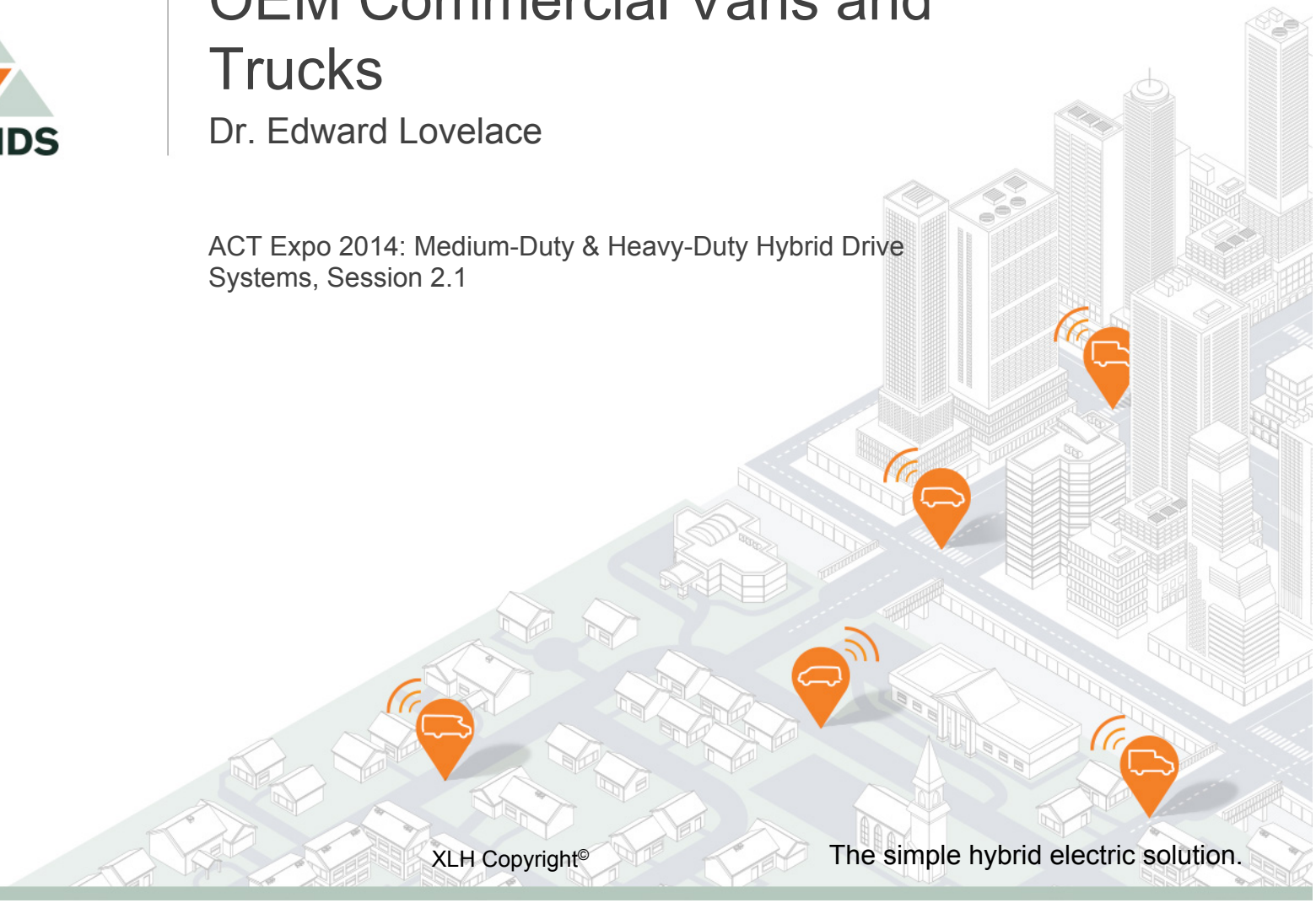
Hybrid Electric Solution for OEM Commercial Vans and Trucks

Dr. Edward Lovelace

ACT Expo 2014: Medium-Duty & Heavy-Duty Hybrid Drive Systems, Session 2.1



XL Hybrids

THE COMPANY

About XL Hybrids

- XL Hybrids saves fleets money and supports sustainability goals without impacting operations
- Pioneering developer of the revolutionary XL3 Hybrid Electric Drive System for converting major OEM vehicles
- 2014 World's 50 Most Innovative Companies by Fast Company
- IHS CERAWeek 2014 Energy Innovation Pioneer
- Over 1 million miles with Fortune 100 customers re-buying like Coca-Cola® and FedEx® without incentives required

