Los Angeles County
Metropolitan Transportation
Authority
One Gateway Plaza
3rd Floor Board Room
Los Angeles, CA

File #: 2017-0303, **File Type:** Contract **Agenda Number:** 43

SYSTEM SAFETY, SECURITY AND OPERATIONS COMMITTEE
JULY 20, 2017

SUBJECT: THIRTY-FIVE 60' ARTICULATED ZERO EMISSION TRANSIT BUS CONTRACT

ACTION: AWARD CONTRACT FOR REPLACEMENT OF 60' TRANSIT BUSES

RECOMMENDATION

CONSIDER:

A. AUTHORIZING the Chief Executive Officer to award a firm fixed-price contract, Contract OP28367-001, Part D, to New Flyer of America for the manufacture and delivery of thirty-five 60' zero emission transit buses, in the amount of $51,211,033 for the base contract, including charging equipment, taxes and delivery; exclusive of any contract option buses, subject to resolution of any properly submitted protest.

B. AUTHORIZING the CEO to award an additional not-to-exceed amount of $8,839,064 for Optional Vehicle Features, Spare Parts, and Training Aids for a total combined contract amount not-to-exceed $60,050,097.

C. ESTABLISHING a life-of-project budget of $72,101,419 for the purchase of thirty five zero emission buses, charging equipment, installation costs, infrastructure upgrades, and contingency under CP 201073.

D. FINDING that the award to New Flyer of America is made to the Proposer that provides the agency with the best value and is most advantageous to Metro. The recommended price addresses all contract requirements and represents the best overall value when all RFP evaluation factor are considered.

E. RECEIVING AND FILING the presentation on the Strategic Planning for Metro's Transition to 100% Zero Emission Bus Fleet by 2030 (Attachment C).

ISSUE

Between FY18-FY22, Metro is scheduled to retire and replace two-hundred sixty (260) 60' CNG buses that will reach the end of their useful life. Recently, staff was also directed to initiate plans to

operate only Zero Emission Buses on Metro's Orange Line by 2020.

This action authorizes the award of a contract for thirty five 60' buses to New Flyer for the replacement of retirement eligible CNG buses currently operating on the Orange Line, and for the initial deployment of related charging equipment on the MOL right-of-way, and at Metro Division 8 in Chatsworth.

DISCUSSION

In April 2016, Metro's Board of Directors authorized staff to initiate RFP OP28367 for the procurement of up to 1,000 CNG or Zero Emission Transit Buses. RFP OP28367, issued in July 2016, consists of four parts, one separately evaluated procurement of each vehicle type:

- Part A, 40' CNG buses (base order of 295, award targeted for June 2017)
- Part B, 60' CNG buses (base order of 65, award targeted for July 2017),
- Part C, 40' ZE buses (base order of 60, award targeted for July 2017),
- Part D, 60' ZE buses (base order of 35, award targeted for June 2017).

This recommended Board action pertains solely to Part D, 60' Zero Emission buses.

Staff will return later this year with recommendations for the remaining two parts of this solicitation. Staff prioritized the solicitation review of Part D as these 60' zero emission buses are needed as soon as possible to replace 60' CNG buses that have reached the end of their service life and ensure the electrification of the Metro Orange Line by 2020.

For this contract procurement, Metro used a "Best Value" competitive negotiation process which considered such factors as:

- Broadest possible range of competing products and materials available
- Fitness for purpose
- Scoring preference for participation in Metro's Local Employment Program
- Manufacturer's warranty
- Performance and Reliability
- Life Cycle Costs
- Delivery Schedules
- Support logistics

Utilization of a "Best Value" solicitation process for this procurement identified the 60' ZEB bus most suited to Metro's operating needs by permitting discussions with proposers to evaluate performance and reliability of the proposed components, warranty, cost data and delivery schedule.

The Local Employment Program (LEP) is a FTA approved pilot for Metro's Rolling Stock procurements. The LEP allows for geographical preferences to be applied as part of Metro's evaluation scoring. The voluntary program provides proposers with incentive points for creating new jobs in California. The proposed awardee New Flyer of America was unable to participate in this voluntary program for this contract due to the low production volume of only 35 buses.

PLAN TO TRANSITION TO 100% ZEB FLEET BY 2030

This procurement supports both Metro's bus fleet management and replacement plans for FY18 - 22 and supports transition to a 100% zero emission fleet by 2030 (Attachment C).

