



Metropolitan Transportation Authority

December 2017

MTA Board Action Items



MTA Board Meeting
2 Broadway - 20th Floor Board Room
New York, N.Y. 10004
Wednesday, 12/13/2017
10:00 AM - 12:00 PM ET

1. PUBLIC COMMENT PERIOD

2. APPROVAL OF MINUTES

MTA Regular Board Minutes - November 15, 2017

MTA Regular Minutes - November 15, 2017 - Page 5

NYCT/MaBSTOA/SIRTOA/Bus Company Regular Board Minutes - November 15, 2017

NYCTA Regular Minutes - November 15, 2017 - Page 10

MTA Metro-North Railroad Regular Board Minutes - November 15, 2017

Metro-North Regular Minutes - November 15, 2017 - Page 14

MTA Long Island Rail Road Regular Board Minutes - November 15, 2017

LIRR Regular Minutes - November 15, 2017 - Page 19

Triborough Bridge & Tunnel Authority Regular Board Minutes - November 15, 2017

TBTA Regular Minutes - November 15, 2017 - Page 31

MTA Capital Construction Regular Board Minutes - November 15, 2017

MTACC Regular Minutes - November 15, 2017 - Page 36

3. COMMITTEE ON FINANCE

Action Items

i. New Money Transportation Revenue Bonds and Bond Anticipation Notes (BANs), Dedicated Tax Fund Bonds, TBTA General and Subordinate Revenue Bonds and BANs

Authorization to Issue New Money Transportation Revenue Bonds, Dedicated Tax Fund Bonds, TBTA General Revenue Bonds, and TBTA Subordinated Revenue Bonds - Page 38

ii. Supplemental Resolutions Authorizing Refunding Bonds

Approval of Supplemental Resolutions Authorizing Refunding Bonds - Page 96

iii. MTA and TBTA Reimbursement Resolutions for Federal Tax Purposes

MTA and TBTA Reimbursement Resolutions for Federal Tax Purposes - Page 155

iv. Authorization to Extend NYPA Contracts

Authorization to Extend NYPA Contracts - Page 159

v. Executive Order 88 - Advanced Metering Infrastructure

Executive Order 88 - Advanced Metering Infrastructure - Page 161

MTAHQ Procurements Report

MTAHQ Procurement Report - Page 163

i. Non-Competitive (no items)

ii. Competitive

MTAHQ Competitive Procurements - Page 165

iii. Ratifications

MTAHQ Ratification - Page 168

Real Estate Items (No Items)

Real Estate Agenda (No Items) - Page 172

4. COMMITTEE ON NYCT & BUS

NYCT & Bus Procurements Report

NYCT December Procurement Staff Summary and Resolution - Page 173

i. Non-Competitive

NYCT Non-Competitive Actions - Page 177

ii. Competitive

NYCT Competitive Actions - Page 181

iii. Ratifications

NYCT, MTACC Ratifications - Page 187

5. COMMITTEE ON METRO-NORTH RAILROAD & LONG ISLAND RAIL ROAD

MNR Procurements Report

MNR Procurement Staff Summary & Resolution - Page 192

i. Non-Competitive

MNR Non-Competitive Procurements - Page 195

ii. Competitive

MNR Competitive Procurements - Page 199

iii. Ratification (no items)

LIRR Procurements Report

LIRR Procurements - Page 209

i. Non-Competitive (no items)

ii. Competitive

LIRR Competitive Procurements - Page 213

iii. Ratifications (no items)

MTACC Procurements Report

MTA CC Procurements - Page 222

i. Non-Competitive (no items)

ii. Competitive

MTA CC Competitive Procurements - Page 225

iii. Ratifications

MTA CC Ratifications - Page 231

6. COMMITTEE ON MTA BRIDGES & TUNNELS OPERATIONS

B&T Procurements Report

B&T Procurements - Page 233

i. Non-Competitive (no items)

ii. Competitive

B&T Competitive - Page 236

iii. Ratifications (no items)

7. CORPORATE GOVERNANCE COMMITTEE

Action Item

i. Procurement Guidelines (All-Agency General and Service Procurement Guidelines included in Exhibit Book)

Staff Summary Procurement Guidelines - Page 243

8. FIRST MUTUAL TRANSPORTATION ASSURANCE CO (FMTAC) (no items)

9. MTA 2018 BUDGET ADOPTION MATERIALS (Action Items) (Budget Materials included in Exhibit Book)

10. MTA 2015-2019 Capital Plan Program Amendment (Action Item)

MTA 2015-2019 Capital Plan Program Amendment - Page 244

**Metropolitan Transportation Authority
Minutes of
Regular Board Meeting
2 Broadway
New York, NY 10004
November 15, 2017
10:00 a.m.**

The following members were present:

**Hon. Joseph J. Lhota, Chairman
Hon. Fernando Ferrer, Vice Chairman
Hon. Norman E. Brown
Hon. Ira Greenberg
Hon. David Jones
Hon. Susan Metzger
Hon. Charles G. Moerdler
Hon. John J. Molloy
Hon. Mitchell H. Pally
Hon. Scott Rechler
Hon. Andrew Saul
Hon. Lawrence Schwartz
Hon. Polly Trottenberg
Hon. Veronica Vanterpool
Hon. James Vitiello
Hon. Carl Weisbrod
Hon. Carl V. Wortendyke**

The following alternate non-voting members were also present:

Hon. Andrew Albert
Hon. Vincent Tessitore, Jr.

The following members were absent:

**Hon. Peter Ward
Hon. Neal Zuckerman**

Patrick Foye, President, Veronique Hakim, Managing Director, Janno Lieber, MTA Chief Development Officer, Donna Evans, Chief of Staff, Robert Foran, Chief Financial Officer, Phillip Eng, Chief Operating Officer, Helene Fromm, Acting General Counsel, Tim Mulligan, Acting President, NYCTA, Patrick Nowakowski, President, Long Island Rail Road, Catherine Rinaldi, Acting President, Metro-North Railroad, Cedrick Fulton, President TBTA, Darryl Irick, President, MTA Bus Company, and Stephen Morello, Counselor to the Chairman, also attended the meeting.

The Board of the Metropolitan Transportation Authority also met as the Boards of the New York City Transit Authority, the Manhattan and Bronx Surface Transit Operating Authority, the

Staten Island Rapid Transit Operating Authority, the Metropolitan Suburban Bus Authority, the Triborough Bridge and Tunnel Authority, the Long Island Rail Road, the Metro-North Commuter Railroad Company, the MTA Capital Construction Company, the MTA Bus Company, and the First Mutual Transportation Assurance Company.

Unless otherwise indicated, these minutes reflect items on the agenda of the Board of the Metropolitan Transportation Authority, the Metropolitan Suburban Bus Authority, and the First Mutual Transportation Assurance Company. Refer to the other agencies' minutes of this date for items on the agendas of the Boards of the other agencies.

Chairman Lhota welcomed Assemblywoman Amy Paulin, Chairperson, Committee on Corporations, Authorities and Commissions, noting that she and her committee have oversight over the MTA.

1. PUBLIC SPEAKERS SESSION.

Stephen Morello reminded the public speakers that comments are limited to two minutes. Mr. Morello called speakers' attention to the new countdown clock and stated that he would notify each speaker thirty seconds before their two-minutes expired. Mr. Morello also reminded the speakers that the rules and protocol for the public comment period require maintaining decorum and refraining from all personal attacks and offensive comments. Mr. Morello stated that all public speakers must state the agenda item they intend to comment on prior to speaking.

The following twenty (20) speakers commented during the public speakers session.

Refer to the video recording of the meeting produced by the MTA and maintained in MTA records, and to the other agencies' minutes of this date, for the content of speakers' statements.

Chris Pangilinan, private citizen
Yannick Benjamin, Wheeling Forward
Mary Kaessinger, People's MTA
Omar Vera, private citizen
Norbert Giesse, Cures
Arthur Piccolo, Bowling Green Association
Harold Schroer, private citizen and WWII Veteran
Christopher Gorman, CUNY
Zachary Accuardi, Transit Center
Timothy Lunceford-Stevens, RARA Elevator
Jim Fouratt, Rise & Resist
Dustin Jones, Rise & Resist
Julie Varughese, IAC
Nancy Montgomery, private citizen
Edward Yood, Disability Pride NYC
Christian Cobb, Peoples Power Association
Tony Murphy, Peoples MTA
Miriam Fischer, Peoples MTA

Regular Board Meeting
November 15, 2017

Jessica Murray, CUNY
Sasha Blair-Goldenshoh, Google

2. **CHAIRMAN'S REMARKS.**

Chairman Lhota announced that Chief Financial Officer Robert Foran would give a presentation on the MTA's Financial Plan and the Proposed 2018 Budget later in the meeting.

The Chairman commented on the Governor's Executive Order 168 issued early in the summer in connection with the Penn Station service reductions due to Amtrak switch and track-related work and the substantial service disruptions within the subway system. Chairman Lhota stated that all future extensions issued by the Governor will be consistent with the Executive Orders issued in connection with Superstorm Sandy. The Chairman stated that going forward the MTA staff will present to the Board for formal review and ratification items in connection with the Executive Order, on a monthly basis. Chairman Lhota stated that this process has been used in the past and Board ratification is consistent with the All-Agency Procurement Guidelines approved by the Board. In addition, the Chairman noted that he asked the MTA Auditor General to review and audit the purchases made under the Executive Order.

Chairman Lhota commented on the Subway Action Plan and noted that subway performance in September continued to show increasing signs of stabilization, making it clear that the initiatives undertaken as part of the Subway Action Plan have begun to arrest a multi-year downward slide in performance. Chairman Lhota stated that since the implementation of the Subway Action Plan major incidents that cause delays have declined, which include average monthly major track incidents, signal incidents, debris-related fires and right-of-way incidents. The Chairman noted that as a whole these types of incidents are down by nearly 20%, and emphasized the importance of addressing and reducing major incidents. Chairman Lhota commented on how the Subway Action Plan addresses the subway car fleet, stating that in September the Mean Distance Between Failure ("MDBF") was 123,349 miles, a 23% improvement from August and a 14% improvement from a year earlier. The Chairman stated that similarly the 12-month fleet MDBF in September, at 118,699 miles, represented the fifth consecutive month of improvement. Chairman Lhota stated that the Subway Action Plan is putting the MTA back on track, and that thanks to all of the MTA workers the agency is seeing increased positive results.

3. **MINUTES.** Upon motion duly made and seconded, the Board approved the minutes of the Regular Board Meeting held on October 25, 2017.

4. **COMMITTEE ON FINANCE.**

- A. **Procurement Items.** Upon motion duly made and seconded, the Board approved the following procurement items. The specifics are set forth in the staff summaries and documentation filed with the meeting materials.

1. Mark Fox - AFT Projects at Metro-North Railroad (MNR) New Haven Line. Approved the award of a competitively negotiated contract with Mark Fox to provide technical design, fabrication, crating, storage, delivery and oversight of installation of materials at the MNR Overhead Bridge (6th Avenue Bridge) on the New Haven Line.
2. Mary Judge – AFT Project at Long Island Rail Road (LIRR) Ronkonkoma Branch. Approved a competitively negotiated contract with Mary Judge to provide technical design, fabrication, crating, storage, delivery and oversight of installation of materials at the Wyandanch Station.
3. CorVel Healthcare Corporation – All-Agency Medical Bill Review and Payment Services – No. 16014-0100. Approved a competitively negotiated, personal service contract with CorVel Healthcare Corporation to provide medical bill review and payment, Medicare Secondary Payer, third party administration claims and related services for five years with an option to extend for three years.

B. Real Estate Items. Upon motion duly made and seconded the Board approved the real estate items listed below. The specifics are set forth in the staff summaries and documentation filed with the meeting materials.

Metro-North Railroad

1. Lease agreement with the Town of Bedford for governmental offices and other community-based uses at the Bedford Hills Station, Harlem Line, Westchester County, N.Y.
2. License agreement with CTM Media Group, Inc. for placement of promotional brochure and racks at five Metro-North Stations in Westchester County and Penn Station, N.Y.
3. Permit agreement with Premium Outlet Partners, L.P. for use of a portion of Metro-North's Harriman Station parking facility for Permittee's employees, Harriman, N.Y.

New York City Transit Authority

4. License agreement with Bayis Ester Chana, Inc. for the operation of a recreation area for a school located in an open right-of-way behind 39th Street (portion of Kings County Block 5582, Lots 2 and 7), Brooklyn, N.Y.

Long Island Rail Road

5. Exchange of property rights with the Incorporated Village of Freeport for a portion of Section 55, Block 111, Lot 2; and a portion of Section 55, Block 491, Lot 347 on the Land and Tax Map of Nassau County.

6. License agreement with CTM Media Group, Inc. for placement of promotional brochure and racks at five Metro-North Stations in Westchester County and Penn Station, N.Y. (Combined with the Metro-North Item above).

5. **CHIEF FINANCIAL OFFICER PRESENTATION ON MTA 2018 FINAL PROPOSED BUDGET AND NOVEMBER FINANCIAL PLAN 2018-2021.**

Chairman Lhota introduced MTA Chief Financial Officer Robert Foran, who presented the November Financial Plan and the MTA 2018 Final Proposed Budget. Chairman Lhota noted that the November budget presentation was for informational purposes only and that the Board would vote on the budget materials at the December 13, 2017 Board meeting.

Copies of the proposed budget and plan were distributed to Board members.

Following the presentation, Chairman Lhota thanked Mr. Foran and invited Board discussion concerning the proposed budget and the financial plan.

The details of the presentation on the proposed budget and financial plan and Board members' comments and questions with respect thereto are included in the video recording of the meeting produced by the MTA and maintained in MTA records.

6. **EXECUTIVE SESSION.** Upon motion duly made and seconded, the Board voted to convene in Executive Session pursuant to Section 105(1)(e) of the New York State Public Officers Law to discuss matters relating to collective bargaining.

7. **PUBLIC SESSION RESUMED.**

The Chairman announced that during Executive Session the Board approved collective bargaining agreements between Metro-North Railroad and six bargaining units.

8. **ADJOURNMENT.** Upon motion duly made and seconded, the Board voted to adjourn the meeting at 12:05 p.m.

Respectively submitted,

Victoria Clement
Assistant Secretary

**Minutes of the
Regular Board Meeting
for the New York City Transit Authority,
Manhattan and Bronx Surface Transit Operating Authority,
Staten Island Rapid Transit Operating Authority and
MTA Bus Company**

**2 Broadway
New York, NY 10004
Wednesday November 15, 2017
10:00 a.m.**

The following members were present:

**Hon. Joseph J. Lhota, Chairman
Hon. Fernando Ferrer, Vice Chairman
Hon. Norman E. Brown
Hon. Ira Greenberg
Hon. David Jones
Hon. Susan Metzger
Hon. Charles G. Moerdler
Hon. John J. Molloy
Hon. Mitchell H. Pally
Hon. Scott Rechler
Hon. Andrew Saul
Hon. Lawrence Schwartz
Hon. Polly Trottenberg
Hon. Veronica Vanterpool
Hon. James Vitiello
Hon. Carl Weisbrod
Hon. Carl V. Wortendyke**

The following alternate non-voting members were also present:

**Hon. Andrew Albert
Hon. Vincent Tessitore, Jr.**

The following members were absent:

**Hon. Peter Ward
Hon. Neal Zuckerman**

Patrick Foye, President, Veronique Hakim, Managing Director, Janno Lieber, MTA Chief Development Officer, Donna Evans, Chief of Staff, Robert Foran, Chief Financial Officer, Phillip Eng, Chief Operating Officer, Helene Fromm, Acting General Counsel, Tim Mulligan, Acting President, NYCTA, Patrick Nowakowski, President, Long Island Rail Road, Catherine Rinaldi, Acting President, Metro-North Railroad, Cedrick Fulton, President TBTA, Darryl Irick, President, MTA Bus Company, and Stephen Morello, Counselor to the Chairman, also attended the meeting.

1. CHAIRMAN LHOTA CALLED THE MEETING TO ORDER

2. PUBLIC COMMENT PERIOD

Stephen Morello reminded the public speakers that comments are limited to two minutes. Mr. Morello called speakers' attention to the new countdown clock and stated that he would notify each speaker thirty seconds before their two-minutes expired. Mr. Morello also reminded the speakers that the rules and protocol for the public comment period require maintaining decorum and refraining from all personal attacks and offensive comments. Mr. Morello stated that all public speakers must state the agenda item they intend to comment on prior to speaking.

There were twenty (20) public speakers. The following speakers spoke on MTA NYC Transit/Staten Island Rapid Transit Operating Authority /MTA Bus Company matters during the public speakers session.

Chris Pangilinan, private citizen
Yannick Benjamin, Wheeling Forward
Mary Kaessinger, People's MTA
Omar Vera, private citizen
Arthur Piccolo, Bowling Green Association
Harold Schroer, private citizen and WWII Veteran
Christopher Gorman, CUNY
Zachary Accuardi, Transit Center
Timothy Lunceford-Stevens, RARA Elevator
Jim Fouratt, Rise & Resist
Dustin Jones, Rise & Resist
Julie Varughese, IAC
Nancy Montgomery, private citizen
Edward Yood, Disability Pride NYC
Christian Cobb, Peoples Power Association
Tony Murphy, Peoples MTA
Miriam Fischer, Peoples MTA
Jessica Murray, CUNY
Sasha Blair-Goldenshoh, Google

Please refer to the video recording of the meeting produced by the MTA and maintained in MTA records for the content of the speakers' statements.

3. CHAIRMAN LHOTA'S COMMENTS

Chairman Lhota announced that Chief Financial Officer Robert Foran would give a presentation on the MTA's Financial Plan and the Proposed 2018 Budget later in the meeting.

The Chairman commented on the Governor's Executive Order 168 issued early in the summer in connection with the Penn Station service reductions due to Amtrak switch and track-related work and the substantial service disruptions within the subway system. Chairman Lhota stated that all future extensions issued by the Governor will be consistent with the Executive Orders issued in connection with Superstorm Sandy. The Chairman stated that going forward the MTA staff will present to the Board for formal review and ratification items in connection with the

Executive Order, on a monthly basis. Chairman Lhota stated that this process has been used in the past and Board ratification is consistent with the All-Agency Procurement Guidelines approved by the Board. In addition, the Chairman noted that he asked the MTA Auditor General to review and audit the purchases made under the Executive Order.

Chairman Lhota commented on the Subway Action Plan and noted that subway performance in September continued to show increasing signs of stabilization, making it clear that the initiatives undertaken as part of the Subway Action Plan have begun to arrest a multi-year downward slide in performance. Chairman Lhota stated that since the implementation of the Subway Action Plan major incidents that cause delays have declined, which include average monthly major track incidents, signal incidents, debris-related fires and right-of-way incidents. The Chairman noted that as a whole these types of incidents are down by nearly 20%, and emphasized the importance of addressing and reducing major incidents. Chairman Lhota commented on how the Subway Action Plan addresses the subway car fleet, stating that in September the Mean Distance Between Failure (“MDBF”) was 123,349 miles, a 23% improvement from August and a 14% improvement from a year earlier. The Chairman stated that similarly the 12-month fleet MDBF in September, at 118,699 miles, represented the fifth consecutive month of improvement. Chairman Lhota stated that the Subway Action Plan is putting the MTA back on track, and that thanks to all of the MTA workers the agency is seeing increased positive results.

4. MINUTES

Upon motion duly made and seconded, the Board unanimously approved the minutes of the meeting held on October 25, 2017 of the Board of MTA NYC Transit /Staten Island Rapid Transit Operating Authority /MTA Bus Company.

5. COMMITTEE ON FINANCE

Real Estate Items: Upon motion duly made and seconded, the Board approved a license agreement with Bayis Ester Chana, Inc. for the operation of a recreation area for a school located in an open right-of-way behind 39th Street (portion of Kings County Block 5582, Lots 2 and 7), Brooklyn, N.Y.

6. COMMITTEE ON TRANSIT & BUS OPERATIONS MTA NYC Transit & MTA Bus Company

Procurements:

Competitive Procurements: Upon motion duly made and seconded, the Board approved the competitive procurements requiring a two-thirds vote (Schedule B in the Agenda) and a majority vote (Schedule F in the Agenda). Details of the above items are set forth in staff summaries, copies of which are on file with the records of the meeting of the Board of MTA NYC Transit /Staten Island Rapid Transit Operating Authority /MTA Bus Company.

7. **CHIEF FINANCIAL OFFICER PRESENTATION ON MTA 2018 FINAL PROPOSED BUDGET AND NOVEMBER FINANCIAL PLAN 2018-2021**

Chairman Lhota introduced MTA Chief Financial Officer Robert Foran, who presented the November Financial Plan and the MTA 2018 Final Proposed Budget. Chairman Lhota noted that the November budget presentation was for informational purposes only and that the Board would vote on the budget materials at the December 13, 2017 Board meeting. Copies of the proposed budget and plan were distributed to Board members.