Energy

01. Tesla Motors	06. Dow Chemical
02. GE	07. Okeanos
03. XL Hybrids	08. Azuri
04. Philips	09. Ceres
05. US Marine Corps	10. Mosaic

Why XL Hybrids

Leadership

- Leader in HEV powertrains for commercial fleets
- Passionately focused on:
  - Reducing fuel use and CO_2 emissions
  - Lowering total cost of ownership for fleets
  - Superior service with 99.9%+ vehicle uptime

Fleet Benefits

- Low cost hybrid powertrain ~$8,000 at volume
- OEM powertrain intact – fail-operational ensures vehicle uptime
- Fast installation (4-6 hours)
- Improves fleet operation with no impact on fleet practices
- Designed for new and existing vehicles
- No special fueling infrastructure or plug required

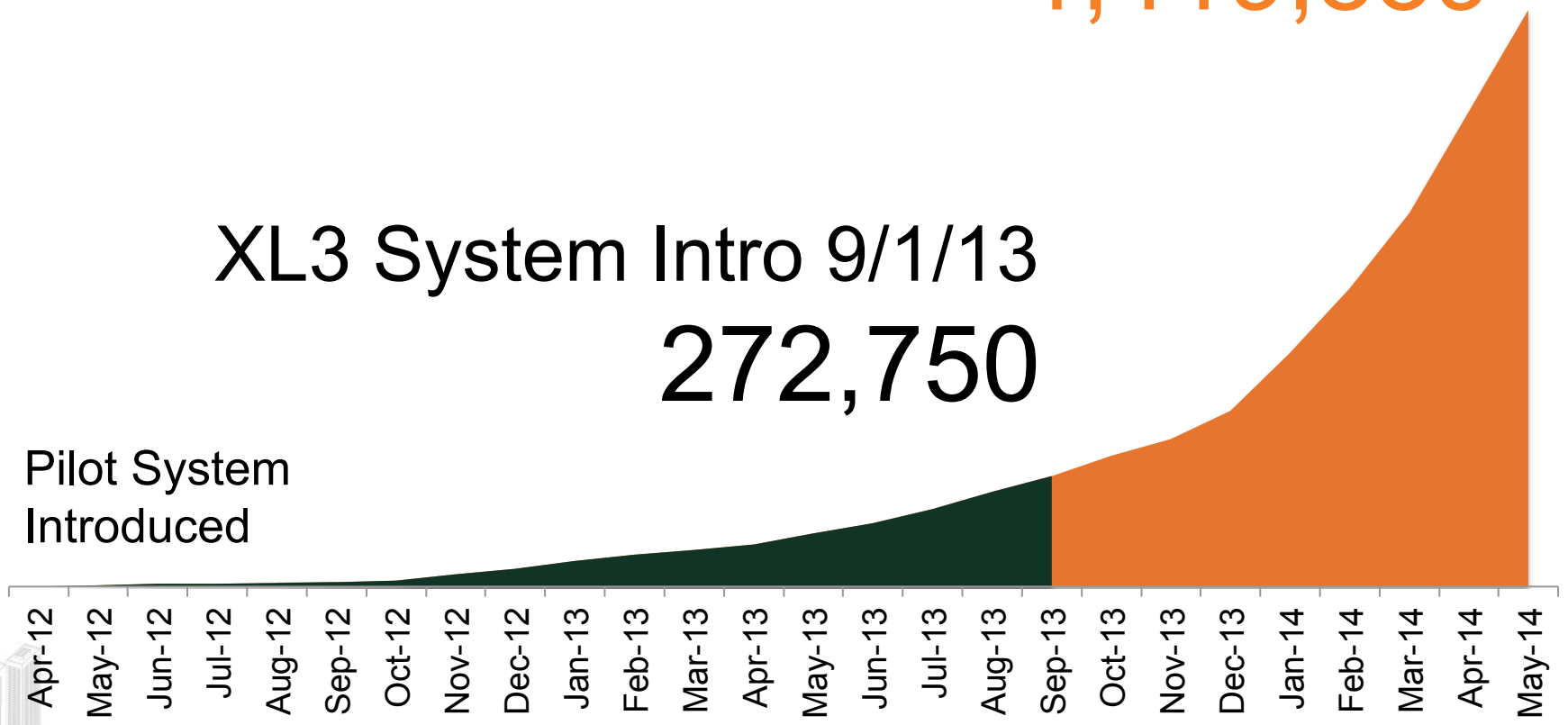
XL Hybrids Reaches 1 Million Customer Miles

