



BATTERY



POWERTRAIN



The Lion Advantage
Supported by an
R&D Team of 100+
Engineers & Technicians

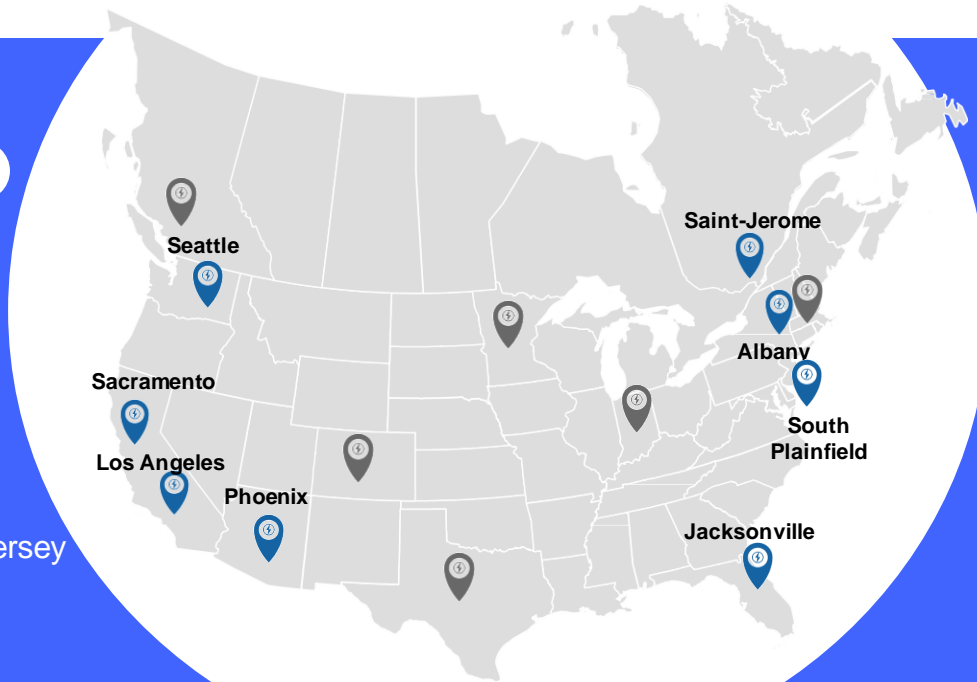
Lion adapts to its customers' needs by designing each integrated component from the ground up specifically for EV; involves no retrofitting or third party integrators

Experience / Service Centers

Currently open



- **Sacramento, California**
- **Los Angeles, California**
- **Seattle, Washington**
- **Jacksonville, Florida**
- **Albany, New York**
- **Phoenix, Arizona**
- **South Plainfield, New Jersey**
- **Saint-Jerome, Quebec**



At least 6 more openings in 2021



- **Minnesota**
- **British Columbia**
- **Colorado**
- **Texas**
- **Indiana**
- **Massachusetts**

Savings electric vs diesel

80%

Energy Costs
Reduction

60%

Maintenance
Costs Reduction



Why go electric?

Affordability
& Sustainability

**Calculating TCO - Electric will always
be cheaper than diesel no matter what**

- Zero-emission solution
- Low maintenance
- No noise pollution
- Health Impact
- GHG reduction
- Proven safety record

All-Electric Lion8 Refuse Truck



LION8

MAXIMUM POWER

Up to 350 kW / 470 HP

MAXIMUM TORQUE

2, 507 ft-lb

BATTERY CAPACITY

Up to 336 kWh

CHARGING TYPE

Standard : Level III (DC) - CCS-COMBO

Optional : Level II (AC) - J1772



1 LION TRUCK =
ELIMINATING

100 tons
of GHG

*EPA calculator

MODULAR
BATTERY
APPROACH

Weight & Payload Capacity:

Current ASL Options:

220" WB w/Tag Axle (8x4)

Curb Weight: 37,200

Tires: 425/65R22.5

Cut Angle: 40 degrees

C2C: 34.7

W2W: 36.6

Body: 30 CY

Maximum Payload: 12 tons

244" WB (6x4)

Curb Weight: 35,300

Tires: 315/80R22.5

Cut Angle: 40 degrees

C2C: 37.6

W2W: 39.7

Body: 30 CY

Maximum Payload: 11 tons



REL Options: (Final specs will be complete in 2021)

220" WB (6X4)

Body: 25 CY Residential

Maximum Payload: 11 tons

Range: Stated vs. Actual

Battery Pack Options:

Stated Range based on 100% Capacity:

252 kWh = 130 miles

336 kWh = 170 miles

For a 10 hours day, we estimate the following:

252 kWh with electric / auxiliary heat = ~*75 miles - ~95 miles

336 kWh with electric / auxiliary heat = ~*115 miles - ~135 miles

* Lower miles is with electric heat only, higher miles w/auxiliary heat (optional) *