To achieve these objectives, Metro's electrification plan consists of near and long term elements. The near term elements are those that may be applied now with limited risk to service while providing Metro with the needed opportunity to evaluate and initiate mitigations for real and possible impacts to service and operations. Metro's plan to transition to a 100% Zero Emission Fleet considers:

- Current status of electric bus technology,
- Production,
- Impact to Service,
- Impact to Facilities & Infrastructure,
- Impact to Operating Practices and Operating Environment,
- Impact to Operator and Maintainer Training,
- Service contracts with energy utilities, and
- Costs

In brief, it is currently not possible to immediately transition to 100% zero emission operation without significant risks to service and operation:

- Current ZE bus technologies do not permit a 1:1 replacement of CNG buses with ZE buses due to differences in costs and performance. In particular, this includes issues with ZE buses that include operating range and vehicle weight;
- Facilities and infrastructure modifications will be required to support ZE bus operation & maintenance; this will take time and money.
- There are additional unknowns about potential operating impacts related to maturity of ZE technologies, such as ZE technology maturity and battery life durability (i.e. will a ZE buses operating range degrade over time).

    - Currently, there are no mitigation plans in place should a power outage occur preventing buses from charging overnight or through-out the day.

Near term elements of Metro's ZEB plans consist of:

1. Electrification of the Metro Orange Line by 2020 (45 ZE buses required)
    - Procurement of 5 60' ZE buses from BYD (Contract awarded)
    - Procurement of 35 60' ZE buses from New Flyer under this request for Contract Award
    - Procurement of 5 additional 60' ZE buses from New Flyer through a Lo-No Emission Grant
    - Negotiation and establishment of service contracts with third-party energy utilities and PUC
    - Electrification of facilities, operating lines, and infrastructure under separate public works procurements

2. Electrification of Metro Silver Line by approximately 2021 (~ 60 ZE buses required)

    - Coordinate with Foothill Transit for Bus Bay Charging Stations
    - Identify other candidate locations along ROW for installation of opportunity chargers (potentially Harbor Gateway Transit Center in South Bay)
    - Negotiate and establish service contracts with third-party energy utilities
    - Electrify facilities, operating lines, and infrastructure under separate public works procurements
    - In approximately FY2019, exercise option for additional ZE buses

Long term elements of Metro's ZEB plans consist of:

- Return to the Board in the FY18-FY19 timeframe, and periodically thereafter, to present plans for further expand electrification of Metro's bus transit system;
- Challenge the bus manufacturing and battery industries to develop ZEB designs that exceed Metro's goals for operating range, weight and cost;
- Develop a working group with local utilities (i.e. DWP and SCE) to ensure their support expanding the bus charging networks at Metro operating locations; negotiate with PUC and local utilities to refine rate structures that are optimized to electric bus charging and operations;
- Work with engineering/design firms to refine optimal procedures for installing and operating bus "Depot" and en-route charging systems;
- Seek funding support for Metro's ZEB program from federal, state and local sources;
- Evaluate alternate options for procuring battery electric bus technologies, such as using

commercial leases to help mitigate operational risks associated with batteries and/or propulsion system technologies.

DETERMINATION OF SAFETY IMPACT

There will be anticipated safety improvements for operating these new battery electric buses in Metro's bus fleet. These buses will also incorporate the latest safety features and designs, including improved ADA amenities and boarding ramps. The batteries and high voltage powertrain equipment on these buses includes special safety provisions, and "Locks out" employee access while they are energized. New buses also will provide a safer, cleaner environment for Metro patrons and employees.

FINANCIAL IMPACT

Total LOP funding of $72,101,419 is included in Cost Center 3320 - Vehicle Technology, in project 201073. For FY18, there is $20,993,816 million programmed to cover expenses for purchasing these buses. Because this is a multi-year contract, the Cost Center Manager will be responsible for ensuring that future year funding is programmed.

Impact to Budget

Future funding for this procurement may come from various eligible available Federal, State and local funding sources including financing options and grants that are eligible for Bus Capital Projects. Staff will pursue all sources of funding maximizing their use for these activities.

ALTERNATIVES CONSIDERED

Staff considered awarding an additional 45 ZE 60' buses as part of the initial base award recommendation to cover Metro's Silver Line BRT service. Staff determined that 40' ZE Buses are more suitable for operating on this corridor.

Staff considered purchasing CNG 60' replacement buses to cover this service, or continuing operation of 60' CNG buses. In both cases, these options are not recommended and would not comply with Metro Board's directives to operate zero emission buses on the Metro's Orange Line corridor. New 60 CNG buses would cost about $42 million, $20 million less than zero emission electric buses. Extending the service life of existing CNG buses would require an extensive overhaul, including a retrofit of the fuel system Retrofitting a new "Low NOx" CNG engine and transmission PPA package would add another cost. Even with these investments, Metro's older CNG buses do not come close to providing the reliability, passenger & operator comfort, cost effectiveness, and value as new buses do for Metro and our riders.

NEXT STEPS

Upon Board approval, staff will execute the Contract with New Flyer and issue a Notice to Proceed. Staff will also report back annually on the status of the Plan to transition to a 100% ZEB fleet.

