



City of Richmond City
Council Meeting
November 22, 2022

Andrew Gibbs

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650 730 0274



Commercial
Vehicle Center



Richmond
CALIFORNIA



BIG SAVINGS, NO MATTER WHICH WAY YOU GO.



ATTENDEES/ PRESENTERS

❑ The Ford Store – Morgan Hill

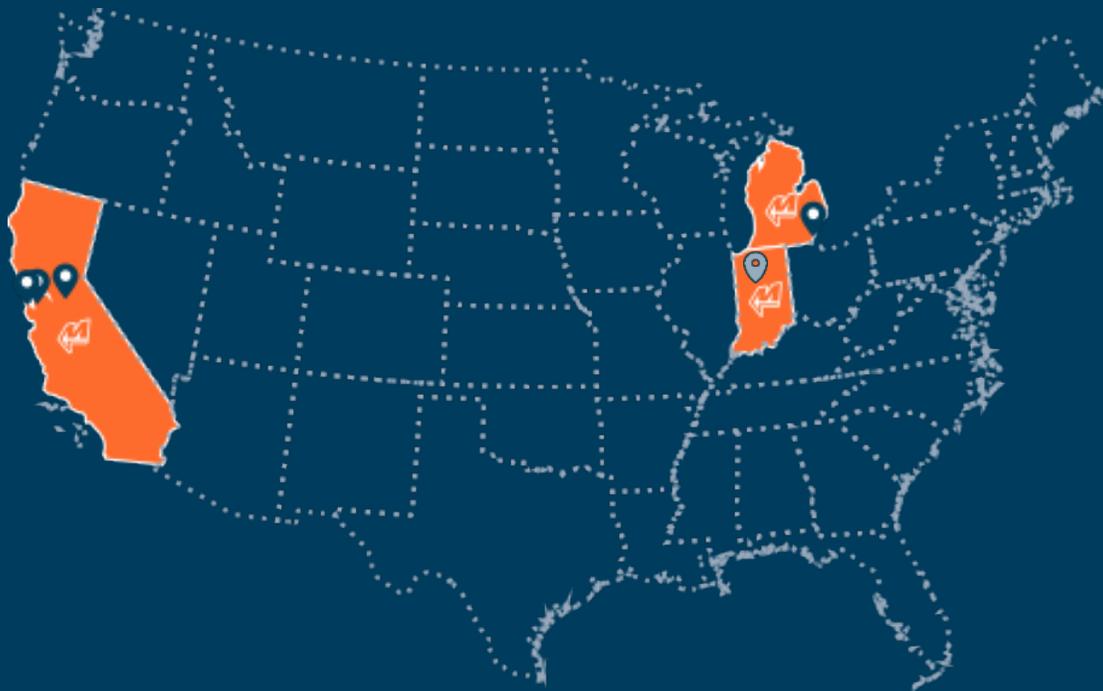
- Mark Wexler – Commercial Vehicle & Fleet Sales Director

❑ Motiv Power Systems

- Gary Schmidt – SVP Sales and Marketing
- Matt Hultman – Director Channel Sales
- Andrew Gibbs – National Account Manager
- Jacob Panachaveetil – Sales Engineer

HOW MOTIV IS FREEING FLEETS FROM FOSSIL FUELS

Motiv is a decade-plus innovator of medium-duty electric trucks and buses designed to power the backbone of modern commerce. We deliver all-electric vehicles for a wide variety of medium duty applications. We utilize our proprietary Adapt EV software, patented power electronics, and industry-leading truck and bus body partners for the commercial EV market.



- Headquartered in Silicon Valley, CA
- Electronics manufacturing in Hayward, CA
- Pre-delivery and service center in Stockton, CA
- Applications and manufacturing center near Detroit, MI
- Chassis electrification in Indiana and Michigan

WHY GO ELECTRIC?

- When switching to **ALL-ELECTRIC**, you not only save the environment, • but you also save on recurring fuel, maintenance, and operation costs.