Total as of 5/1/14

1,419,839

XL3 System Intro 9/1/13

272,750

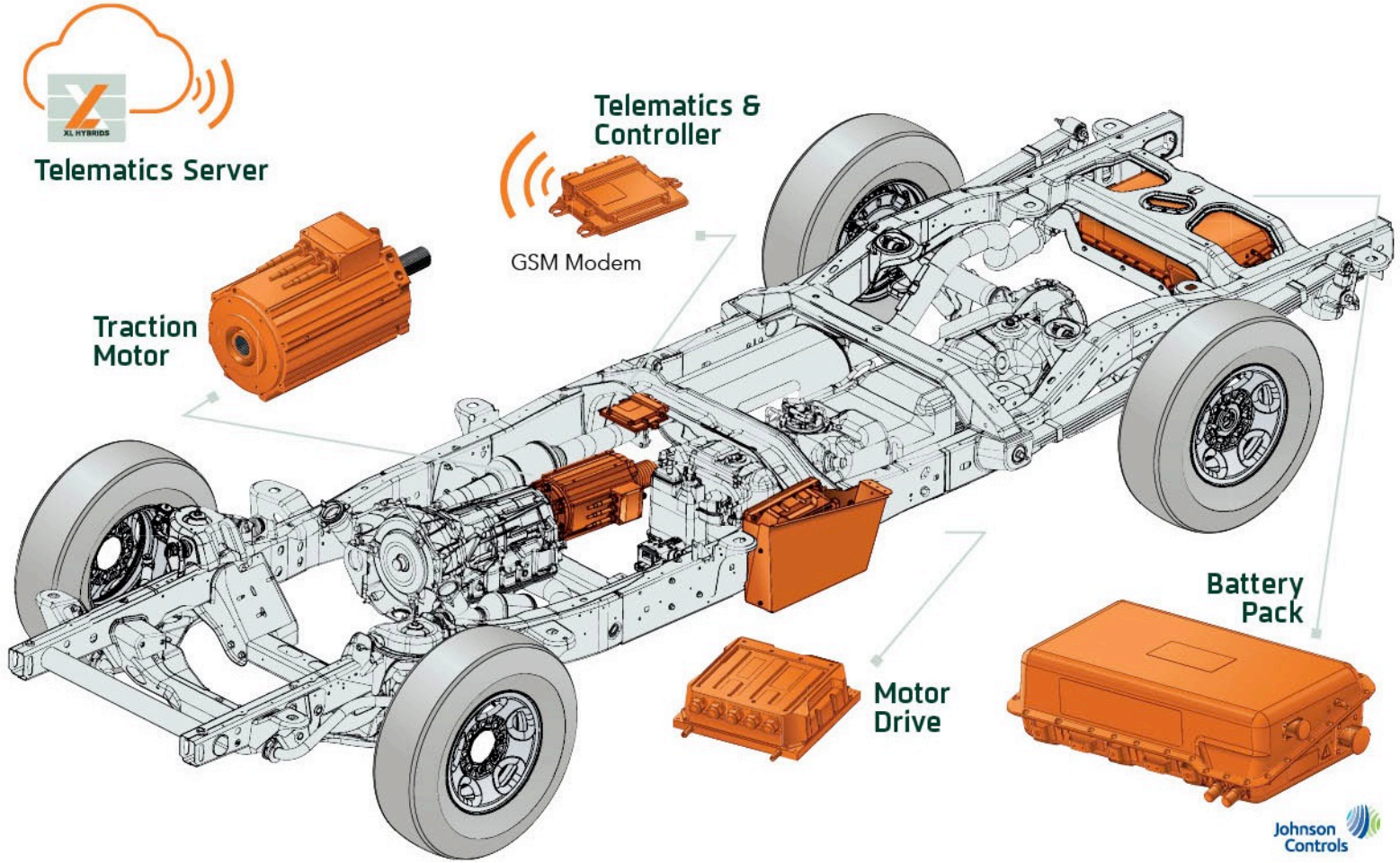


The simple hybrid electric solution.