ATTACHMENTS

Attachment A - Procurement Summary
Attachment B - DEOD Summary
Attachment C - Metro's Zero Emission Bus Plans
Attachment D - Funding and Expenditure Plan

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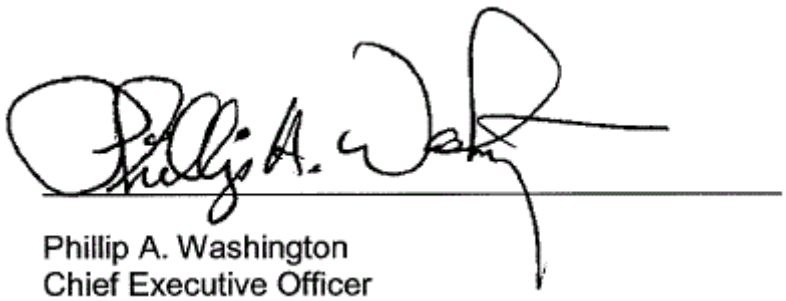


Phillip A. Washington
Chief Executive Officer

PROCUREMENT SUMMARY

THIRTY-FIVE 60 FOOT ZERO EMISSION TRANSIT BUS CONTRACT /OP28367-001 (Group D)

1.	**Contract Number**: OP28367-001	
2.	**Recommended Vendor**: New Flyer of America, Inc.	
3.	**Type of Procurement (check one):** ☐ **IFB** ☒ **RFP** ☐ **RFP–A&E** ☐ **Non-Competitive** ☐ **Modification** ☐ **Task Order**	
4.	**Procurement Dates**:	
	A. Issued: 07.29.16	
	B. Advertised/Publicized: 08.04.16; 08.08.16; 08.12.16; 08.15.16	
	C. Pre-Proposal Conference: 08.30.16	
	D. Proposals Due: 02.10.17	
	E. Pre-Qualification Completed: 06.05.17	
	F. Conflict of Interest Form Submitted to Ethics: 05.26.17	
	G. Protest Period End Date: 06.16.17	
5.	**Solicitations Picked up/Downloaded**: 63	**Bids/Proposals Received**: 2
6.	**Contract Administrator**: Elizabeth Hernandez	**Telephone Number**: (213) 922-7334
7.	**Project Manager**: John Drayton	**Telephone Number**: (213) 617-6285

A. Procurement Background

This Board Action is to approve Contract No. OP28367-001 issued in support of Metro's bus fleet replacement plan to procure new 60' Zero Emission (ZE) buses for the replacement of retirement-eligible 60' CNG buses currently operating on the Orange Line. The RFP solicitation Group D – 60' ZE bus Base Buy consists of 35 ZE buses, with Option orders of up to 65 additional buses for a total of 100 60' ZE buses. Board approval of contract awards are subject to resolution of any properly submitted protest.

The RFP was issued in accordance with Metro's Acquisition Policy and the contract type is a firm fixed unit price.

Twenty six amendments (26) were issued during the solicitation phase of this RFP:

- Amendment No. 1, issued on 08.03.16, updated the required certifications;
- Amendment No. 2, issued on 08.08.16, provided revised Pre-Proposal Conference date and venue;
- Amendment No. 3, issued on 08.11.16, updated due dates for requests for approved equals and clarifications;
- Amendment No. 4, issued on 08.26.16, edited the submittal forms and technical specifications;
- Amendment No. 5, issued on 09.07.16, extended the proposal and clarifications requests due dates, edited submittal forms and technical

specifications, and established a project data repository for plan holder access to RFP documents;

- Amendment No. 6, issued on 09.16.16, extended the proposal and clarifications requests due dates, edited submittal forms and technical specifications, and scheduled on site bus inspections for proposers;
- Amendment No. 7, issued on 09.30.16, edited pricing forms, technical specifications, and commercial terms and conditions;
- Amendment No. 8, issued on 10.14.16, edited pricing and clarification request forms, technical specifications, and commercial terms and conditions;
- Amendment No. 9, issued on 11.02.16, edited pricing forms, technical specifications, and commercial terms and conditions;
- Amendment No. 10, issued on 11.07.16, edited pricing forms, technical specifications, and commercial terms and conditions;
- Amendment No. 11, issued on 11.10.16, extended the due dates for Groups A and B, 40’ and 60’ CNG proposals, and edited commercial terms and conditions;
- Amendment No. 12, issued on 11.22.16, edited pricing and submittal forms;
- Amendment No. 13, issued on 12.12.16, extended the due dates for Groups C and D 40’ and 60’ zero emission bus proposals;
- Amendment No. 14, issued on 01.12.17, edited commercial terms and conditions for Group A;
- Amendment No. 15, issued on 01.13.17, extended the due dates for Groups C and D, 40’ and 60’ zero emission bus proposals;
- Amendment No. 16, issued on 01.26.17, extended the due dates for Groups C and D, 40’ and 60’ zero emission bus proposals;
- Amendment No. 17, issued on 01.31.17, edited pricing forms and technical specifications for Groups C and D, 40’ and 60’ zero emission bus proposals;
- Amendment No. 18, issued on 02.06.17, edited pricing forms for Groups C and D, 40’ and 60’ zero emission bus proposals;
- Amendment No. 19, issued on 02.10.17, solicited best and final offers (BAFO) from Group A proposers;
- Amendment No. 20, issued on 02.24.17, edited documents for Group A;
- Amendment No. 21, issued on 02.28.17, edited documents for Group A;
- Amendment No. 22, issued on 03.30.17, solicited BAFO from Group A proposers.
- Amendment No. 23, issued on 05.05.17, solicited BAFO from Group D proposers.
- Amendment No. 24, issued on 05.05.17, edited documents for Group B proposers.
- Amendment No. 25, issued on 05.09.17, solicited conforming offer for Group B proposers.
- Amendment No. 26, issued on 05.10.17, edited documents for BAFO from Group D proposers.

