

# **ALEXANDRIA TRANSIT COMPANY (DASH)**

## ***BUS FLEET OVERVIEW AND GREEN TECHNOLOGY DISCUSSION***

*June 19<sup>th</sup> 2017*



# DASH SYSTEM OVERVIEW

Services City of Alexandria and Surrounding Areas

10 Routes

4 Million Annual Passengers

Estimated 9,000,000 Single Occupancy Vehicle (SOV) miles eliminated from roads every year

Over 1.7 million revenue miles annually



# FLEET OVERVIEW

## 85 Heavy Duty Buses

### 33 'Old' Diesel Buses (2000 to 2007)

*All Pre-EPA 2010, do not meet EPA emission Standards*

### 52 Diesel-Electric Hybrid Buses (2011 to 2017)



# FLEET STATUS: WHAT'S THE ISSUE?

- Transit buses have 12 year useful lifespan
  - 25% of the DASH fleet exceeds this
- DASH requires **65** replacement over the next 10 years to meet and maintain State of Good Repair (SGR)
  - The current 10 year Alexandria CIP identifies \$26 million for DASH replacement buses, which funds only **37 hybrid** buses or **54 clean diesel** buses.



# HYBRIDS: WHAT'S THE ISSUE?

All DASH buses purchased since 2011 have been Diesel Hybrid Electric

They Operate a 5.9 Liter Diesel Motor at all times, complementing a battery-electric powertrain

Hybrid's achieve 20-30% Fuel Economy Savings over "Old Diesel"  
*However newest Clean Diesels are actually obtaining better MPG*

True Data:

Alexandria Hybrid: 4.54 mpg

Fairfax Diesel: 5.95 mpg

These buses carry a \$200,000 Premium over a standard Diesel  
Plus there is a \$50,000 mid-life Battery Replacement/Overhaul required



# HYBRIDS: WHAT'S THE ISSUE?

## Return On Investment (ROI) issues

Lower fuel prices hinder cost savings

DASH typical bus lifetime mileage is not sufficient (commuter oriented service), typically our buses serve 300,000 lifetime miles.

## Industry Trends

Many transit properties moving from Hybrid back to Clean Diesel

New York City Pulls all 1,677 Hybrid Buses to be re-fit to Clean Diesel

(Source: GREEN FAIL: New York Gives up on Hybrid Buses; <http://www.breitbart.com/big-government/2013/06/30/green-fail-new-york-metra-gives-up-on-hybrid-buses/>)

Cost of Hybrid Technology premium is going up every year due to lack of production demand

## State of Good Repair

Cost of Hybrids hinders DASH's ability to purge old diesel buses from fleet



# THE FUTURE IS ELECTRIC

Where is the industry going?

Battery Electric

Fuel Cell

CNG

The future for DASH

Battery Electric is feasible for our service types and area!

Minimal infrastructure changes required

Vastly improved reliability, less maintenance down time

How do we get there?

We must focus our efforts now to get the old dirty diesels off the road and begin planning for future electrification

DASH is already looking at funding sources for pilot programs



# DIESEL IN THE SHORT TERM

GOAL: Rapidly Replace all Pre-EPA 2010 buses with new Clean Diesel Technology

IMMEDIATE RESULTS: 98% Reduction in Particulate Matter and 94% Reduction in NOx emissions

They are still 15% quieter than old Diesel buses

Achieves similar/better fuel savings as hybrids, due to:

Advancements in automatic transmission technology

Electrification of major systems (engine cooling, HVAC, etc.)

Reduced Weight and improved safety/customer experience

Improved ROI - Dollar Stretches Further, get more off the road now



vs. Model Year 2000 Diesel Bus	Nitrogen Oxide (NOx)	Particulate Matter (PM)	Hydrocarbon (HC)
2012 Clean Diesel	-94%	-98%	-89%

(Source: Clean Air Task Force - ["Clean Diesel versus CNG Buses: Cost, Air Quality, & Climate Impacts"](#))



# NEXT STEPS

- Seeking EPC Input on Short and Long Term Bus Replacement Plan
- Short Term: Move to Clean Diesel
- Long Term: Implementation Goals for Battery-Electric



# THANK YOU Questions?