XL Hybrids

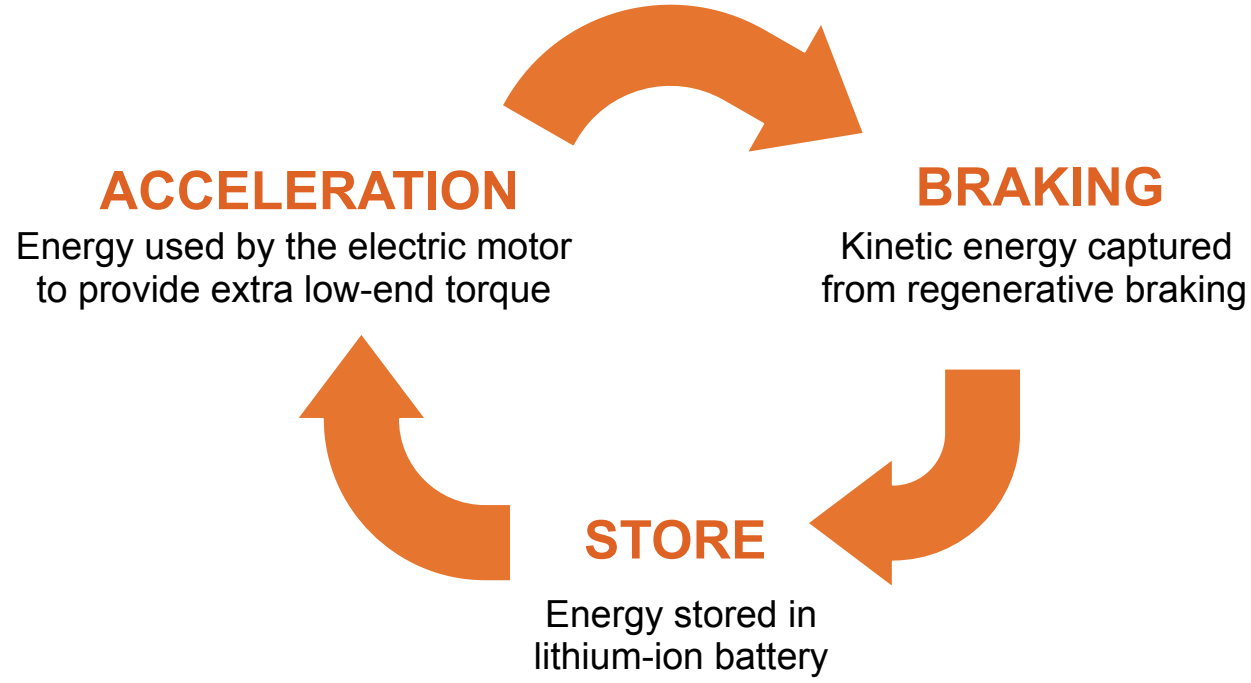
THE XL3 TECHNOLOGY

XL3 Hybrid Electric Powertrain



The simple hybrid electric solution.

Brake, Store and Go Further



Fast Installation: 4 to 6 Hours

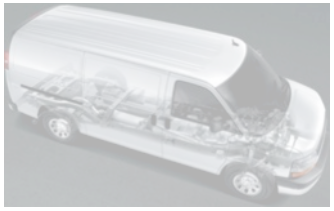
BATTERY PACK INTEGRATION

- No impact to cargo area
- No plug

E-MOTOR INTEGRATION POST-TRANSMISSION

- OEM powertrain stays intact

Product Specifications



Hybrid Powertrain	Specifications
System Voltage	259V
Lithium-Ion Battery	1.8 kWh
Traction Motor Type	Permanent Magnet
Traction Motor Power [peak]	40 kW
Hybrid System Torque [peak]	220 lb-ft
Hybrid System Weight	350 lbs
Electronic Speed Governor	70 MPH
Hybrid MPG Increase [EPA City]*	25%
Hybrid Component Warranty	3-Year // 75,000 miles