A pre-proposal conference was held on August 30, 2016. On-site bus inspections were performed on October 4, 5, and 6, 2016. A total of two proposals were received on February 10, 2017.

Questions received throughout the solicitation process and Metro's responses to those questions were made accessible to the RFP plan holders by posting them at Metro's project data repository. Nine sets of Questions and Answers were issued for a total of 754 questions and answers uploaded to the repository from August 12, 2016 to December 30, 2016. Proposers for Group D 60' ZE buses requested, and Metro granted, several extensions changing the proposal due date from the initial date of December 2, 2016 to February 10, 2017.

The proposal evaluation period, from February 13, 2017 through May 26, 2017, included reviews of the written proposals, clarifications requests and responses, oral presentations, proposers' manufacturing and engineering site visits, face-to-face and conference call discussions, and transit agency reference checks. These series of evaluation processes were necessary to assess and determine the proposers' strengths and weaknesses in their respective technical and price proposals.

B. Evaluation of Proposals

A Proposal Evaluation Team (PET) consisting of staff from Metro's Vehicle Technology and Acquisition, Maintenance, and Operations was convened and conducted a comprehensive technical evaluation of the proposals received.

The proposals were evaluated based on the following evaluation criteria and weights:

• Technical Compliance	400 points
• Price	300 points
• Project Management Experience	100 points
• Experience and Past Performance	100 points
• Life Cycle Costs	100 points
Sub-Total	1,000 points
• Voluntary Local Employment Program (Incentive Points)	50 points
Total Available Points	1,050 points

The evaluation criteria are appropriate and consistent with criteria developed for other, similar bus procurements. Several factors were considered when developing these weights, giving the greatest importance to the technical compliance of the proposed bus.

The Local Employment Program (LEP) is a FTA approved pilot for Metro's Rolling Stock procurements. The LEP allows for geographical preferences to be applied as part of Metro's evaluation scoring. The voluntary program provides proposers with

incentive points for creating jobs in California. The voluntary LEP may not be used as a basis for award.

Both Proposers are listed below in alphabetical order:

1. BYD Coach & Bus, LLC (BYD)
2. New Flyer of America Inc. (NFA)

The PET began its review of the written technical proposals submitted by the two proposers on February 13, 2016. Based on the PET's initial review, 164 written requests for clarification were sent to the two proposers and the appropriate responses were received and reviewed accordingly.

In April 2017, the PET scheduled site visits to each of the proposers' manufacturing and engineering facilities. The agenda for the site visits included facility/plant/site manufacturing process tour, in depth presentations and discussions by the Proposer's management, engineering and project key personnel on the following topics:

1. Technical Proposal – Detailed presentations of the proposed vehicle systems and sub-systems vis-à-vis Metro's technical specifications;
2. Project Management;
3. Experience and Past Performance;
4. Consolidated comments and discussions of the strengths, weaknesses, deficiencies, and risks in the technical Proposals as noted by the PET in the individual evaluations.

The PET was supported by Consultant Technical Advisors (TAs) with subject matter expertise relative to the review, evaluation, assessments, and recommendations for the Life Cycle Costs (LCC) and Local Employment Program (LEP) submittals. The TAs comments and findings on the strengths, weaknesses, and deficiencies in the proposed Local Employment Plan were discussed with the respective Proposers. BYD voluntarily participated in the LEP by committing to hire new local residents to support this contract and capital investment in facility upgrades and expansion and received the maximum preferential scoring points. For this bus type (Group D 60' ZE), NFA elected not to submit a Local Employment Plan and received no perferential scoring points. NFA has the existing workforce and facility capabilities in place to manufacture this quantity of buses without any expansion to its local workforce in Ontario, CA.

A total of 93 Requests for Deviations were submitted by the Proposers for Metro's review and consideration. The deviations were discussed individually with the Proposers during negotiation discussions conducted through the third week of April.

