

CURRENT STATE OF PUBLIC TRANSIT FUNDING OPTIONS FOR ELECTRIC VEHICLES AND CHARGING SYSTEMS

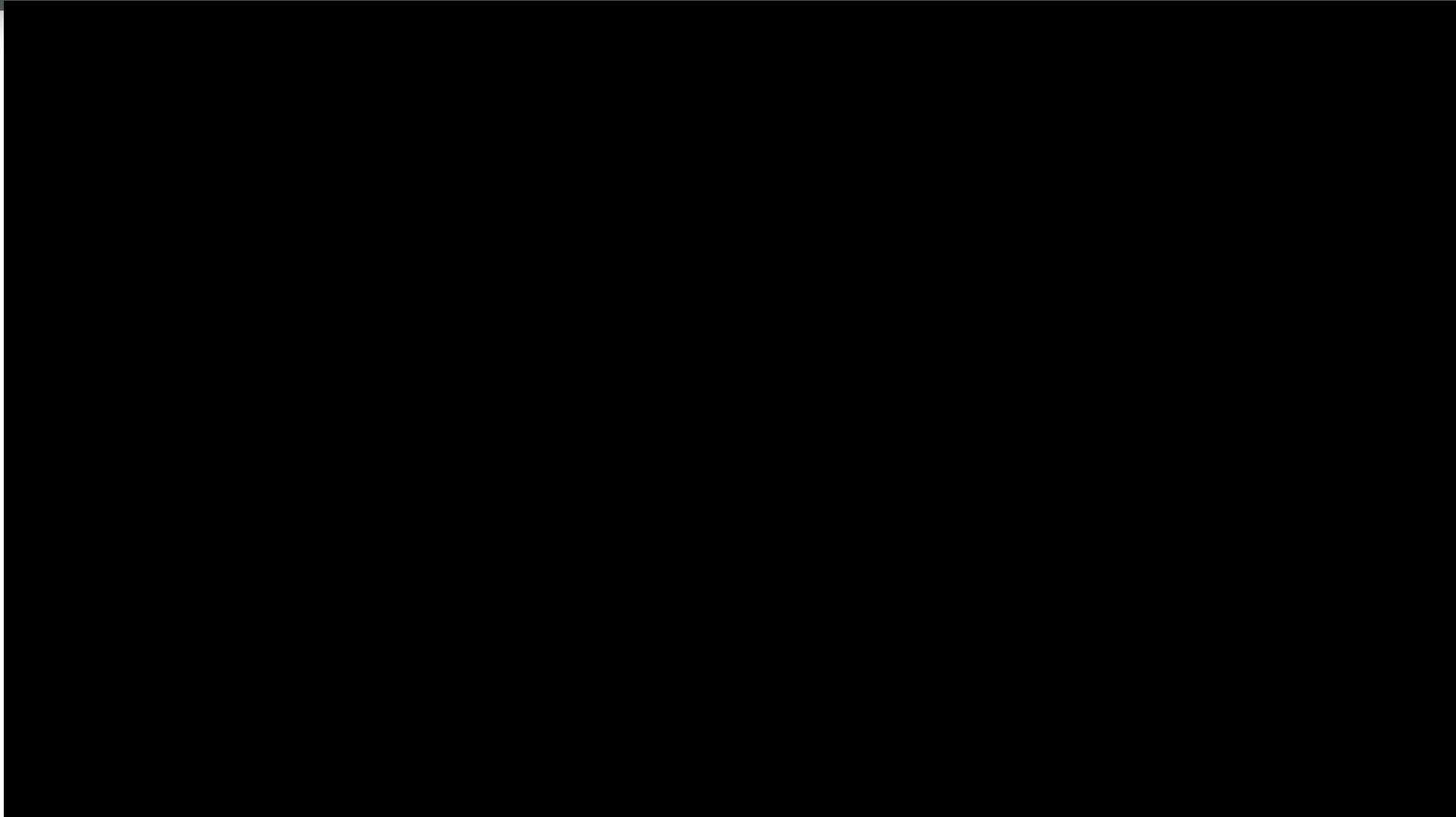


APTA 2017 Sustainability &
Multimodal Planning Workshop

August 9, 2017



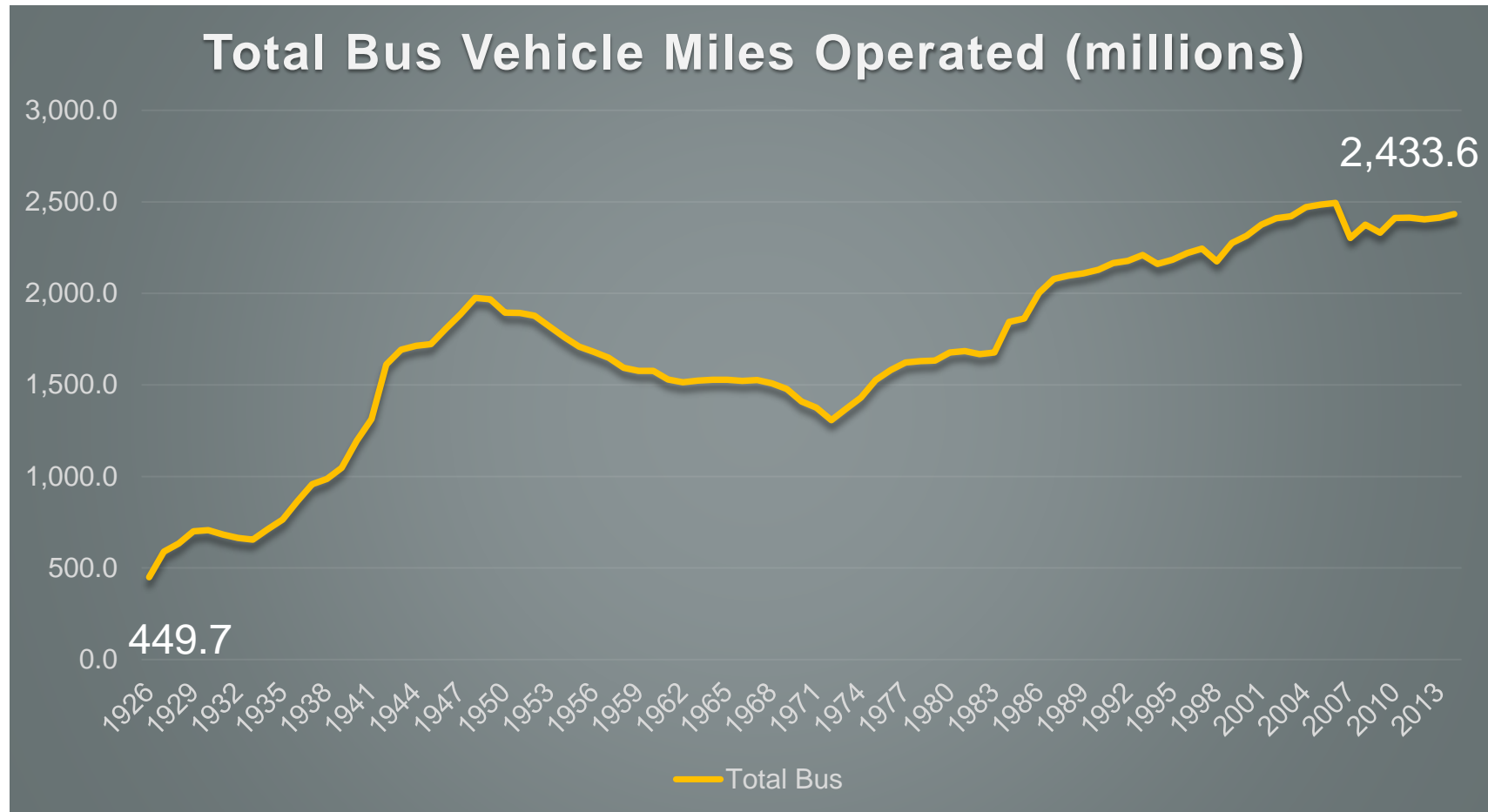
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1. Federal Funding Trends and Updates
2. FAST Act Overview
3. Low-No Best Practices; How to Submit a Winning Application
4. New FAST Act Financing Innovations