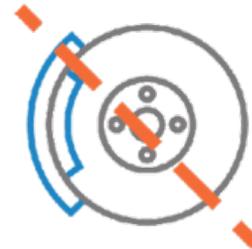
ELIMINATE
GASOLINE



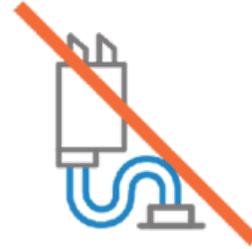
ELIMINATE
TRANSMISSION SERVICING



ELIMINATE
OIL CHANGES



REDUCE
BRAKE WEAR



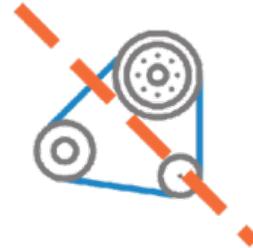
ELIMINATE
EXHAUST COMPONENTS



ELIMINATE
EMISSIONS TESTING



ELIMINATE
AIR FILTERS



REDUCE
BELTS



ELIMINATE
VACUUM LINES



WHY MOTIV: YOUR PATHWAY TO ELECTRIFICATION



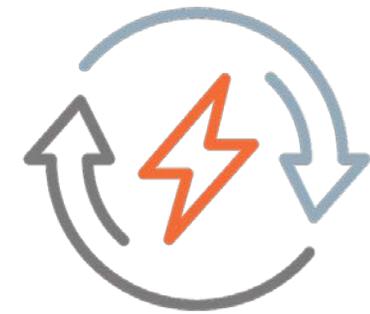
HIGHEST-TOUCH CUSTOMER SUPPORT

Dedicated support for infrastructure and depot electrification planning, vehicle procurement, and driver and maintenance training for post-deployment success.



ROAD TESTED, PROVEN, & RELIABLE

1.7 M real-world miles with 98% uptime across diverse medium-duty truck and bus applications deployed in North America.



COMPLETE ENERGY SOLUTION

Electrification beyond vehicles, including charge stations, turnkey installation, financing, and more.

COMMITTED TO YOUR SUCCESS



Motiv Power Systems

Electrifying the Backbone of Modern Commerce

Over **70** pounds of
MILLION deliveries

Single-charge range
with 3-ton payload:

150 **MILES**

2.1+
MILLION
customer
driven miles

Reducing tailpipe
emissions by over **3.4**
MILLION pounds

Proven
performance:

150 **DELIVERY**
STOPS
per day

Forbes®

SUSTAINABILITY

Electric Truck With 3-Ton Payload Goes 150 Miles On A Charge Using Tech From Motiv And ONE

Jeff Kart Contributor

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Mar 8, 2022, 12:15am EST

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The 6,000 pounds hauled during the field test is a typical daily payload for Motiv's commercial ...

[+] MOTIV POWER SYSTEMS

An electric truck hauling 6,000 pounds of payload “easily” traveled 150 miles south from San Francisco’s Golden Gate Bridge to the Bixby Bridge in Big Sur.

