



## **AGENDA**

### **Environmental Policy Commission**

**Monday, June 19, 2017**

**7:30–9:15 PM**

**Alexandria Renew Enterprises**

**1800 Limerick St, Alexandria, VA 22314**

- |              |  |
|--------------|--|
| 7:30 –7:40   | Welcome <ul style="list-style-type: none"><li>• Review/Approve Minutes</li><li>• Staff Report/ Updates</li><li>• Commission/Meeting Updates<ul style="list-style-type: none"><li>○ Alexandria Earth Day</li><li>○ Transportation</li><li>○ Waterfront</li><li>○ Eisenhower West Implementation</li></ul></li></ul> |
| 7:40 – 8:20  | Alexandria Renew Overview, Karen Pallansch, Chief Executive Officer <ul style="list-style-type: none"><li>• Role in the City’s Long Term Control Plan for Combined Sewer System</li></ul>  |
| 8:20--8:50   | DASH Program Update, Josh Baker, General Manager, Alexandria Transit   |
| 8:50 – 9:00  | Elections  |
| 9:00 -- 9:15 | Agenda for Next meetings: summer retreat/picnic/EAP launch.  |
| 9:15         | Adjourn  |



June 22, 2017

Chair Ramee A. Gentry  
Alexandria City School Board  
1340 Braddock Place  
Alexandria, VA 22314

**Re: Dramatic increase in energy use at Alexandria City Public Schools**

Dear Chair Gentry and Members of the School Board:

On behalf of the Environmental Policy Commission (EPC), I'm writing to share our concerns regarding significant increases in Alexandria City Public Schools (ACPS) energy usage that were reported in the City's 2016 Progress Report on Eco-City and Key Environmental Indicators ("Report").<sup>1</sup> In particular, the Report shows that ACPS energy usage – as measured by square foot of building space – increased approximately 30% from 2014 to 2015 and more than 57% since 2010. The dramatic and steady increase in ACPS energy use is concerning for environmental and fiscal reasons, and is inconsistent with the City's Eco-City goals.

Alexandria has clear goals related to emission reduction and energy use as outlined in the City's Environmental Action Plan (EAP) and Energy and Climate Change Action Plan. Further, just last week, the Mayor and City Council approved a resolution that reaffirmed the City's commitment to taking action locally to help mitigate climate change as consistent with Paris Climate Accord. Specifically, the resolution recommitments the City to achieve the goal in the City's recently approved Strategic Plan to reduce greenhouse gas emissions by 25% on a per capita basis by 2022 compared to 2012 levels.

To help reduce ACPS's energy bills and contribute to the achievement of the City's energy and climate goals, we urge the School Board to work with ACPS staff and the City's Energy Manager to:

- 1) Identify the underlying cause or causes of this trend;
- 2) Identify and implement strategies and best practices to decrease energy usage throughout ACPS.

The energy usage data in the Report is based on information provided directly by the utilities serving ACPS. Unfortunately, the various uses and users of energy cannot be derived from that data. Therefore, we recommend that the School Board instruct ACPS staff to determine any potential reasons for these steady increases. This examination would likely benefit from review of any policies related to facility use or access that may have indirectly caused energy usage to increase.

Once the causes or potential causes are identified, we would welcome the opportunity to work with the School Board and ACPS on ways to reduce energy consumption in our schools and, more broadly, to work together to advance the City's sustainability goals. The EPC will be engaging the community this Fall to begin updating the Environmental Action Plan (EAP), and would welcome the opportunity to meet with you and your colleagues in the Fall to discuss the role that ACPS can play in setting and achieving the City's environmental goals.

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<sup>1</sup> See Memo from Yon Lambert, Director of Transportation and Environmental Services, to the Mayor and Members of Council dated April 27, 2017 (enclosed).

We appreciate your attention to this important issue and know that it is just one of many important matters you are addressing.

Sincerely,

Jim Kapsis  
Chair  
Alexandria Environmental Policy Commission

Enclosure

City of Alexandria, VA  
**Environmental Policy Commission Meeting Minutes**  
 May 15, 2017 – Regularly Scheduled Meeting

Name	Membership	In Attendance	Not In Attendance
<b>EPC Members</b>			
Natasha Garcia Andersen (Earth Day Chair)	Field of Environmental Science	X	
Scott Barstow	Citizen	X	
Geoffrey Goode	Citizen		O
Leslie Jones			O
James Kapsis (EPC Chair)	Citizen	X	
Praveen Kathpal	Field of Environmental Science	X	
Jessica Lassetter (EPC Vice Chair)	Urban Planning	X	
Stephen Milone	Citizen	X	
Brendan Owens	Environmental Laws	X	
Carolyn Schroeder	Field of Environmental Science	X	
Reid Sherman	Citizen	X	
Sean Wilson	Alexandria Business Community	X	
<b>Alexandria City Staff</b>			
Michael Clem	City of Alexandria	X	
Bill Eger	City of Alexandria	X	
Lisa Goldberg	City of Alexandria	X	
William Skrabak	City of Alexandria	X	
Khoa Tran	City of Alexandria	X	
<b>Guests</b>			
Tori Goebel	N/A		
Chris Reedinger	N/A		

