



# PSTA Replacement Buses

Decision-Making Guide for PSTA Board

*Update to PSTA Finance & Performance  
Management Committee – October 21, 2015*

Pinellas Suncoast Transit Authority (PSTA)  
St. Petersburg, Florida



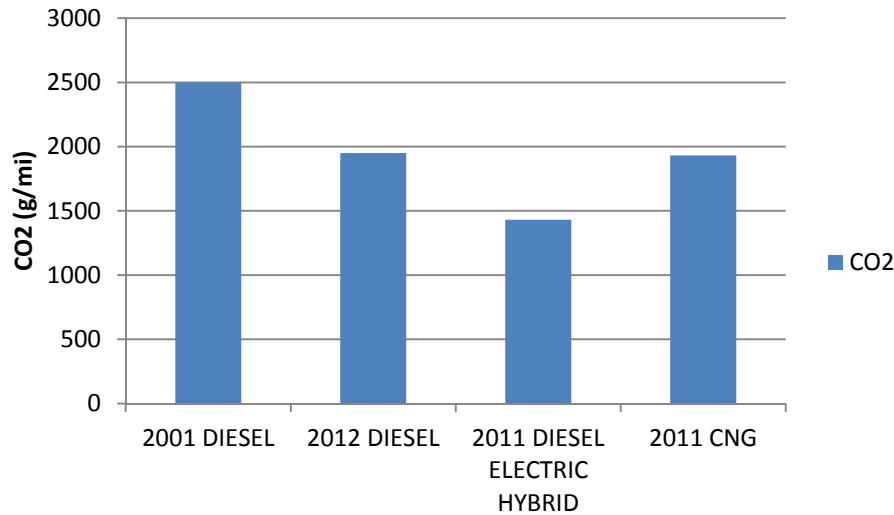
## Review

- **Priority to Make 1-Year Decision**
- **Follow-Up Work Completed**
- **Actions Recommended:**
  - Electric Bus Federal Grant
  - Purchase Hybrids with BAE Series Transmissions
  - Purchase 7 Replacement Buses at \$3.5M-\$4.9M