TOTAL BUS VEHICLE MILES DRIVEN CONTINUE TO INCREASE

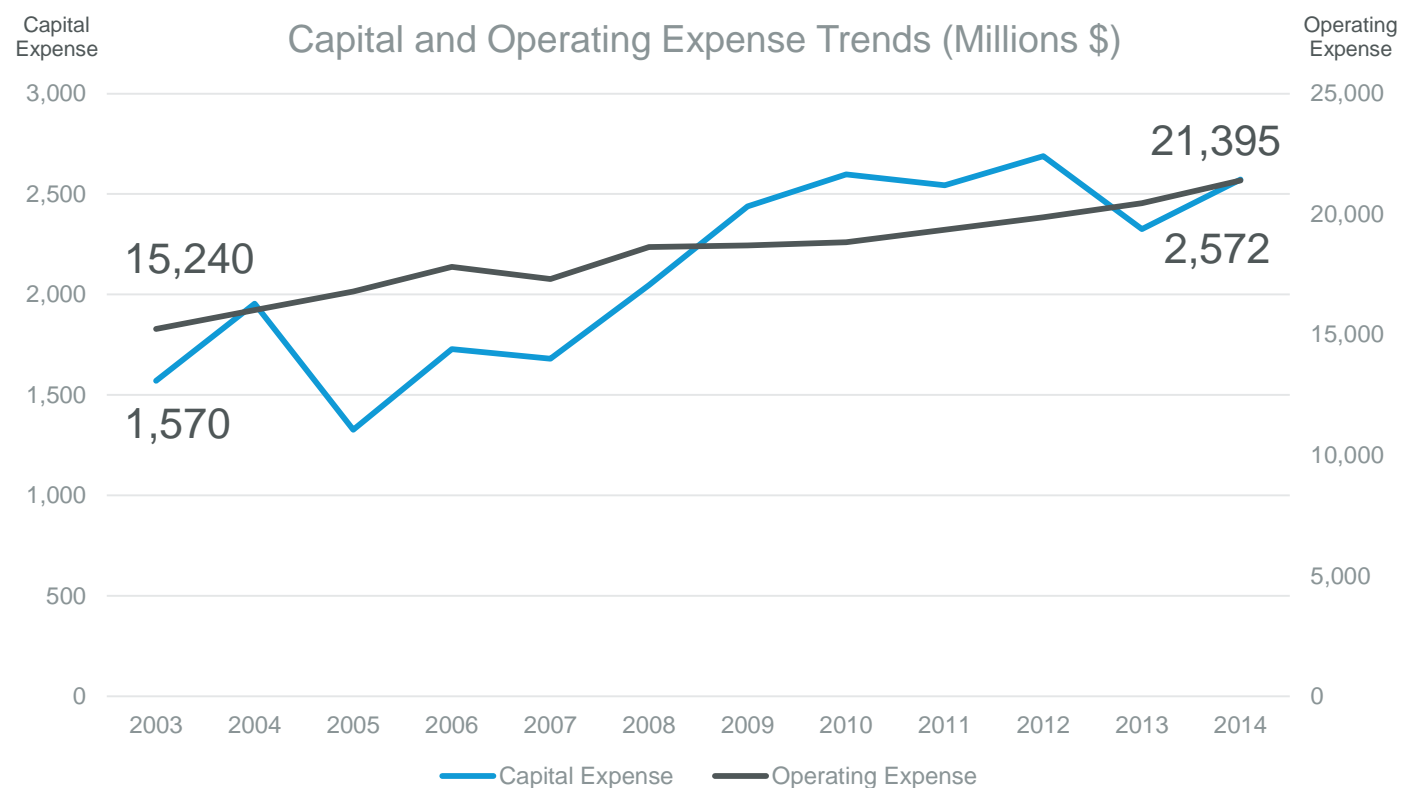
- Buses are the workhorse of transit accounting for almost 50% of all transit mode miles



Source: Data, APTA 2016 Public Transportation Fact Book Appendix A Table 80 Capital Funding Sources;
Charts and calculations, Proterra

CAPITAL AND OPERATING EXPENSE TRENDS

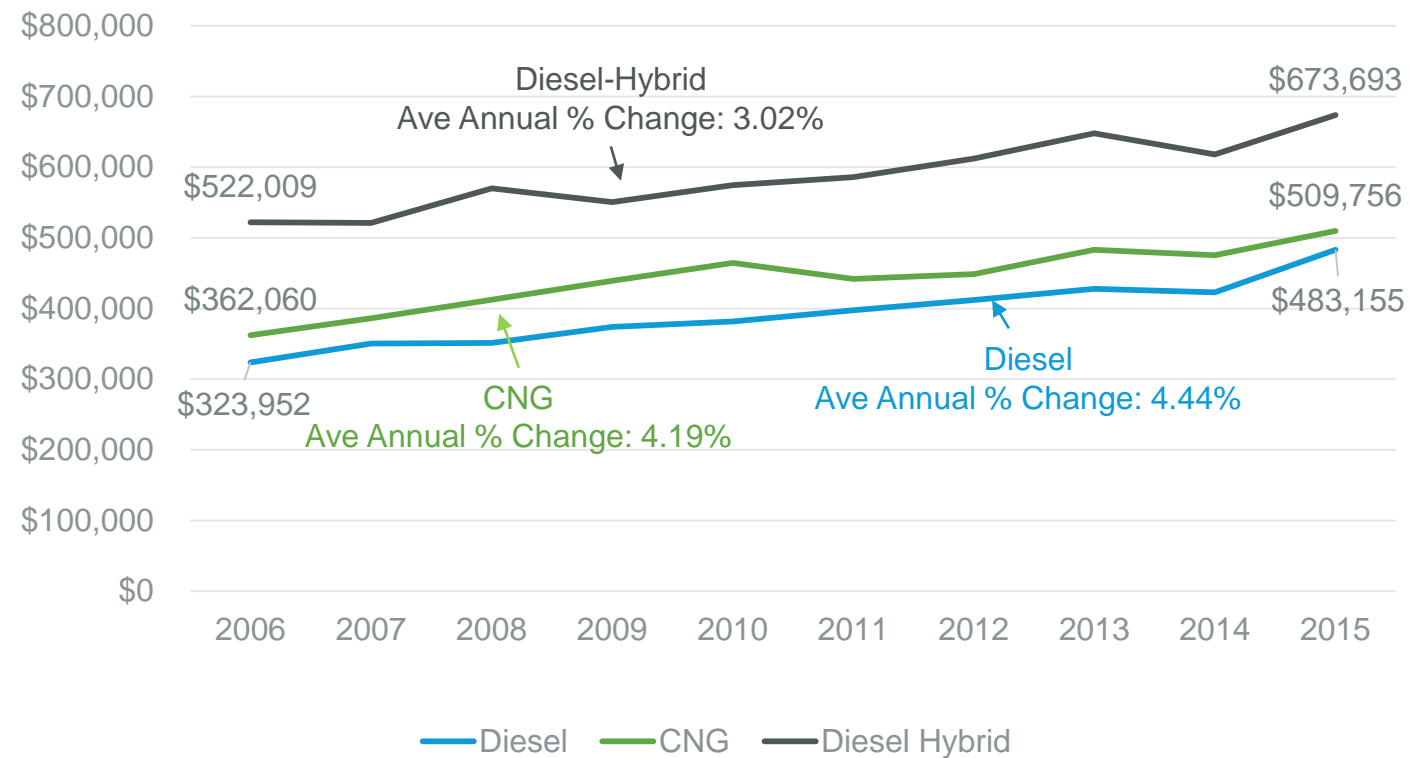
- Total capital expenses have increased an average of 6.18% annually and total operating expenses have increased an average of 3.17% between 2003 and 2014



Source: Data, APTA 2016 Public Transportation Fact Book Appendix A Tables 64 and 68 Capital Expense and Operating Expense; Charts and calculations, Proterra

- Fossil fuel buses have followed fairly consistent and predictable 3.02% to 4.44% annual cost inflation trends

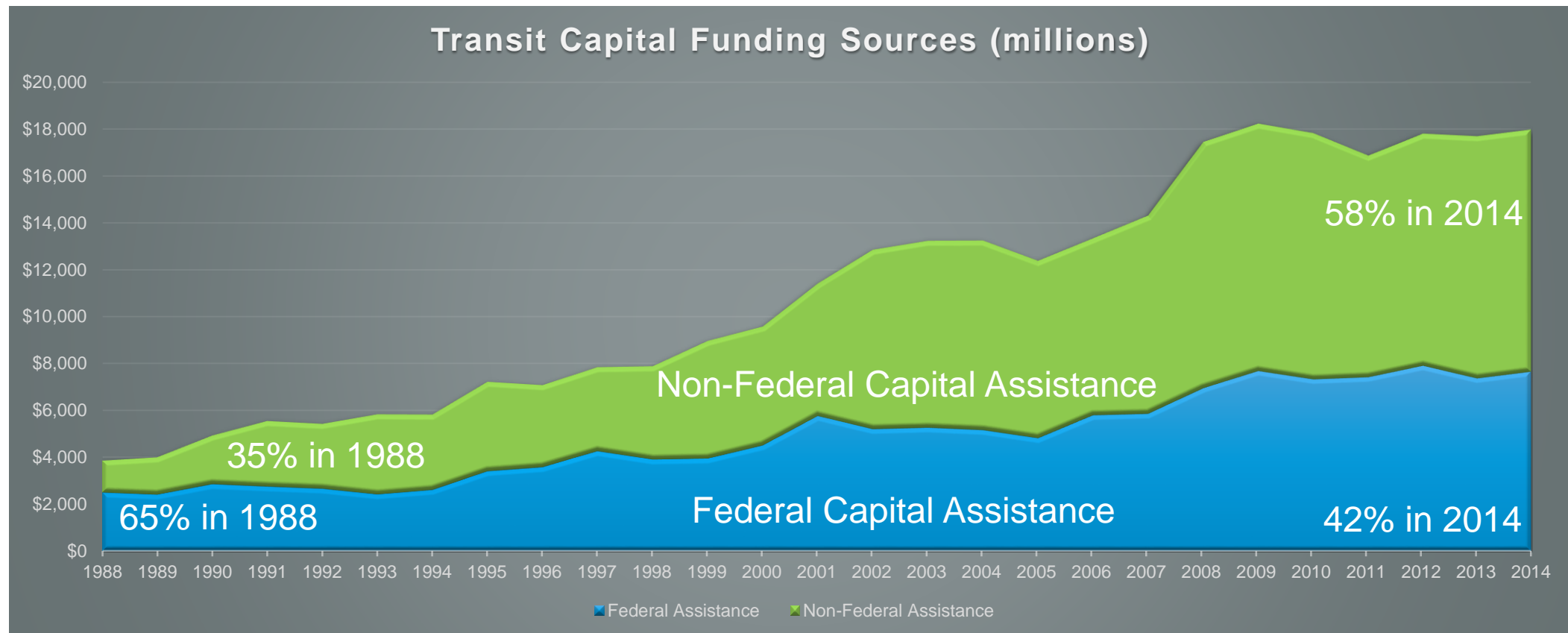
Diesel, CNG and Diesel Hybrid Bus Cost Trends