Following the presentation, Chairman Lhota thanked Mr. Foran and invited Board discussion concerning the proposed budget and the financial plan.

The details of the presentation on the proposed budget and financial plan and Board members' comments and questions with respect thereto are included in the video recording of the meeting produced by the MTA and maintained in MTA records.

8. **EXECUTIVE SESSION**

Upon motion duly made and seconded, the Board voted to convene in Executive Session pursuant to Section 105(1)(e) of the New York State Public Officers Law to discuss matters relating to collective bargaining.

9. **PUBLIC SESSION RESUMED**

The Chairman announced that during Executive Session the Board approved collective bargaining agreements between Metro-North Railroad and six bargaining units.

10. **ADJOURNMENT**

Upon motion duly made and seconded, the Board voted to adjourn the meeting at 12:05 p.m.

Respectfully submitted,
/s/Mariel A. Thompson
Mariel A. Thompson
Assistant Secretary

Minutes of the Regular Meeting
Metro-North Commuter Railroad Company
2 Broadway – 20th Floor
New York, NY 10004
Wednesday, November 15, 2017
10:00 a.m.

The following members were present:

Hon. Joseph J. Lhota, Chairman
Hon. Fernando Ferrer, Vice Chairman
Hon. Norman E. Brown
Hon. Ira Greenberg
Hon. David Jones
Hon. Susan Metzger
Hon. Charles G. Moerdler
Hon. John J. Molloy
Hon. Mitchell H. Pally
Hon. Scott Rechler
Hon. Andrew Saul
Hon. Lawrence Schwartz
Hon. Polly Trottenberg
Hon. Veronica Vanterpool
Hon. James Vitiello
Hon. Carl Weisbrod
Hon. Carl V. Wortendyke

The following alternate non-voting members were also present:

Hon. Andrew Albert
Hon. Vincent Tessitore, Jr.

The following members were absent:

Hon. Peter Ward
Hon. Neal Zuckerman

Patrick Foye, President, Veronique Hakim, Managing Director, Janno Lieber, MTA Chief Development Officer, Donna Evans, Chief of Staff, Robert Foran, Chief Financial Officer, Phillip Eng, Chief Operating Officer, Helene Fromm, Acting General Counsel, Tim Mulligan, Acting President, NYCTA, Patrick Nowakowski, President, Long Island Rail Road, Catherine Rinaldi, Acting President, Metro-North Railroad, Cedrick Fulton, President TBTA, Darryl Irick, President, MTA Bus Company, and Stephen Morello, Counselor to the Chairman, also attended the meeting.

Chairman Lhota called the meeting to order. He welcomed Assemblywoman Amy Paulin, Chairperson, Committee on Corporations, Authorities and Commissions, noting that she and her committee have oversight over the MTA.

1. Public Speakers:

Stephen Morello reminded the public speakers that comments are limited to two minutes. Mr. Morello called speakers' attention to the new countdown clock and stated that he would notify each speaker thirty seconds before their two-minutes expired. Mr. Morello also reminded the speakers that the rules and protocol for the public comment period require maintaining decorum and refraining from all personal attacks and offensive comments. Mr. Morello stated that all public speakers must state the agenda item they intend to comment on prior to speaking.

There were 20 registered public speakers. The following speaker spoke on matters referencing Metro-North:

Nancy Montgomery, Deputy Supervisor, Town of Philipstown thanked the MTA for its efforts in the use of Narcan. She noted that she is the widow of James Lovell who was critically injured in the December 1, 2013 Spuyten Duyvil accident. Ms. Montgomery stated that when she first began attending MTA meetings, she was concerned because Safety was not on the monthly agenda. She noted that Safety is now on the agenda bi-monthly. She noted that the deadline for the implementation of Positive Train Control (PTC) is one year away. Ms. Montgomery asked why PTC is not on the monthly agenda and asked whether the MTA will meet the deadline for PTC implementation. She also asked how testing for sleep apnea is progressing.

The details of the comments made by the remaining public speakers are contained in the video recording of the meeting produced by the MTA and maintained in MTA records, and to the other agencies' minutes of this date.

2. Chairman's Remarks:

Chairman Lhota announced that Chief Financial Officer Robert Foran would give a presentation on the MTA's Financial Plan and the Proposed 2018 Budget later in the meeting.

The Chairman commented on the Governor's Executive Order 168 issued early in the summer in connection with the Penn Station service reductions due to Amtrak switch and track-related work and the substantial service disruptions within the subway system. Chairman Lhota stated that all future extensions issued by the Governor will be consistent with the Executive Orders issued in connection with Superstorm Sandy. The Chairman stated that going forward the MTA staff will present to the Board for formal review and ratification items in connection with the Executive Order, on a monthly basis. Chairman Lhota stated that this process has been used in the past and Board ratification is consistent with the All-Agency Procurement Guidelines approved by the Board. In addition, the Chairman noted that he asked the MTA Auditor General to review and audit the purchases made under the Executive Order. Chairman Lhota also discussed the Subway Action Plan and operational results under the Plan.

The details of Chairman Lhota's remarks are contained in the minutes of the other agencies of this date and in the video recording of this meeting, produced by the MTA and maintained in the MTA records, which recording includes discussion regarding the Subway Action Plan.

3. Approval of Minutes:

Upon motion duly made and seconded, the minutes of the Regular Board Meeting held on October 25, 2017 were approved.

4. Committee on Finance:

MTAHQ Procurements:

The Board was presented with the following competitive procurements recommended to it by the Committee on Finance that relate to Metro-North.

- Approval to the award of a competitively negotiated contract with Mark Fox to provide technical design, fabrication, crating, storage, delivery and oversight of installation of materials at the Metro-North Overhead Bridge (6th Avenue Bridge) on the New Haven Line.
- Approval to award an all-agency, competitively negotiated, personal service contract to CorVel Healthcare Corporation in the not-to-exceed amount of \$14,755,521 to provide medical bill review and payment, Medicare Secondary Payer (MSP), third party administration claims and related services for five years with an option to extend for an additional three years.

Upon motion duly made and seconded, the Board approved the foregoing procurement items, the details of which are contained in the minutes of the MTA Board meeting held this day, staff summaries and reports filed with those minutes and in the video recording of the meeting, produced by the MTA and maintained in MTA records.

Real Estate:

The Board was presented with the following real estate items recommended to it by the Committee on Finance that relate to Metro-North.

- Lease with the Town of Bedford for the Bedford Hills Station Building in Bedford, NY.
- License agreement with CTM Media Group for the placement of promotional brochures within bus schedule racks at five Metro-North stations in Westchester County.
- Permit with Premium Outlet Partners, L.P., for use of a portion of Metro-North's Harriman Station parking facility.

Upon motion duly made and seconded the Board approved the real estate item listed above. The details of the approved real estate item are contained in the minutes of the MTA

Board meeting held this day, a staff summary filed with those minutes and in the video recording of the meeting, produced by the MTA and maintained in MTA records.

5. Committee on Metro-North Railroad:

Procurements:

The Board was presented with the following non-competitive procurement recommended to it by the Committee on MTA Metro-North Railroad.

- Approval to award a non-competitive, miscellaneous service agreement in the total not-to-exceed amount of \$500,000 to the firm, Dayton T. Brown, Inc. to provide engineering services required to meet an urgent need to support Positive Train Control (PTC) 220MHz Radio Frequency testing. The term of the contract will be up to 42 months, to cover both pre-implementation PTC services and to provide support during the initial phases of PTC operations.

The Board was presented with the following competitive procurement recommended to it by the Committee on MTA Metro-North Railroad.

- Approval of a resolution declaring that competitive, sealed bidding is impractical or inappropriate and that it is therefore in the public interest to use the competitive Request for Proposal (RFP) process, pursuant to Public Authorities Law Section 1265-a, to solicit Design/Build Services for the for the Rehabilitation of, and Improvements to, Outlying Stations.

Upon motion duly made and seconded, the Board approved the foregoing procurements. The details of the above procurements are contained in staff summaries and reports filed with the records of this meeting and in the video recording of the meeting produced by the MTA and maintained in the MTA records.

6. Chief Financial Officer Presentation on MTA 2018 Final Proposed Budget and November Financial Plan 2018-2021.

Chairman Prendergast introduced MTA Chief Financial Officer Robert Foran, who presented the MTA 2018 Final Proposed Budget and November Financial Plan for 2018-2021. Chairman Lhota noted that the November budget presentation was for informational purposes only and that the Board would vote on the budget materials at the December 13, 2017 Board meeting.

Copies of the proposed budget and plan were distributed to Board members.

Following the presentation, Chairman Prendergast thanked Mr. Foran and invited Board discussion concerning the proposed budget and the financial plan.

The details of the presentation on the proposed budget and financial plan and Board members' comments and questions with respect thereto are included in the video recording of the meeting produced by the MTA and maintained in MTA records.

7. Executive Session:

Upon motion duly made and seconded, the Board voted to convene an Executive Session, in accordance with Section 105(1)(e) to discuss matters relating to collective bargaining negotiations. In Executive Session, upon motion duly made and seconded, the Board approved the following agreements effective for the period January 16, 2017 through May 31, 2019, with the exception of the agreement with ARSA Maintenance of Way employees which is effective for the period July 16, 2017 through November 30, 2019.

- Transportation Communications Union (TCU).
- International Association of Machinists (IAM).
- American Railway and Airway Supervisors Association (ARSA) – Maintenance of Equipment.
- American Railway and Airway Supervisors Association (ARSA) – Maintenance of Way.
- Sheet Metal Workers (SMW).
- National Conference of Firemen and Oilers (NCF&O).

The details of the above items are contained in staff summaries filed with the records of this meeting.

Upon motion duly made and seconded, the Board voted to reconvene in public session.

8. Public Session Resumed:

The Chairman announced that during Executive Session the Board approved collective bargaining agreements between Metro-North Railroad and six bargaining units.

9. Adjournment:

Upon motion duly made and seconded, the Board voted to adjourn the meeting at 12:05 p.m.

Respectfully submitted,



Linda Montanino
Assistant Secretary

**Minutes of the Regular Board Meeting
Long Island Rail Road Company
2 Broadway
New York, NY 10004
Wednesday, November 15, 2017
10:00 a.m.**

The following members were present:

Hon. Joseph J. Lhota, Chairman
Hon. Fernando Ferrer, Vice Chairman
Hon. Norman E. Brown
Hon. Ira Greenberg
Hon. David Jones
Hon. Susan Metzger
Hon. Charles G. Moerdler
Hon. John J. Molloy
Hon. Mitchell H. Pally
Hon. Scott Rechler
Hon. Andrew Saul
Hon. Lawrence Schwartz
Hon. Polly Trottenberg
Hon. Veronica Vanterpool
Hon. James Vitiello
Hon. Carl Weisbrod
Hon. Carl V. Wortendyke

The following members were absent:

Hon. Peter Ward
Hon. Neal Zuckerman

Patrick Foye, MTA President, Veronique Hakim, Managing Director, Janno Lieber, Chief Development Officer, Donn Evans, Chief of Staff, Robert Foran, Chief Financial Officer, Phillip Eng, Chief Operating Officer, Helene Fromm, Acting General Counsel, Board Member Andrew Albert, Board Member Vincent Tessitore, Jr., Tim Mulligan, Acting President, NYCTA, Patrick Nowakowski, President, Long Island Rail Road, Catherine Rinaldi, Acting President, Metro-North Railroad, Cedrick Fulton, President, TBTA, Darryl Irick, President, MTA Bus Company, and Stephen Morello, Counselor to the Chairman, also attended the meeting.

Chairman Lhota called the meeting to order, and welcomed Assemblywoman Amy Paulen, Chair of the Assembly Committee on Corporations, Authorities and Commissions. In this capacity, Assemblywomen Paulen has oversight over the MTA.

1. Public Speakers

Stephen Morello, Counselor to the Chairman, indicated that twenty (20) speakers had signed up to speak. In light of the number of speakers, he asked that speakers limit their comments to two minutes and advised that an audible beep would be heard after 90 seconds, alerting the speaker that he/she had 30 seconds left. He also asked speakers to limit their comments to matters on the agenda of the meeting, and to observe rules of politeness and refrain from making disparaging remarks about anyone.

Only one (1) of the speakers commented on matters relating to the Long Island Rail Road ("LIRR"):

Norbert Giesse, a Board member of Civics United for Railroad Environmental Solutions (CURES), stated that MTA promised the cleanest Tier IV locomotives for freight service on the LIRR system. He stated that these should be switch duty Tier IV locomotives. He asked the Board to consider the long term health impacts on communities and asked why there was a disposition towards procuring line haul locomotives. He stated that in the 1960's, the LIRR carried four times the amount of freight it carries today, yet relied on switchers. He further stated that the system hadn't changed and the grades hadn't changed. He asked whether there is a preferred manufacturer who is looking to sell MTA line haul locomotives. He stated that MTA's consultant, STV, is advising on the specifications for the freight locomotives to be purchased, and he urged that MTA not approve any specification requiring the purchase of locomotives with over 2,300 horsepower.

The details of the speakers' comments are contained in the video recording of the meeting, produced by the MTA and maintained in MTA records, and in the minutes of the other agencies of this date.

2. Chairman's Remarks

Chairman Lhota stated that his remarks would be brief because the Board would be receiving a presentation later from MTA Chief Financial Officer Robert Foran on the financial plan for the next four years as well as the budget for 2018.

Chairman Lhota stated that with respect to the Governor's Executive Order ("EO") No. 168, issued this summer in connection with the Amtrak work program at Penn Station and the serious disruptions to the subway system, all future extensions of the Executive Order would be consistent with the Governor's Executive Order issued in connection with Superstorm Sandy. He also advised the Board of an important change in the process going forward: Items advanced under EO No. 168 will be brought to the Board for review and ratification. This will happen each month, and this is consistent with past practice and with the All-Agency Procurement Guidelines approved by the Board. Chairman Lhota indicated further that he would ask the MTA Auditor General to review purchases made under the EO, and the Auditor General will report his findings to the Audit Committee of the Board.

under the Plan are beginning to arrest the multi-year downward slide in performance. Nowhere is this more evident than in the category of major incidents that cause delays. In September, we logged 69 major weekday incidents, 5% better than the 12-month rolling average. In the first half of 2017, we averaged 77 major weekday incidents per month, and it has since dropped to 62 major incidents per month since implementation of the Plan, a reduction of 19%.

Chairman Lhota stated that under the Plan, we are paying close attention to all of our infrastructure. We have repaired thousands of track defects, installed miles of welded rail, inspected and repaired hundreds, if not thousands, of signals, and cleaned many miles of roadbed. These efforts have started to pay off. In the 3rd quarter of this year, as compared to the first half of the year, average monthly track incidents declined by over 7%, average monthly major signal incidents fell by over 21%, average monthly debris-related fire incidents dropped by 20%, and average monthly right of way incidents as a whole are down nearly 20%. Chairman Lhota added that he cannot over-emphasize the importance of reducing these major incidents as they can cause delays that profoundly affect all of our customers. As an example, on September 14th, a broken third rail protection board near 72nd Street on West Side IRT line during the morning rush hour delayed 168 trains in a little over an hour. That single day affected several of our performance metrics of additional platform time and additional train time by over 5% for the entire month of September.

Chairman Lhota also indicated that the Subway Action Plan was having positive impacts on our fleet. In September, the Mean Distance Between Failures ("MBDF") reached 123,000 miles, a 23% improvement from August and a 14% improvement from a year earlier. Similarly, a 12-month fleet MBDF in September at 119,000 miles represents a fifth straight month of improvement.

Chairman Lhota stated that the Subway Action Plan is starting to get us back on track, and he thanked all of our workers for making this possible.

Board Member Andrew Albert stated that we should also thank our riders for putting up with the work and the resulting delays.

Board Member Albert also stated that the R-32 and R-42 subway cars continued to show poor performance, and he asked when the R-211 procurement would be coming to the Board.

Chairman Lhota responded that he believed it would be brought forward in December.

3. Approval of Minutes

Chairman Lhota asked for a motion to approve the minutes of the Regular Board Meeting of October 25, 2017. Upon motion duly made and seconded, the minutes of the Regular Board Meeting of October 25, 2017 were approved.

4. Committee on Finance

Procurement Items

The Board was presented with three (3) procurement items recommended to it by the Committee on Finance, two (2) of which related to Long Island Rail Road:

- **AFT Projects at one LIRR Station on the Ronkonkoma Branch** – AFT to provide technical design, fabrication, crating, storage, delivery and oversight of installation of materials at the station specified below:

Competitively negotiated – 10 proposals – 14 months. Mary Judge, Wyandanch Station – LIRR (\$138,052.60).

- **CorVel Healthcare Corporation – All-Agency Medical Bill Review and Payment Services** – To obtain Board approval for the award of a competitively negotiated, personal service contract to CorVel Healthcare Corporation (CorVel) to provide medical bill review and payment, Medicare Secondary Payer (MSP), third party administration claims and related services for five years beginning January 2018 for \$8,383,819 with an MTA option to extend for a three-year period for \$5,030,291. The eight year total cost is \$13,414,110 plus a 10% contingency in the amount of \$1,341,411 for other related services for a total of \$14,755,521.

Upon motion duly made and seconded, the Board approved the foregoing procurement items, the details of which are contained in the minutes of the MTA Board meeting held this day, the staff summaries filed with those minutes, and in the video recording of the meeting, produced by the MTA and maintained in MTA records.

Real Estate Items

The Board was presented with six (6) real estate items recommended to it by the Committee on Finance, two (2) of which related to the Long Island Rail Road:

- **Exchange of Property Rights with the Village of Freeport** - Release of certain deed covenants from LIRR property and the encumbrance of Village property with identical deed covenants.
- **License Agreement with CTM Media Group for the placement of promotional brochure racks at Penn Station (Combined with Metro-North Action Item)** – LIRR has requested that CTM promote LIRR Deals & Getaways in exchange for the privilege to place brochure racks within Penn Station at locations approved by LIRR. Agreement is month-to-month, terminable at will by either party on 30 days' prior written notice.

Upon motion duly made and seconded, the Board approved the foregoing real estate items, the details of which are contained in the minutes of the MTA Board meeting held this day,

the staff summaries filed with those minutes, and in the video recording of the meeting, produced by the MTA and maintained in MTA records.

5. Long Island Rail Road Committee

Procurement Items

The Board was presented with one (1) procurement item recommended to it by the Long Island Rail Road Committee, as follows:

- **Strategic Planning Partners** - Long Island Rail Road requests MTA Board approval to award a competitively solicited Personal Service contract to Strategic Planning Partners ("SPP") for the development of protocols for Security Sensitive Information (SSI) and for Security Control Officer Consultants for various LIRR locations for all existing/proposed LIRR projects containing a Security/SSI component for a period of two years, plus a one-year option, in the total not-to-exceed amount of \$1,377,643.

Board Member Ira Greenberg stated that he had asked why this was an LIRR-only contract and why other MTA agencies couldn't use it. He further stated that he had not heard back on this question.

LIRR Chief Procurement & Logistics Officer Dennis Mahon responded, stating that New York City Transit has similar needs, but these were handled internally. The contract in question can be used by any agency, and there is language in the contract to allow that.

Upon motion duly made and seconded, the Board approved the foregoing procurement item, the details of which are contained in the minutes of the MTA Board meeting held this day, the staff summary filed with those minutes, and in the video recording of the meeting produced by the MTA and maintained in the MTA records.

6. Presentation on MTA 2018 Final Proposed Budget and November Financial Plan 2018-2021.

Chairman Lhota introduced MTA Chief Financial Officer Robert Foran, to give a presentation on the MTA 2018 Final Proposed Budget and November Financial Plan 2018-2021.

Chief Financial Officer Foran gave a PowerPoint presentation to the Board, highlighting the following:

- The 2017 July Plan projected breakeven/small cash balances through 2019, with gaps of \$112 Million and \$493 Million in 2020 and 2021.
- What has changed since the July Plan?
 - Changes and re-estimates worsening financial results over the plan period:

- Lower fare box/toll revenue estimates (\$281 million)
 - Lower real estate transaction forecasts (\$147 million)
 - Lower advertising revenue (\$143 million)
 - Lower MNTOA receipts (\$80 million)
- Changes and re-estimates improving financial results over the plan period:
 - Lower debt service costs (\$189 million)
 - In total, changes and re-estimates, including the above, are \$309 million unfavorable for the plan period.
- Highlights of the 2018-2021 November Action Plan:
 - MTA is implementing Subway Action Plan, an investment of \$1.5 billion in operating expenses over the plan period.
 - Maintains annual savings targets proposed in February and July (\$200 million in 2018, \$250 million in 2019, \$300 million in 2020, and \$350 million in 2021).
 - Propose fare/toll increases of 4% in 2019 and 2021, consistent with previous plans.
 - Use \$170 million in reserves to offset expenses.
 - Budget continues to be balanced through 2019; 2020 and 2021 gaps have increased to \$352 million and \$643 million, respectively.
 - The Subway Action Plan (“SAP”) will “jump start” improvements over the next 14 months, then maintain level of effort going forward.
 - Implementing the full SAP will require Board action.
 - Annual recurring savings targets are more aggressive and will be harder to achieve.
 - \$593 million in savings have been implemented or identified in July and November Plans.
 - The Plan funds important investments and is balanced through 2019; the 2020 and 2021 gaps will need to be addressed; new revenue sources will be required for operations and capital.
 - If savings targets are not achieved, gaps will occur earlier and be larger.
 - If savings targets are not achieved and fare and toll increases are not implemented, projected gaps increase significantly.