The PET determined both Proposers to be in the competitive range and the invitation to submit their best and final offer was issued on May 5, 2017. Resolution

of acceptable and unacceptable deviations necessitated that Best and Final Offers be submitted by the Proposers.

Best and Final Offer (BAFO)

Best and Final Offer (BAFO) submittals were received on May 17, 2017, and were reviewed and evaluated by the PET. The PET reviewed the BAFOs and prepared a recommendation for award memorandum on May 24, 2017.

Qualifications Summary of Firms within the Competitive Range:

BYD Coach & Bus, LLC

BYD Coach & Bus, LLC is a bus and coaches manufacturing division under BYD Heavy Industries which has been open at its current location in Lancaster, California since 2013 and proposes to build LACMTA bus orders at this facility. The parent company is BYD Motors, Inc. with corporate offices located in downtown Los Angeles. BYD has globally supplied fully electric and plug in hybrid vehicles. BYD has been awarded contracts to provide 60' ZE vehicles by the City of Albuquerque, IndyGo and LACMTA.

BYD's proposal ranked second in technical compliance, project management, and experience and past performance, and first in price, and life cycle costs. BYD's Local Employment Plan ranked first in dollar value for jobs creation and facility capital investment.

New Flyer of America Inc. (NFA)

NFA is a North Dakota corporation organized in October 1989 and is a wholly owned subsidiary of Transit Holdings, a holding company that owns New Flyer of America, Inc. and New Flyer Industries Canada ULC.

NFA proposes to build LACMTA bus orders in its St. Cloud, Minnesota and Ontario, California facilities. The St. Cloud plant is a production and finishing facility. The Ontario, California facility houses production, service and aftermarket parts. NFA's transit agency clients include Boston, Orange County, San Francisco, Dallas and Washington.

NFA scored first in technical compliance, project management, and experience and past performance, second in price and life cycle costs. NFA did not offer to participate in the voluntary Local Employment Program for the 60' ZE bus Group D due to the low production quantity and received no preferential scoring points.

NFA was ranked first overall between the two Proposers primarily on the strength of its superior technical proposal in the areas of Technical Compliance, Project Management and Experience and Past Performance.

1	Firm	Average Score	Factor Weight	Weighted Average Score	Rank
2	**Firm 1 – BYD**				
3	Technical Compliance	60.66	400	242.63	
4	Price	100.00	300	300.00	
5	Project Management	61.50	100	61.50	
6	Experience and Past Performance	44.25	100	44.25	
7	Life Cycle Costs	100.00	100	100.00	
8	Local Employment Plan	100.00	50	50.00	
9	Total		**1050**	**798.38**	**2**
10	**Firm 2 – NFA**				
11	Technical Compliance	76.20	400	304.81	
12	Price	93.5	300	280.50	
13	Project Management	79.90	100	79.90	
14	Experience and Past Performance	74.63	100	74.63	
15	Life Cycle Costs	93.60	100	95.80	
16	Local Employment Plan	0.00	50	0.00	
17	**Total**		**1050**	**835.64**	**1**

C. Cost/Price Analysis

The recommended price has been determined to be fair and reasonable based upon adequate price competition, an independent cost estimate (ICE), technical evaluation, fact finding, and negotiations. The Base and Option vehicles are based on Firm Fixed Unit Rate prices. The Optional Vehicle Features are also based on Firm Fixed Prices for total Base Buy and Option Buy quantities. There is no obligation to purchase any Option buses. Option vehicles may be ordered in minimum increments of 10 buses.

	Proposer Name	Initial Proposal Amount ***	Base Buy (35)	Option Buy (65)	Optional Features (Base & Option)	Negotiated or NTE amount (BAFO)
	Metro ICE*		$42,000,000.00	$78,000,000.00	N/A	$120,000,000
1.	BYD	$122,912,239	$48,967,928	$89,491,292	$11,826,827**	$150,286,047

2.	NFA	$125,413,592	$51,211,033	$94,726,013	$14,707,828**	$160,644,874

*Note: Metro's estimate did not include pricing for Optional Features or enroute/opportunity and shop chargers.
** Pricing Form for Optional Vehicle Configuration included items for alternative ADA securements, APC, enhanced camera systems, USB, wireless stops, spares, special tools, DTE, training aids, etc. The recommended value for the Base Optional Features is $8,839,064.
*** Initial pricing did not include all necessary charging equipment.

The PET determined that when considering price and non-price factors, NFA's proposal provides the Best Value and is most advantageous to Metro. Price analysis shows that the negotiated amount for the recommended firm, NFA, is $10 million higher than the price negotiated with BYD. NFA's higher priced proposal, from a Best Value perspective, offers advantages in the areas of technical compliance, project management, and experience and past performance evaluation categories. NFA's higher proposed price is offset by offering a more service-proven bus design, structure, door system, and powerplant, in addition to its proven project management experience and past performance exhibited on the latest Metro bus contract successfully completed in 2016.