Source: APTA 2015 Vehicle Database, Proterra calculations

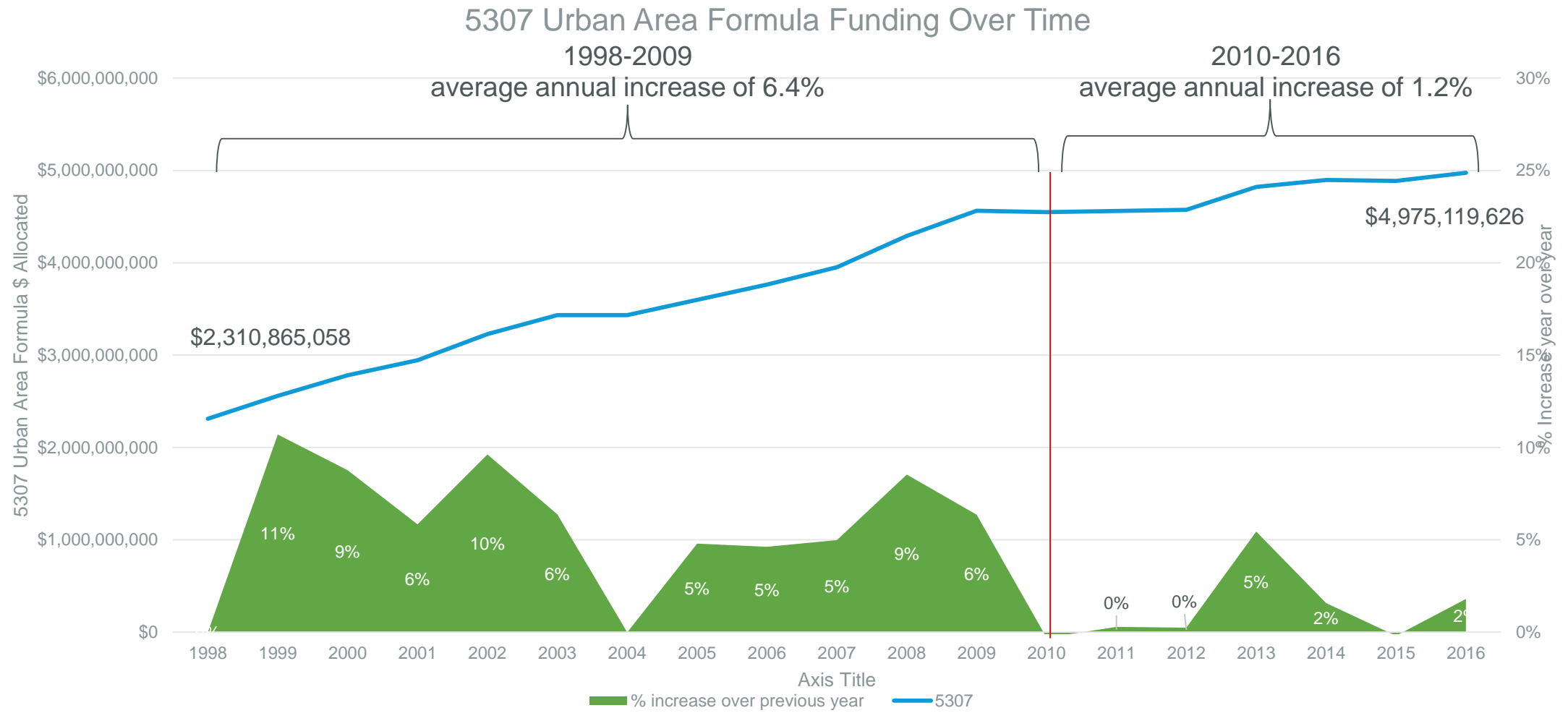
CAPITAL COSTS INCREASING, NOT FEDERAL ASSISTANCE

- Total capital costs are increasing; however, the share of federal revenue to cover capital costs is not keeping up at the same pace



Source: Data, APTA 2016 Public Transportation Fact Book Appendix A Table 80 Capital Funding Sources; Charts and calculations, Proterra. Non-federal capital assistance includes 1) Directly Generated, 2) Local Assistance and 3) State Assistance

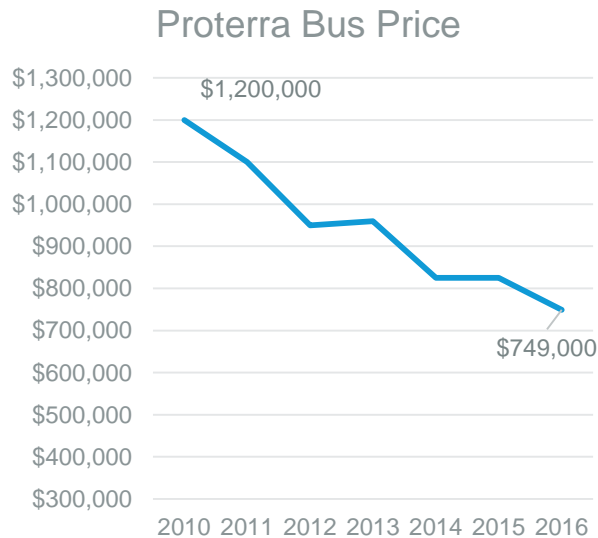
5307 URBAN AREA FORMULA FUNDING OVER TIME



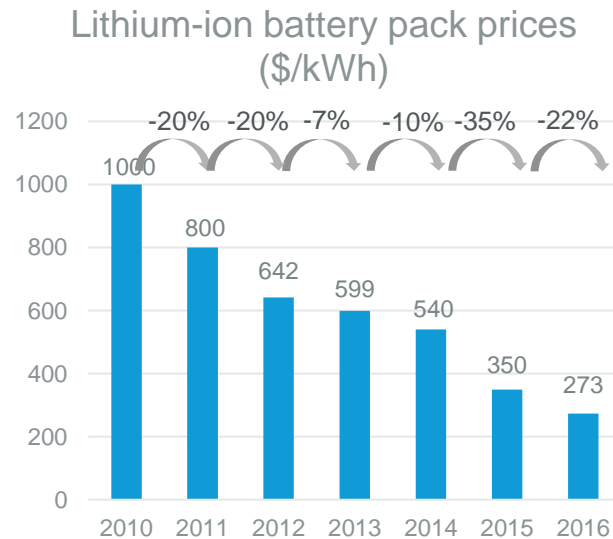
Source: FTA Apportionments for Formula and Discretionary Programs by State FY 1998-2016; Calculations by Proterra

BATTERY ELECTRIC BUS (BEB) COSTS ARE FALLING

- Two ways to fix budget challenges: 1) reduce capital and operating costs 2) increase sources of funding

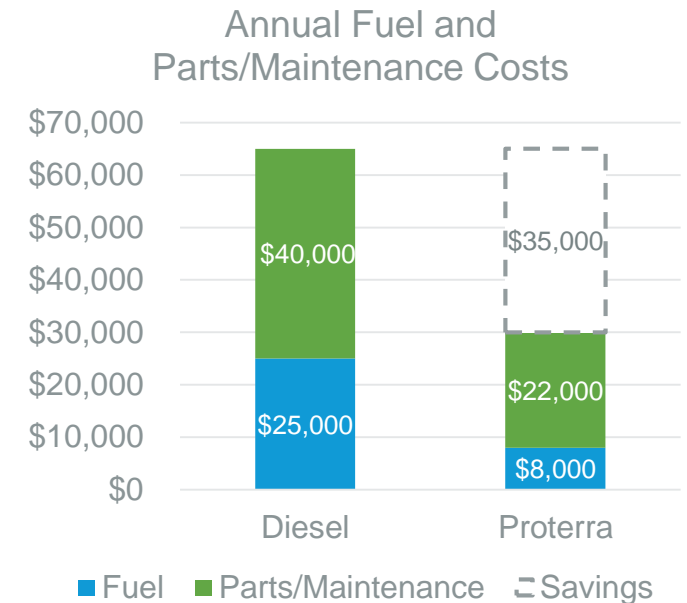


- Proterra BEB bus costs have decreased 38% since 2010



- Lithium-ion battery prices have fallen 73% since 2010

Source: Data, Bloomberg New Energy Finance 2017
Sustainable Energy in America Factbook page 148