* Actual MPG may vary

Available Vehicle Platforms

Class 2 to 4 In the Market Today

E-Series

GM-Vans

Shuttles

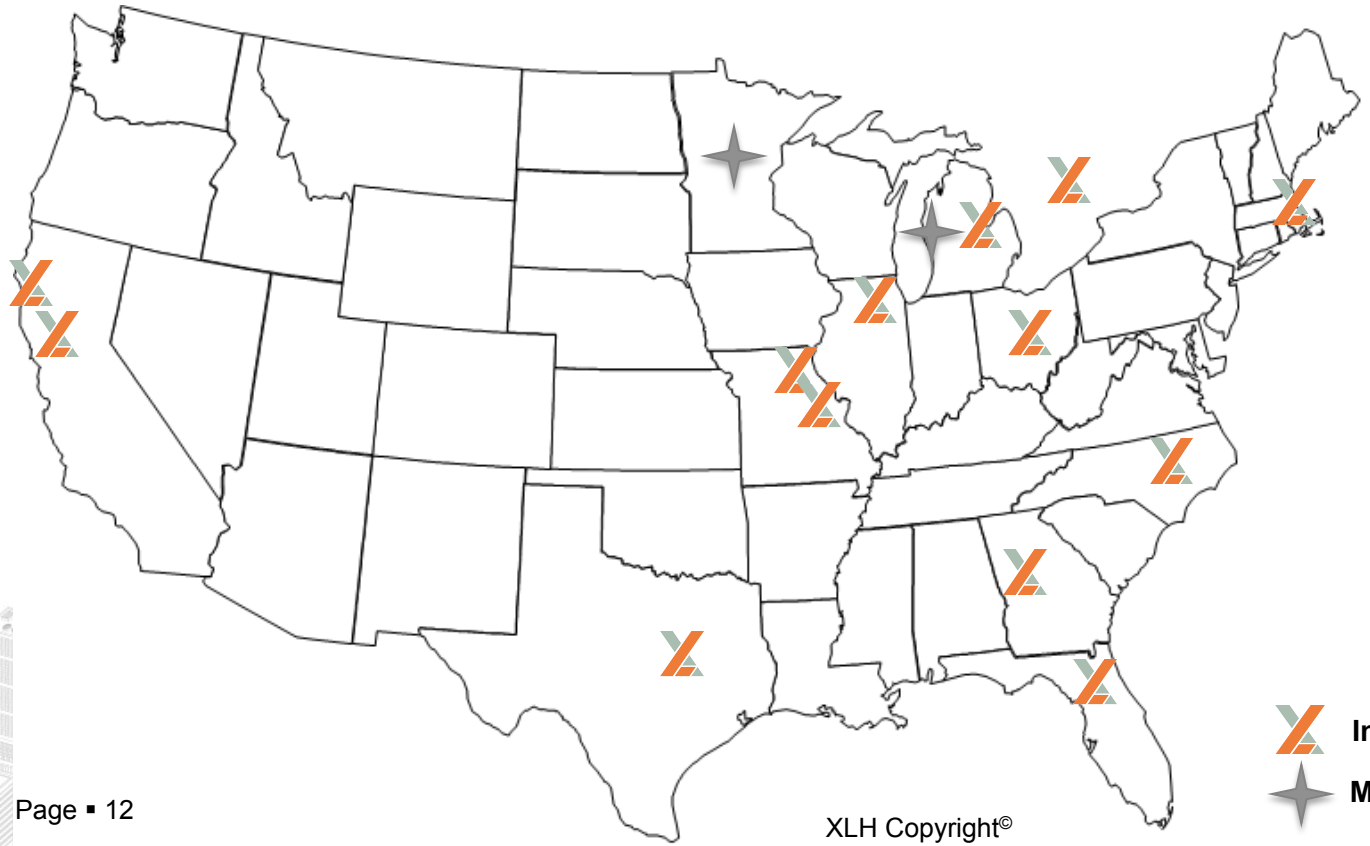
Cutaways

Future Platforms

- Same basic HEV powertrain architecture
- Upfits and retrofits
- Rear wheel drive
- Fuel independent
- Expandable from Class 1 to 6

Nationwide Coverage

- Ship-thru upfitters for 50 states + Canada delivery
- Service: Leverage installers & installer dealer network