Local Employment Program

BYD participated in Metro's **voluntary** Local Employment Program (LEP). This participation resulted in maximum incentive points based on total proposed wages, benefits and training of new employees hired in California. The LEP also provides points for facility improvements made to facilities in California. The table below describes the commitment levels for BYD for new local jobs and facility improvements. BYD received the maximum 50 incentive points for new local jobs, training and facility improvements.

NFA chose not to participate in Metro's voluntary LEP, proposing to fulfill this Group D requirement with existing workers in St. Cloud, MN and Ontario, CA, and received no preferential scoring points.

Proposers:	**BYD**
Total Local Employment, Facility and Training Investment	$13,716,747

D. Background on Recommended Contractor

The recommended firm, New Flyer of America Inc. (NFA), is a corporation organized in North Dakota, and is a wholly owned subsidiary of Transit Holdings. NFA is the US operating company in the New Flyer group of companies, and manufactures and sells New Flyer transit buses to U.S. customers.

NFA proposes to support the Metro project with existing workforce in production, manufacturing, engineering, quality assurance and warranty services from its locations in Winnipeg, Canada, St. Cloud, Minnesota and Ontario, California. NFA will build Metro buses from the St. Cloud and Ontario facilities. The 380,000 square foot St. Cloud facility opened in 1999 and has two production lines for full production

and finishing processes. The 100,000 square foot service center Ontario facility will include a production team for finishing and delivery of the buses, field service support for warranty and retrofit activities, and a team for aftermarket parts and materials. NFA recently completed delivery of the 900 40'CNG bus buy to Metro.

NFA's proposed a dedicated Customer Project Manager and primary point of contact for this project who previously worked with Metro staff for the 900 bus buy. NFA's proposed project team has combined extensive years of experience in the transit/bus industry for engineering, manufacturing, quality control, production, testing, systems integration, and field/warranty support delivering buses to major transit agencies such as Boston, New York, Washington, D.C. and Dallas.

DEOD SUMMARY

THRITY-FIVE 60 FOOT ZERO EMISSION TRANSIT BUS CONTRACT/ OP28367-000 (Group D)

A. Small Business Participation

The Diversity and Economic Opportunity Department did not recommend a Disadvantaged Business Enterprise (DBE) participation goal for this rolling stock procurement. Transit Vehicle Manufacturers (TVM), as a condition of authorization to bid or propose on FTA-assisted transit vehicle procurements, must certify that they have an FTA approved DBE overall goal methodology in compliance with 49 Code of Federal Regulations (CFR) Part 26.49(a)(1). New Flyer of America submitted a TVM Certification with their proposal, and is currently on FTA's list of eligible TVMs. In compliance with 49 CFR Part 26.49, TVMs report directly to FTA.

B. Living Wage and Service Contract Worker Retention Policy Applicability

The Living Wage and Service Contract Worker Retention Policy is not applicable to this Contract.

C. Prevailing Wage Applicability

Prevailing wage is not applicable to this Contract.

D. Project Labor Agreement/Construction Careers Policy

Project Labor Agreement/Construction Careers Policy is not applicable to this Contract.

Attachment C

Strategic Planning for Metro's Transition to Zero Emission Buses

July 20, 2017

Metro

Requirements and Guidelines/Guiding Principles

- Continue to replace aging bus fleet (~200 Buses per Year)
- Upgrade current CNG buses to “Near Zero” Low NOx engines
- Maintain existing bus fleet in a “State of Good Repair”
- Improve Service Quality and Reliability
- Transition Metro Orange Line (MOL) to Zero Emission by 2020
- Transition Metro Silver Line (MSL) to Zero Emission by ~ 2021
- Goal of 100% Zero Emission Bus Fleet by 2030

Metro

Challenges to Transitioning to 100% Zero Emissions

1. ZEB Service Requirements: Long term, Metro will need ZE buses that meet/exceed Metro service and operating requirements:
    1. 250+ miles range in CBD duty cycle with 1.4 passenger load factor
    2. Less than 31,000 lbs. curb weight for 40' ZEB
    3. 250+ miles range throughout the 12 year vehicle life
    4. 65mph top speed; ability to sustain 10% grade
2. Facilities and Infrastructure: ZEB program will require up front investment in ZEB charging equipment and related infrastructure.
3. Technology: Known and unknown technology risks with ZEB operation, particularly with battery and propulsion system technologies.
4. Funding: Additional funding needs to be identified for 100% ZEB program.

Impacts to other capital and operating costs, deployment schedule and/or service levels and reliability. May require replacement on greater than 1:1 ratio.