- BEB fuel, parts, and maintenance costs are 1/2 of fossil fuel costs

- **September 2015 - Volkswagen admits to installing emission control defeat devices on cars**
- **October & December 2016 – Volkswagen settlement and consent decrees**
 - \$2.7 Billion initial allocation to states on projects to reduce NOx and other emissions
 - \$225 Million additional allocation
 - Eligible projects include projects that reduce NOx emissions, including transit buses.
- **March 2017 – Wilmington Trust MA selected to administer ~\$3.0 Billion in the trust**
- **August/September 2017 - Court expected to declare the Trust Effective Date and then:**
 - 60 days: State must file a Beneficiary Certification.
 - 120 days: Trustee publishes a list of approved beneficiaries.
 - 90 days: State must submit a “beneficiary mitigation plan,”
 - Once designated as a Beneficiary, a state may submit funding requests for eligible mitigation actions. The trustee has 60 days to act upon the funding request.
- **If this timeline holds up, the Beneficiaries should start to receive the funds early 2018. Beneficiaries have 10 years to spend allocated trust funds.**



Volkswagen Settlement

FAST ACT OVERVIEW AND FUNDING HIGHLIGHTS

Fast Act is a 5-year, \$305B bill for highway, transit and vehicle safety programs. **First multi-year, fully funded transportation bill in 10+ years.** Will result in **89% increase** over current funding levels for bus and bus facilities over 5 years

- **Increased Bus and Bus Facilities 5339 (b)–**

- Reinstated a competitive grant program for **Bus and Bus Facilities**, which will **grow from \$213M in 2016 to \$289M in FY2020**

- **Increased Low-No 5339 (c) –**

- Funds the **Low or No Emission (Low-No)** grants at \$55M annually. The money comes from the trust fund and is no longer subject to annual appropriations

- **Expanded Low-No Program eligibility** to all transit agencies, regardless of air quality status

- **Easier to Lease –**

- Eliminated regulatory requirements to make it **easier for transit agencies to enter into leasing arrangements** for vehicles and allows transit agencies to purchase or lease a zero emission vehicle with a separate capital lease of power source (**e.g., batteries**)

- **Innovative Procurement –**

- Introduced **innovative methods to streamline the procurement** process (e.g., establish interstate cooperative rolling stock procurements)



- FAST Act kept **5307** Urbanized Area formula funding and **5311** Non-Urbanized Area formula funding programs with very few changes and **2% annual funding growth**

**5307 Urbanized Area Formula
Annual Funding Amounts (millions)**



**5311 Non-Urbanized Area Formula
Annual Funding Amounts
(millions)**



Purpose: To finance buses and bus facilities capital projects, including replacing, rehabilitating, purchasing or leasing buses or related equipment, and rehabilitating, purchasing, constructing or leasing bus-related facilities.

Funding: Grows from \$213 million in 2016 to \$289 million by 2020; 10% rural set-aside.

Eligible Applicants: Designated recipients that allocate funds to fixed route bus operators, and to states, and local governmental authorities that operate fixed route bus service.

Dates: Proposal due on August 25, 2017.

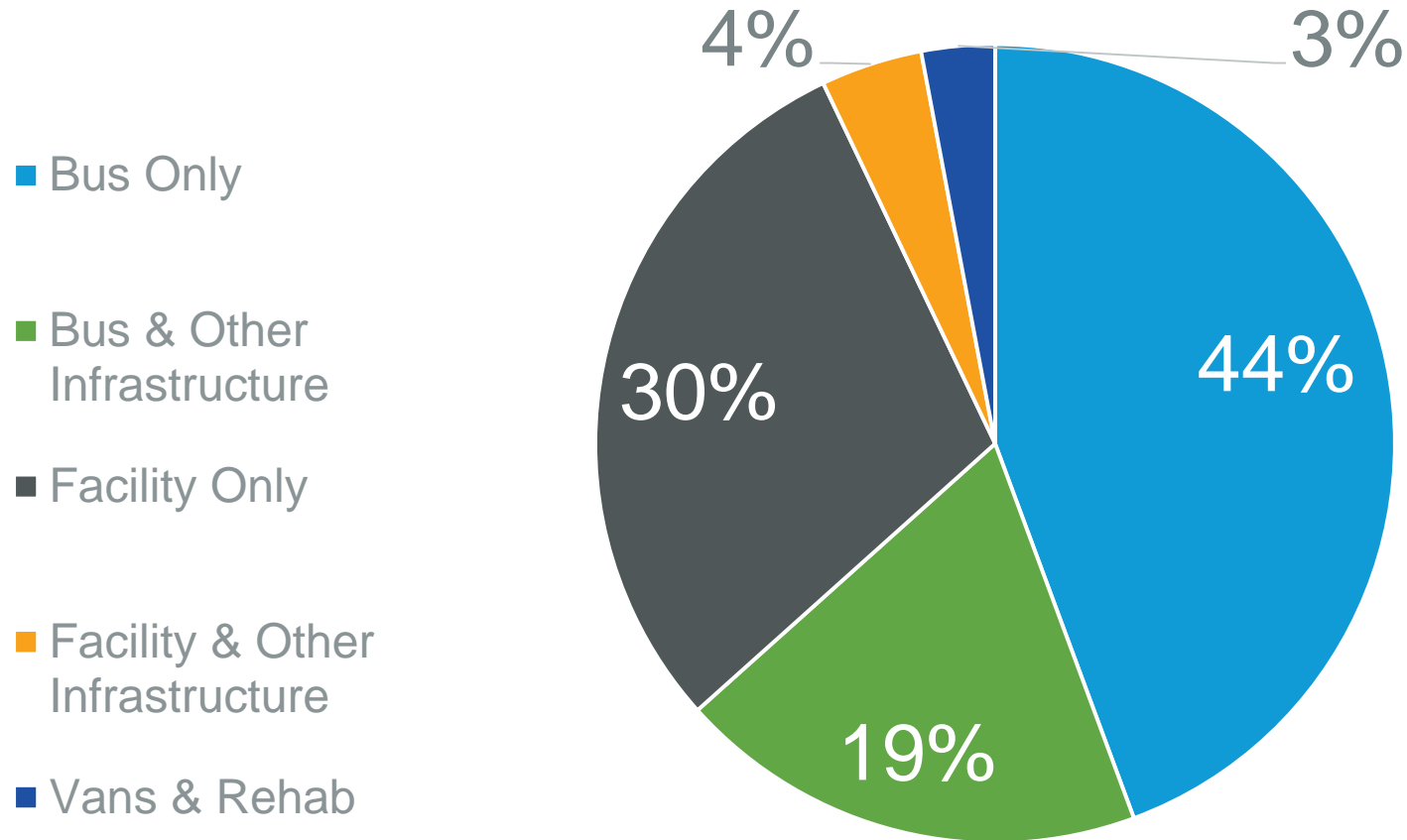
Highlights:

- Agency must go through **competitive procurement** process.
- Applicants are encouraged to identify **scaled funding** options.
- Applicants should distinguish how this need **cannot be met by formula funding**.
- FTA will prioritize projects that improve:
 - [Safety](#)
 - [ITS/Connectivity](#)
 - [State of Good Repair \(replace older assets\)](#)



**Federal Transit
Administration**
**Bus and Bus
Facilities
Grant
5339 (b)**

2016 BUS AND BUS FACILITIES 5339 (B) AWARDS BY PROJECT TYPE AS A PERCENT OF TOTAL FUNDING



62 Total Awards
0 Electric Buses

LOW-NO OVERVIEW

\$275,000,000 Over Five Years

- **\$55,000,000** annual Low-No funds from 2016 – 2020. Total of **\$275,000,000** authorized over five years
- Eligible Projects
 - Purchasing or leasing low or no emission buses
 - Acquiring Low-No buses with a leased power source
 - Leasing facilities and equipment
 - Rehabilitating or improving existing transportation facilities to accommodate low or no emission buses
- 2016 Low-No \$55 million grants were awarded in August, 2016
 - 20 of 101 projects awarded (20% of applicants);
 - \$446 million requested (12% awarded of requested funds)
- 2017 Low-No applications were due on June 26, 2017, awards decision to be made prior to September 30, 2017



**Federal Transit
Administration**
Low-No Grant
5339 (c)

LOW-NO BEST PRACTICE #1

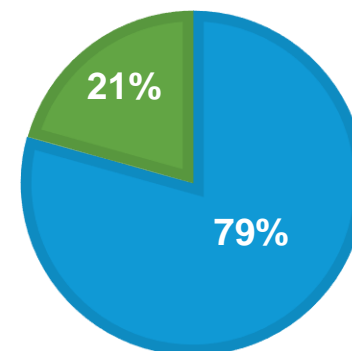
Partner Up



- As a discretionary competitive grant program, Low-No allows agencies to **name and use key technology partners** while **meeting federal third-party procurement requirements**
- Meets FTA goals of getting ZEBs in service as quickly as possible and minimizing risk
- For FY 2016 Low-No, **79%** or 15 of 19 awards for bus projects went to **applicants who selected a single technology partner**
- Transit agencies who selected Proterra as a Low-No partner received over 2/3 of the money and 2/3 of buses awarded to partner applications for electric buses since 2013
- **100% of the 2016 Low-No awarded for buses went to battery electric buses** (i.e., no funding was awarded to deploy fuel-cell or other buses)