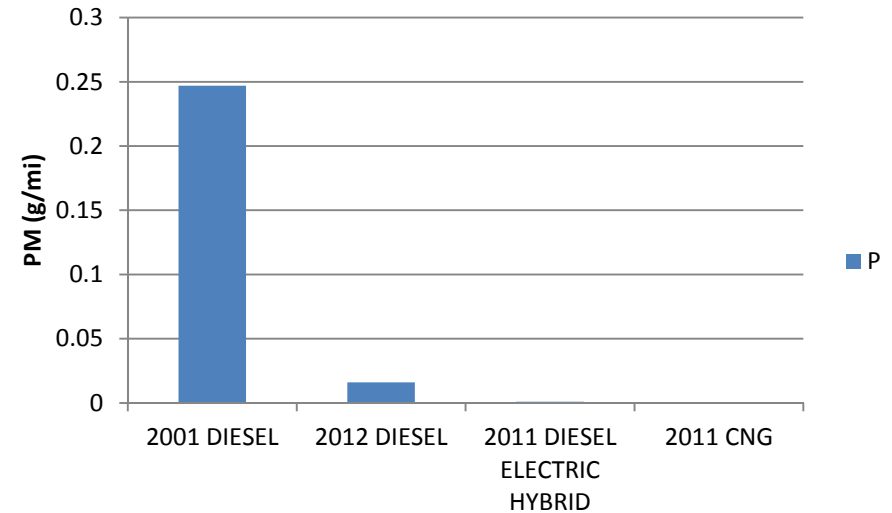


# 1-Year Decision Should Be Made

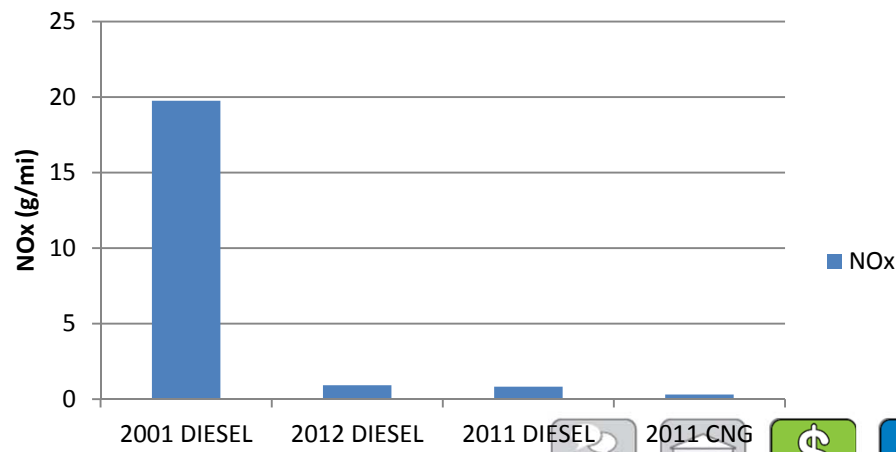
## MEASURED CO2 EMISSIONS



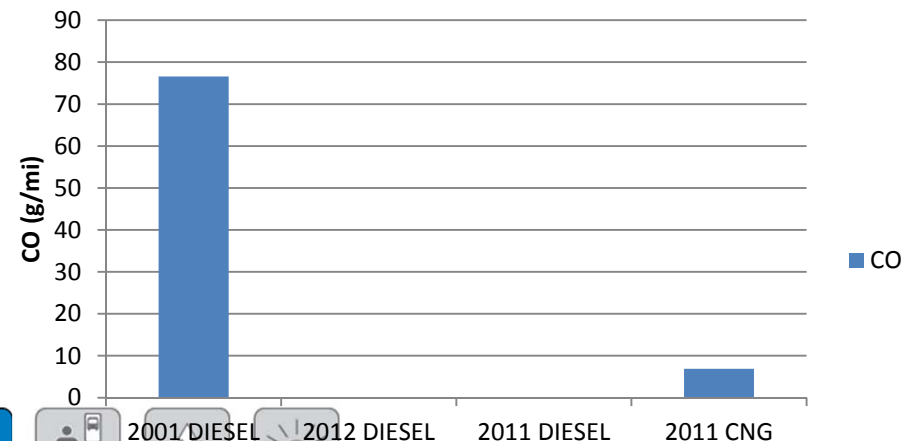
## MEASURED PM EMISSIONS



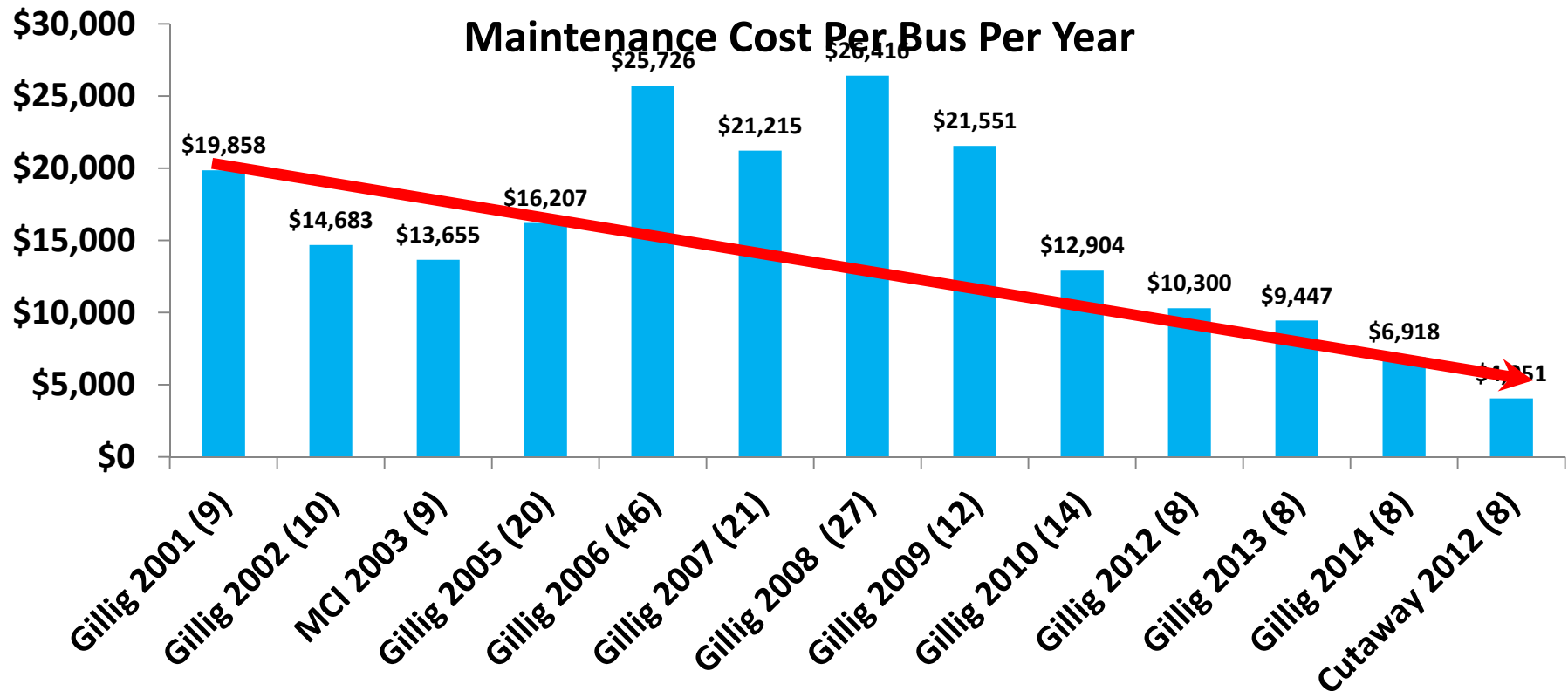
## MEASURED NOx EMISSIONS



## MEASURED CO EMISSIONS



# 1-Year Decision Should Be Made



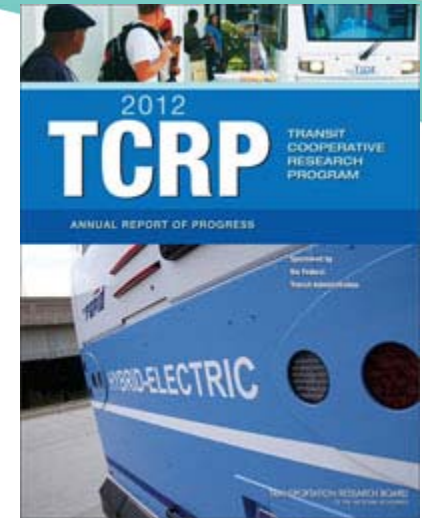
## Follow-Up Work Completed

- **Educational Efforts:**
  - 3 Electric Bus Displays/3 CNG Provider Meetings/5 Bus Manufacturers/3 Transit Maintenance Managers.
- **CNG – On-Site Fueling Station – Increased Cost**
- **Electric Bus:**
  - **Lowered estimate of Life-Cycle Cost**
  - Preparing Application for Fed Lo-No Grant
  - Grant will propose Proterra Electric Buses
- **Hybrid Electric-Diesel Bus:**
  - BAE Series Transmission to Be Specified – No Cost



## Follow-Up Work Completed

- **Life Cycle Cost Analysis Improved**
  - National TCRP Model Utilized.
  - Verified PSTA Hybrid & CNG Assumptions & Lowered Electric Bus Assumptions
- **Cost-Benefit Analysis**
  - **State-of-Good Repair** – San Francisco MPO Concluded SGR Investments = Expansion Investments
  - **Trade-offs:** Without future new funding, fare, service, and tax rate decisions will be needed.



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## Follow-Up Work Completed

- **Legislative Advocacy**

- House & Senate Bills include additional bus funding.
- MPO Priorities All Using Multi-Modal Approach – January 21 Joint Meeting



- **PSTA Capital Reserve Flexible**

- **7 Hybrid Replacements** - \$4.9M will shift local reserve funds to current year.
- **7 Diesel Replacements** - \$3.5M will require no future reserve advancement.



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# Emission Comparison\*

	Diesel	Hybrid	Electric	CNG
<b>Fuel Economy</b>		10%-20% Better than Diesel	Best	Same as Diesel
<b>Air Quality</b>	Much better than Old Diesels	Better Fuel Economy Leads to Slightly Better than Diesel	Best	Lower Nox than Diesel Higher CO than Diesel Low PM/NMHC