- Challenges going forward:
 - Secure full funding for Subway Action Plan.
 - Secure new sustainable funding for operations and capital.
 - Implement biennial fare and toll increases of 4% in 2019 and 2021 (2% annual increases).
 - Achieve cost reduction targets.
 - Enhance customer experience and fund continued investments in maintenance and operations.
 - Respond to general economic conditions (e.g., declining real estate revenues).
 - Respond to potentially higher interest rates than forecast.

- MTA 2018 Final Proposed Budget:

- By Revenue Source (\$ in millions)

- Fare box revenue	\$6,277
- Toll Revenue	1,923
- Other Revenue	685
- Dedicated Taxes	5,434
- State & Local Subsidies	1,224
- BTL Adjustments for Subsidies	593

TOTAL **\$16,137**

- By Expense Category (includes below-the-line adjustments) (\$ in millions)

- Payroll	\$5,360
- Overtime	829
- Health & Welfare	2,002
- Pension	1,351
- Other Labor	492
- Non-Labor	3,395
- Debt Service	2,604

TOTAL **\$16,186**

Board Member Albert asked whether, if we do not get full funding for the Subway Action Plan, things will take longer but will still get done.

Chief Financial Officer Foran responded that things will take longer or will be re-prioritized. The goal is to try to continue this program as it looks to be successful.

Board Member Albert stated that we need to achieve more sustainable funding sources. Otherwise, fares could eventually reach \$10 and tolls could eventually reach \$50.

Board Member Carl Weisbrod asked for the meaning of the following comment on Slide 3, last bullet: "Budget continues to be balanced through 2019." Does this mean that with a commitment to one-half of the Subway Action Plan, it will be balanced?

Chief Financial Officer Foran responded that with respect to the Subway Action Plan, one-half of the funding will be coming from the State and there are conversations with City about the balance of the funding. If the City does not contribute the other half, the Plan will be scaled back.

Board Member Weisbrod commented that the metrics to date for the results of the Subway Action Plan seem to be flat, and not as high we had hoped. He asked whether, as we go into 2018, we can begin to assess which elements are having an impact and which are not. He also asked the Chairman whether he anticipated altering or modifying the Plan.

Chairman Lhota responded stating that we're starting to look at that now. We are jumping into many things at the same time and it's not easy to break this out at this time. But we do look at and re-evaluate Plan performance on a daily basis.

Board member David Jones asked for a projection of what debt service will grow to.

Chief Financial Officer Foran responded that debt service would increase to \$3.2 Billion in 2021. We are now at \$2.6 Billion, or about 16% of our budget. It will go up to 19% of our budget.

Board Member Scott Rechler asked what sustainable incremental amount we need to balance the Plan without a fare increase.

Chief Financial Officer Foran responded, stating that we need approximately \$650 million per year to avoid fare increases in 2019 and 2021.

Board Member Rechler stated that when he looks at the SAP, it doesn't seem to include that much by way of capital investment. It seems to be focused on making sure the system functions, but does not amount to a 21st century rebuilding of the system.

Chief Financial Officer Foran responded, stating that the way we looked at it is what capital do we need that is not now in the capital program to "jump start" the Plan and then it will be built into the capital program going forward.

Board Member Rechler asked what years that would be.

Chief Financial Officer Foran responded that this would be 2019, 2020, and 2021.

Board Member Mitchell Pally stated that the 2009 agreement between then-Governor Paterson and the Legislature is no longer helpful or appropriate. Our operating and capital needs have increased, mostly for the right reasons. Board Member Pally stated he was hopeful based

on the current discussions taking place --- whether they involved congestion pricing or a millionaire's tax or something else --- that both capital and operating needs for the next 10 years will be addressed without the need for a fare increase. This is especially important to those who represent areas where customers pay by the mile, not by the trip. The numbers in Suffolk County are getting much too high. Elimination of the fare increase in 2019 and 2021 would be a welcome and hopeful endeavor that we can accomplish; this is the only way we can show our riders in all parts of the system that we are taking their concerns into account. Fare increases are no longer acceptable.

Chief Financial Officer Foran responded, stating that MTA is agnostic as to where the necessary revenues come from. Policy makers will decide where the revenue comes from, but it is important to continue cut costs; this is the only way we can maintain credibility with our customers.

Board Member Pally stated that cuts are getting harder and harder to find; they are not the total solution to our problems.

Board Member Pally stated that in the 2017 budget, we added costs for LIRR service over the summer and for the subway system, including programs to address help LIRR commuters get to and from New York City. He expressed the hope that the 2018 budget also includes those programs at least for LIRR, if they have proven to be successful.

Chief Financial Officer Foran responded, stating that we are prepared to fund whatever worked. Chairman Lhota added that he didn't think programs such as ferries would be needed, but core communications/core information to customers about alternate routes and connections is critical.

Board Member Pally stated that over the past few years, the question of access to subways and buses has become a major issue. He further stated that perhaps MTA should not be in the Access-A-Ride business. We have a responsibility to make the system as accessible as possible, but perhaps MTA is not the best operator of such a service. Board Member Pally noted that on Long Island, local government addresses this need, and he asked whether it would be better to have New York City manage this service as part of its social services program. He expressed the hope that MTA can find another way to do this; MTA has not been successful with this and we should not continue to pay the costs of an unsuccessful program.

Board Member James Vitiello expressed concern about and requested more information on revenues derived from real estate taxes, and the impact of reduced numbers of real estate transactions on MTA's ability to use these taxes to generate revenue.

Chief Financial Officer Foran responded, noting that the main real estate taxes we deal with are the Real Property Transfer Tax and the Mortgage Recording Tax. If mortgage rates rise, or a limit is imposed on the deductibility of the Mortgage Recording Tax, it will affect the number of transactions and therefore MTA revenues. He added that MTA can provide additional information to the Board on this subject.

Board Member Veronica Vanterpool stated the Plan shows we will continue to fund our general reserve. She asked whether the level of funding would be consistent with prior years.

Chief Financial Officer Foran responded in the affirmative, stating that we try to put in 1% of our operating budget as a target.

Board Member Vanterpool asked about the Bridges & Tunnels Necessary Reconstruction Reserve and the suspension in July of contributions to this Reserve in 2018 to 2021. She asked where this money is going.

Chief Financial Officer Foran responded, stating that this is money set aside in case TBTA cannot access the capital market. The balance got to a level where we felt we could draw some of the money down and apply it to other capital projects. He noted that MTA chose not increase the reserve, but is maintaining it at some \$325-350 million, which is a healthy balance, especially since open road tolling may reduce the need for plaza reconstructions.

Board Member Andrew Saul stated that he had asked for data on the payroll, specifically the number of active employees. He noted that payroll accounts for 63% of MTA expenses. He further noted that the Subway Action Plan proposes to add workers and he wondered about the right percentage mix as between administrative and operating personnel. He asked whether the number of administrative personnel is correct and whether are we top-heavy. He asked that MTA look at this question.

Chairman Lhota responded, stating that we have started this process and we will work with you and the Board to address these questions.

Board Member Vitiello asked whether there was a way to look at the cost of participation in our own pension plans versus the cost of participation in NYSERS. Is one more economically efficient than the other? He added that he realized that it may not be up to MTA to decide what we participate in.

Chairman Lhota responded, stating that we can do an analysis. He further stated that he believed the Transit Workers Union is entirely within NYSERS, and he noted that plan participation is usually prescribed by agreements with our unions.

Board Member Vitiello acknowledged this, but stated that new collective bargaining agreements were always coming up for negotiation, so it would be a worthwhile exercise to examine this question.

Board Member Greenberg asked if projections regarding State subsidies came from the Division of the Budget.

Chief Financial Officer Foran responded, stating that the Division of the Budget does budgets on an annual basis, but we have ongoing conversations with them all the time. We are basically following prior guidance from them.

Board Member Greenberg stated that the projections are flat regarding the Mortgage Recording Tax. He also stated that for the Triborough Bridge & Tunnel Authority, less revenue is going to operations as opposed to debt. He added that this is why MTA needs more dedicated revenue, and that our subsidies are not what they need to be. We need more dedicated revenue, not because our costs have ballooned but because we are spending more on things we need to improve our service.

Board Member Greenberg added, with respect to the subway system, that he hoped to see improvements on whatever metrics you choose, because he did not believe he has seen it yet on a line-by-line basis. He noted that this is a new program and we need to give it a few months, so he hopes to see progress by January.

Board Member Lawrence Schwartz suggested the formation of a working group to determine long term macro solutions to the accessibility issue. He also suggested a working group to look into fare structure, adding that it would benefit MTA to look at this and see if there are things we would propose to overhaul the fare system and make it more equitable.

Board Member Schwartz also stated that MTA needs to overhaul its contracting system and that there is not enough competition in our capital program. The same firms are bidding all the time. He added that MTA is getting ripped off – some players “game” the system, especially with regard to delay claims. Board Member Schwartz stated that there are two paths to follow: we may need changes in State law; and we also need to look at our internal perspective. He added that Scott Rechler and others are looking at changes in the TIFIA law, which could result in savings by encouraging the private sector to do a lot of the work that MTA would otherwise have to do. This would help take financial pressure off of the MTA.

Board Member Rechler stated that we cannot ask the public to reinvest in the system unless we can show we are being as efficient as we can be.

Board Member Charles Moerdler stated that we have had visitation after visitation on the issue of accessibility. He recommended the formation of an accessibility working group focusing on the entire system. We should be able to deal with this question. It may require legislation, so the sooner we get started, the better.

Additional details about Board Member comments with respect to the presentation on the MTA 2018 Final Proposed Budget and November Financial Plan 2018-2021 are contained in the minutes of the MTA Board meeting held this day, and in the video recording of the meeting produced by the MTA and maintained in the MTA records.

7. Executive Session

Chairman Lhota asked for a motion to move the meeting into Executive Session for purposes of discussing Collective Bargaining Agreements under Section 105(1) (e) of the New York State Public Officers Law. Upon motion duly made and seconded, the Board voted to move the meeting into Executive Session.

8. Adjournment

Upon returning to the public session of the Board meeting, Chairman Lhota stated that the Board had discussed in Executive Session matters pertaining to collective bargaining agreements affecting Metro-North Railroad.

Upon motion duly made and seconded, the Board voted to adjourn the meeting at 12:05 P.M.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Mark D. Hoffer". The signature is written in a cursive, slightly slanted style.

Mark D. Hoffer,
Secretary

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

BOARD MINUTES

November 15, 2017

Minutes of the Regular Meeting
Triborough Bridge and Tunnel Authority
November 15, 2017

Meeting Held at
2 Broadway, 20th Floor
New York, New York 10004

10:00 a.m.

The following members were present:

Hon. Joseph J. Lhota, Chairman
Hon. Fernando Ferrer, Vice Chairman
Hon. Norman E. Brown
Hon. Ira Greenberg
Hon. David Jones
Hon. Susan Metzger
Hon. Charles G. Moerdler
Hon. John J. Molloy
Hon. Mitchell H. Pally
Hon. Scott Rechler
Hon. Andrew Saul
Hon. Lawrence Schwartz
Hon. Polly Trottenberg
Hon. Veronica Vanterpool
Hon. James Vitiello
Hon. Carl Weisbrod
Hon. Carl V. Wortendyke

The following alternate non-voting members were also present:

Hon. Andrew Albert
Hon. Vincent Tessitore, Jr.

The following members were absent:

Hon. Peter Ward
Hon. Neal Zuckerman

Patrick Foye, President, Veronique Hakim, Managing Director, Janno Lieber, MTA Chief Development Officer, Donna Evans, Chief of Staff, Robert Foran, Chief Financial Officer, Helene Fromm, Acting General Counsel, Phillip Eng, Acting President, New York City Transit Authority, Patrick Nowakowski, President, Long Island Rail Road, Catherine Rinaldi, Acting President, Metro-North Railroad, Cedrick T. Fulton, President, Triborough Bridge and Tunnel Authority, Darryl Irick, President, MTA Bus Company, and Stephen Morello, Counselor to the Chairman, also attended the meeting.

The Board of the Metropolitan Transportation Authority also met as the Board of the New York City Transit Authority, the Manhattan and Bronx Surface Transit Operating Authority, the Staten Island Rapid Transit Operating Authority, the Metropolitan Suburban Bus Authority, the Triborough Bridge and Tunnel Authority, the Long Island Rail Road Company, the Metro-North Commuter Railroad Company, the MTA Capital Construction Company, the MTA Bus Company, and the First Mutual Transportation Assurance Company.

1. Public Speakers

There were 20 public speakers. None of the speakers specifically commented on issues regarding the Triborough Bridge and Tunnel Authority.

Refer to the video recording of the meeting produced by the Metropolitan Transportation Authority and maintained in MTA records, and to the other agencies' minutes of this date, for the content of the speakers' statements.

2. Chairman Lhota's Opening Remarks

Chairman Lhota stated that Chief Financial Officer Robert Foran would be giving a presentation on the Financial Plan and Proposed 2018 Budget. With regard to Governor Cuomo's Executive Order 168, Chairman Lhota stated that it was issued in early summer 2017 in connection with the Penn Station service reductions due to AMTRAK switch and track-related work, and the substantial service disruptions within the subway system. All future extensions issued by the Governor will be consistent with the Executive Orders issued in connection with Superstorm Sandy. Going forward, MTA staff will bring these items to the MTA Board for its formal review and ratification.

The details of Chairman Lhota's remarks are contained in the video recording of this meeting, produced by the MTA and maintained in MTA records, and the MTA's and other agencies' minutes of the meeting of this date.

3. Approval of Minutes of Regular Meeting October 25, 2017

Upon a motion duly made and seconded, the minutes of the Regular Board Meeting held on October 25, 2017 were approved.

Refer to the video recording of the meeting produced by the Metropolitan Transportation Authority and maintained in MTA records, and to the other agencies' minutes of this date, for the content of the statements made regarding this matter.

4. Committee on MTA Bridges and Tunnels Operations

Procurements

Commissioner Moerdler stated that there are three (3) procurements totaling \$6.72 million.

Non-Competitive Procurements

Commissioner Moerdler stated that there is one (1) non-competitive procurement totaling \$550,000.

Commissioner Moerdler stated that the Committee members who were present at the Committee Meeting considered and voted in favor of the procurement although a Committee Quorum was not present. Upon a motion duly made and seconded, the Board approved the procurement recommended to it by the Committee for MTA Bridges and Tunnels Operations.

Miscellaneous Procurement Contracts

RapidToll Systems, Inc.	Contract No. 17-OPS-2965 TBTA is seeking Board approval in accordance with the All-Agency Procurement Guidelines to award this non-competitive miscellaneous procurement contract, Contract 17-OPS-2965, to RapidToll Systems, Inc. to install and	\$548,858.00
-------------------------	---	--------------

maintain a video-based audit system (Data Logger) to monitor the performance of its new open road Cashless Tolling system and to ensure that TBTA's \$1.9 billion revenue stream is properly accounted for.

Competitive Procurements

Commissioner Moerdler stated that there are two (2) competitive procurements totaling \$6.166 million.

Commissioner Moerdler stated that the Committee members who were present at the Committee Meeting considered and voted in favor of the procurements although a Committee Quorum was not present. Upon a motion duly made and seconded, the Board approved the procurements recommended to it by the Committee for MTA Bridges and Tunnels Operations.

Personal Service Contracts

WSP USA, Inc.	Contract No. PSC-16-2990 TBTA is seeking Board approval under the All Agency Service Contract Procurement Guidelines to award a personal service contract for the Quality Oversight and Administration for Design-Build Project BW-39/RK-60, Installation of an Integrated Electronic Security System and Fire Alarm and Detection System at the Bronx Whitestone and Robert F. Kennedy Bridge Facilities, to WSP USA, Inc.	\$4,414,813.25
GPI/Parsons RK-22 JV	Contract No. PSC-17-3004 TBTA is seeking Board approval under the All Agency Guidelines for Procurement of Services to award a personal service contract to GPI/Parsons RK-22 JV for Construction Administration and Inspection Services for Project RK-22, Interim Repairs to the FDR Ramps of the Robert F. Kennedy Bridge.	\$1,751,005.87

Ratifications

Commissioner Moerdler stated that there are no ratifications.

5. MTA 2018 Final Proposed Budget and November Financial Plan 2018-2021

MTA Chief Financial Officer Robert Foran presented and discussed the MTA's 2018 Final Proposed Budget and November Financial Plan for 2018 through 2021. Mr. Foran noted that there is a projected decrease of \$10 to \$15 million in TBTA's toll revenue due to Open Road Tolling (ORT) since customers are shifting from cash to E-ZPass and paying the lower than cash E-ZPass rate. He also stated that there is a proposed fare and toll increase of 4% in 2019 and 2021 (2% annual increases). Vice Chairman Ferrer asked for details regarding 2017 savings. With regard to TBTA, Mr. Foran stated that

there have been savings due to lower E-ZPass transponder unit costs, lower costs for maintenance and bridge painting, and elimination of costs for cash collection and processing, due to ORT implementation, since payments are now made by E-ZPass payment and Tolls by Mail. Mr. Foran noted that approximately 51% of the 2018 Proposed Budget comes from fares and tolls. Commissioner Albert commented that the MTA needs new sustainable funding sources. Commissioner Rechler asked what amount would be needed to avoid the proposed fare and toll increases in 2019 and 2021 and Mr. Foran responded that approximately \$650 million would be needed on an annual basis. Commissioner Pally also expressed concern with imposing the fare and toll increases. Mr. Foran responded that policy makers will determine how the funding is derived but it is important for MTA to continue to look for ways to cut costs. Commissioner Vanterpool requested clarification regarding the proposal in July to suspend contributions to the Bridge and Tunnel Necessary Reconstruction Reserve from 2018 to 2021 and asked what will happen to those funds. Mr. Foran explained that by MTA Board policy, operating monies had been set aside in the event that TBTA is unable to access the market and, therefore, would be unable to undertake necessary capital construction projects. The balance had reached such a high level that it was decided to draw down that balance for current capital projects rather than selling TBTA debt. With the establishment of ORT, TBTA does not have the same need for plaza reconstruction and it made sense not to add additional funds to it but the reserve is still maintained at a healthy level. Chairman Lhota added that the amount no longer going to the fund is used to support New York City Transit, Long Island Rail Road and Metro-North Railroad. Commissioner Vanterpool then inquired whether this decision was made based on a Board action. Mr. Foran stated that board action was taken years ago and it is included as part of the Budget. Commissioner Greenberg commented that an additional revenue source is needed as less TBTA revenue is going toward operating expenses since more funds have been allocated to debt.

The details of Mr. Foran's presentation and the discussions with regard to same are contained in the minutes of the meeting of the Board of the Metropolitan Transportation Authority.

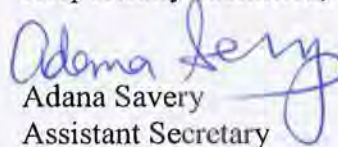
6. Executive Session

Upon a motion duly made and seconded, the Board unanimously voted to convene in Executive Session pursuant to Public Officers Law §105(1)(e) to discuss matters relating to collective negotiations.

7. Adjournment

Upon a motion duly made and seconded, the Board unanimously voted to adjourn the meeting at 12:05 p.m.

Respectfully submitted,


Adana Savery
Assistant Secretary

**Regular Board Meeting
MTA Capital Construction Company
2 Broadway
New York, NY 10004
Wednesday, November 15, 2017
10:00 AM**

The following members were present:

Hon. Joseph J. Lhota, Chairman
Hon. Fernando Ferrer, Vice Chairman
Hon. Norman E. Brown
Hon. Ira Greenberg
Hon. David Jones
Hon. Susan Metzger
Hon. Charles G. Moerdler
Hon. John J. Molloy
Hon. Mitchell H. Pally
Hon. Scott Rechler
Hon. Andrew Saul
Hon. Lawrence Schwartz
Hon. Polly Trottenberg
Hon. Veronica Vanterpool
Hon. James Vitiello
Hon. Carl Weisbrod
Hon. Carl V. Wortendyke

The following alternate non-voting members were also present:

Hon. Andrew Albert
Hon. Vincent Tessitore, Jr.