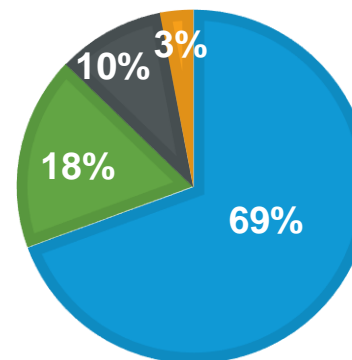
2016 LOW-NO AWARDS BY PROCUREMENT METHOD: TECHNOLOGY PARTNER VS. RFP

■ Technology Partner ■ RFP Procurement Award



% OF PARTNERED ELECTRIC BUS AWARD \$ BY VENDOR

■ Proterra ■ New Flyer ■ BYD ■ Gillig



- Demonstrate a commitment to reducing emissions as part of a long range plan
- Meets FTA goal of deploying electric transit bus fleet advanced technology, which is proven, but not yet widely deployed
- Projects should not be demonstration or pilot projects

- Case Study

- **Foothill Transit** adopted resolution committing to all electric bus fleet by 2030
- 2010 Initial purchase of Proterra buses
- Subsequent Low-No awards



FOOTHILL TRANSIT ANNOUNCES ALL ELECTRIC BUS FLEET BY 2030

Posted May 24th, 2016

Foothill Transit commits to clearing the air in the San Gabriel valley with zero-emission electric buses.

(WEST COVINA, CA) May 12, 2016 – Foothill Transit is embarking on a bold new vision to fully electrify their bus fleet by 2030 – replacing Foothill Transit’s fleet of over 300 buses. This new goal is a part of the agency’s ongoing commitment to sustainability and providing premier public transit service to the communities of the Pomona and San Gabriel Valleys.

LOW-NO BEST PRACTICE #3

Leverage Other Funding Resources



- Leverage other federal and state/local funding sources or financing tools like capital and battery leases to get more buses with a lower requested Low-No amount
- Meet goal of deploying more electric buses with less grant money
- Minimum 15% cost share on buses, 10% on infrastructure cost
- Case studies:
 1. **5307 Match - SEPTA** (Philadelphia) awarded \$2,585,075 for 25 Proterra buses to pay for incremental cost of electric buses; used 5307 funds to pay balance of projects
 2. **Local Match – King County Metro** (Seattle) awarded \$3,336,040 for eight (8) Proterra buses; proposed significant local match to pay for balance of project
 3. **Financing Local Match – Park City Transit** (Utah) awarded \$3,905,378 for six (6) buses; reduced cost of buses by removing battery cost and using a Battery Service Agreement

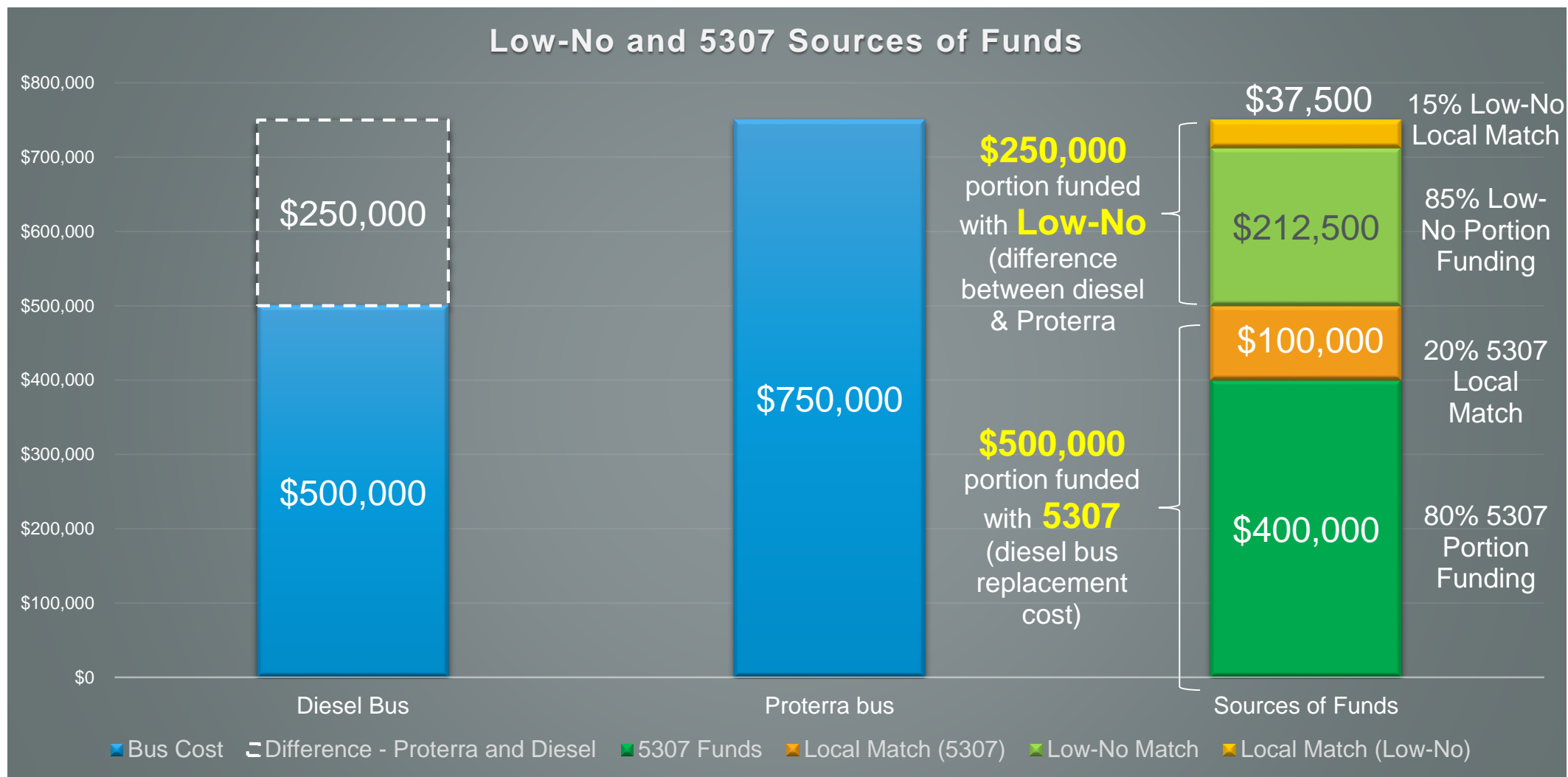


Case Study #1 - Using 5307 Funds to Leverage Low-No Request

SEPTA Example



\$212,500 Low-No grant request = only **28%** of total \$750,000 Project Cost (78% non-Low-No contribution)



- A Low-No Grantee can acquire and deploy three (3) Proterra buses using 5307 funding as part of a Low-No application vs. one (1) Proterra bus WITHOUT using 5307 funding

	Low-No Only (1 Bus)		Low-No With 5307 Leverage (1 Bus)		x's 3	Low-No With 5307 Leverage (3 buses)	
Bus Cost		\$750,000		\$750,000			\$2,250,000
Low-No Match	85%	\$637,500	28%	\$212,500			\$637,500
Low-No Local Match	15%	\$112,500	5%	\$37,500			\$112,500
5307 Federal Funds	0%	\$0	53%	\$400,000			\$1,200,000
5307 Local Match	0%	\$0	13%	\$100,000			\$300,000

- FTA has historically allowed Grantees to use FTA funds to help pay capital lease payments
- FAST Act changed several provisions regarding leases, as outlined by the [FTA's Annual Report on Leasing Arrangements](#) published December 2016
- Changes in leasing guidance in FAST Act vs. old TEA 21/49 CFR 639 Capital Leases guidance include:
 - **Cost effective analysis** requirement of leasing **REMOVED** by FAST Act
 - **Leasing of batteries**, separate from vehicle, added for zero-emission buses
 - **Lease definition** expanded
 - **Maintenance** for equipment leased may be covered by lease cost
 - **Eligible Costs** expanded

	TEA-21/49 CFR 639 Capital Leases	FAST Act 3019 (c) Leasing Arrangements
Authority	Limiting the leasing arrangements to those that are more cost-effective than purchase or construction	Remove the limitation of leases to those that are more cost effective than purchase or construction
Grantee Requirements	Lease of the capital asset is more cost-effective than purchase or construction of the asset, as determined under subpart C of this part. The agencies were to validate the certification of cost effectiveness as a prerequisite with the grant application	REPORTING REQUIREMENT - Not later than 3 years after the date on which a grantee enters into a capital lease under this subsection, the grantee shall submit to the Secretary a report that contains - (A) an evaluation of the overall costs and benefits of leasing rolling stock and (B) a comparison of the expected short-term and long term maintenance costs of leasing versus buying rolling stock