KNAPHEIDE SINCE 1848

Leggett & Platt INCORPORATED

farmbro inc

Install & service

Major component manufacturers

Installation Partners Executing Fast Installs

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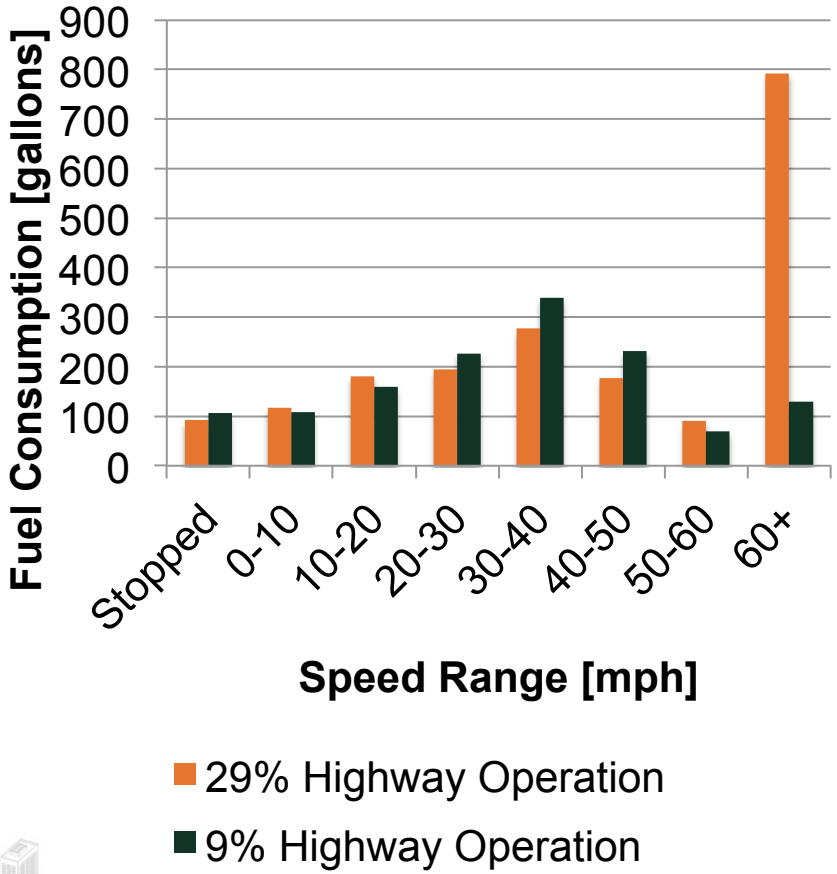
XL Hybrids