MEETING EV NEEDS FOR MEDIUM-DUTY TRUCK & BUS FLEETS

Motiv Product

Vehicle Application

EPIC4

14,001 – 16,000 lbs



Step Van

176"
14,500 lbs



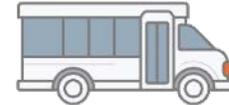
Box Truck

158", 176", 190"
14,500 lbs



Work Truck

158", 176", 190"
14,500 lbs



Shuttle Bus

158", 176", 190"
14,500 lbs



Type A

158"
14,500 lbs

EPIC5

16,001 – 19,500 lbs

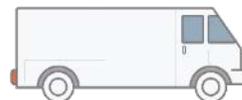


Step Van

208"
19,500 lbs

EPIC6

19,501 – 26,000 lbs



Step Van

178", 208"
22,000 lbs

Motiv's Epic E-450 Upfit Options

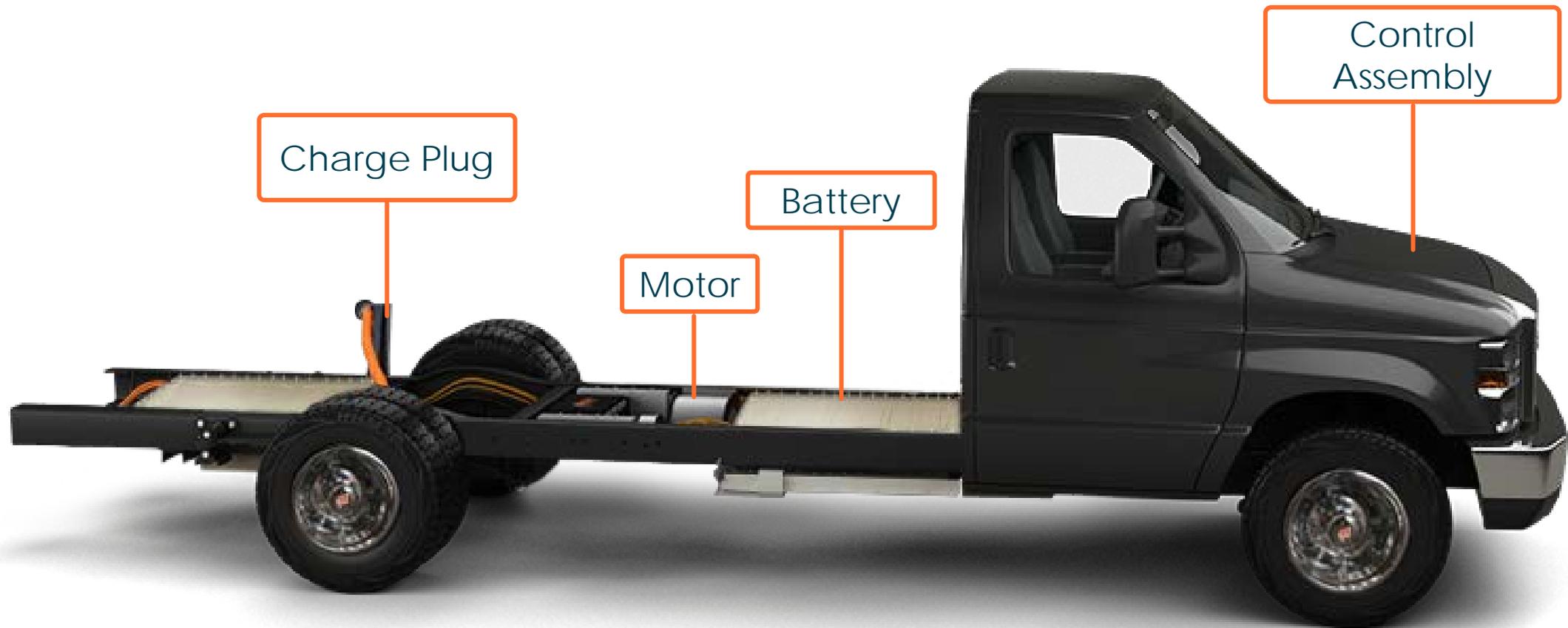
E-450 Cutaway



DRW	Engine	Body Code	11 ft. Stake/Platform	11 ft. Van	11 ft. Utility	12 ft. Stake/Platform	12 ft. Van	14 ft. Stake/Platform	14 ft. Van	16 ft. Stake/Platform	16 ft. Van	Wheelbase (in.)/CA	Max. GVWR (lbs.)	Max. Payload (lbs.) (see weight info - Pg. 7)
4X2 DRW	7.3L Eco	(E4F)	■	■	■	■	■	■	■			158/100	14,000	8,480
4X2 DRW	7.3L Prem	(E4F)	■	■	■	■	■	■	■			158/100	14,200	8,680
4X2 DRW	7.3L Prem	(E4F)	■	■	■	■	■	■	■			158/100	14,500	8,980
4X2 DRW	7.3L Eco	(E4F)						■	■	■	■	176/118	14,000	8,480
4X2 DRW	7.3L Prem	(E4F)						■	■	■	■	176/118	14,200	8,680
4X2 DRW	7.3L Prem	(E4F)						■	■	■	■	176/118	14,500	8,980