The following members were absent:

Hon. Peter Ward
Hon. Neal Zuckerman

Patrick Foye, President, MTA, Veronique Hakim, Managing Director, MTA, Janno Lieber, Chief Development Officer, MTA, Donna Evans, Chief of Staff, MTA, Robert Foran, Chief Financial Officer, MTA, Phillip Eng, Chief Operating Officer, MTA, Helene Fromm, Acting General Counsel, MTA, Stephen Morello, Counselor to the Chairman, MTA, Tim Mulligan, Acting President, NYCTA, Patrick Nowakowski, President, Long Island Rail Road, Catherine Rinaldi, Acting President, Metro-North Railroad, Cedrick Fulton, President TBTA, Darryl Irick, President, MTA Bus Company, Stephen Morello, Counselor to the Chairman, MTA, Evan Eisland, Sr. Vice President, General Counsel and Secretary, MTACC and David Cannon, Chief Procurement Officer and Assistant Secretary, MTACC also attended the meeting.

The Board of the Metropolitan Transportation Authority met as the Board of the New York City Transit Authority, the Manhattan and Bronx Surface Transit Operating Authority, the Staten Island Rapid Transit Operating Authority, the Triborough Bridge and Tunnel Authority, the Long Island Rail Road, the Metro-North Commuter Railroad Company, the MTA Capital Construction Company, the MTA Bus Company, and the First Mutual Transportation Assurance Company.

Unless otherwise indicated, these minutes reflect items concerning the business of the MTA Capital Construction Company. Refer to the other agencies' minutes of this date for items on the agendas of the Boards of the other agencies.

Chairman Lhota called the meeting to order.

Public Comment Periods

There were twenty (20) public speakers none of whom spoke on MTA Capital Construction matters. The names and remarks of the speakers are contained in the minutes of the Regular Meeting of the Board of the Metropolitan Transportation Authority and in the minutes of the other agencies of this date.

Chairman's Remarks

The Chairman's remarks are noted in the minutes of the Regular Meeting of the Board of the Metropolitan Transportation Authority held on this date.

Approval of Minutes

Upon motion duly made and seconded, the Board approved the minutes of the Regular Meeting of the Board of the Metropolitan Transportation Authority as amended and the MTA Capital Construction Company held on October 25, 2017.

Committee on NYCT and Bus

Procurement Items

Upon motion duly made and seconded, the Board approved the following competitive items:

Award of eight competitively solicited consultant contracts (CM1568 – CM1575) for Indefinite Quantity Architectural/Engineering Design Services for Miscellaneous Federally Funded Construction and Security Projects on an as-needed basis for New York City Transit, MTA Bus and MTA Capital Construction for an estimated aggregate of \$100M and for a five-year term.

A copy of the Resolution and Staff Summary for the above items are filed with the records of the Regular Meeting of the Board of the Metropolitan Transportation Authority of this date.

Other MTA Business

CFO Presentation on MTA 2018 Final Proposed Budget and November Financial Plan 2018-2021

Robert Foran, MTA's Chief Financial Officer presented the MTA's 2018 Final Proposed Budget and November Financial Plan for 2018 - 2021. A discussion among the Board members followed.

The Board members remarks are more fully noted in the minutes of the Regular Meeting of the Board of the Metropolitan Transportation Authority held on this date.

A copy of the of the 2018 Final Proposed Budget and the 2018 – 2021 Financial Plan are filed with the records of the Regular Meeting of the Board of the Metropolitan Transportation Authority held on this date.

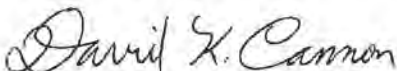
Executive Session

Upon motion duly made and seconded, the Board voted to convene into Executive Session pursuant to Section 105(1)(e) of the New York State Public Officers Law to discuss matters relating to collective bargaining negotiations.

Adjournment

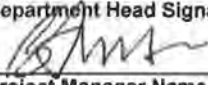

Upon motion duly made and seconded, the Board voted to adjourn the public meeting at 12:05 p.m.

Respectfully submitted,





David K. Cannon
Assistant Secretary

Staff Summary

Subject
Authorization to Issue New Money Transportation Revenue Bonds and Bond Anticipation Notes, and Triborough Bridge and Tunnel Authority General Revenue and Subordinate Revenue Bonds and Bond Anticipation Notes
Department
Finance
Department Head Name
Robert E. Foran, Chief Financial Officer
Department Head Signature

Project Manager Name
Patrick J. McCoy, Director, Finance 

Date
December 13, 2017
Vendor Name
Contract Number
Contract Manager Name
Table of Contents Ref #

Board Action					
Order	To	Date	Approval	Info	Other
1	Finance Comm.	12/11	X		
2	Board	12/13	X		

Internal Approvals			
Order	Approval	Order	Approval
1	Legal 	2	Chief of Staff 

PURPOSE:

The MTA Finance Department is seeking MTA and TBTA Board authorization and approval of the necessary documentation to issue new money bond anticipation notes (BANs) and bonds to finance up to \$3,000 million of capital projects set forth in approved transit and commuter capital programs, and to issue up to \$200 million of new money bonds and BANs to finance capital projects set forth in approved bridges and tunnels capital programs. The MTA Finance Department will report to the Board on the status of the proposed debt issuance schedule, the results of each note and bond issue and planned note and bond issues.

DISCUSSION:

MTA and TBTA Board approval is sought for the following resolutions, documents and activities in connection with the issuance of bonds and/or bond anticipation notes in an aggregate principal amount necessary to finance up to \$3.2 billion of capital projects of the transit and commuter systems and MTA Bridges & Tunnels set forth in approved capital programs:

- Separate Supplemental Resolutions authorizing Transportation Revenue Bonds (TRB Bonds) and Transportation Revenue BANs (TRB BANs), including providing for the following:
 - The issuance of TRB BANs and TRB Bonds under the General Resolution Authorizing Transportation Revenue Obligations (the TRB Resolution), in one or more series from time to time, in an amount sufficient to produce net proceeds of up to \$3,000 million necessary to finance transit or commuter capital programs, plus applicable issuance costs and any original issue discount,
 - Issuance of such TRB BANs or TRB Bonds in competitive or negotiated public sales, by direct placement or in connection with a revolving credit or other loan agreement, and
 - The issuance of TRB Bonds under the TRB Resolution in an amount sufficient to (i) retire the TRB BANs when due and (ii) to finance transit or commuter capital programs, in each case plus accrued interest and applicable issuance costs and any original issue discount.
- Multiple Series 2018 Supplemental Resolution authorizing Triborough Bridge and Tunnel Authority General Revenue Obligations, including providing for the issuance of the following:

- o An aggregate principal amount of up to \$200 million of Triborough Bridge and Tunnel Authority General Revenue Obligations (reduced by any bonds issued under the Triborough Bridge and Tunnel Authority Subordinate Resolution) in one or more series necessary to finance capital projects of TBTA as set forth in existing MTA Bridges & Tunnels capital programs, plus applicable issuance costs and any original issue discount, and
- o Parity Reimbursement Obligations and other Parity Debt in an amount sufficient to secure any Credit Facilities entered into in connection with the issuance of the General Revenue Obligations.
- Multiple Series 2001 Subordinate Revenue Bond Supplemental Resolution authorizing Triborough Bridge and Tunnel Authority Subordinate Revenue Obligations, including providing for the issuance of the following:
 - o An aggregate principal amount of up to \$200 million of Triborough Bridge and Tunnel Authority Subordinate Revenue Obligations (reduced by any bonds issued under the Triborough Bridge and Tunnel Authority General Revenue Bond Resolution) in one or more series necessary to finance capital projects of TBTA, as set forth in existing MTA Bridges & Tunnels capital programs plus applicable issuance costs and any original issue discount, and
 - o Parity Reimbursement Obligations and other Parity Debt in an amount sufficient to secure any Credit Facilities entered into in connection with the issuance of the Subordinate Revenue Obligations.
- A Supplemental Resolution authorizing Triborough Bridge and Tunnel Authority General Revenue BANs (TBTA BANs), including providing for the following:
 - o The issuance of TBTA BANs under the Triborough Bridge and Tunnel Authority General Revenue Bond Resolution (the Resolution), in one or more series from time to time, in an amount sufficient to produce net proceeds of up to \$200 million necessary to finance capital projects of MTA Bridges and Tunnels, plus applicable issuance costs and any original issue discount,
 - o Issuance of such TBTA BANs in competitive or negotiated public sales, by direct placement or in connection with a revolving credit or other loan agreement, and
 - o The issuance of TBTA Bonds in an amount sufficient to (i) retire the TBTA BANs when due and (ii) to finance capital projects of MTA Bridges and Tunnels, in each case plus accrued interest and applicable issuance costs and any original issue discount.

With respect to the above-referenced financial transactions, MTA and TBTA Board approval, as applicable, is sought:

(a) delegating authority to the Chairman, the Managing Director, the Chair of the Finance Committee, the Vice Chairman, the Chief Financial Officer or the Director, Finance to award the obligations either pursuant to competitive bid or to members (or entities related to such firms) of the Board-approved MTA underwriting syndicate and to execute and/or deliver in each case, where appropriate:

- o Notices of Sale and bid forms,
- o Purchase Agreements with underwriters,
- o Direct Purchase Agreements,
- o Revolving Credit Agreements or other Loan Agreements,
- o Official Statements and other disclosure documents,
- o Continuing Disclosure Agreements and related filings,
- o Remarketing Agreements,
- o Dealer and Broker/Dealer Agreements,
- o Issuing and Paying Agent Agreements,
- o Credit Facilities and related Parity Reimbursement Obligations and Parity Debt,
- o Related Subordinated Contract Obligations, and
- o Investment Agreements.

Any such documents will be in substantially the form of any document previously entered into by MTA or TBTA for previous issues, with such changes as approved by any one or more of the foregoing officers.

(b) authorizing such officers to terminate, amend, supplement, replace or extend any such documents, including Credit Facilities (and related Parity Reimbursement Obligations and Parity Debt), as they shall deem advisable, and to take such other

actions as may be necessary or desirable to effectuate the issuance of the new money bonds and BANs and other financial transactions set forth above, on behalf of MTA, TBTA or other MTA subsidiaries and affiliates.

ALTERNATIVES:

There are no viable funding alternatives to the bond funded portion of existing approved capital programs.

RECOMMENDATION:

The MTA and TBTA Boards approve the above-referenced resolutions and documents and all other actions described above, including the execution and delivery of such other documents, and the taking of all other actions, from time to time deemed necessary or desirable by such officers in connection therewith. The authorization to issue the bonds and bond anticipation notes and take other related actions hereunder shall continue in effect without any further action by the MTA and TBTA Boards until the adoption by the MTA and TBTA Boards of subsequent bond supplemental resolutions relating to 2019 note and bond issues (except that bonds may still be issued to refinance 2018 BANs outstanding at any time) unless (a) the MTA and TBTA Boards shall have confirmed the effectiveness of this authorization for an additional period, or (b) the MTA and TBTA Boards shall have modified or repealed this authorization.

METROPOLITAN TRANSPORTATION AUTHORITY

**MULTIPLE SERIES 2018
TRANSPORTATION REVENUE BOND SUPPLEMENTAL RESOLUTION**

Adopted December 13, 2017

**MULTIPLE SERIES 2018
TRANSPORTATION REVENUE BOND
SUPPLEMENTAL RESOLUTION**

BE IT RESOLVED by the Board of Metropolitan Transportation Authority (the “Issuer”), as follows:

ARTICLE I

DEFINITIONS AND STATUTORY AUTHORITY

Section 1.01. Supplemental Resolution. This resolution is supplemental to, and is adopted in accordance with Article II, Article A-II and Article A-VIII of, a resolution adopted by the Issuer on March 26, 2002, entitled “General Resolution Authorizing Transportation Revenue Obligations”, as heretofore supplemented (the “Resolution”).

Section 1.02. Definitions.

1. All terms which are defined in Section 101 of the Resolution shall have the same meanings, respectively, in this Multiple Series 2018 Transportation Revenue Bond Supplemental Resolution (hereinafter referred to as the “Supplemental Resolution”) as such terms are given in said Section 101 of the Resolution.

2. In this Supplemental Resolution:

“Authorized Officer” shall include the officers designated as such in the Resolution, and the Chairman, the Managing Director, the Chair of the Finance Committee, the Vice Chairman, the Chief Financial Officer or the Director, Finance of the MTA, as well as any officer duly designated as “Acting” in said officer’s capacity, except that, for the purposes of any delegation set forth herein that does not expressly include any Assistant Secretary, “Authorized Officer” shall not include any Assistant Secretary of the Issuer.

“Board” shall mean, when used with respect to the Issuer, the board of the Issuer acting as such pursuant to the provisions of the Issuer Act.

“Bond Counsel” shall mean Nixon Peabody LLP, Orrick, Herrington & Sutcliffe LLP, D. Seaton and Associates, P.A., P.C., Bryant Rabbino LLP or any other attorney or firm of attorneys of nationally recognized standing in the field of law relating to the issuance of obligations by state and municipal entities, selected by the Issuer.

“Code” shall mean the Internal Revenue Code of 1986, as amended, and regulations thereunder.

“Series 2018 Bonds” shall mean the Transportation Revenue Bonds, Series 2018, authorized by Article II of this Supplemental Resolution.

“Series 2018 Notes” shall mean the Transportation Revenue Bond Anticipation Notes, Series 2018, authorized to be issued in one or more Series or subseries in accordance with Section A-203 of the Standard Resolution Provisions and pursuant to a Supplemental Resolution of the Issuer adopted as of the date that this Supplemental Resolution is adopted.

Section 1.03. Authority for this Supplemental Resolution. This Supplemental Resolution is adopted pursuant to the provisions of the Issuer Act and the Resolution.

ARTICLE II

AUTHORIZATION OF SERIES 2018 BONDS

Section 2.01. Principal Amount, Designation and Series. Pursuant to the provisions of the Resolution and in order to finance Capital Costs, a Series of General Revenue Bonds (which may be issued in one or more Series or subseries and from time to time, which for purposes of this Supplemental Resolution shall collectively be referred to herein as the “Series 2018 Bonds”, subject to redesignation as hereinafter provided) entitled to the benefit, protection and security of such provisions are hereby authorized to be issued in an aggregate principal amount not exceeding the principal amount necessary so that, after giving effect to any net original issue discount and underwriters’ discount from the principal amount, the amount to be deposited in the Proceeds Account pursuant to, or otherwise applied to effectuate the purposes of, Section 2.02 and Section 3.01 of this Supplemental Resolution (exclusive of the amount so deposited therein determined in any Certificate of Determination as estimated to be necessary to pay capitalized interest or to pay any Costs of Issuance of the Series 2018 Bonds), shall not exceed the amount or amounts determined in a Certificate of Determination to be necessary to effectuate the purposes set forth in Section 2.02 hereof; provided, however, that the Series 2018 Bonds issued to finance Capital Costs shall not exceed \$3,000 million at any one time Outstanding reduced by the amount of bond anticipation notes (the “Series 2018 Notes”) issued under the Metropolitan Transportation Authority Multiple Series 2018 Bond Anticipation Notes and Related Subordinated Indebtedness Transportation Revenue Bond Supplemental Resolution, adopted December 13, 2017 (but, for purposes of clarification, not including both the Series 2018 Notes and Series 2018 Bonds issued thereunder to refinance Series 2018 Notes). For all purposes of this Section 2.01, net original issue premium as determined to be advisable by an Authorized Officer in connection with the marketing of the Series 2018 Bonds also shall be excluded.

Series 2018 Bonds shall be designated as, and shall be distinguished from the Obligations of all other Series by the title “Transportation Revenue Bonds, Series 2018” or such other title or titles set forth in one or more Certificates of Determination.

The authority to issue the Bonds and take related actions granted under previous resolutions of the Issuer shall continue in full force and effect. The authorization to issue the Series 2018 Bonds shall continue in effect until the adoption by the Issuer Board of a subsequent new money bond issuance supplemental resolution relating to 2019 new money financings, provided, however, the authorization to issue the Series 2018 Bonds to refinance the Series 2018 Notes shall continue in effect until all of such Series 2018 Notes have been refinanced by Series 2018 Bonds.

Section 2.02. Purposes. The purposes for which the Series 2018 Bonds are issued shall be set forth in one or more Certificates of Determination and may include (i) the payment of all or any part of the Capital Costs, and (ii) the payment of principal of and redemption premium, if any, and interest on Outstanding Series 2018 Notes.

Section 2.03. Date, Maturity and Interest for Series 2018 Bonds. The Series 2018 Bonds, except as otherwise provided in the Resolution, shall be dated the date or dates determined in the related Certificate of Determination. The Series 2018 Bonds shall mature on the date or dates and in the year or years and principal amount or amounts, and shall bear interest at the rate or rates per annum, if any, determined in any Certificate of Determination.

Section 2.04. Interest Payments. The Series 2018 Bonds shall bear interest from their date or dates and be payable on such date or dates as may be determined pursuant to the related Certificate of Determination. Except as otherwise provided in the related Certificate of Determination, interest on the Series 2018 Bonds shall be computed on the basis of twelve 30-day months and a 360-day year.

Section 2.05. Denominations, Numbers and Letters. Unless otherwise provided in the related Certificate of Determination, the Series 2018 Bonds shall be issued in fully registered form without coupons in the denomination of \$5,000 or any integral multiple thereof. The Series 2018 Bonds shall be numbered and lettered as provided in any Certificate of Determination.

Section 2.06. Places of Payment and Paying Agents. Except as otherwise provided in any Certificate of Determination, principal and Redemption Price of the Series 2018 Bonds shall be payable to the registered owner of each Series 2018 Bond when due upon presentation of such Series 2018 Bond at the principal corporate trust office of the Trustee. Except as otherwise provided in the related Certificate of Determination, interest on the registered Series 2018 Bonds will be paid by check or draft mailed on the interest payment date by the Paying Agent, to the registered owner at his address as it appears on the registration books or, at the option of any Owner of at least one million dollars (\$1,000,000) in principal amount of the Series 2018 Bonds, by wire transfer in immediately available funds on each interest payment date to such Owner thereof upon written notice from such Owner to the Trustee, at such address as the Trustee may from time to time notify such Owner, containing the wire transfer address (which shall be in the continental United States) to which such Owner wishes to have such wire directed, if such written notice is received not less than twenty (20) days prior to the related interest payment date (such notice may refer to multiple interest payments).

Section 2.07. Sinking Fund Installments. The Series 2018 Bonds, if any, determined in the related Certificate of Determination shall be subject to redemption in part, by lot, or otherwise as determined in accordance with Section A-404 of the Resolution, on each date in the year or years determined in the related Certificate of Determination at the principal amount thereof plus accrued interest up to but not including the date of redemption thereof, from mandatory Sinking Fund Installments which are required to be made in amounts sufficient to redeem on each such date the principal amount of such Series 2018 Bonds.

Section 2.08. Redemption Prices and Terms. The Series 2018 Bonds may also be subject to redemption prior to maturity, at the option of the Issuer, upon notice as provided in

Article A-IV of the Resolution, at any time as a whole or in part (and by lot within a maturity, or otherwise as determined in accordance with Section A-404 of the Resolution, if less than all of a maturity is to be redeemed), from maturities designated by the Issuer on and after the date and in the years and at the Redemption Prices (expressed as a percentage of principal amount) determined in the related Certificate of Determination, plus accrued interest up to but not including the redemption date. Notwithstanding the foregoing, in the case of taxable Series 2018 Bonds, if set forth in the Certificate of Determination, the taxable Series 2018 Bonds may be made subject to pro rata redemption and/or a make-whole redemption premium.