- Eligible Costs:
 - The cost of the rolling stock or related equipment
 - Associated financing costs, including interest, legal fees, and financial advisor fees
 - Ancillary costs such as delivery and installation charges; and
 - Maintenance costs
- 7%, or 12,234 of the total of 174,422 revenue vehicles reported to NTD in 2014, were leased

Source: FTA Annual Report on Leasing Arrangements December 2016 <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA%202016%20Annual%20Report%20on%20Leasing%20Arrangements.pdf>

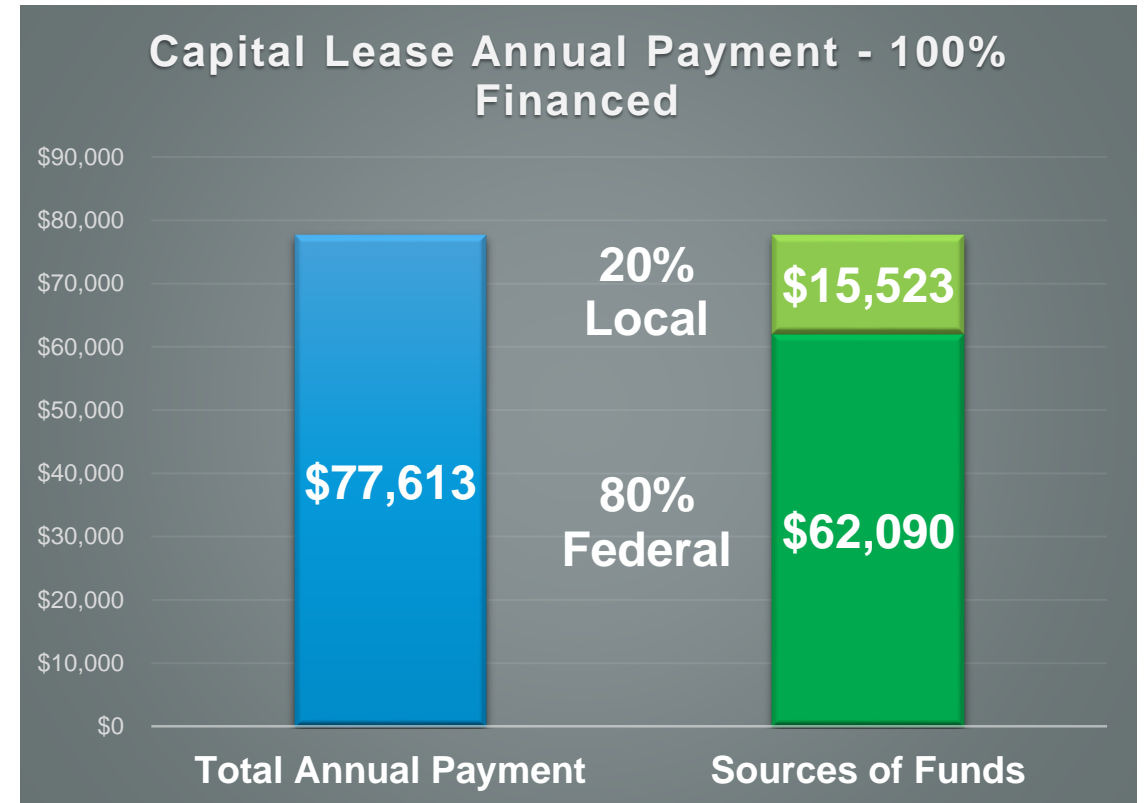
- What is a Capital Lease? Meets 1 of 4 – Part test, FASB Rule 13
 1. Term of the lease = or > 75% of the useful life of the facility or equipment.
 2. Grantee will become the owner of the asset at the end of the lease term.
 3. Lease contains a bargained for option date/price.
 4. Present Value of the rents = 90% of the value of the property.
- Historically governed by 49 CFR Ch. VI Part 639, updated by FAST Act
- Capital costs, including capital leases, paid at 80% federal cost share
- General Terms:
 - Low, Tax-Exempt borrowing rates
 - 12 year, fixed rate terms
 - 100% of project can be financed
- Well established tax-exempt municipal capital lease market

Capital Lease Example

100% Financed Electric Bus

Capital Lease - 100% Financed

	Assumptions
Bus Cost	\$750,000
Amount Financed	\$750,000
Assumed Interest Rate	3.50%
Term (Years)	12
Annual Payment	\$77,613

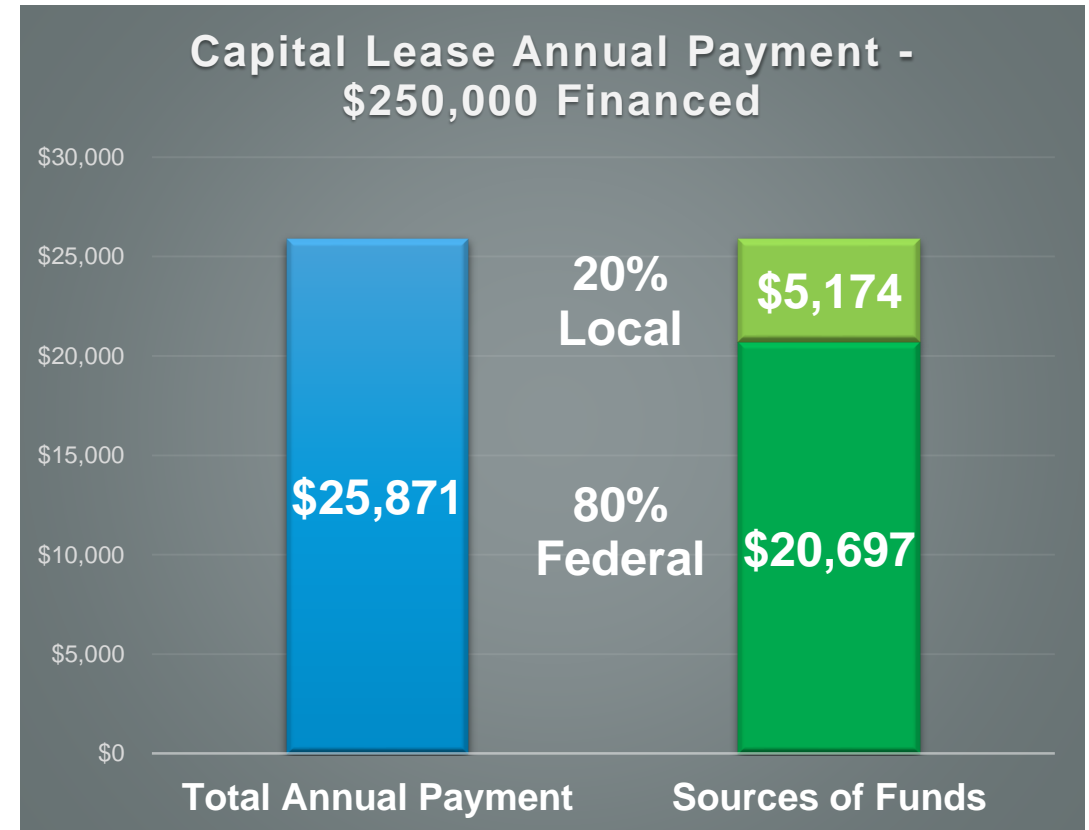


Capital Lease Example

\$250,000 Financed – Difference Between Fossil Fuel Bus and BEB

Capital Lease - 100% Financed

	Assumptions
Bus Cost	\$750,000
Amount Financed	\$250,000
Interest Rate	3.50%
Term (Years)	12
Annual Payment	\$25,871



- FAST Act Comprehensive Transit Bill signed into law on December 4, 2015 explicitly identified the ability of transit customers to use battery lease / service programs:

Legislative Section 3019 (c)(3) CAPITAL LEASING OF CERTAIN ZERO EMISSION VEHICLE COMPONENTS. — (A) DEFINITIONS. —In this paragraph—(i) the term “removable power source”— (I) means a power source that is separately installed in, and removable from, a zero emission vehicle; and (II) may include a battery, a fuel cell, an ultra-capacitor, or other advanced power source used in a zero emission vehicle; and (ii) the term “zero emission vehicle” has the meaning given the term in section 5339(c) of title 49, United States Code.(B) LEASED POWER SOURCES. —Notwithstanding any other provision of law, for purposes of this subsection, the cost of a removable power source that is necessary for the operation of a zero emission vehicle shall not be treated as part of the cost of the vehicle if the removable power source is acquired using a capital lease.(C) ELIGIBLE CAPITAL LEASE. —A grantee may acquire a removable power source by itself through a capital lease.(D) PROCUREMENT REGULATIONS. —For purposes of this section, a removable power source shall be subject to section 200.88 of title 2, Code of Federal Regulations.”