MOTIV'S EPIC E-450



VEHICLE APPLICATIONS AND BODY PARTNERS

EPIC4

14,001 – 16,000 lbs



EPIC5

16,001 – 19,500 lbs



EPIC6

19,501 – 26,000 lbs



CUSTOMER SUCCESS STORIES



ARAMARK

- 31 step vans deployed across 5 depots
- > 530,000 miles
- 30 additional trucks for delivery in 2022



GOOGLE/MOUNTAIN VIEW

- 6 shuttles deployed in 2015-16
- > 580,000 miles
- Longest running Motiv fleet, still in daily operation



TYPE A SCHOOL BUSES

- 25 buses deployed across school districts in CA, CT, AZ, and NY
- > 195,000 miles



ALSCO

- 4 vehicles deployed in 2021, 2 are in USA's first zero-emission delivery zone
- > 36,000 miles



BIMBO BAKERIES

- 28 step vans deployed across 5 depots in CA, PA, and NY
- > 85,000 miles
- 30 in production for 2022, 30 on order for 2023 delivery



PUROLATOR

- 5 step vans deployed in 2021
- > 31,000 miles, > 99% uptime

PLANNING: CHARGING INFRASTRUCTURE

1. Plan for infrastructure in tandem with your vehicle purchase. Do not wait until there are only weeks before deployment.
2. Talk to your electric vehicle OEM, power utility, and local Clean Cities Coalition about infrastructure funding programs.
3. Learn about electric vehicle charging and infrastructure requirements.



California Hybrid & Zero Emission Truck & Bus Voucher Incentive Program (HVIP)

\$38 Million available as of November 14, 2022

Agencies: CARB, CALSTART, Tetra Tech

Funding Type: Voucher Reimbursement

Program Status: First-Come, First-Served basis.

Voucher Amounts

Vehicle Weight Class

Base voucher Amount

Class 4-5 (14,001 – 19,500 lbs GVWR)	\$60,000 per Vehicle
Class 6-7 (19,501 – 26,000 lbs GVWR)	\$85,000 per Vehicle

HVIP Funding & Approval Process

* We have worked diligently to apply for HVIP funding since March 2022

* We have achieved “Funding Set Aside” status at this point
 $\$60,000 \times 14 \text{ units E450} = \$840,000$

* Funding is NOT officially approved until Richmond finalizes the order with a PO.



TCO Analysis

High Level			
Comparison Values	ICE Vehicle	Battery EV	Savings
Avg Annual Fuel Cost	\$18,490	\$3,170	\$15,319
Avg Maintenance Cost	\$4,490	\$1,796	\$2694
Total Cost of Ownership	\$314,798	\$196,672	\$118,126
Payback Period			~4-5 years