252 kWh with AC = ~85 miles

336 kWh with AC = ~130 miles

** These numbers do not include any regen gained during operation**

Arm cycles that BEV has tested are as follows: (Will require 45-47 kWh for the below numbers)

Up to 1,200 in the summer

Up to 1,000 in the winter (Northern climates)

(Arm uses 3 electric motors for all functions with a gear box, which is less efficient in the cold weather months)

FACTOR THAT WILL IMPACT THE RANGE

With an integrated solution on the Lion8 refuse trucks, there are factors that will impact the range:

- ✓ AC (2 kW) per hour of operation
- ✓ Heat (4 kW) per hour of operation
- ✓ Refuse operation: up to 54 kW per day (10 hours)
- ✓ 24 V auxiliary items

Weight & Payload Capacity (Cont.):

Roll-Off Options: (Final specs will be completed 2021)

GVWR: 66,000 (Available now)

GVWR: 75,000 - 80,000 (Available September 2021)

Cable or Hook bodies

FEL Options: (Final specs will be completed in Q1 2022)



The Lion chassis: a versatile platform with huge potential



Lion vocational trucks are the only heavy electric specialty vehicles perfectly integrated to date. Our chassis and electric powertrain will serve as a platform to accommodate the various applications available.



Lion Crane



Lion Stake Bed



Lion Refrigerated



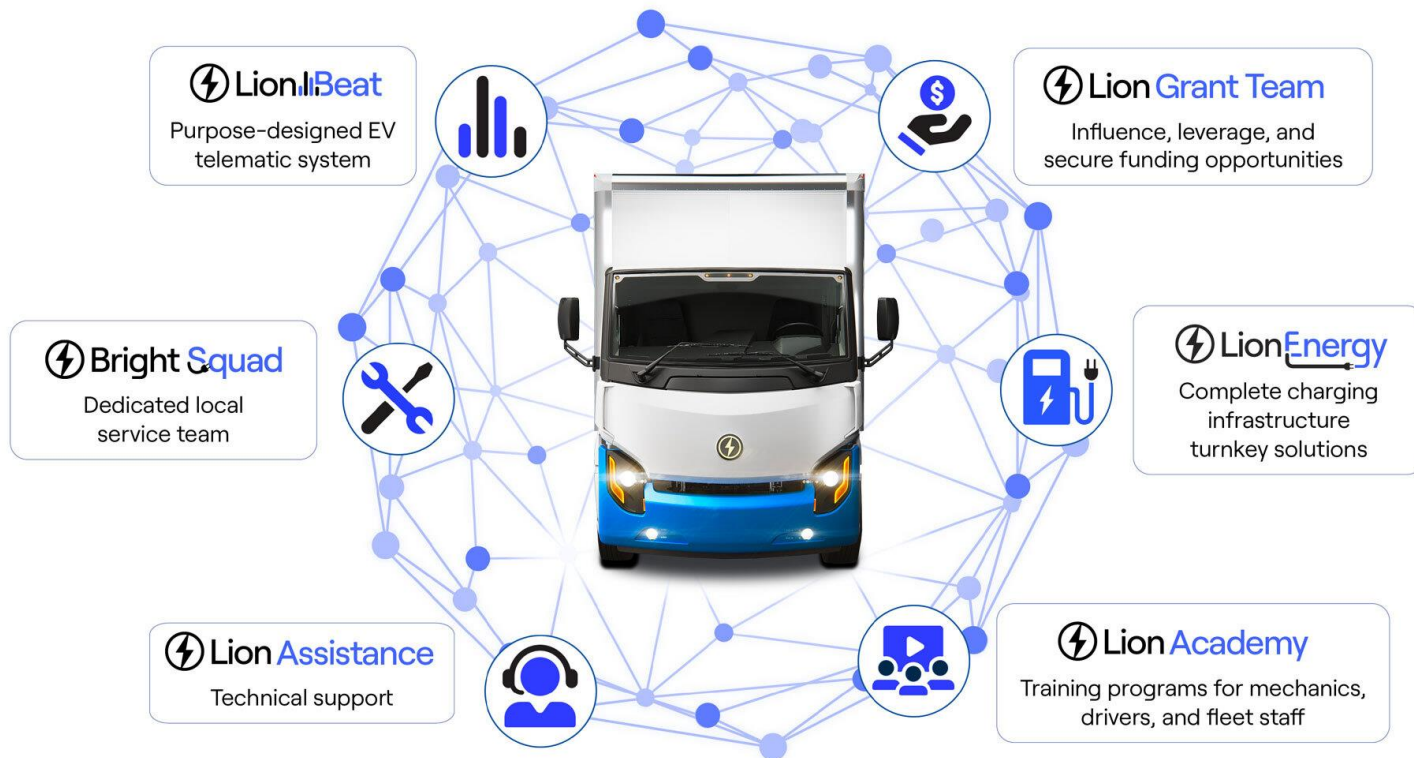
Lion Utility

Operating in cold climates since 2016

Lion Electric vehicles have been tested and proven in all types of warm and cold weather conditions



Support at every step!



The bright move

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