Metro

Strategic Approach – Two Phase Plan

Phase 1:

- Award ZEB contracts for MOL and MSL based on service proven products, with a high-probability of success, and minimal impact to service.
- Upgrade to Near Zero CNG engines and RCNG
- Evaluate and mitigate issues that could potentially impact service & operation.
- Develop ZEB Master Plan, including technology assessment, for fleet-wide operation

Key Milestone: ZEB Technology Assessment (2019-2020)

- "Go/No-Go" decision milestone on expanding use of ZEB fleet-wide at Metro in 2019-2020 (i.e. determine whether to move into Phase 2).

Phase 2:

- Continue assessment of ZEB technologies.
- Take measured steps toward full implementation of 100% zero emission bus fleet for use throughout Metro's operating region.

Metro

Current Bus Contracts

Top Level Procurement Schedule (Bus Only)

Current Bus Contracts	FY17				FY18				FY19				FY20				FY21				FY22				FY23			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
ZEB Implementation Phase:	**Phase 1** (MOL & MSL Electrificaton) & ZEB Technology Assessment														**Phase 2** - ZEB Re-Assessment and Expansion of ZEB Program to Rapid and Local Lines												
CNG 40’ Procurement (Group A)	*Awarded June 2017*				Design, engineering, material sourcing				Delivery 295 Buses				**Options (Up to 305 Buses)**															
CNG 60’ Procurement (Group B)	Soliciation and Award				Design, engineering, material sourcing				Delivery 65 Buses				**Options (Up to 335 Buses)**															
ZEB 40’ Bus Procurement (Group C, MSL)	Soliciation and Award				Design, engineering, material sourcing				Delivery 60 Buses								**Options (Up to 40 Buses)**											
ZEB 60’ Bus Procurement (Group D, MOL)	Soliciation and Award				Design, engineering, material sourcing				Delivery 60' ZEB's 35 Buses				**Remaining 60' ZEB Options (Up to 65 Buses)**															
New Flyer Low-No Grant (MOL) Five 60' ZEB Contract	Soliciation and Award						Delivery (5 Buses)						*Award targeted for Fall 2017*															
BYD Five 60' ZEB Contract (MOL) Five 60' ZEB Contract	Soliciation and Award						Delivery (5 Buses)						*Awarded March 2017*															

Metro

ZEB – Phase 1 – Key Program Elements

- **Phase 1 ZEB (2017-2020)**
  - Upgrade CNG fleet to Low NOx engines and RCNG
  - Continue to operate and maintain CNG fleet in "State of Good Repair"
  - Start MOL and MSL operation using limited range ZE battery electric buses and "En-Route" charging
    - Install opportunity charging on the ROW of BRT Lines (901, 910, 950)
    - Continuous daily operation (no breaks for midday charging)
    - Maximize use of mature ZEB technologies that are commercially available, "Off-the-shelf" hardware
  - By 2020, Open Metro Orange Line BRT (45 x 60' ZE buses)
  - By ~ 2021, Open Metro Silver Line BRT (60 x 40' ZE buses)
  - Develop "Master Plan" for fleet-wide ZEB implementation, and establish ZEB investment priorities and goals for Local and Rapid Lines (160+ lines, 2300 buses)