~ 38% Saving, using an BEV over ICE, over 10 years



~ 60% Maintenance savings

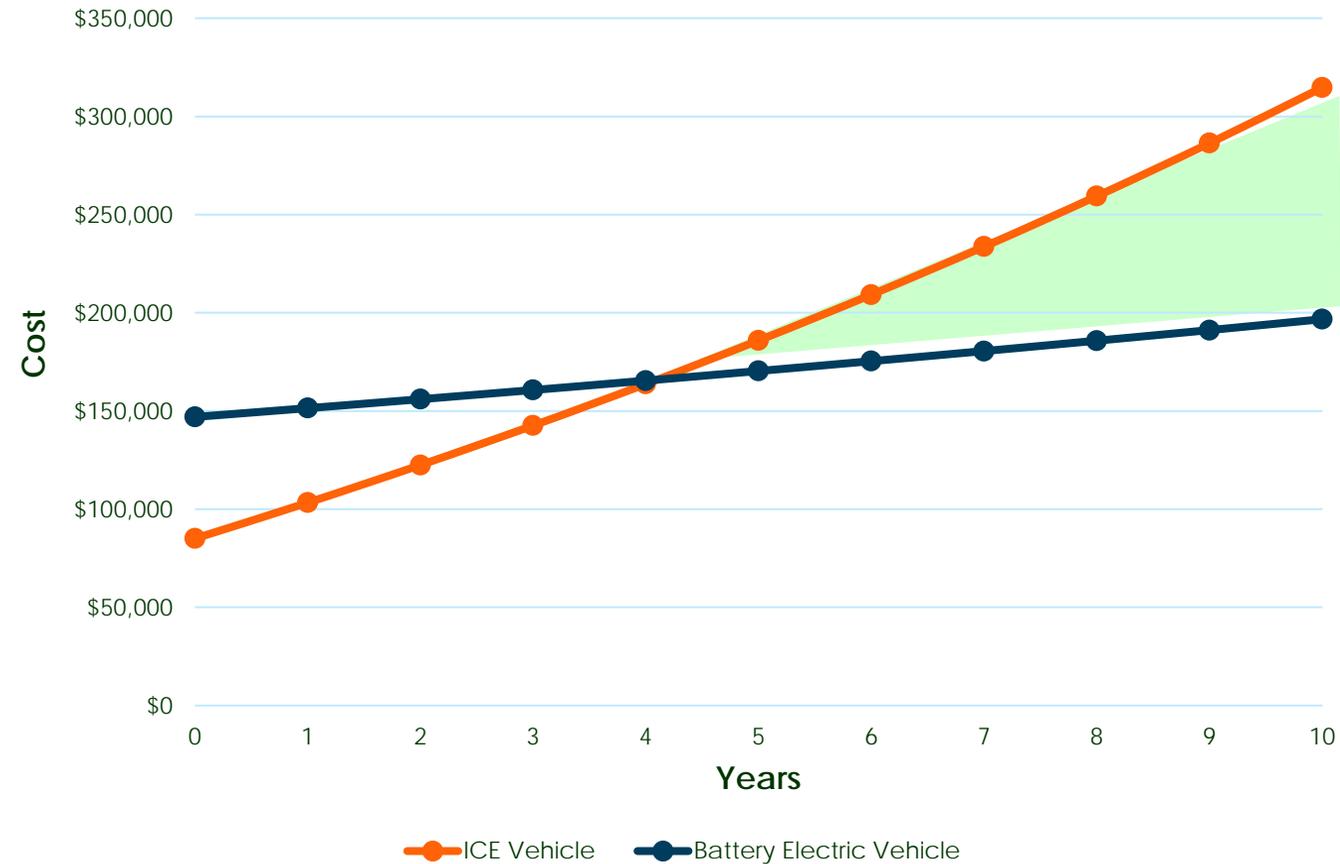


~ 82% Fuel savings

ASSUMPTIONS			
Comparable ICE Vehicle Price	\$85,000	EV Purchase Price - Before Incentives	\$210,000
ICE Efficiency (mpg)	10	EV Incentives	\$60,000
ICE Fuel Price (\$/gal)	\$6.00	EV Price - After Incentives	\$150,000
Electricity Price (\$/kWh)	\$0.15	Miles per Day	80
Operating Lifetime (years)	10	In-Use Days per Year	250

Total Cost of Ownership Analysis

ICE Vehicle VS. Battery Electric Vehicle



CUSTOMER SERVICE/ WARRANTY



Each vehicle has a diagnostic computer, collecting vehicle/ performance data.