Meeting called to order – 7:38 PM with the following agenda:

- Welcome
- Review/Approve Minutes
- Staff Report/ Updates
- Commission/Meeting Updates
  - Alexandria Earth Day
  - Transportation
  - City Energy Report, Bill Eger, City Energy Manager,

- City Solid Waste Management/Resource Recovery Update, Michael Clem, Recycling Program Analyst, T&ES
  - Agenda for Next meeting
  - Adjourn
- Welcome and Introductions
  - Staff Reports
    - EPC representation for Waterfront Commission sought
    - EPC representation for Eisenhower West Implementation Advisory Group sought
  - Commission/Meeting Updates
    - Earth Day update
      - 1,400 people participated (1,000 in 2016)
      - Feedback received from surveys completed was positive
      - Location seemed to attract foot traffic
      - Advertisement for event was not as good as previous years
    - EPC letter to Mayor/City Council
      - Letter submitted covered on SAPs for Old Town North, North Potomac Yard and Green Building Policy
      - Staff and EPC agreed that collaboration on letter was good
      - Continued discussions on revisions to EAP and green building policy
    - City Energy Update – Bill Eger
      - Overview and update on city energy program
      - Discussion of goal setting, energy use trends
    - City Solid Waste Management/Resource Recovery Update
      - Overview and update on solid waste/resource recovery program
      - Discussion of goal setting, waste generation, recycling and reuse trends
    - Decision to postpone June 5 EPC Work Session
    - Next EPC meeting June 19, 2017
    - Meeting adjourned 9:37 PM

## Clean Diesel vs. Hybrid Talking Points



### **Background**

- 39 “old” diesel buses remain in DASH fleet, which do not meet EPA-2010 standards (no emission controls or filtration systems)
- The City Manager (CM) Proposed FY18-27 CIP does not provide sufficient funding to meet bus replacement schedule while adhering to a policy of only purchasing Hybrids buses.

### **Return on Investment (ROI)**

- Hybrid purchases require 40% premium over Clean Diesel bus, approximately \$200,000 per bus
- DASH buses accumulate 300,000 miles over lifetime, resulting in a lifetime fuel savings of only \$50,000 per bus, at current fuel price of \$2.2 per gallon. (25% ROI)
- While Hybrids achieve approximately 25% increase in fuel economy, modern Clean Diesel buses have been proven to achieve similar fuel savings due to advancements in automatic transmission technology, and electrification of major mechanical components (engine cooling, A/C).
- West Ox case study: Garage shared by Fairfax Connector (Clean Diesel New Flyers) and WMATA (Hybrid New Flyers), Fairfax Connector Clean Diesel buses have shown better fuel economy than WMATA Hybrids.

### **Emissions**

- All 33 DASH old diesel buses are of pre-2007/2010 EPA requirement. Post EPA-2010 buses produce significantly less (*almost non-existent*) particulate matter and emission levels than pre-2010 engines.
- Modern Hybrid buses achieve 96.3% total emission reductions over old diesels.
- Modern Clean Diesel buses achieve 95.2% total emission reductions over old diesels.
- Noise levels have been reduced substantially for both technologies.

### **Noise Levels**

- Clean Diesel buses are rated as 15% quieter than old diesel buses, while Hybrids are 18% quieter.
- The Clean Diesel engine portion of the bus delivers over 80% of the noise reductions benefits outlined in the bullet above in the Hybrid drive configuration. (80% of the 18% quieter rating)

### **State of Good Repair**

- DASH requires 65 replacement buses to meet and maintain State of Good Repair (SGR) over the 10 year FY18-27 period.
- CM Proposed FY18-27 CIP identifies only \$25,925,000 in replacement bus funding, which funds a mere 37 hybrids or 54 clean diesels.
- Procuring Clean Diesels would eliminate old diesel buses from the fleet more quickly and have an immediate emissions impact on the community.
- The average fleet age would reduce from 6.4 to 5.2 years over same period.

### **Maintenance**

- Hybrid batteries are rated for 7 year life span, requiring mid-life battery overhaul. This maintenance costs approximately \$50,000 per bus. \$3.8 million in CIP is allocated to support this, displacing funds from other CIP transit improvements.
- Non-PM fleet down time has increased substantially in recent years due to increased complexities of Hybrid buses and the inability of DASH to service their Hybrid components.
- If Hybrids continue to be purchased, the fleet spare ratio will need to be increased to compensate for increased downtime, requiring a larger fleet and capital requirement to provide the same level of service.





# **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?**