<b>Climate Impacts</b>		Better than Diesel or CNG	Best	Total GHC emissions slightly higher than Diesel

*\*Comparison of Modern CNG, Diesel and Diesel Hybrid Electric Transit Buses Efficiency & Environmental Performance, mjbradley.com, November 2013.*





# Financial Comparison

	Diesel	Hybrid	Electric	Refurb Electric	CNG
<b>Purchase Cost</b>	\$500,000	\$695,000	\$840,000	\$580,000	\$540,000
<b>Life-Cycle Cost</b>		+\$40K vs. Diesel over 500K Miles (PSTA 2013 Study & TCRP Model)	Too New – <b>Maint. Costs Lower than Diesel</b>	Old Bus presents risk.	Same <b>range</b> as Diesel*
<b>Facility/ Charging Costs</b>	\$0	\$0	\$350,000 Per Charging Station	\$25,000	<del>\$1M</del> <b>\$2M+</b> Facility Safety Revisions

*\*Capital Metro CNG Implementation Study, Texas Transportation Institute, November 2011.*



# Operational Comparison

	Diesel	Hybrid	Electric	Refurb Electric	CNG
<b>Reliability</b>		Proven Reliability Battery Replacements?	Promising Results	Not Proven Old Bus	Proven Reliability
<b>Span of Service</b>	All Routes	All Routes	15 of 40 Routes	15 of 40 Routes	All Routes
<b>Social Issues</b>	Yes	Best in Urban/Beach	On-Route Charging Stations	Not Proven	Domestic Fuel
<b>Timeline</b>	1 Yr.	1 Yr.	3-5 Years – Fed LoNo Grant Needed	2-3 Yr.	4 Years



## Actions

1. Apply for **Federal Lo-No Electric Bus Grant** Funds for PSTA Pilot Project
2. When purchasing future Hybrid-Diesels, **specify BAE series transmissions** at no net cost for further emission reductions at slow speeds.
3. **Continue to work with CNG Experts** to consider potential for public-private partnership for financed refueling station at PSTA.
4. Make no, permanent or long-term decision on bus types to **remain flexible in the future.**
5. Recommend PSTA Board to vote on October 28 to **purchase 7 replacement buses.**
6. **Purchase Hybrids - \$4.9M – Advance Reserve Funds** or **Purchase Diesels \$3.5M**