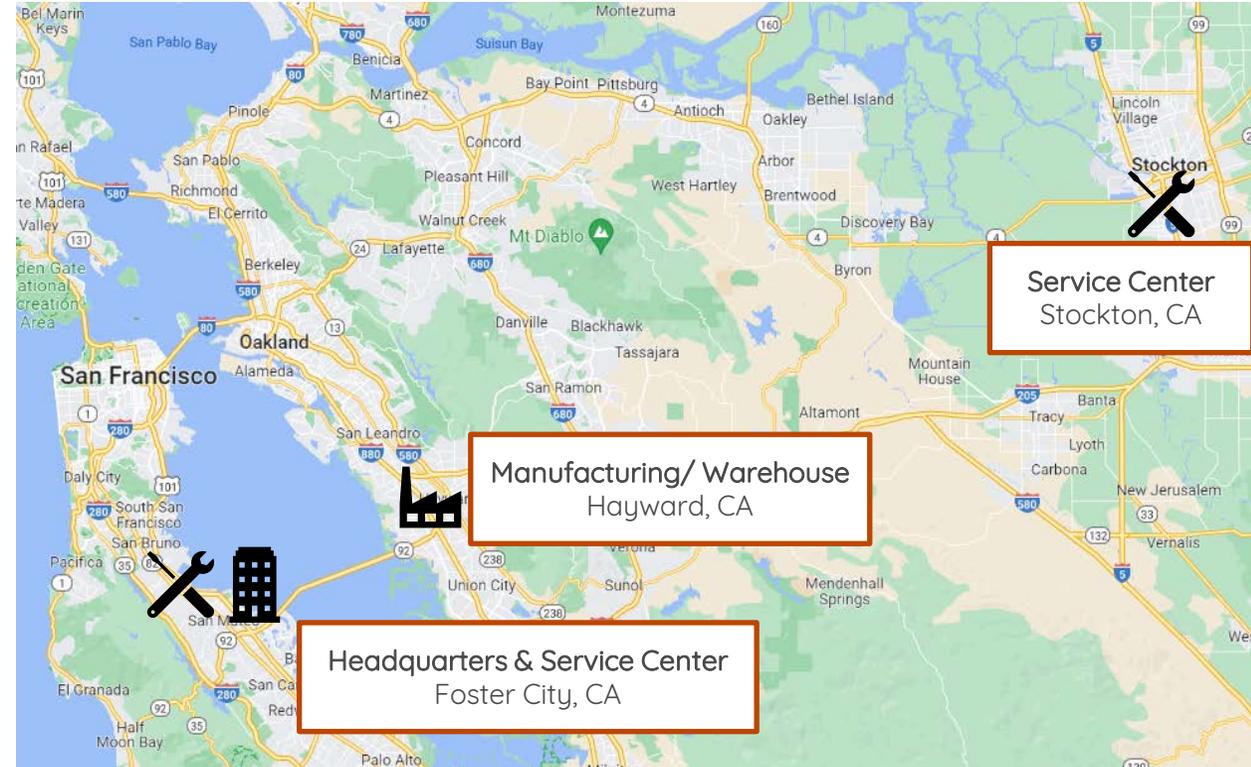
80% of field issues can be remotely diagnosed and fixed.



Typically less than 24 hrs. for technicians to be on-site, in the unlikely event of parts swap or repairs.

Vehicle Warranty Coverage

Traction battery	5 years or 100,000 miles
All other powertrain components	3 years or 50,000 miles
HVAC (Battery & Cabin)	5 years or 100,000 miles
Chassis Warranty	Ford Warranty – Pass Thru



NEXT STEPS

- We are deeply committed and invested with hundreds of hours into this project with the City of Richmond
- We need a “Go” or “No-Go” decision on if the City intends to move forward
- THANK YOU FOR YOUR TIME AND SUPPORT IN THIS EV PROJECT!



Case Study

MOUNTAIN VIEW/ GOOGLE COMMUNITY SHUTTLES

CHASSIS

- Built on EPIC4 with 127 kWh

FLEET

- 4 shuttles deployed in 2015, 2 more in 2016

PROOF OF PERFORMANCE

- 13-mile loop, 30 stops, 5-6 routes per day per vehicle, 65-85 miles per day
- > 580,000 miles, > 18,000 routes, > 850,000 passengers
- Extremely positive feedback from Mountain View residents, continue to use buses beyond designed project life
- > 458 metric tons of tailpipe emissions reduced



Case Study

SACRAMENTO AREA SCHOOL DISTRICTS (TYPE A SCHOOL BUSES)

CHASSIS

- Built on EPIC4 with 106 kWh

FLEET

- 11 buses deployed in 2018

PROOF OF PERFORMANCE

- Routes range from 45-75 miles
- Motiv provided driver training and mechanic training to maximize performance and reliability
- > 126,000 miles
- > 102 metric tons of tailpipe emissions reduced