- FY 2017 \$55 million Low and No Emissions grant specifically identified projects eligible for grant funding could include "*acquiring low or no emission buses with a leased power source.*"

- 1. Purchase a Proterra bus at the same out-of-pocket cost as a fossil fuel bus today**
- 2. Hedge against anticipated and unknown future midlife battery replacement costs**
- 3. Eliminates risk of owning, fixing and replacing batteries**
- 4. Use savings from lower fuel and operating costs to pay battery lease payments**
- 5. Lower out-of-pocket costs allow easier and faster full conversion to electric bus fleet**

BATTERY LEASE SAMPLE ASSUMPTIONS



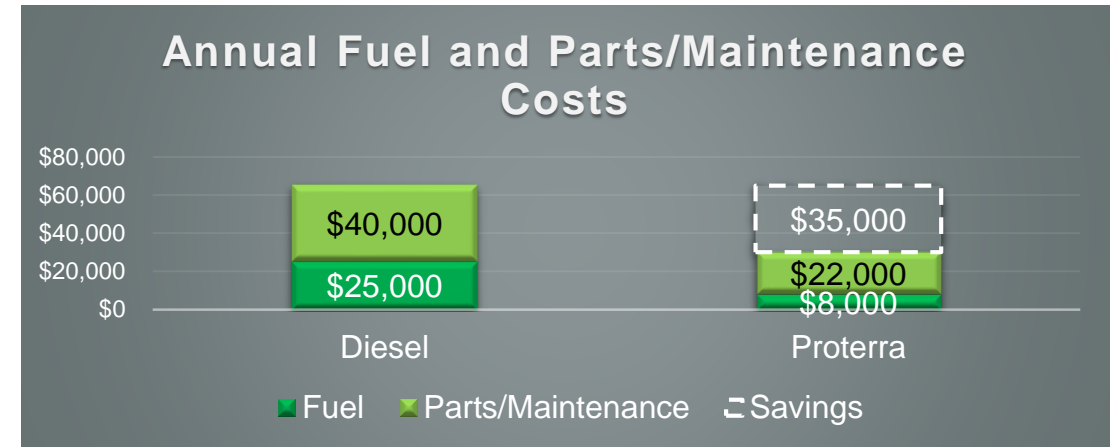
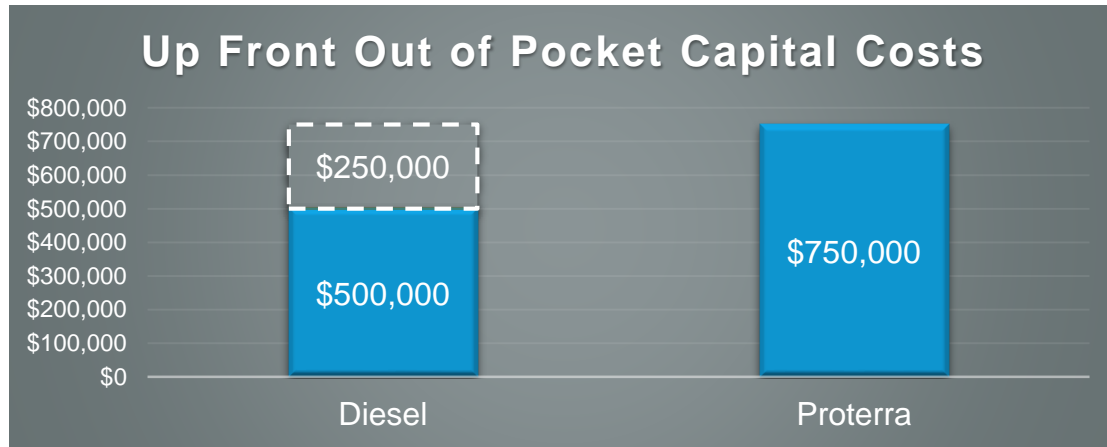
	Diesel Cash	Proterra Cash	Proterra Battery Lease
Bus Cost	\$500,000	\$750,000	\$500,000
Annual Miles	40,000	40,000	40,000
Fuel Cost (\$/gal, \$/kWh)	\$2.50	\$0.10	\$0.10
Fuel Efficiency (miles/gal, DGE)	4	19	19
Parts, Mid-life Refurb, Maintenance	\$1.00	\$0.55	\$0.30
Annual Battery Lease Payment	\$0	\$0	\$38,000
Total Annual Operating Expenses	\$65,000	\$30,000	\$58,000

Diesel vs. Proterra Operating Costs

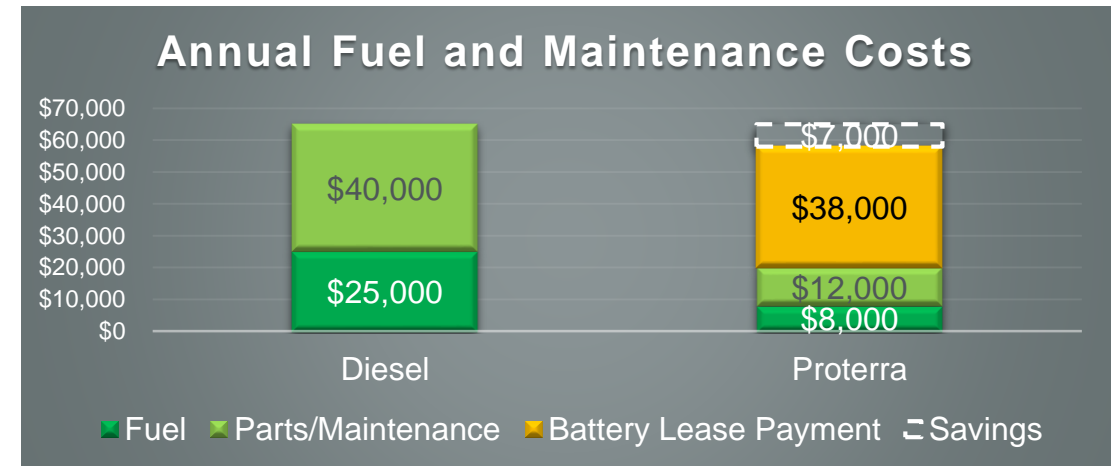
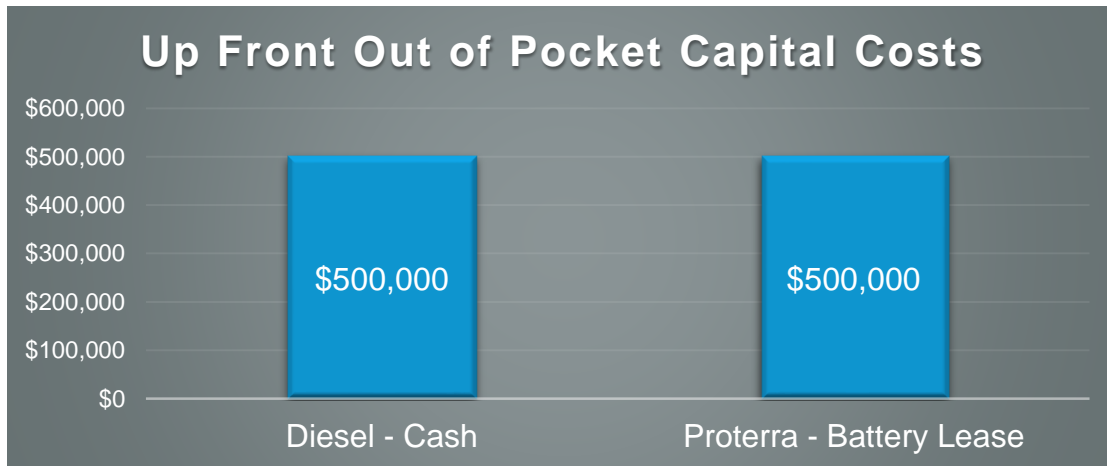
Reduced Proterra Operating Costs Offset Battery Service Payment