ZEB Phase 1 - ZEB Master Planning

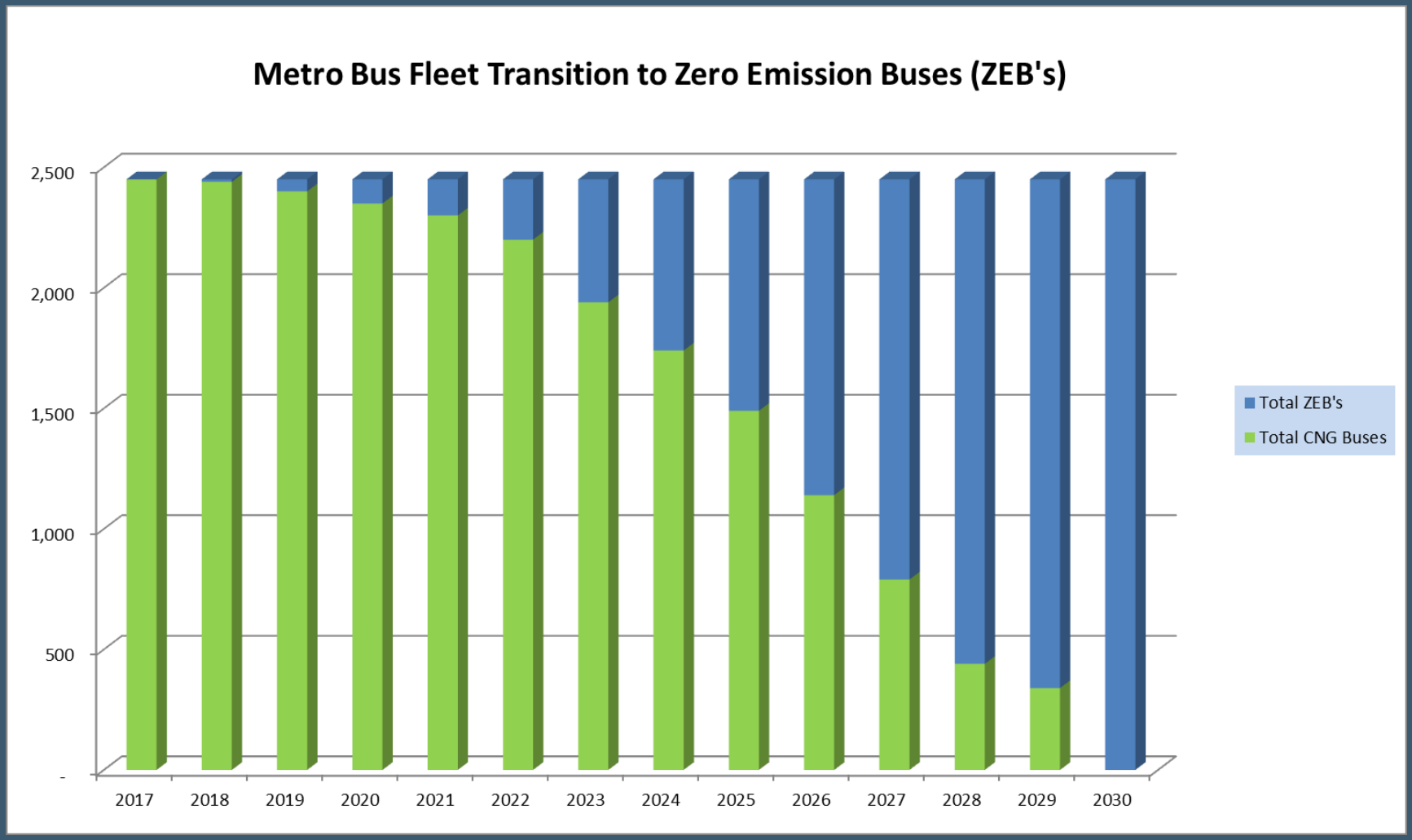
Develop comprehensive plans for deploying ZEB's on Metro Local and Rapid bus routes (i.e. Phase 2 of Metro's ZEB program).

Master plan elements include:

- **Life-Cycle and Technology Configurations, Costs**
- **Utilities and Infrastructure Requirements**
- **Operating Considerations**
- **Material Sourcing Strategies and End of Life Recycling/Reuse**
- **ZEB Program Funding**

Metro

Metro's Transition to 100% ZEB



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CARB's goal is that by 2040 only ZEB's are in service.
LA Metro's 2030 ZEB plan would be ten years ahead of CARB goals.

ZEB – Phase 2 – Key Program Elements

- **Phase 2 - ZEB Program** (2020-2030)
  - Infrastructure: Solicit engineering and design services for installing electric charging infrastructure at all Metro bus operating locations.
  - Utilities: Coordinate with PUC, SCE and DWP to ensure support for ZEB programs and new power drops. Negotiate ZEB rate structures.
  - Range: Phase 2 will require new longer range 40' and 60' ZE buses that are capable of delivering at least 250 miles in Metro service, and meet seating, axle weight and other operating requirements.
  - Charging: Optimize operating assignments around overnight depot charging with minimal breaks for midday or opportunity charging.
  - Procurement: Strategies and alternate lease structures to help Metro reduce transition costs and mitigate technology and operating risks (e.g. battery leases).
  - Funding: Funding source evaluation and trade-offs

Attachment D

35 ZEB BUS CONTRACT
FUNDING/EXPENDITURE PLAN

In Thousands	FY18	FY19	FY20	Total LOP	% of Total
Uses of Funds					
Bus Acquisition	12,010	36,030		**48,040**	**67%**
Bus Charging System Installation, Power Drops, Site prep	7,808			**7,808**	**11%**
Professional Services	200	100	100	**400**	**1%**
Labor	876	876	437	**2,189**	**3%**
Travel/Admin	100	200	200	**500**	**1%**
Spare Parts, Training, Service Manuals, Charging Equip		6,005	6,005	**12,010**	**17%**
Contingency			1,154	**1,154**	**2%**
Total Project Cost	**20,994**	**43,211**	**7,896**	**72,101**	**100%**

In Thousands	FY18	FY19	FY20	Total LOP	% of Total
Sources of Funds					
Federal					
FTA LoNo Grant	4,275			**4,275**	**6%**
Local					
TDA 4/PC40	16,719	43,211		**59,930**	**83%**
Measure R 35			7,896	**7,896**	**11%**
Total Project Funding	**20,994**	**43,211**	**7,896**	**72,101**	**100%**