THE FLEET PERFORMANCE

Attractive Drive Cycles for Hybrids

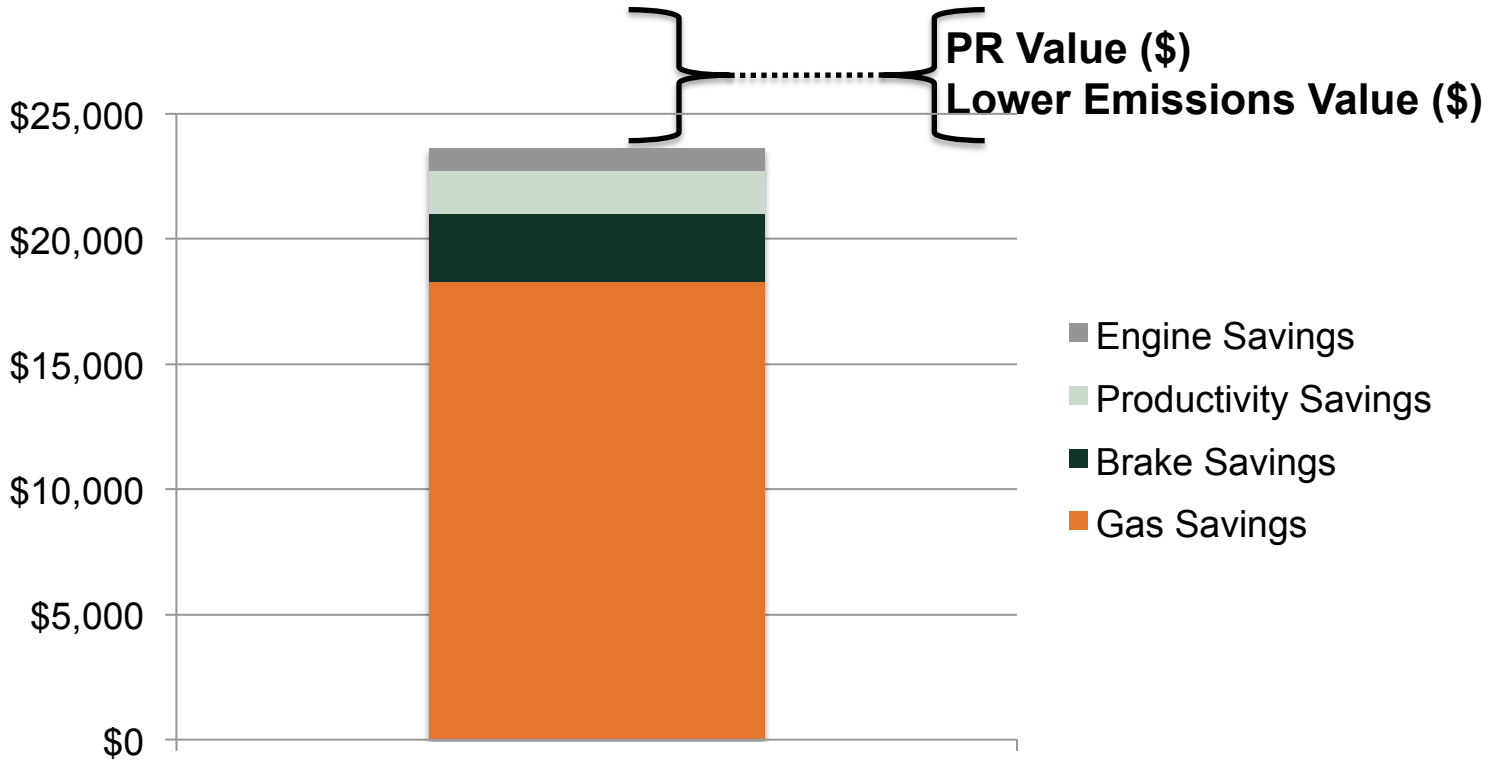
Nationwide value proposition



- Any drive cycle where the vehicle changes speed
- High percentage highway cycles can work with sufficient suburban miles
  - Two actual vehicles with very different drive cycles
  - Both achieving good savings

Example Case Study

Asset life savings based on 250,000 miles



Assumptions: 100-unit PO, Price of gas=$4.00, Initial MPG=12, Fuel reduction=21%, Annual mileage=25K, Vehicle life=10 yrs.
Brake maintenance reduction = 50%, Drive productivity increase = $175/yr.

Case Study: Delivery Company

Profile

- 6 vans
- Retrofits
- Baseline 4.8L vs. Hybrid 4.8L
- 31% miles > 50 mph
- 32k miles / year avg. per van

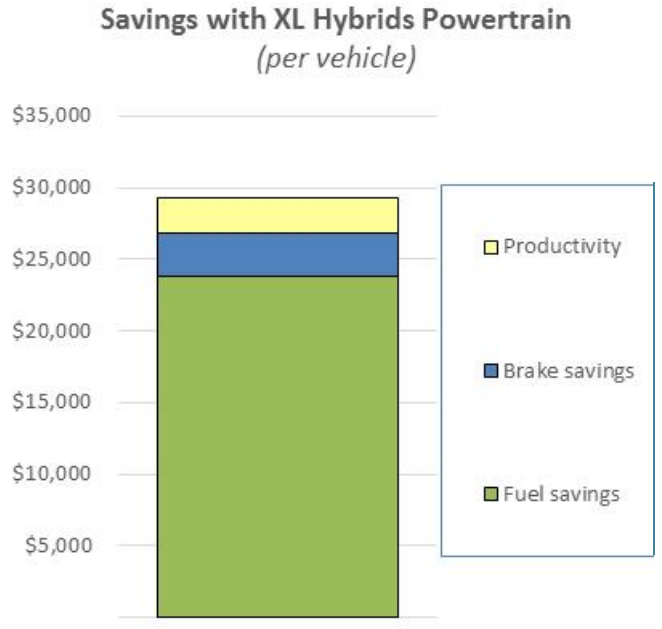
HEV Benefits over 300K Miles *(projected)*

- Payback = 2.9 yrs., or 90K miles
- Savings = $29,000 / van
- 20% gallons fuel reduction / van
- Tons CO2 reduced / van = 51

Note: *Every 1,000 gallons of fuel saved by XL Hybrids technology = 8.9 metric tons of CO2 reduced*

Actual Results

	Baseline	XLH Hybrid
MPG (actual)	11.3	14.2
MPG Increase (%)		25%
Mileage (actual)		145,000



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Case Study: Beverage Company

Profile

- 70 vans
- Upfits
- Baseline 6.0L vs. Hybrid 4.8L
- ~30% miles > 50 mph
- 25k miles / year avg. per van

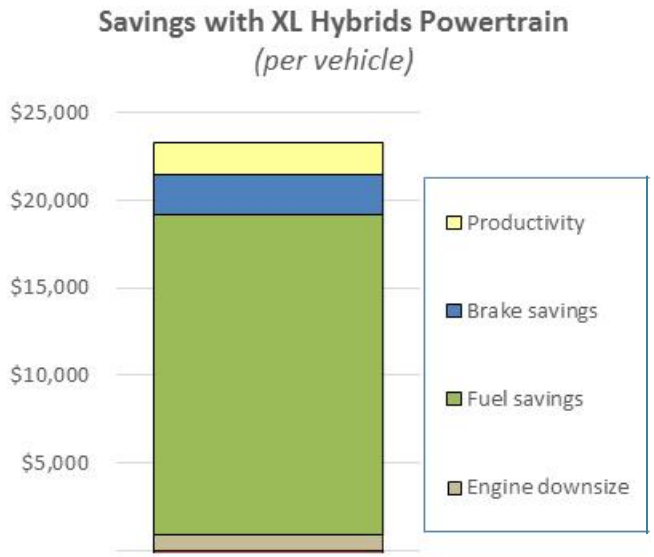
HEV Benefits over 250K Miles *(projected)*