Section 2.09. Delegation to an Authorized Officer. 1. There is hereby delegated to each Authorized Officer, subject to the limitations contained in this Supplemental Resolution, the following powers with respect to the Series 2018 Bonds:

(a) to determine whether and when to issue any Series 2018 Bonds constituting Capital Cost Obligations, the amount of the Series 2018 Bonds to be applied to finance Capital Costs or other uses as provided in Section 2.02 hereof, and the amount of the proceeds of the Series 2018 Bonds estimated to be necessary to pay the Costs of Issuance of the Series 2018 Bonds and capitalized interest, if any;

(b) to determine the purpose or purposes for which the Series 2018 Bonds are being issued, which shall be one or more of the purposes set forth in Section 2.02 of this Supplemental Resolution;

(c) to determine the principal amounts of the Series 2018 Bonds to be issued for the purposes set forth in Section 2.02 of this Supplemental Resolution and whether such principal amounts constitute a separate Series or a subseries of Series 2018 Bonds, which principal amounts (and the aggregate of all such Series and subseries) shall not exceed the principal amounts permitted by Section 2.01 of this Supplemental Resolution, and to determine Accreted Values and Appreciated Values, if applicable;

(d) to determine the maturity date and principal amount of each maturity of the Series 2018 Bonds and the amount and due date of each Sinking Fund Installment, if any;

(e) to determine the date or dates which the Series 2018 Bonds shall be dated and the interest rate or rates of the Series 2018 Bonds or the manner of determining such interest rate or rates; provided, however, that any Series 2018 Bonds issued as fixed rate Tax-Exempt Obligations shall be subject to a maximum interest rate of not greater than 10% per annum, any Series 2018 Bonds issued as fixed rate Taxable Obligations shall be subject to a maximum interest rate of not greater than 12% per annum, any Variable Interest Rate Obligations issued as Tax-Exempt Obligations shall be subject to a maximum interest rate of not greater than 15% per annum, any Variable Interest Rate Obligations issued as Taxable Obligations shall be subject to a maximum interest rate of not greater than 18% per annum and any Parity Reimbursement Obligations shall be subject to a maximum interest rate of not greater than 25% per annum, or, in each such case, such higher rate or rates as determined by the Issuer's Board;

(f) to determine the Redemption Price or Redemption Prices, if any, and the redemption terms, if any, for the Series 2018 Bonds; provided, however, that if the Series 2018 Bonds are to be redeemable at the election of the Issuer, the Redemption Price (except in the case of taxable Series 2018 Bonds) shall not be greater than one hundred three percent (103%) of the principal amount of the Series 2018 Bonds to be redeemed, plus accrued interest thereon up to but not including the date of redemption and in the case of taxable Series 2018 Bonds the Redemption Price may be determined pursuant to provisions relating to pro rata redemption and/or make-whole redemption;

(g) to determine whether the sale of the Series 2018 Bonds shall be conducted on either a negotiated or competitive bid basis and, as applicable, to determine the purchase price for the Series 2018 Bonds to be paid by the purchaser or purchasers referred to in one or more Purchase Agreements or a bank direct purchase agreement, the purchase price for the Series 2018 Bonds to be paid by the winning bidder, if such sale is conducted by competitive bid pursuant to a Notice of Sale (as hereinafter defined), in either case as such document is described in Section 2.10 of this Supplemental Resolution, which may include such original issue discount and original issue premium as shall be determined in the related Certificate of Determination; provided, however, that, in the case of Series 2018 Bonds sold on a negotiated basis, the underwriters' discount reflected in such purchase price shall not exceed \$10.00 for each one thousand dollars (\$1,000) principal amount of the Series 2018 Bonds;

(h) to take all actions required for the Series 2018 Bonds to be eligible under the rules and regulations of The Depository Trust Company ("DTC") for investment and trading as uncertificated securities, to execute and deliver a standard form of letter of representation with DTC and, notwithstanding any provisions to the contrary contained in this Supplemental Resolution, to include in the related Certificate of Determination such terms and provisions as may be appropriate or necessary to provide for uncertificated securities in lieu of Series 2018 Bonds issuable in fully registered form;

(i) to determine whether to issue all or any portion of the Series 2018 Bonds as Tax-Exempt Obligations, Taxable Obligations, Put Obligations, Variable Interest Rate Obligations or as any other form of Obligations permitted by the Resolution and any matters related thereto, including (i) the terms and provisions of any such Series 2018 Bonds, (ii) the selection of remarketing agents, tender agents, calculation agents, auction agents, dealers, bidding agents or any other agents or parties to ancillary arrangements and the terms of any such arrangements, and (iii) the methods for determining the accrual of Debt Service;

(j) to determine the advisability, as compared to an unenhanced transaction, of obtaining one or more Credit Facilities, to select a provider or providers thereof and to determine and accept the terms and provisions and price thereof, to determine such other matters related thereto as in the opinion of the officer executing the related Certificate of Determination shall be considered necessary or appropriate and to effect such determinations by making any changes in or additions to this Supplemental Resolution required by Credit Facility providers, if any, or required by a Rating Agency in order to attain or maintain specific ratings on the Series 2018 Bonds, or relating to the

mechanisms for the repayment of amounts advanced thereunder or payment of fees, premiums, expenses or any other amounts, notices, the provision of information, and such other matters of a technical, mechanical, procedural or descriptive nature necessary or appropriate to obtain or implement a Credit Facility with respect to the Series 2018 Bonds, and to make any changes in connection therewith;

(k) to make such changes in or from the form of this Supplemental Resolution as may be required by a Rating Agency in order to attain or maintain specific ratings on the Series 2018 Bonds;

(l) to make such changes in or from the form of this Supplemental Resolution as may be necessary or desirable in order to cure any ambiguities, inconsistencies or other defects; and

(m) to determine such other matters specified in or permitted by (i) Sections 202, 203, and A-201 of the Resolution or (ii) this Supplemental Resolution, including preparation of any documentation therefor.

2. Any Authorized Officer shall execute one or more Certificates of Determination evidencing the determinations made pursuant to this Supplemental Resolution and any such Certificate of Determination shall be conclusive evidence of the determinations of such Authorized Officer, as stated therein. More than one Certificate of Determination may be delivered to the extent more than one Series or subseries of Series 2018 Bonds are delivered from time to time, or other authority is exercised under this Supplemental Resolution from time to time and each such Certificate of Determination shall be delivered to the Trustee prior to the authentication and delivery of the respective Series or subseries of Series 2018 Bonds by the Trustee or other documentation. Determinations set forth in the related Certificate of Determination shall have the same effect as if set forth in this Supplemental Resolution. Any such Authorized Officer may exercise any authority delegated under this Supplemental Resolution from time to time following issuance of any Series 2018 Bonds, as appropriate for any purposes, including, in order to change interest rate modes or auction periods, obtain a substitute or additional Credit Facility, enter into a bank direct purchase agreement or similar instrument, or to appoint new or additional agents or other parties deemed appropriate to a particular form or mode of Obligation or manner of sale.

Section 2.10. Sale of Series 2018 Bonds. Each Authorized Officer is hereby authorized either (i) to sell and award all or any portion of the Series 2018 Bonds through a competitive bidding process to purchasers meeting the requirements of one or more Notices of Sale (as hereinafter defined) to be published in order to give notice of the competitive sale of the Series 2018 Bonds; (ii) to sell and award all or any portion of the Series 2018 Bonds through a negotiated sale to the purchasers who are referred to in the bond purchase agreement and who shall be selected from the then current list of approved underwriters; or (iii) to sell and award all or any portion of the Series 2018 Bonds through a direct sale to the financial institution or institutions selected by the Authorized Officer who shall be referred to in the continuing covenant, direct purchase or similar agreement. Each Authorized Officer is hereby authorized to sell and award the Series 2018 Bonds to the purchasers referred to in the preceding sentence in the case of a bond purchase agreement, in substantially the form most recently executed or

delivered by the Issuer in connection with the sale of Obligations, or, with respect to a continuing covenant, direct purchase or similar agreement, containing bank facility terms and provisions (including, without limitation, increased costs, term-out, events of default and remedies) in substantially the form set forth in a letter of credit reimbursement agreement most recently executed or delivered by the Issuer, including, if applicable, that the direct purchaser offer to the Issuer a term-out provision of no less than five years, with such revisions to reflect the terms and provisions of the Series 2018 Bonds as may be approved by the officer executing the bond purchase, continuing covenant or similar agreement (each, a “Purchase Agreement”). Each Authorized Officer is hereby authorized to agree to the selection of the representative of the underwriters or the other purchasers or facility providers as referred to in the Purchase Agreement or Agreements and to execute and deliver the Purchase Agreement or Agreements for and on behalf and in the name of the Issuer with such changes, omissions, insertions and revisions as may be approved by the officer executing the Purchase Agreement or Agreements, said execution being conclusive evidence of such approval and concurrence in the selection of the representative of the underwriters.

If it is determined that any sale of Series 2018 Bonds shall be conducted on a competitive bid basis, each Authorized Officer is hereby further authorized to conduct the sale and award of the Series 2018 Bonds on the basis of a competitive bid, pursuant to the terms of a notice of sale, including bid form (the “Notice of Sale”), in a form, including any limitations on permitted bidders and a description of the basis for determining the winning bidder or bidders, determined by such Authorized Officer. Each Authorized Officer is hereby authorized to conduct such competitive sale of the Series 2018 Bonds in a manner consistent with this Supplemental Resolution and to utilize the services of the Authority’s financial advisor and the services of an electronic bidding service, as such Authorized Officer shall determine, and the execution by such Authorized Officer of a letter of award shall be conclusive evidence of such award.

Each Authorized Officer is hereby authorized to make public and to authorize the use and distribution by said purchasers or other appropriate parties of a preliminary official statement, offering circular, or other disclosure document (the “Preliminary Official Statement”) in connection with each public offering or any direct or private placement of the Series 2018 Bonds, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, with such changes, omissions, insertions and revisions as such officer shall deem advisable. The Issuer authorizes any of said officers to deliver a certification to the effect that such Preliminary Official Statement or Official Statement, if deemed necessary or appropriate, together with such other documents, if any, described in such certificate, was deemed final as of its date for purposes of Rule 15c2-12 of the Securities and Exchange Commission as applicable.

Each Authorized Officer is hereby authorized to make public and to authorize distribution of a final Official Statement in substantially the form of each Preliminary Official Statement or the most recently executed and delivered Official Statement if there is not a Preliminary Official Statement, with such changes, omissions, insertions and revisions as such officer shall deem advisable, to sign such Official Statement and to deliver such Official Statement to the purchasers of such issue of the Series 2018 Bonds, such execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

Each Authorized Officer is hereby authorized to execute and deliver for and on behalf and in the name of the Issuer, to the extent determined by such Authorized Officer to be necessary or convenient, a Continuing Disclosure Agreement, substantially in the form appended to the Purchase Agreement or Notice of Sale, with such changes, omissions, insertions and revisions as such officer shall deem advisable (the “Continuing Disclosure Agreement”), said execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

The proceeds of each good faith check, if any, received by the Issuer from the purchasers of each issue of the Series 2018 Bonds under the terms of the related Purchase Agreement or Notice of Sale may be invested by the Issuer pending application of the proceeds of such good faith check for the purposes provided in Section 2.02 of this Supplemental Resolution at the time of the issuance and delivery of such Series 2018 Bonds.

Each Authorized Officer (including any Assistant Secretary of the Issuer) is hereby authorized and directed to execute, deliver, amend, replace or terminate any and all documents and instruments (including any remarketing agreements, dealer agreements, broker dealer agreements, tender agent agreements, or auction agency agreements, any investment agreements or arrangements, or any reimbursement agreements or documents or instruments relating to a Credit Facility deemed appropriate to a given form or mode of an Obligation) and to do and cause to be done any and all acts necessary or proper for carrying out each Purchase Agreement or Notice of Sale, the Continuing Disclosure Agreement, the terms of any Credit Facility or other such agreement or arrangement, and the issuance, sale and delivery of the Series 2018 Bonds and for implementing the terms of the Series 2018 Bonds and the transactions contemplated hereby or thereby.

When reference is made in this Supplemental Resolution to the authorization of an Authorized Officer to do any act, such act may be accomplished by any of such officers individually.

Section 2.11. Forms of Series 2018 Bonds and Trustee’s Authentication Certificate. Subject to the provisions of the Resolution, the form of registered Series 2018 Bonds, and the Trustee’s certificate of authentication, shall be substantially in the form set forth in Exhibit One to the Resolution including, if necessary, any changes to comply with the requirements of DTC or the provisions of this Supplemental Resolution or any Certificate of Determination.

Section 2.12. Appointment of Trustee and Paying Agent. Unless otherwise provided by any Certificate of Determination, The Bank of New York Mellon, as successor in interest to JPMorgan Chase Bank, N.A., shall be the Trustee under the Resolution and the Paying Agent for the Series 2018 Bonds.

ARTICLE III

DISPOSITION AND ALLOCATION OF SERIES 2018 BOND PROCEEDS

Section 3.01. Disposition and Allocation of Series 2018 Bond Proceeds. Any proceeds of the sale of the Series 2018 Bonds, other than accrued interest and capitalized interest, if any, shall be disposed of or applied, simultaneously with the issuance and delivery of the Series 2018 Bonds, in the following order, or shall otherwise be disposed of or applied pursuant to the related Certificate of Determination to:

1. the payment of Capital Costs or the payment of principal of and redemption premium, if any, and interest on the Series 2018 Notes; and
2. the balance of such proceeds, exclusive of accrued interest, shall be deposited in the Series 2018 Bond Proceeds Account which is hereby established in the Proceeds Fund and applied to the payment of Costs of Issuance or otherwise applied to the payment of Costs of Issuance.

Section 3.02. Unless otherwise provided in the related Certificate of Determination, the accrued interest and capitalized interest, if any, received on the sale of the Series 2018 Bonds shall be deposited in the Debt Service Fund.

ARTICLE IV

TAX COVENANT PROVISIONS AND DEFEASANCE

Section 4.01. Tax Covenants Relating to the Series 2018 Bonds. The Issuer covenants that, in order to maintain the exclusion from gross income for Federal income tax purposes of the interest on the Series 2018 Bonds issued as Tax-Exempt Obligations, the Issuer will satisfy, or take such actions as are necessary to cause to be satisfied, each provision of the Code necessary to maintain such exclusion. In furtherance of this covenant, the Issuer agrees to comply with such written instructions as may be provided by Bond Counsel. In furtherance of the covenant contained in the preceding sentence, the Issuer agrees to continually comply with the provisions of any "Arbitrage and Use of Proceeds Certificate" or "Tax Certificate" to be executed by the Issuer in connection with the execution and delivery of any Series 2018 Bonds issued as Tax-Exempt Obligations, as amended from time to time.

Notwithstanding any other provision of the Resolution to the contrary, upon the Issuer's failure to observe, or refusal to comply with, the above covenant (a) the Owners of the Series 2018 Bonds, or the Trustee acting on their behalf, shall be entitled to the rights and remedies provided to Owners or the Trustee under Section 702 of the Resolution, and (b) neither the Owners of the Obligations of any Series or holders of any Parity Debt (other than the Series 2018 Bonds or the Trustee acting on their behalf), nor the Trustee acting on their behalf, shall be entitled to exercise any right or remedy provided to the Owners, the Parity Debt holders or the Trustee under the Resolution based upon the Issuer's failure to observe, or refusal to comply with, the above covenant.

Section 4.02. Defeasance. In the event the Issuer shall seek, prior to the maturity or redemption date thereof, to pay or cause to be paid, within the meaning and with the effect expressed in the Resolution, all or less than all Outstanding Series 2018 Bonds issued as Tax-Exempt Obligations and the provisions of Section 4.01 hereof shall then be of any force or effect, then, notwithstanding the provisions of Article A-XI of the Resolution, the Series 2018 Bonds issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid shall not be deemed to have been paid within the meaning and with the effect expressed in Section A-1101 of the Resolution unless (i) the Issuer has confirmed in writing that the Owners of the Series 2018 Bonds issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid will continue, after such action, to have the benefit of a covenant to the effect of the covenant of the Issuer contained in Section 4.01 hereof or (ii) there shall have been delivered to the Trustee an Opinion of Bond Counsel to the effect that non-compliance thereafter with the applicable provisions of the Code will not affect the then current treatment of interest on the Series 2018 Bonds issued as Tax-Exempt Obligations in determining gross income for Federal income tax purposes.

METROPOLITAN TRANSPORTATION AUTHORITY

**MULTIPLE SERIES 2018 BOND ANTICIPATION NOTES
AND RELATED SUBORDINATED INDEBTEDNESS
TRANSPORTATION REVENUE BOND SUPPLEMENTAL RESOLUTION**

Adopted December 13, 2017

**MULTIPLE SERIES 2018 BOND ANTICIPATION NOTES AND
RELATED SUBORDINATED INDEBTEDNESS
TRANSPORTATION REVENUE BOND SUPPLEMENTAL RESOLUTION**

BE IT RESOLVED by the Board of Metropolitan Transportation Authority (the “Issuer”), as follows:

**ARTICLE I
DEFINITIONS AND STATUTORY AUTHORITY**

SECTION 1.01. Supplemental Resolution. This resolution is supplemental to, and is adopted in accordance with Article II, Article A-II and Article A-VIII of, a resolution adopted by the Issuer on March 26, 2002, entitled “General Resolution Authorizing Transportation Revenue Obligations”, as heretofore supplemented (the “Resolution”).

SECTION 1.02. Definitions.

1. All terms which are defined in Section 101 of the Resolution shall have the same meanings, respectively, in this Multiple Series 2018 Bond Anticipation Notes and Related Subordinated Indebtedness Transportation Revenue Bond Supplemental Resolution (hereinafter referred to as the “Supplemental Resolution”) as such terms are given in said Section 101 of the Resolution.

2. In this Supplemental Resolution:

“Authorized Officer” shall include the officers designated as such in the Resolution, and the Chairman, the Managing Director, the Chair of the Finance Committee, the Vice Chairman, the Chief Financial Officer or the Director, Finance of the MTA, as well as any officer duly designated as “Acting” in said officer’s capacity, except that, for the purposes of any delegation set forth herein that does not expressly include any Assistant Secretary, “Authorized Officer” shall not include any Assistant Secretary of the Issuer.

“Board” shall mean, when used with respect to the Issuer, the board of the Issuer acting as such pursuant to the provisions of the Issuer Act.

“Bond Counsel” shall mean Nixon Peabody LLP, Orrick, Herrington & Sutcliffe LLP, D. Seaton and Associates, P.A., P.C., Bryant Rabbino LLP or any other attorney or firm of attorneys of nationally recognized standing in the field of law relating to the issuance of obligations by state and municipal entities, selected by the Issuer.

“Code” shall mean the Internal Revenue Code of 1986, as amended, and regulations thereunder.

“Noteholder”, “Holder” or “Holder of Notes”, or any similar term, means any person who shall be the registered owner of any Outstanding Series 2018 Note or Notes.

“Notice of Sale” shall mean the form of Notice of Sale to be distributed with the Preliminary Official Statement, hereinafter defined, and published in the event of a competitive sale of the Series 2018 Notes.

“Series 2018 Bonds” shall mean the Transportation Revenue Bonds, Series 2018, authorized by Article II of the Resolution and pursuant to a resolution of the Issuer adopted as of the date that this resolution is adopted.

“Series 2018 Notes” shall mean the Transportation Revenue Bond Anticipation Notes, Series 2018, authorized to be issued, in accordance with Section A-203 of the Standard Resolution Provisions, pursuant to this Supplemental Resolution.

SECTION 1.03. Authority for this Supplemental Resolution. This Supplemental Resolution is adopted pursuant to the provisions of the Issuer Act and the Resolution.

ARTICLE II AUTHORIZATION OF SERIES 2018 NOTES

SECTION 2.01. Principal Amount, Designation and Series. In accordance with the provisions of the Resolution, one or more Series of Transportation Revenue Bond Anticipation Notes constituting Obligation Anticipation Notes under the Resolution (which may be issued in one or more Series or subseries and from time to time, which for purposes of this Supplemental Resolution shall collectively be referred to herein as the “Series 2018 Notes”, subject to redesignation as hereinafter provided) and entitled to the benefit, protection and security of this Supplemental Resolution are hereby authorized to be issued in an aggregate principal amount not exceeding the principal amount necessary so that, after giving effect to any net original issue discount and underwriters’ discount from the principal amount, the amount to be deposited in the Series 2018 Note Proceeds Account pursuant to, or otherwise applied to effectuate the purposes of, Section 2.02 and Section 3.01 of this Supplemental Resolution (exclusive of the amount so deposited therein determined in any Certificate of Determination as estimated to be necessary to pay capitalized interest or to pay any Costs of Issuance of the Series 2018 Notes), shall not exceed \$3,000 million at any one time Outstanding reduced by the amount of bonds issued under the Metropolitan Transportation Authority Multiple Series 2018 Transportation Revenue Bond Supplemental Resolution, adopted December 13, 2017 (but, for purposes of clarification, not including both the Series 2018 Notes and Series 2018 Bonds issued thereunder to refinance Series 2018 Notes). The Series 2018 Notes may be issued in the form of a loan agreement, line of credit, revolving credit agreement or similar facility (each, a “Loan Facility”). For all purposes of this Section such Transportation Revenue Bond Anticipation Notes shall be designated as, and shall be distinguished from the Transportation Revenue Bond Anticipation Notes of all other Series by the title, “Transportation Revenue Bond Anticipation Notes, Series 2018”, with such further or different designations as may be provided in any Certificate of Determination.

The authority to issue Obligation Anticipation Notes and take related actions granted under previous resolutions of the Issuer shall continue in full force and effect. The authorization to issue the Series 2018 Notes shall continue in effect until the adoption by the Issuer’s Board of a subsequent new money note issuance supplemental resolution relating to 2019 new money financings, provided, however, the authorization to issue the Series 2018 Bonds to refinance the Series 2018 Notes authorized hereunder shall continue in effect until all of such Series 2018 Notes have been refinanced by Series 2018 Bonds.

SECTION 2.02. Use of Proceeds. The proceeds of the Series 2018 Notes shall be used only for the purposes set forth in one or more Certificates of Determination and may include (i) the payment of all or any part of the Capital Costs, including Costs of Issuance related to the Series 2018 Notes and (ii) the payment of the principal and interest of Outstanding Series 2018 Notes.

