TECHNOLOGICAL CHALLENGES & TRENDS IN ELECTRIC-, CNG/LNG- & HYDROGEN POWERTRAINS

JP Pelletier, VP Engineering MCI
NFI Group - Coach Business
January 13, 2020
NFI Group.. A Global Independent Bus Builder

NORTH AMERICA’S BROADEST OFFERING

- **LF CUTAWAY**
  - ARBOC
  - Low Floor Cutaway (ranging from 21’ to 34’)

- **MEDIUM-DUTY**
  - ARBOC
  - Medium Duty Shuttle (27’, 29 and 34’)

- **HEAVY-DUTY**
  - NEW FLYER
  - Heavy Duty Transit (35’, 40’)

- **HIGH CAPACITY**
  - NEW FLYER
  - Heavy Duty Transit (60’ articulated)

- **COMUTER**
  - ALEXANDER DENNIS
  - Heavy Duty Double Deck (45’)

- **MOTOR COACH**
  - MCI
  - Motor Coach (35’, 45’)

- **MOTOR COACH**
  - MCI
  - Motor Coach (35’, 45’)

Powered by busworld academy | NORTH AMERICA | JAN. 13-14, 2020
NFI Group - Leadership in Electric, Connected and ADAS equipped Vehicles

NFI IS A LEAD TECHNOLOGY DEVELOPMENT

- Propulsion Agnostic on Proven Platforms
- Leader in ZEBs and Infrastructure
- Telematics and Connected Vehicles
- Advanced Driver Assistance Systems
MCI Model Range

MCI J Series

- J4500 & J3500
- 35’ & 45’
- #1 Selling coach.
- Common application for tour, charter and employee shuttle.

‘MCI D-Series

- D4500 & 4000 Commuter, D4505 and 4005, D4000 ISTV
- 40’ & 45’
- #1 Selling all time coach model and #2 currently.
- Common application for public sector commuter transit agencies and large private scheduled service operations.

Next Generation

- Current line D45 CRT LE
- 45’ model featuring an innovative Low Entry (LE) vestibule with a ramp
- First model in our next generation of D-Series coaches 40’ & 45’
- Commuter transit and employee transportation

100% Electric 2020

CNG

100% Electric 2020/2021

Integrated with MCI Connect Telematics

Leadership in ADAS (Advanced Driver Assistance Systems)
Significant Product Advancements

J3500 (2019 New)
- Available NOW
- Commonality with J4500
- Best in class interior space, luggage and payload.

Next Generation D-Series (2019-21)
- D45 CRT LE available NOW
- Groundbreaking patented new Low Entry Vestibule.
- D4520 in 2020
- D45 CRT in 2021

Charge Electric (2020-2021)
- J4500e – Customer demo and 2020 production
- D45CRTe LE – Customer demo and Altoona testing for 202

leadership in ADAS (Advanced Driver Assistance Systems)
100% Electric CHARGE Drivetrain (2020).
Integrated with MCI Connect Telematics = Max Uptime and Low TCO
The Market

- The California Air Resources Board (CARB) regulation in the United States that sets a statewide goal for public transit agencies to gradually transition to 100 percent zero-emission bus fleets by 2040.
- “A zero-emission public bus fleet means cleaner air for all of us. (Zero = 100% battery electric or Hydrogen fuel cell)
- As longtime partners for clean air in California, the state’s 200 public transit agencies play a pivotal role in transitioning vehicle fleets away from fossil fuel-powered technologies to zero-emission alternatives. Eight of the 10 largest transit agencies in the state are already operating zero-emission buses, including battery electric and hydrogen fuel cell vehicles. Increasing
- Deployment of zero-emission buses is expected to accelerate rapidly in the coming years – from 153 buses today to 1,000 by 2020
- Altogether, public transit agencies operate about 12,000 buses statewide.

- Early adoption phase.
- California epicenter of demand
- Driven by either:
  - Regulation for public sector
  - Zero emission sustainability programs for private sector
- Focus is commuter / shuttle with fixed start and end points.
- Lower need for baggage space.

Source: CARB