- Payback = 3.3 yrs., or 81K miles
- Savings = $23,000 / van
- 19% gallons fuel reduced / van
- Tons CO2 reduced / van = 39

Note: *Every 1,000 gallons of fuel saved by XL Hybrids technology = 8.9 metric tons of CO2 reduced*

Actual Results

	Baseline	XLH Hybrid
MPG (actual)	11.1	13.8
MPG Increase (%)		24%
Mileage (actual)		448,000



Good for Business and the Planet

Corporate Energy Savings Investments

Coca-Cola Press Release

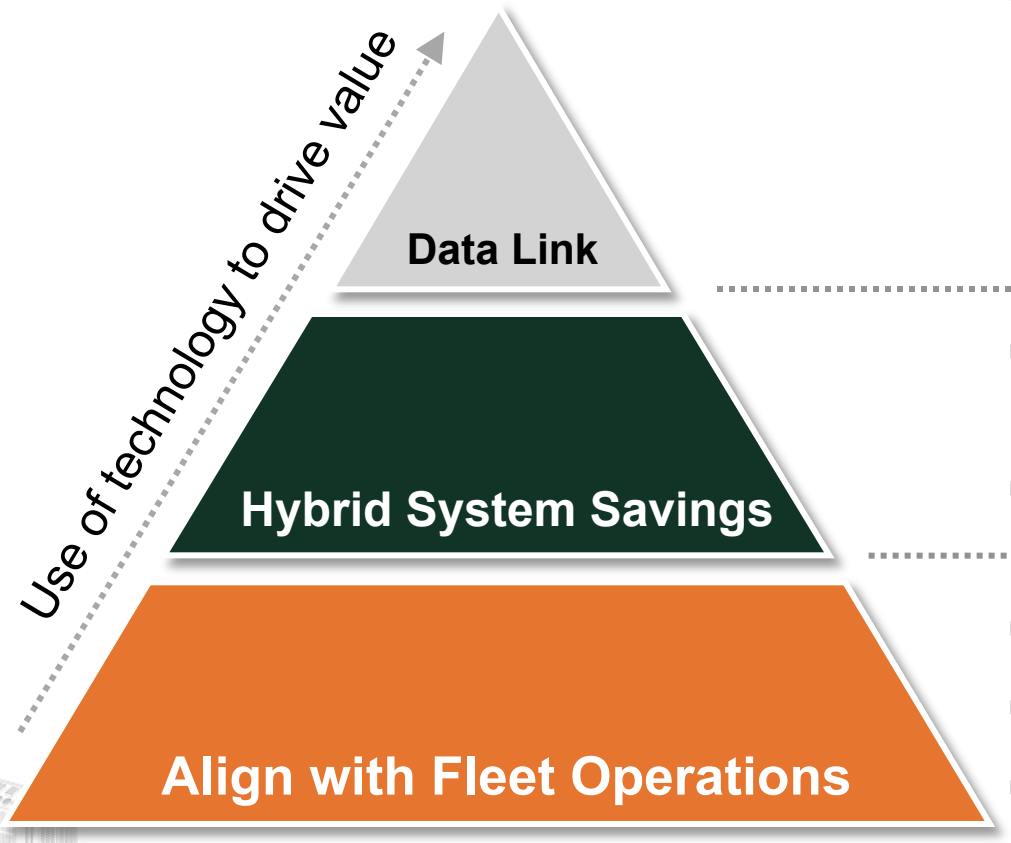
"Adoption of this hybrid technology supports Coca-Cola's goal to reduce the carbon footprint embedded in 'the drink in your hand' by 25 percent by 2020."

"We continue to make energy-saving investments because they are good for business, good for the communities we serve and good for the planet."

December 2013: Bruce Karas, Vice President of Environment and Sustainability for Coca-Cola

How XL Hybrids Drives Value

Enhancing fleet operational performance



- Ensure performance with data analytics
  - System health
  - Performance optimization

- 20% savings on fuel and CO2 from day one
- Significant savings over asset life

- No change to vehicle purchasing
- No change to servicing
- No change to driver behavior
- No change to infrastructure

Thank You

For more information contact

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