SECTION 2.03. Date, Maturity and Interest for Series 2018 Notes; Redemption. The Series 2018 Notes shall be dated the date or dates determined in any Certificate of Determination. The Series 2018 Notes shall mature on the date or dates and in the principal amount or amounts, and shall bear interest at the rate or rates per annum, if any, determined in any Certificate of Determination. Except as otherwise provided in any Certificate of Determination, the Series 2018 Notes shall not be subject to redemption prior to maturity.

SECTION 2.04. Interest Payments. The Series 2018 Notes shall bear interest from the dates determined in any Certificate of Determination, payable on such date or dates as may be determined pursuant to any Certificate of Determination. Except as otherwise provided in any Certificate of Determination, interest on the Series 2018 Notes shall be computed on the basis of twelve 30-day months and a 360-day year.

SECTION 2.05. Denominations, Numbers and Letters. Unless otherwise provided in any Certificate of Determination, the Series 2018 Notes shall be issuable in fully registered form in the denomination of \$5,000 or any integral multiple thereof. The Series 2018 Notes shall be numbered and lettered as provided in any Certificate of Determination.

SECTION 2.06. Places of Payment and Paying Agents. Except as otherwise provided in any Certificate of Determination, the principal and Redemption Price of the Series 2018 Notes shall be payable to the registered owner of each Series 2018 Note when due upon presentation of such Series 2018 Note at the principal corporate trust office of the Trustee. Except as otherwise provided in any Certificate of Determination, interest on the registered Series 2018 Notes will be paid by check or draft mailed on the interest payment date by Paying Agent to the registered owner at his address as it appears on the registration records or, at the option of any Holder of at least one million dollars (\$1,000,000) in principal amount of the Series 2018 Notes, by wire transfer in immediately available funds on each interest payment date to such Holder thereof upon written notice from such Holder to the Trustee, at such address as the Trustee may from time to time notify such Holder, containing the wire transfer address (which shall be in the continental United States) to which such Holder wishes to have such wire directed, if such written notice is received not less than twenty (20) days prior to the related interest payment date (such notice may refer to multiple interest payments).

SECTION 2.07. Sources of Payment

1. The principal of and interest on the Series 2018 Notes may be payable solely from (i) the proceeds of any other Series 2018 Notes, (ii) the proceeds of the Series 2018 Bonds, and (iii) the proceeds of notes or other evidences of indebtedness or any other amounts (which other amounts are not pledged under the Resolution), in each case if and to the extent such amounts may lawfully be used to make such payments. The interest on the Series 2018 Notes may also be payable from amounts available for transfer pursuant to Section 504(b) and Section 505.3 of the Resolution for the payment of Subordinated Indebtedness.

2. There are hereby pledged to the payment of principal and interest on the Series 2018 Notes (i) the proceeds of other Series 2018 Notes issued to refinance such Series 2018 Notes, and (ii) the proceeds of the Series 2018 Bonds issued to refinance such Series 2018 Notes, and such pledge has priority over any other pledge thereof created by the Resolution, including Section 501. There is hereby also pledged to the payment of interest on the Series 2018 Notes amounts available for transfer pursuant to Section 504(b) and Section 505.3 of the Resolution for the payment of Subordinated Indebtedness in accordance with and subject to the limitations contained in Section 506 of the Resolution. Proceeds and amounts described in clause (iii) of Section 2.07(1) hereof may be pledged to the payment of principal and interest on the Series 2018 Notes to the extent set forth in a Certificate of Determination.

SECTION 2.08. Delegation to an Authorized Officer.

1. There is hereby delegated to each Authorized Officer, subject to the limitations contained in this Supplemental Resolution, the following powers with respect to the Series 2018 Notes:

(a) to determine whether and when to issue any Series 2018 Notes, the amount of the Series 2018 Notes to be applied to pay Capital Costs or other uses as provided in Section 2.02 of this Supplemental Resolution and the amount of the proceeds of the Series 2018 Notes estimated to be necessary to pay the Costs of Issuance of the Series 2018 Notes;

(b) to determine the purposes or purposes for which the Series 2018 Notes are being issued, which shall be one or more of the purposes set forth in Section 2.02 of this Supplemental Resolution;

(c) to determine the principal amount of the Series 2018 Notes to be issued, which principal amount shall not exceed the amount described in Section 2.01 of this Supplemental Resolution, and whether such Series 2018 Notes shall be issued in one or more Series or subseries;

(d) to determine the maturity date and principal amount of each maturity of the Series 2018 Notes; provided that the Series 2018 Notes shall mature no later than five years after the date of issuance of such Series 2018 Notes;

(e) to determine the date or dates which the Series 2018 Notes shall be dated and the interest rate or rates of the Series 2018 Notes, provided that the true interest cost (as calculated by the officers of the Issuer executing any Certificate of Determination, which calculation shall be conclusive) on the Series 2018 Notes bearing a fixed rate of interest shall not exceed 4.00% per annum and for Series 2018 notes bearing interest at a variable interest rate shall not exceed a rate equal to SIFMA or one-month or three-month LIBOR or any short-term index generally accepted in the marketplace, in each case, plus 4.00% and any default rate or equivalent rate shall not exceed the sum of 4.00% plus either a specified prime rate or the federal funds rate;

(f) to determine the Redemption Price or Redemption Prices, if any, and the redemption terms, if any, for the Series 2018 Notes; provided, however, that if the Series 2018 Notes are to be redeemable at the election of the Issuer, the Redemption Price

(except in the case of taxable Series 2018 Notes) shall not be greater than one hundred three percent (103%) of the principal amount of the Series 2018 Notes to be redeemed, plus accrued interest thereon up to but not including the date of redemption and in the case of taxable Series 2018 Notes the Redemption Price may be determined pursuant to provisions relating to pro rata redemption and/or make-whole redemption;

(g) to determine the advisability of conducting the sale of all or any portion of the Series 2018 Notes through competitive bidding or through a negotiated sale or a direct purchase transaction, and to determine the purchase price for the Series 2018 Notes to be paid by the purchasers pursuant to either a competitive bid process or by the purchasers referred to in the Purchase Agreement described in Section 2.09 of this Supplemental Resolution in the event the Series 2018 Notes are sold, in such officer's discretion, through a negotiated sale or a direct purchase transaction, which may include such original premium and original issue discount as shall be determined in any Certificate of Determination, provided, however, that in the case of a negotiated transaction, underwriters' discount reflected in such purchase price shall not exceed \$3.50 for each one thousand dollars (\$1,000) principal amount of the Series 2018 Notes;

(h) to determine the advisability, as compared to an unenhanced transaction, of obtaining municipal bond insurance or any other credit or liquidity facility, to determine and accept the terms and provisions and price thereof, to determine the items to be pledged to the Series 2018 Notes from those permitted by Section A-203 of the Resolution, and to determine such other matters as the officer executing any Certificate of Determination shall consider necessary or appropriate and to effect such determinations by making any changes in or additions to this Supplemental Resolution required by bond insurers or the provider of any other credit or liquidity facility, if any, or required by the bond rating agencies in order to attain or maintain specific ratings on the Series 2018 Notes, or relating to the mechanism for the payment of insurance premium, credit or liquidity facility fees or direct purchase fees, notices, the provision of information, and such other matters of a technical, mechanical, procedural or descriptive nature necessary or appropriate to implement an insurance policy or any other credit or liquidity facility with respect to the Series 2018 Notes, and to make any changes in connection therewith. Such changes may include, but are not limited to, the making of any additional covenants with Holders or other parties deemed necessary or appropriate by the officer executing any Certificate of Determination;

(i) to take all actions required for the Series 2018 Notes to be eligible under the rules and regulations of The Depository Trust Company ("DTC") for investment and trading as uncertificated securities, to execute and deliver a standard form letter of representation with, or other form of document required by, DTC and, notwithstanding any provisions to the contrary contained in this Supplemental Resolution, to include in any Certificate of Determination such terms and provisions as may be appropriate or necessary to provide for uncertificated securities in lieu of Notes issuable in fully registered form; and

(j) to determine whether to issue all or any part of the Series 2018 Notes as Tax-Exempt Obligations or Taxable Obligations;

(k) to make such changes in or from the form of this Supplemental Resolution as may be required by a Rating Agency in order to attain or maintain specific ratings on the Series 2018 Notes;

(l) to make such changes in or from the form of this Supplemental Resolution as may be necessary or desirable in order to cure any ambiguities, inconsistencies or other defects; and

(m) to determine any other matters provided for herein, including the matters set forth in Sections 2.11 and 2.12 hereof.

2. Any Authorized Officer shall execute one or more Certificates of Determination evidencing the determinations made pursuant to this Supplemental Resolution and any such Certificate of Determination shall be conclusive evidence of the determinations of such Authorized Officer, as stated therein. More than one Certificate of Determination may be delivered to the extent more than one Series or subseries of Series 2018 Notes are delivered from time to time, or other authority is exercised under this Supplemental Resolution from time to time and each such Certificate of Determination shall be delivered to the Trustee prior to the authentication and delivery of the respective Series or subseries of Series 2018 Notes by the Trustee or other documentation. Determinations set forth in any Certificate of Determination shall have the same effect as if set forth in this Supplemental Resolution. Any such Authorized Officer may exercise any authority delegated under this Supplemental Resolution from time to time following issuance of any Series 2018 Notes, as appropriate for any purposes, including, if any Series 2018 Notes shall consist of multiple subseries, to change the principal amounts and number of the individual subseries or to combine all subseries into a single Series, if any Series 2018 Notes consist of a single Series, to divide such Series into two or more subseries and to determine the principal amount of such subseries, obtain a substitute or additional Credit Facility, or to appoint new or additional agents or other parties deemed appropriate to a particular form or mode of Obligation or manner of sale.

SECTION 2.09. Sale of Series 2018 Notes. Each Authorized Officer is hereby authorized either (i) to sell and award all or any portion of the Series 2018 Notes through a competitive bidding process to purchasers meeting the requirements of one or more Notices of Sale (as hereinafter defined) to be published in order to give notice of the competitive sale of the Series 2018 Notes; (ii) to sell and award all or any portion of the Series 2018 Notes through a negotiated sale to the purchasers who are referred to in the note purchase agreement and who shall be selected from the then current list of approved underwriters; (iii) to sell and award all or any portion of the Series 2018 Notes through a direct sale to the financial institution or institutions selected by the Authorized Officer who shall be referred to in the continuing covenant, direct purchase or similar agreement; or (iv) to issue all or any portion of the Series 2018 Notes in the form of a Loan Facility to any financial institution or institutions selected by the Authorized Officer. Each Authorized Officer is hereby authorized to sell and award the Series 2018 Notes to the purchasers referred to in the preceding sentence in the case of a note purchase agreement, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, or, with respect to a Loan Facility or a continuing covenant, direct purchase or similar agreement, containing bank facility terms and provisions (including, without limitation, increased costs, term-out, events of default and remedies) in substantially the form set forth in a letter of credit reimbursement agreement most recently

executed or delivered by the Issuer, including, if applicable, that the requirement that the Loan Facility issuer or direct purchaser offer to the Issuer a term-out provision of no less than five years, with such revisions to reflect the terms and provisions of the Series 2018 Notes as may be approved by the officer executing the note purchase, Loan Facility, continuing covenant or similar agreement (each, a "Purchase Agreement"). Each Authorized Officer is hereby authorized to agree to the selection of the representative of the underwriters or the other purchasers or facility providers as referred to in the Purchase Agreement or Agreements and to execute and deliver the Purchase Agreement or Agreements for and on behalf and in the name of the Issuer with such changes, omissions, insertions and revisions as may be approved by the officer executing the Purchase Agreement or Agreements, said execution being conclusive evidence of such approval and concurrence in the selection of the representative of the underwriters.

If it is determined that any sale of Series 2018 Notes shall be conducted on a competitive bid basis, each Authorized Officer is hereby further authorized to conduct the sale and award of the Series 2018 Notes on the basis of a competitive bid, pursuant to the terms of a notice of sale, including bid form (the "Notice of Sale"), in a form, including any limitations on permitted bidders and a description of the basis for determining the winning bidder or bidders, determined by such Authorized Officer. Each Authorized Officer is hereby authorized to conduct such competitive sale of the Series 2018 Notes in a manner consistent with this Supplemental Resolution and to utilize the services of the Authority's financial advisor and the services of an electronic bidding service, as such Authorized Officer shall determine, and the execution by such Authorized Officer of a letter of award shall be conclusive evidence of such award.

Each Authorized Officer is hereby authorized, to the extent required, to make public and to authorize the use and distribution by said purchasers of a Preliminary Official Statement (the "Preliminary Official Statement"), in connection with the public offering of the Series 2018 Notes, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations of the Issuer, with such changes, omissions, insertions and revisions as such Authorized Officer shall deem advisable, said distribution being conclusive evidence of the approval of such changes, omissions, insertions and revisions. The Issuer authorizes any of said officers to deliver a certification to the effect that the Preliminary Official Statement, together with such other documents, if any, described in such certificate, was deemed final as of its date for purposes of Rule 15c2-12 of the Securities and Exchange Commission.

Each Authorized Officer is hereby authorized, to the extent required, to make public and to authorize distribution of a final Official Statement in substantially the form of the Preliminary Official Statement or the most recently executed and delivered Official Statement if there is not a Preliminary Official Statement, with such changes, omissions, insertions and revisions as such Authorized Officer shall deem advisable, to sign such Official Statement and to deliver such Official Statement to the purchasers of the Series 2018 Notes, said execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

Notwithstanding the preceding two paragraphs, however, each Authorized Officer may make public and authorize the use and distribution of a final Official Statement in connection with the public offering of the Series 2018 Notes meeting the requirements of the preceding two paragraphs and may deem such Official Statement final as of its date for purposes of Rule 15c2-12 of the Securities and Exchange Commission.

Each Authorized Officer is hereby authorized to execute and deliver for and on behalf and in the name of the Issuer, to the extent determined by such Authorized Officer to be necessary or convenient, a Continuing Disclosure Agreement, substantially in the form of the Continuing Disclosure Agreement most recently executed and delivered by the Issuer in connection with the sale of Obligations, or such other form authorized by the Issuer in connection with other financings prior to the issuance of the Series 2018 Notes, with such changes, omissions, insertions and revisions as such Authorized Officer shall deem advisable (the “Continuing Disclosure Agreement”), said execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

Each Authorized Officer (including any Assistant Secretary of the Issuer) is hereby authorized and directed to execute and deliver any and all documents and instruments and to do and cause to be done any and all acts necessary or proper for carrying out the Notice of Sale, the Purchase Agreement, the Continuing Disclosure Agreement, the terms of any municipal bond insurance or any other credit or liquidity facility, and the issuance, sale and delivery of the Series 2018 Notes, and for implementing the terms of the Series 2018 Notes and the transactions contemplated hereby or thereby.

When reference is made in this Supplemental Resolution to the authorization of an Authorized Officer to do any act, such act may be accomplished by any of such officers individually.

SECTION 2.10. Forms of Series 2018 Notes and Authentication Certificate. The form of registered Series 2018 Notes, and the certificate of authentication, shall be of substantially the form and tenor provided in any Certificate of Determination.

SECTION 2.11. Appointment of Trustee, Paying Agent and other Agents. There is hereby delegated to any Authorized Officer executing any Certificate of Determination the right and authority to appoint any trustee, paying agent, fiscal agent or other agent with respect to the Series 2018 Notes deemed advisable by such Authorized Officer and to determine the terms and provisions of any arrangements with any such parties.

SECTION 2.12. General Provisions. As and to the extent provided in any Certificate of Determination, the provisions of Articles A-III, IV, A-IV, A-VII, A-IX and A-XI of the Resolution may apply equally to the Series 2018 Notes as though set forth in full herein but with each reference to Bonds being a reference to Series 2018 Notes, except as affected by the terms hereof and the procedures of the Securities Depository; provided that the Authorized Officer executing any Certificate of Determination may, in the alternative, set forth in any Certificate of Determination provisions relating to any such matters as deemed necessary or appropriate by such Authorized Officer.

ARTICLE III

DISPOSITION AND ALLOCATION OF SERIES 2018 NOTE PROCEEDS

SECTION 3.01. Disposition of Series 2018 Note Proceeds. Except as otherwise provided in any Certificate of Determination, the proceeds of the sale of the Series 2018 Notes shall be deposited in the Series 2018 Note Proceeds Account which is hereby established in the

Proceeds Fund and applied pursuant to the related Certificate of Determination to the payment of Capital Costs, including any Costs of Issuance and accrued interest, and the payment of principal and interest on Outstanding Series 2018 Notes.

ARTICLE IV TAX COVENANT PROVISIONS AND DEFEASANCE

SECTION 4.01. Tax Covenants Relating to the Series 2018 Notes. The Issuer covenants that, in order to maintain the exclusion from gross income for Federal income tax purposes of the interest on the Series 2018 Notes issued as Tax-Exempt Obligations, the Issuer will satisfy, or take such actions as are necessary to cause to be satisfied, each provision of the Code necessary to maintain such exclusion. In furtherance of this covenant, the Issuer agrees to comply with such written instructions as may be provided by Bond Counsel. In furtherance of the covenant contained in the preceding sentence, the Issuer agrees to continually comply with the provisions of any “Arbitrage and Use of Proceeds Certificate” or “Tax Certificate” to be executed by the Issuer in connection with the execution and delivery of any Series 2018 Notes issued as Tax-Exempt Obligations, as amended from time to time.

Notwithstanding any other provision of the Resolution to the contrary, upon the Issuer’s failure to observe, or refusal to comply with, the above covenant (a) the Holders of the Series 2018 Notes, or the Trustee acting on their behalf, shall be entitled to the rights and remedies provided to Bondholders or the Trustee under Section 702 of the Resolution (as though such provisions related to Series 2018 Notes rather than Bonds), and (b) neither the Holders of the Notes of any Series (other than the Series 2018 Notes or the Trustee acting on their behalf) nor the Trustee acting on their behalf, shall be entitled to exercise any right or remedy provided to Noteholders under the Resolution based upon the Issuer’s failure to observe, or refusal to comply with, the above covenant.

SECTION 4.02. Defeasance. In the event the Issuer shall seek, prior to the maturity or redemption date thereof, to pay or cause to be paid, within the meaning and with the effect expressed in this Supplemental Resolution, all or less than all Outstanding Series 2018 Notes issued as Tax-Exempt Obligations and the provisions of Section 4.01 hereof shall then be of any force or effect, then, notwithstanding the provisions of this Supplemental Resolution, the Series 2018 Notes issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid shall not be deemed to have been paid within the meaning and with the effect expressed in this Supplemental Resolution unless (i) the Issuer has confirmed in writing that the Holders of the Series 2018 Notes issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid will continue, after such action, to have the benefit of a covenant to the effect of the covenant of the Issuer contained in Section 4.01 hereof or (ii) there shall have been delivered to the Trustee an opinion of Bond Counsel to the effect that non-compliance thereafter with the applicable provisions of the Code will not affect the then current treatment of interest on the Series 2018 Notes issued as Tax-Exempt Obligations in determining gross income for Federal income tax purposes.

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

**MULTIPLE SERIES 2018
GENERAL REVENUE BOND
SUPPLEMENTAL RESOLUTION**

Adopted December 13, 2017

Table of Contents

	Page
ARTICLE I DEFINITIONS AND STATUTORY AUTHORITY	1
Section 1.01 Supplemental Resolution	1
Section 1.02 Definitions	1
Section 1.03 Authority for this Supplemental Resolution	1
ARTICLE II AUTHORIZATION OF SERIES 2018 BONDS	2
Section 2.01 Authorized Principal Amount, Designation and Series	2
Section 2.02 Purposes	2
Section 2.03 Dates, Maturities, Principal Amounts and Interest	2
Section 2.04 Interest Payments	3
Section 2.05 Denominations, Numbers and Letters	3
Section 2.06 Places of Payment and Paying Agent	3
Section 2.07 Sinking Fund Installments	3
Section 2.08 Redemption Prices and Terms	3
Section 2.09 Delegation to an Authorized Officer	4
Section 2.10 Sale of Series 2018 Bonds	6
Section 2.11 Forms of Series 2018 Bonds and Trustee's Authentication Certificate	8
Section 2.12 Appointment of Trustee and Paying Agent	8
ARTICLE III DISPOSITION OF SERIES 2018 BOND PROCEEDS	8
Section 3.01 Disposition of Series 2018 Bond Proceeds	8
ARTICLE IV TAX COVENANTS AND DEFEASANCE	9
Section 4.01 Tax Covenants Relating to the Series 2018 Bonds	9
Section 4.02 Defeasance	9

**MULTIPLE SERIES 2018
GENERAL REVENUE BOND
SUPPLEMENTAL RESOLUTION**

BE IT RESOLVED by the Triborough Bridge and Tunnel Authority (the “Issuer”), as follows:

ARTICLE I

DEFINITIONS AND STATUTORY AUTHORITY

Section 1.01 Supplemental Resolution. This resolution is supplemental to, and is adopted, in accordance with Article II and Article A-VIII of a resolution of the Issuer adopted on March 26, 2002, entitled “General Resolution Authorizing General Revenue Obligations” (the “Resolution”).