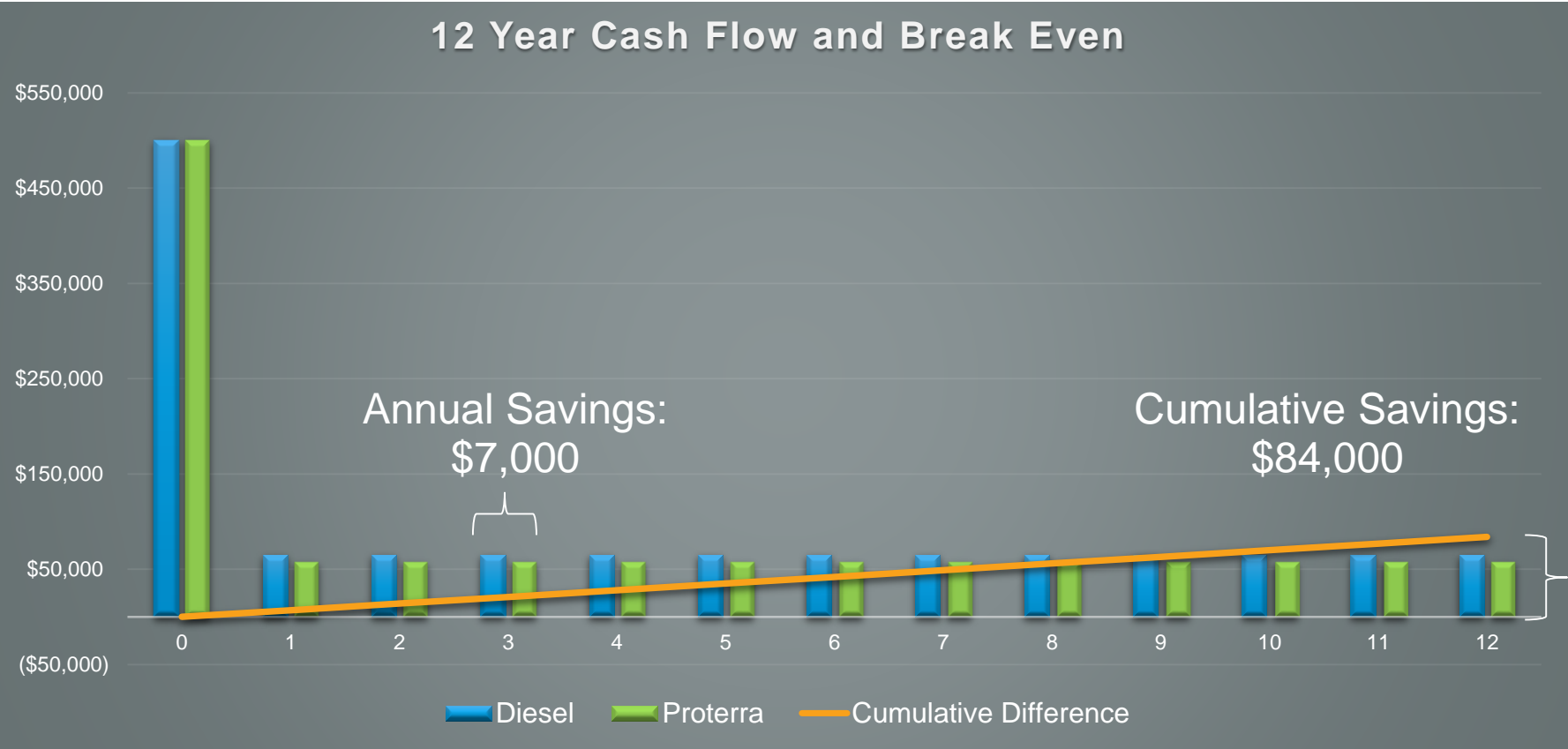
Diesel Cash vs. Proterra Cash



Diesel Cash vs. Proterra Battery Lease



- 12 Year Cash Flows – Diesel Cash vs. Proterra Battery Lease

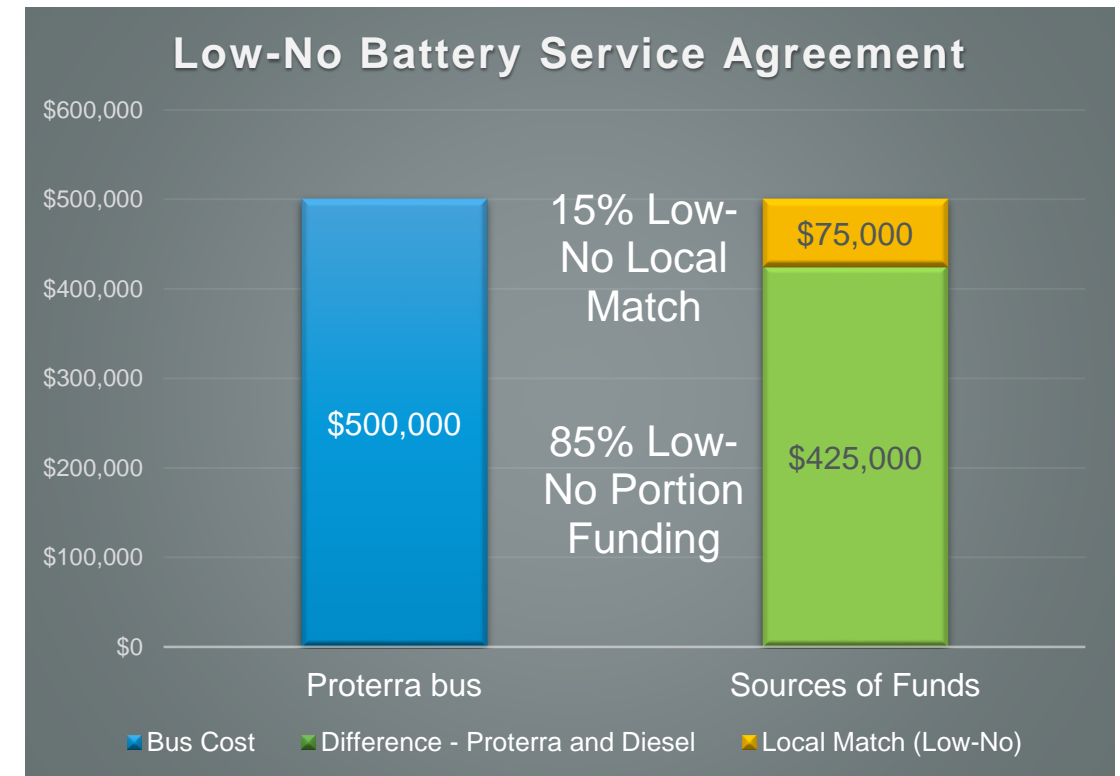
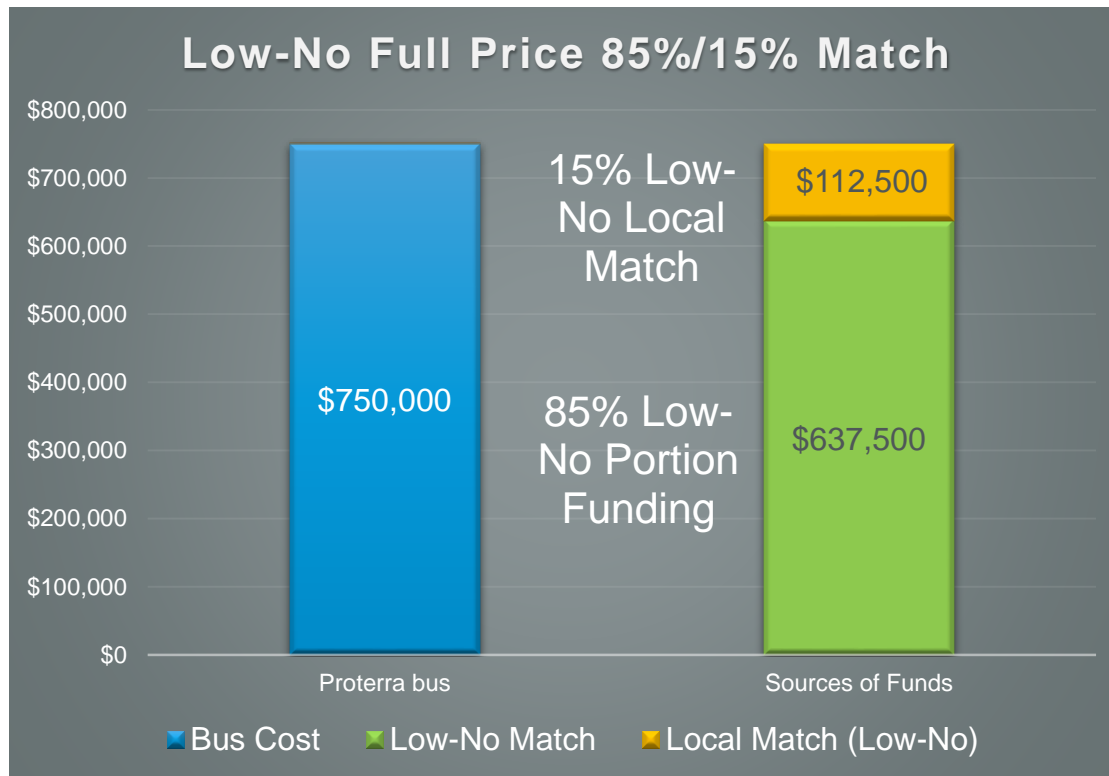


Using a Battery Service Agreement to Increase LowNo Vehicles

Park City, Utah Example



- Lower the amount of Low-No matching funds needed
- Increase the number of buses that can be purchased with the same amount of Low-No Funding



B. More Proterra Buses with Same Amount of Money

Battery Service Agreements and LowNo



- A Low-No Grantee can acquire and deploy three (6) Proterra buses using a Battery Service Agreement as part of a Low-No application vs. four (4) Proterra buses WITHOUT using a Battery Service Agreement for same amount of LowNo and Local match.

	Low-No (Full Price)	Low-No (Battery Service Agreement)
Bus Cost	\$750,000	\$500,000
85% Low-No Match	\$637,500	\$425,000
Number of Buses	4	6
Total Low-No Match	\$2,550,000	\$2,550,000
Total Local Match	\$450,000	\$450,000

- Savings from reduced fuel and maintenance costs offsets the cost of the battery service payment resulting in no additional cost
- Battery Service Agreement payments can also be paid up to 80% using 5307 match funds



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THANK YOU.