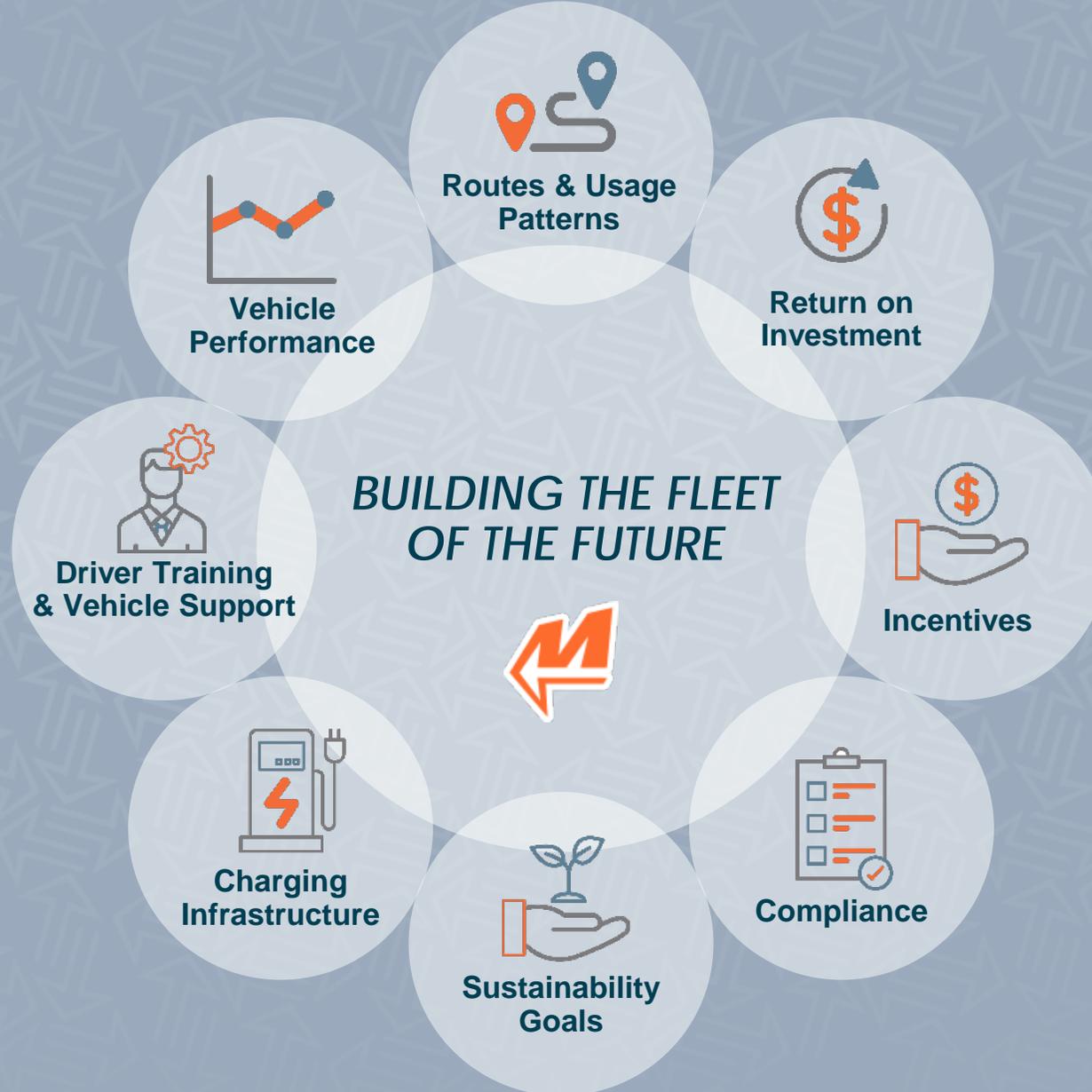
EPIC4 TRUCKS OPTIONS



Chassis	EPIC4
Battery Technology	Lithium-Ion
Battery Capacity	127 kWh
Real World Range	105 miles
Level 2 Charging	19.2 kW / J1772
Level 3 Charging	60 kW / CCS
Regenerative Braking	Multiple levels, driver selectable based on preference/comfort
Hill Hold	Yes
Wheelbase Options	158" to 190"



8 KEY CONSIDERATIONS FOR GOING ELECTRIC



Andrew Gibbs

National Account Manager

Motiv Power Systems

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THANK YOU