Section 1.02 Definitions.

1. All capitalized terms which are used but not otherwise defined in this Multiple Series 2018 General Revenue Bond Supplemental Resolution (the “Supplemental Resolution”) shall have the same meanings, respectively, as such terms are given by Section 102 of the Resolution.

2. In this Supplemental Resolution:

“Authorized Officer” shall include the officers designated as such in the Resolution, and the Chairman, the Managing Director, the Chair of the Finance Committee, the Vice Chairman, the Chief Financial Officer or the Director, Finance, as well as any officer duly designated as “Acting” in said officer’s capacity, except that, for the purposes of any delegation set forth herein that does not expressly include any Assistant Secretary, “Authorized Officer” shall not include any Assistant Secretary of the Issuer.

“Board” shall mean, when used with respect to the Issuer, the board of the Issuer acting as such pursuant to the provisions of the Issuer Act, and when used with respect to the MTA, the members of the MTA acting as such pursuant to the provisions of the MTA Act.

“Bond Counsel” shall mean Nixon Peabody LLP, Orrick, Herrington & Sutcliffe LLP, D. Seaton and Associates, P.A., P.C., Bryant Rabbino LLP or any other attorney or firm of attorneys of nationally recognized standing in the field of law relating to the issuance of obligations by state and municipal entities, selected by the Issuer.

“Code” shall mean the Internal Revenue Code of 1986, as amended, and regulations thereunder.

Section 1.03 Authority for this Supplemental Resolution. This Supplemental Resolution is adopted pursuant to the provisions of the Issuer Act and the Resolution.

ARTICLE II

AUTHORIZATION OF SERIES 2018 BONDS

Section 2.01 Authorized Principal Amount, Designation and Series. Pursuant to the provisions of the Resolution and in order to finance Capital Costs, multiple Series of General Revenue Obligations (which may be issued at one time or from time to time in any number of Series or subseries, which for purposes of this Supplemental Resolution shall collectively be referred to herein as the “Series 2018 Bonds”, constituting Capital Cost Obligations, subject to redesignation as hereinafter provided) entitled to the benefit, protection and security of such provisions are hereby authorized to be issued in an aggregate principal amount not exceeding the principal amount necessary so that, after giving effect to any net original issue discount and underwriters’ discount from the principal amount, the amount to be deposited in the Proceeds Account pursuant to, or otherwise applied to effectuate the purposes of, Section 2.02 and Section 3.01 of this Supplemental Resolution (exclusive of the amount so deposited therein determined in the related Certificate of Determination as estimated to be necessary to pay capitalized interest or to pay any Costs of Issuance of the Series 2018 Bonds) shall not exceed the amount or amounts determined in one or more Certificates of Determination to be necessary to effectuate the purposes set forth in Section 2.02 hereof; provided, however, that the Series 2018 Bonds issued to finance Capital Costs shall not exceed \$200 million reduced by the amount of bonds then Outstanding issued under the Triborough Bridge and Tunnel Authority Multiple Series 2001 Subordinate Revenue Bond Supplemental Resolution, adopted December 13, 2017 (excluding all amounts excluded above, such as net original issue discount, underwriters’ discounts, capitalized interest and Costs of Issuance). For all purposes of this Section 2.01, net original issue premium as determined to be advisable by an Authorized Officer in connection with the marketing of the Series 2018 Bonds, shall not be counted.

Series 2018 Bonds shall be designated as, and shall be distinguished from the Obligations of all other Series by the title, “General Revenue Bonds, Series 2018”, or such other title or titles set forth in one or more Certificates of Determination.

The authority to issue Obligations and take related actions granted under previous resolutions of the Issuer shall continue in full force and effect. The authorization to issue the Series 2018 Bonds shall continue in effect until the adoption by the Issuer Board of a subsequent new money bond issuance supplemental resolution relating to 2019 new money financings.

Section 2.02 Purposes. The purposes for which the Series 2018 Bonds are issued shall be set forth in one or more Certificates of Determination and shall include the payment of all or any part of the Capital Costs, all to the extent and in the manner provided in this Supplemental Resolution.

Section 2.03 Dates, Maturities, Principal Amounts and Interest. The Series 2018 Bonds, except as otherwise provided in the Resolution, shall be dated the date or dates determined in the related Certificate of Determination. The Series 2018 Bonds shall mature on the date or dates and in the year or years and principal amount or amounts, and shall bear interest at the rate or rates per annum, if any, specified in or determined in the manner provided in the related Certificate of Determination.

Section 2.04 Interest Payments. The Series 2018 Bonds shall bear interest from their date or dates and be payable on such date or dates as may be determined pursuant to the related Certificate of Determination. Except as otherwise provided in the related Certificate of Determination, interest on the Series 2018 Bonds shall be computed on the basis of twelve (12) 30-day months and a 360-day year.

Section 2.05 Denominations, Numbers and Letters. Unless otherwise provided in the related Certificate of Determination, the Series 2018 Bonds shall be issued in fully registered form without coupons in the denomination of \$5,000 or any integral multiple thereof.

The Series 2018 Bonds shall be lettered and numbered as provided in the related Certificate of Determination.

Section 2.06 Places of Payment and Paying Agent. Except as otherwise provided in the related Certificate of Determination, principal and Redemption Price of the Series 2018 Bonds shall be payable to the registered owner of each Series 2018 Bond when due upon presentation of such Series 2018 Bond at the principal corporate trust office of the Trustee. Except as otherwise provided in the related Certificate of Determination, interest on the registered Series 2018 Bonds will be paid by check or draft mailed on the interest payment date by the Paying Agent, to the registered owner at his address as it appears on the registration books or, at the option of any Owner of at least one million dollars (\$1,000,000) in principal amount of the Series 2018 Bonds, by wire transfer in immediately available funds on each interest payment date to such Owner thereof upon written notice from such Owner to the Trustee, at such address as the Trustee may from time to time notify such Owner, containing the wire transfer address (which shall be in the continental United States) to which such Owner wishes to have such wire directed, if such written notice is received not less than twenty (20) days prior to the related interest payment date (such notice may refer to multiple interest payments).

Section 2.07 Sinking Fund Installments. The Series 2018 Bonds, if any, determined in the related Certificate of Determination shall be subject to redemption in part, by lot, or otherwise as determined in accordance with Section A-404 of the Resolution, on each date in the year or years determined in the related Certificate of Determination at the principal amount thereof plus accrued interest up to but not including the date of redemption thereof, from mandatory Sinking Fund Installments which are required to be made in amounts sufficient to redeem on each such date the principal amount of such Series 2018 Bonds.

Section 2.08 Redemption Prices and Terms. The Series 2018 Bonds may also be subject to redemption prior to maturity, at the option of the Issuer, upon notice as provided in Article A-IV of the Resolution, at any time as a whole or in part (and by lot within a maturity, or otherwise as determined in accordance with Section A-404 of the Resolution, if less than all of a maturity is to be redeemed), from maturities designated by the Issuer on and after the date and in the years and at the Redemption Prices (expressed as a percentage of principal amount) determined in the related Certificate of Determination, plus accrued interest up to but not including the redemption date. Notwithstanding the foregoing, in the case of taxable Series 2018 Bonds, if set forth in the Certificate of Determination, the taxable Series 2018 Bonds may be made subject to pro rata redemption and/or a make-whole redemption premium.

Section 2.09 Delegation to an Authorized Officer. 1. There is hereby delegated to each Authorized Officer, subject to the limitations contained in this Supplemental Resolution, the following powers with respect to the Series 2018 Bonds:

(a) to determine whether and when to issue any Series 2018 Bonds constituting Capital Cost Obligations, the amount of the Series 2018 Bonds to be applied to finance Capital Costs, and the amount of the proceeds of the Series 2018 Bonds, estimated to be necessary to pay the Costs of Issuance of the Series 2018 Bonds and capitalized interest, if any;

(b) to determine the purpose or purposes for which the Series 2018 Bonds are being issued, which shall be one or more of the purposes set forth in Section 2.02 of this Supplemental Resolution;

(c) to determine the principal amounts of the Series 2018 Bonds to be issued for the purposes set forth in Section 2.02 of this Supplemental Resolution and whether such principal amounts constitute a separate Series or a subseries of Series 2018 Bonds, which principal amounts (and the aggregate of all such Series and subseries) shall not exceed the principal amounts permitted by Section 2.01 of this Supplemental Resolution, and to determine Accreted Values and Appreciated Values, if applicable;

(d) to determine the maturity date and principal amount of each maturity of the Series 2018 Bonds and the amount and due date of each Sinking Fund Installment, if any;

(e) to determine the date or dates which the Series 2018 Bonds shall be dated and the interest rate or rates of the Series 2018 Bonds or the manner of determining such interest rate or rates; provided, however, that any Series 2018 Bonds issued as fixed rate Tax-Exempt Obligations shall be subject to a maximum interest rate of not greater than 10% per annum, any Series 2018 Bonds issued as fixed rate Taxable Obligations shall be subject to a maximum interest rate of not greater than 12% per annum, any Variable Interest Rate Obligations issued as Tax-Exempt Obligations shall be subject to a maximum interest rate of not greater than 15% per annum, any Variable Interest Rate Obligations issued as Taxable Obligations shall be subject to a maximum interest rate of not greater than 18% per annum and any Parity Reimbursement Obligations shall be subject to a maximum interest rate of not greater than 25% per annum, or, in each such case, such higher rate or rates as determined by the Issuer's Board;

(f) to determine the Redemption Price or Redemption Prices, if any and the redemption terms, if any, for the Series 2018 Bonds; provided, however, that if the Series 2018 Bonds are to be redeemable at the election of the Issuer, the Redemption Price (except in the case of taxable Series 2018 Bonds) shall not be greater than one hundred three percent (103%) of the principal amount of the Series 2018 Bonds to be redeemed, plus accrued interest thereon up to but not including the date of redemption and in the case of taxable Series 2018 Bonds the Redemption Price may be determined pursuant to provisions relating to pro rata redemption and/or make-whole redemption;

(g) to determine whether the sale of the Series 2018 Bonds shall be conducted on either a negotiated or competitive bid basis and, as applicable, to determine the purchase price for the Series 2018 Bonds to be paid by the purchaser or purchasers referred to in one or more

Purchase Agreements or a bank direct purchase agreement or the purchase price for the Series 2018 Bonds to be paid by the winning bidder, if such sale is conducted by competitive bid pursuant to a Notice of Sale (as hereinafter defined), in either case as such document is described in Section 2.10 of this Supplemental Resolution, which may include such original issue discount and original issue premium as shall be determined in the related Certificate of Determination; provided, however, that the underwriters' discount reflected in such purchase price shall not exceed \$10.00 for each one thousand dollars (\$1,000) principal amount of the Series 2018 Bonds;

(h) to take all actions required for the Series 2018 Bonds to be eligible under the rules and regulations of The Depository Trust Company ("DTC") for investment and trading as uncertificated securities, to execute and deliver a standard form of letter of representation with DTC and, notwithstanding any provisions to the contrary contained in this Supplemental Resolution, to include in the related Certificate of Determination such terms and provisions as may be appropriate or necessary to provide for uncertificated securities in lieu of Series 2018 Bonds issuable in fully registered form;

(i) to determine whether to issue all or any portion of the Series 2018 Bonds as Tax-Exempt Obligations, Taxable Obligations, Put Obligations, Variable Interest Rate Obligations or as any other form of Obligations permitted by the Resolution and any matters related thereto, including (i) the terms and provisions of any such Series 2018 Bonds, (ii) the selection of remarketing agents, tender agents, calculation agents, auction agents, dealers, bidding, agents or any other agents or parties to ancillary arrangements and the terms of any such arrangements, and (iii) the methods for determining the accrual of Debt Service;

(j) to determine the advisability, as compared to an unenhanced transaction, of obtaining one or more Credit Facilities, to select a provider or providers thereof and to determine and accept the terms and provisions and price thereof, to determine such other matters related thereto as in the opinion of the officer executing the related Certificate of Determination shall be considered necessary or appropriate and to effect such determinations by making any changes in or additions to this Supplemental Resolution required by Credit Facility providers, if any, or required by a Rating Agency in order to attain or maintain specific ratings on the Series 2018 Bonds, or relating to the mechanisms for the repayment of amounts advanced thereunder or payment of fees, premiums, expenses or any other amounts, notices, the provision of information, and such other matters of a technical, mechanical, procedural or descriptive nature necessary or appropriate to obtain or implement a Credit Facility with respect to the Series 2018 Bonds, and to make any changes in connection therewith;

(k) to make such changes in or from the form of this Supplemental Resolution as may be required by a Rating Agency in order to attain or maintain specific ratings on the Series 2018 Bonds;

(l) to make such changes in or from the form of this Supplemental Resolution as may be necessary or desirable in order to cure any ambiguities, inconsistencies or other defects; and

(m) to determine such other matters specified in or permitted by (i) Sections 202, 203, and A-201 of the Resolution or (ii) this Supplemental Resolution, including preparation of any documentation therefor.

2. Any Authorized Officer shall execute one or more Certificates of Determination evidencing the determinations made pursuant to this Supplemental Resolution and any such Certificate of Determination shall be conclusive evidence of the determinations of such Authorized Officer, as stated therein. More than one Certificate of Determination may be delivered to the extent more than one Series or subseries of Series 2018 Bonds are delivered from time to time, or other authority is exercised under this Supplemental Resolution from time to time and each such Certificate of Determination shall be delivered to the Trustee prior to the authentication and delivery of the respective Series or subseries of Series 2018 Bonds by the Trustee or other documentation. Determinations set forth in the related Certificate of Determination shall have the same effect as if set forth in this Supplemental Resolution. Any such Authorized Officer may exercise any authority delegated under this Supplemental Resolution from time to time following issuance of any Series 2018 Bonds, as appropriate for any purposes, including, in order to change interest rate modes or auction periods, obtain a substitute or additional Credit Facility, enter into a bank direct purchase agreement or similar instrument, or to appoint new or additional agents or other parties deemed appropriate to a particular form or mode of Obligation or manner of sale.

Section 2.10 Sale of Series 2018 Bonds. Each Authorized Officer is hereby authorized either (i) to sell and award all or any portion of the Series 2018 Bonds through a competitive bidding process to purchasers meeting the requirements of one or more Notices of Sale (as hereinafter defined) to be published in order to give notice of the competitive sale of the Series 2018 Bonds; (ii) to sell and award all or any portion of the Series 2018 Bonds through a negotiated sale to the purchasers who are referred to in the bond purchase agreement and who shall be selected from the then current list of approved underwriters; or (iii) to sell and award all or any portion of the Series 2018 Bonds through a direct sale to the financial institution or institutions selected by the Authorized Officer who shall be referred to in the continuing covenant, direct purchase or similar agreement. Each Authorized Officer is hereby authorized to sell and award the Series 2018 Bonds to the purchasers referred to in the preceding sentence in the case of a bond purchase agreement, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, or, with respect to a continuing covenant, direct purchase or similar agreement, containing bank facility terms and provisions (including, without limitation, increased costs, term-out, events of default and remedies) in substantially the form set forth in a letter of credit reimbursement agreement most recently executed or delivered by the Issuer, including, if applicable, that the direct purchaser offer to the Issuer a term-out provision of no less than five years, with such revisions to reflect the terms and provisions of the Series 2018 Bonds as may be approved by the officer executing the bond purchase, continuing covenant or similar agreement (each, a "Purchase Agreement"). Each Authorized Officer is hereby authorized to agree to the selection of the representative of the underwriters or the other purchasers or facility providers as referred to in the Purchase Agreement or Agreements and to execute and deliver the Purchase Agreement or Agreements for and on behalf and in the name of the Issuer with such changes, omissions, insertions and revisions as may be approved by the officer executing the Purchase Agreement or Agreements,

said execution being conclusive evidence of such approval and concurrence in the selection of the representative of the underwriters.

If it is determined that any sale of Series 2018 Bonds shall be conducted on a competitive bid basis each Authorized Officer is hereby further authorized to conduct the sale and award of the Series 2018 Bonds on the basis of a competitive bid, pursuant to the terms of a notice of sale, including bid form (the "Notice of Sale"), in a form, including any limitations on permitted bidders and a description of the basis for determining the winning bidder or bidders, determined by such Authorized Officer. Each Authorized Officer is hereby authorized to conduct such competitive sale of the Series 2018 Bonds in a manner consistent with this Supplemental Resolution and to utilize the services of the Authority's financial advisor and the services of an electronic bidding service, as such Authorized Officer shall determine, and the execution by such Authorized Officer of a letter of award shall be conclusive evidence of such award.

Each Authorized Officer is hereby authorized to make public and to authorize the use and distribution by said purchasers or other appropriate parties of a preliminary official statement, offering circular, or other disclosure document (the "Preliminary Official Statement") in connection with each public offering or any direct or private placement of the Series 2018 Bonds, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, with such changes, omissions, insertions and revisions as such officer shall deem advisable. The Issuer authorizes any of said officers to deliver a certification to the effect that such Preliminary Official Statement or Official Statement, if deemed necessary or appropriate, together with such other documents, if any, described in such certificate, was deemed final as of its date for purposes of Rule 15c2-12 of the Securities and Exchange Commission as applicable.

Each Authorized Officer is hereby authorized to make public and to authorize distribution of a final Official Statement in substantially the form of each Preliminary Official Statement or the most recently executed and delivered Official Statement if there is not a Preliminary Official Statement, with such changes, omissions, insertions and revisions as such officer shall deem advisable, to sign such Official Statement and to deliver such Official Statement to the purchasers of such issue of the Series 2018 Bonds, such execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

Each Authorized Officer is hereby authorized to execute and deliver for and on behalf and in the name of the Issuer, to the extent determined by such Authorized Officer to be necessary or convenient, a Continuing Disclosure Agreement, substantially in the form appended to the Purchase Agreement or Notice of Sale, with such changes, omissions, insertions and revisions as such officer shall deem advisable (the "Continuing Disclosure Agreement"), said execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

The proceeds of each good faith check, if any, received by the Issuer from the purchasers of each issue of the Series 2018 Bonds under the terms of the related Purchase Agreement or Notice of Sale may be invested by the Issuer pending application of the proceeds of such good faith check for the purposes provided in Section 2.02 of this Supplemental Resolution at the time of the issuance and delivery of such Series 2018 Bonds.

Each Authorized Officer (including any Assistant Secretary of the Issuer) is hereby authorized and directed to execute, deliver, amend, replace or terminate any and all documents and instruments (including any remarketing agreements, dealer agreements, broker-dealer agreements, tender agent agreements, or auction agency agreements, any investment agreements or arrangements, or any reimbursement agreements or documents or instruments relating to a Credit Facility deemed appropriate to a given form or mode of an Obligation) and to do and cause to be done any and all acts necessary or proper for carrying out each Purchase Agreement or Notice of Sale, each Continuing Disclosure Agreement, the terms of any Credit Facility or other such agreement or arrangement, and the issuance, sale and delivery of each issue of the Series 2018 Bonds and for implementing the terms of each issue of the Series 2018 Bonds and the transactions contemplated hereby or thereby.

When reference is made in this Supplemental Resolution to the authorization of an Authorized Officer to do any act, such act may be accomplished by any of such officers individually.

Section 2.11 Forms of Series 2018 Bonds and Trustee's Authentication Certificate. Subject to the provisions of the Resolution, the form of registered Series 2018 Bonds, and the Trustee's certificate of authentication, shall be substantially in the form set forth in Exhibit One to the Resolution including, if necessary, any changes to comply with the requirements of DTC or the provisions of this Supplemental Resolution or the related Certificate of Determination.

Section 2.12 Appointment of Trustee and Paying Agent. Unless otherwise provided in the related Certificate of Determination, U.S. Bank Trust National Association shall be the Trustee under the Resolution and the Paying Agent for the Series 2018 Bonds.

ARTICLE III

DISPOSITION OF SERIES 2018 BOND PROCEEDS

Section 3.01 Disposition of Series 2018 Bond Proceeds. Any proceeds of the sale of the Series 2018 Bonds, other than accrued interest and capitalized interest, if any, shall be deposited, simultaneously with the issuance and delivery of the Series 2018 Bonds, at one time or from time to time in one or more Series or subseries, in the Proceeds Account which is deemed to be established for each Series in the Proceeds Fund to be applied, or shall otherwise be applied pursuant to a Certificate of Determination to:

- (a) the payment of all or any part of the Capital Costs; and
- (b) the balance of such proceeds, exclusive of accrued interest, shall be deposited in the COI Account and applied to the payment of Costs of Issuance or otherwise applied to the payment of Costs of Issuance.

Unless otherwise provided in the related Certificate of Determination, accrued interest and capitalized interest, if any, received on the sale of the Series 2018 Bonds shall be deposited in the Debt Service Fund.

ARTICLE IV

TAX COVENANTS AND DEFEASANCE

Section 4.01 Tax Covenants Relating to the Series 2018 Bonds. The Issuer covenants that, in order to maintain the exclusion from gross income for Federal income tax purposes of the interest on the Series 2018 Bonds issued as Tax-Exempt Obligations, the Issuer will satisfy, or take such actions as are necessary to cause to be satisfied, each provision of the Code necessary to maintain such exclusion. In furtherance of this covenant, the Issuer agrees to comply with such written instructions as may be provided by Bond Counsel. In furtherance of the covenant contained in the preceding sentence, the Issuer agrees to continually comply with the provisions of any “Arbitrage and Use of Proceeds Certificate” or “Tax Certificate” to be executed by the Issuer in connection with the execution and delivery of any Series 2018 Bonds issued as Tax-Exempt Obligations, as amended from time to time.

Notwithstanding any other provision of the Resolution to the contrary, upon the Issuer’s failure to observe, or refusal to comply with the above covenant (a) the Owners of the Series 2018 Bonds, or the Trustee acting on their behalf, shall be entitled to the rights and remedies provided to Owners or the Trustee under Section 702 of the Resolution, other than the right (which is hereby abrogated solely as to the Issuer’s failure to observe, or refusal to comply with the above covenant) to declare the principal of all Obligations then Outstanding, and the interest accrued thereon, to be due and payable pursuant to Section 567 of the Issuer Act, and (b) neither the Owners of the Obligations of any Series or holders of any Parity Debt (other than the Series 2018 Bonds or the Trustee acting on their behalf), nor the Trustee acting on their behalf, shall be entitled to exercise any right or remedy provided to the Owners, the Parity Debt holders or the Trustee under the Resolution based upon the Issuer’s failure to observe, or refusal to comply with, the above covenant.

Section 4.02 Defeasance. In the event the Issuer shall seek, prior to the maturity or redemption date thereof, to pay or cause to be paid, within the meaning and with the effect expressed in the Resolution, all or less than all Outstanding Series 2018 Bonds issued as Tax-Exempt Obligations and the provisions of Section 4.01 hereof shall then be of any force or effect, then, notwithstanding the provisions of Article A-XI of the Resolution, the Series 2018 Bonds issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid shall not be deemed to have been paid within the meaning and with the effect expressed in Section A-1101 of the Resolution unless (i) the Issuer has confirmed in writing that the Owners of the Series 2018 Bonds issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid will continue, after such action, to have the benefit of a covenant to the effect of the covenant of the Issuer contained in Section 4.01 hereof or (ii) there shall have been delivered to the Trustee an Opinion of Bond Counsel to the effect that non-compliance thereafter with the applicable provisions of the Code will not affect the then current treatment of interest on the Series 2018 Bonds issued as Tax-Exempt Obligations in determining gross income for Federal income tax purposes.

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

**MULTIPLE SERIES 2001
SUBORDINATE REVENUE BOND
SUPPLEMENTAL RESOLUTION**

Adopted December 13, 2017

Table of Contents

	Page
ARTICLE I DEFINITIONS AND STATUTORY AUTHORITY.....	1
Section 1.01 Supplemental Resolution	1
Section 1.02 Definitions.....	1
Section 1.03 Authority for this Supplemental Resolution	1
ARTICLE II AUTHORIZATION OF SERIES 2018 BONDS	2
Section 2.01 Authorized Principal Amount, Designation and Series	2
Section 2.02 Purposes	2
Section 2.03 Dates, Maturities, Principal Amounts and Interest	2
Section 2.04 Interest Payments	3
Section 2.05 Denominations, Numbers and Letters.....	3
Section 2.06 Places of Payment and Paying Agent	3
Section 2.07 Sinking Fund Installments	3
Section 2.08 Redemption Prices and Terms	3
Section 2.09 Delegation to an Authorized Officer.....	4
Section 2.10 Sale of Series 2018 Bonds	6
Section 2.11 Forms of Series 2018 Bonds and Trustee's Authentication Certificate.....	8
Section 2.12 Appointment of Trustee and Paying Agent	8
ARTICLE III DISPOSITION OF SERIES 2018 BOND PROCEEDS.....	8
Section 3.01 Disposition of Series 2018 Bond Proceeds	8
ARTICLE IV TAX COVENANTS AND DEFEASANCE	8
Section 4.01 Tax Covenants Relating to the Series 2018 Bonds	8
Section 4.02 Additional Covenants.....	9
Section 4.03 Defeasance	10

**MULTIPLE SERIES 2001
SUBORDINATE REVENUE BOND
SUPPLEMENTAL RESOLUTION**

BE IT RESOLVED by the Triborough Bridge and Tunnel Authority (the “Issuer”), as follows:

ARTICLE I

DEFINITIONS AND STATUTORY AUTHORITY

Section 1.01 Supplemental Resolution. This resolution is supplemental to, and is adopted, in accordance with Article II and Article A-VIII of a resolution of the Issuer adopted on March 26, 2002, entitled “2001 Subordinate Revenue Resolution Authorizing Subordinate Revenue Obligations” (the “Resolution”).

Section 1.02 Definitions.

1. All capitalized terms which are used but not otherwise defined in this Multiple Series 2001 Subordinate Revenue Bond Supplemental Resolution (the “Supplemental Resolution”) shall have the same meanings, respectively, as such terms are given by Section 102 of the Resolution.

2. In this Supplemental Resolution:

“Authorized Officer” shall include the officers designated as such in the Resolution, and the Chairman, the Managing Director, the Chair of the Finance Committee, the Vice Chairman, the Chief Financial Officer or the Director, Finance, as well as any officer duly designated as “Acting” in said officer’s capacity, except that, for the purposes of any delegation set forth herein that does not expressly include any Assistant Secretary, “Authorized Officer” shall not include any Assistant Secretary of the Issuer.

“Board” shall mean, when used with respect to the Issuer, the board of the Issuer acting as such pursuant to the provisions of the Issuer Act, and when used with respect to the MTA, the members of the MTA acting as such pursuant to the provisions of the MTA Act.

“Bond Counsel” shall mean Nixon Peabody LLP, Orrick, Herrington & Sutcliffe LLP, D. Seaton and Associates, P.A., P.C., Bryant Rabbino LLP or any other attorney or firm of attorneys of nationally recognized standing in the field of law relating to the issuance of obligations by state and municipal entities, selected by the Issuer.

“Code” shall mean the Internal Revenue Code of 1986, as amended, and regulations thereunder.

Section 1.03 Authority for this Supplemental Resolution. This Supplemental Resolution is adopted pursuant to the provisions of the Issuer Act and the Resolution.

ARTICLE II

AUTHORIZATION OF SERIES 2018 BONDS

Section 2.01 Authorized Principal Amount, Designation and Series. Pursuant to the provisions of the Resolution and in order to finance Capital Costs, multiple Series of Subordinate Revenue Obligations (which may be issued at one time or from time to time in any number of Series or subseries, which for purposes of this Supplemental Resolution shall collectively be referred to herein as the “Series 2018 Bonds”, constituting Capital Cost Subordinate Revenue Obligations, subject to redesignation as hereinafter provided) entitled to the benefit, protection and security of such provisions are hereby authorized to be issued in an aggregate principal amount not exceeding the principal amount necessary so that, after giving effect to any net original issue discount and underwriters’ discount from the principal amount, the amount to be deposited in the Proceeds Account pursuant to, or otherwise applied to effectuate the purposes of, Section 2.02 and Section 3.01 of this Supplemental Resolution (exclusive of the amount so deposited therein determined in the related Certificate of Determination as estimated to be necessary to pay capitalized interest or to pay any Costs of Issuance of the Series 2018 Bonds) shall not exceed the amount or amounts determined in one or more Certificates of Determination to be necessary to effectuate the purposes set forth in Section 2.02 hereof; provided, however, that the Series 2018 Bonds issued to finance Capital Costs shall not exceed \$200 million, reduced by the amount of bonds then Outstanding issued under the Triborough Bridge and Tunnel Authority Multiple Series 2018 General Revenue Bond Supplemental Resolution, adopted December 13, 2017 (excluding all amounts excluded above, such as net original issue discount, underwriters’ discounts, capitalized interest and Costs of Issuance). For all purposes of this Section 2.01, net original issue premium as determined to be advisable by an Authorized Officer in connection with the marketing of the Series 2018 Bonds, shall not be counted.

Series 2018 Bonds shall be designated as, and shall be distinguished from the Obligations of all other Series by the title “Subordinate Revenue Bonds, Series 2018”, or such other title or titles set forth in one or more Certificates of Determination.

The authority to issue Obligations and take related actions granted under previous resolutions of the Issuer shall continue in full force and effect. The authorization to issue the Series 2018 Bonds shall continue in effect until the adoption by the Issuer Board of a subsequent new money bond issuance supplemental resolution relating to 2019 new money financings.

Section 2.02 Purposes. The purposes for which the Series 2018 Bonds are issued shall be set forth in one or more Certificates of Determination and shall include the payment of all or any part of the Capital Costs, all to the extent and in the manner provided in this Supplemental Resolution.

Section 2.03 Dates, Maturities, Principal Amounts and Interest. The Series 2018 Bonds, except as otherwise provided in the Resolution, shall be dated the date or dates determined in the related Certificate of Determination. The Series 2018 Bonds shall mature on the date or dates and in the year or years and principal amount or amounts, and shall bear interest at the rate or rates per annum, if any, specified in or determined in the manner provided in the related Certificate of Determination.

Section 2.04 Interest Payments. The Series 2018 Bonds shall bear interest from their date or dates and be payable on such date or dates as may be determined pursuant to the related Certificate of Determination. Except as otherwise provided in the related Certificate of Determination, interest on the Series 2018 Bonds shall be computed on the basis of twelve (12) 30-day months and a 360-day year.

Section 2.05 Denominations, Numbers and Letters. Unless otherwise provided in the related Certificate of Determination, the Series 2018 Bonds shall be issued in fully registered form without coupons in the denomination of \$5,000 or any integral multiple thereof.

The Series 2018 Bonds shall be lettered and numbered as provided in the related Certificate of Determination.

Section 2.06 Places of Payment and Paying Agent. Except as otherwise provided in the related Certificate of Determination, principal and Redemption Price of the Series 2018 Bonds shall be payable to the registered owner of each Series 2018 Bond when due upon presentation of such Series 2018 Bond at the principal corporate trust office of the Trustee. Except as otherwise provided in the related Certificate of Determination, interest on the registered Series 2018 Bonds will be paid by check or draft mailed on the interest payment date by the Paying Agent, to the registered owner at his address as it appears on the registration books or, at the option of any Owner of at least one million dollars (\$1,000,000) in principal amount of the Series 2018 Bonds, by wire transfer in immediately available funds on each interest payment date to such Owner thereof upon written notice from such Owner to the Trustee, at such address as the Trustee may from time to time notify such Owner, containing the wire transfer address (which shall be in the continental United States) to which such Owner wishes to have such wire directed, if such written notice is received not less than twenty (20) days prior to the related interest payment date (such notice may refer to multiple interest payments).

Section 2.07 Sinking Fund Installments. The Series 2018 Bonds, if any, determined in the related Certificate of Determination shall be subject to redemption in part, by lot, or otherwise as determined in accordance with Section A-404 of the Resolution, on each date in the year or years determined in the related Certificate of Determination at the principal amount thereof plus accrued interest up to but not including the date of redemption thereof, from mandatory Sinking Fund Installments which are required to be made in amounts sufficient to redeem on each such date the principal amount of such Series 2018 Bonds.

Section 2.08 Redemption Prices and Terms. The Series 2018 Bonds may also be subject to redemption prior to maturity, at the option of the Issuer, upon notice as provided in Article A-IV of the Resolution, at any time as a whole or in part (and by lot within a maturity, or otherwise as determined in accordance with Section A-404 of the Resolution, if less than all of a maturity is to be redeemed), from maturities designated by the Issuer on and after the date and in the years and at the Redemption Prices (expressed as a percentage of principal amount) determined in the related Certificate of Determination, plus accrued interest up to but not including the redemption date. Notwithstanding the foregoing, in the case of taxable Series 2018 Bonds, if set forth in the Certificate of Determination, the taxable Series 2018 Bonds may be made subject to pro rata redemption and/or a make-whole redemption premium.

Section 2.09 Delegation to an Authorized Officer. 1. There is hereby delegated to each Authorized Officer, subject to the limitations contained in this Supplemental Resolution, the following powers with respect to the Series 2018 Bonds:

(a) to determine whether and when to issue any Series 2018 Bonds constituting Capital Cost Subordinate Revenue Obligations, the amount of the Series 2018 Bonds to be applied to finance Capital Costs, and the amount of the proceeds of the Series 2018 Bonds, estimated to be necessary to pay the Costs of Issuance of the Series 2018 Bonds and capitalized interest, if any;

(b) to determine the purpose or purposes for which the Series 2018 Bonds are being issued, which shall be one or more of the purposes set forth in Section 2.02 of this Supplemental Resolution;

(c) to determine the principal amounts of the Series 2018 Bonds to be issued for the purposes set forth in Section 2.02 of this Supplemental Resolution and whether such principal amounts constitute a separate Series or a subseries of Series 2018 Bonds, which principal amounts (and the aggregate of all such Series and subseries) shall not exceed the principal amounts permitted by Section 2.01 of this Supplemental Resolution, and to determine Accreted Values and Appreciated Values, if applicable;

(d) to determine the maturity date and principal amount of each maturity of the Series 2018 Bonds and the amount and due date of each Sinking Fund Installment, if any;

(e) to determine the date or dates which the Series 2018 Bonds shall be dated and the interest rate or rates of the Series 2018 Bonds or the manner of determining such interest rate or rates; provided, however, that any Series 2018 Bonds issued as fixed rate Tax-Exempt Obligations shall be subject to a maximum interest rate of not greater than 10% per annum, any Series 2018 Bonds issued as fixed rate Taxable Obligations shall be subject to a maximum interest rate of not greater than 12% per annum, any Variable Interest Rate Obligations issued as Tax-Exempt Obligations shall be subject to a maximum interest rate of not greater than 15% per annum, any Variable Interest Rate Obligations issued as Taxable Obligations shall be subject to a maximum interest rate of not greater than 18% per annum and any Parity Reimbursement Obligations shall be subject to a maximum interest rate of not greater than 25% per annum, or, in each such case, such higher rate or rates as determined by the Issuer's Board;

(f) to determine the Redemption Price or Redemption Prices, if any, and the redemption terms, if any, for the Series 2018 Bonds; provided, however, that if the Series 2018 Bonds are to be redeemable at the election of the Issuer, the Redemption Price (except in the case of taxable Series 2018 Bonds) shall not be greater than one hundred three percent (103%) of the principal amount of the Series 2018 Bonds to be redeemed, plus accrued interest thereon up to but not including the date of redemption and in the case of taxable Series 2018 Bonds the Redemption Price may be determined pursuant to provisions relating to pro rata redemption and/or make-whole redemption;

(g) to determine whether the sale of the Series 2018 Bonds shall be conducted on either a negotiated or competitive bid basis and, as applicable, to determine the purchase price for the Series 2018 Bonds to be paid by the purchaser or purchasers referred to in one or more

Purchase Agreements or a bank direct purchase agreement or the purchase price for the Series 2018 Bonds to be paid by the winning bidder, if such sale is conducted by competitive bid pursuant to a Notice of Sale (as hereinafter defined), in either case as such document is described in Section 2.10 of this Supplemental Resolution, which may include such original issue discount and original issue premium as shall be determined in the related Certificate of Determination; provided, however, that the underwriters' discount reflected in such purchase price shall not exceed \$10.00 for each one thousand dollars (\$1,000) principal amount of the Series 2018 Bonds;

(h) to take all actions required for the Series 2018 Bonds to be eligible under the rules and regulations of The Depository Trust Company ("DTC") for investment and trading as uncertificated securities, to execute and deliver a standard form of letter of representation with DTC and, notwithstanding any provisions to the contrary contained in this Supplemental Resolution, to include in the related Certificate of Determination such terms and provisions as may be appropriate or necessary to provide for uncertificated securities in lieu of Series 2018 Bonds issuable in fully registered form;

(i) to determine whether to issue all or any portion of the Series 2018 Bonds as Tax-Exempt Obligations, Taxable Obligations, Put Obligations, Variable Interest Rate Obligations or as any other form of Obligations permitted by the Resolution and any matters related thereto, including (i) the terms and provisions of any such Series 2018 Bonds, (ii) the selection of remarketing agents, tender agents, calculation agents, auction agents, dealers, bidding, agents or any other agents or parties to ancillary arrangements and the terms of any such arrangements, and (iii) the methods for determining the accrual of Debt Service;

(j) to determine the advisability, as compared to an unenhanced transaction, of obtaining one or more Credit Facilities, to select a provider or providers thereof and to determine and accept the terms and provisions and price thereof, to determine such other matters related thereto as in the opinion of the officer executing the related Certificate of Determination shall be considered necessary or appropriate and to effect such determinations by making any changes in or additions to this Supplemental Resolution required by Credit Facility providers, if any, or required by a Rating Agency in order to attain or maintain specific ratings on the Series 2018 Bonds, or relating to the mechanisms for the repayment of amounts advanced thereunder or payment of fees, premiums, expenses or any other amounts, notices, the provision of information, and such other matters of a technical, mechanical, procedural or descriptive nature necessary or appropriate to obtain or implement a Credit Facility with respect to the Series 2018 Bonds, and to make any changes in connection therewith;

(k) to make such changes in or from the form of this Supplemental Resolution as may be required by a Rating Agency in order to attain or maintain specific ratings on the Series 2018 Bonds; and

(l) to make such changes in or from the form of this Supplemental Resolution as may be necessary or desirable in order to cure any ambiguities, inconsistencies or other defects; and

(m) to determine such other matters specified in or permitted by (i) Sections 202, 203, and A-201 of the Resolution or (ii) this Supplemental Resolution, including preparation of any documentation therefor.

2. Any Authorized Officer shall execute one or more Certificates of Determination evidencing the determinations made pursuant to this Supplemental Resolution and any such Certificate of Determination shall be conclusive evidence of the determinations of such Authorized Officer, as stated therein. More than one Certificate of Determination may be delivered to the extent more than one Series or subseries of Series 2018 Bonds are delivered from time to time, or other authority is exercised under this Supplemental Resolution from time to time and each such Certificate of Determination shall be delivered to the Trustee prior to the authentication and delivery of the respective Series or subseries of Series 2018 Bonds by the Trustee or other documentation. Determinations set forth in the related Certificate of Determination shall have the same effect as if set forth in this Supplemental Resolution. Any such Authorized Officer may exercise any authority delegated under this Supplemental Resolution from time to time following issuance of any Series 2018 Bonds, as appropriate for any purposes, including, in order to change interest rate modes or auction periods, obtain a substitute or additional Credit Facility, enter into a bank direct purchase agreement or similar instrument, or to appoint new or additional agents or other parties deemed appropriate to a particular form or mode of Obligation or manner of sale.

Section 2.10 Sale of Series 2018 Bonds. Each Authorized Officer is hereby authorized either (i) to sell and award all or any portion of the Series 2018 Bonds through a competitive bidding process to purchasers meeting the requirements of one or more Notices of Sale (as hereinafter defined) to be published in order to give notice of the competitive sale of the Series 2018 Bonds; (ii) to sell and award all or any portion of the Series 2018 Bonds through a negotiated sale to the purchasers who are referred to in the bond purchase agreement and who shall be selected from the then current list of approved underwriters; or (iii) to sell and award all or any portion of the Series 2018 Bonds through a direct sale to the financial institution or institutions selected by the Authorized Officer who shall be referred to in the continuing covenant, direct purchase or similar agreement. Each Authorized Officer is hereby authorized to sell and award the Series 2018 Bonds to the purchasers referred to in the preceding sentence in the case of a bond purchase agreement, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, or, with respect to a continuing covenant, direct purchase or similar agreement, containing bank facility terms and provisions (including, without limitation, increased costs, term-out, events of default and remedies) in substantially the form set forth in a letter of credit reimbursement agreement most recently executed or delivered by the Issuer, including, if applicable, that the direct purchaser offer to the Issuer a term-out provision of no less than five years, with such revisions to reflect the terms and provisions of the Series 2018 Bonds as may be approved by the officer executing the bond purchase, continuing covenant or similar agreement (each, a "Purchase Agreement"). Each Authorized Officer is hereby authorized to agree to the selection of the representative of the underwriters or the other purchasers or facility providers as referred to in the Purchase Agreement or Agreements and to execute and deliver the Purchase Agreement or Agreements for and on behalf and in the name of the Issuer with such changes, omissions, insertions and revisions as may be approved by the officer executing the Purchase Agreement or Agreements, said execution being conclusive evidence of such approval and concurrence in the selection of the representative of the underwriters.

If it is determined that any sale of Series 2018 Bonds shall be conducted on a competitive bid basis each Authorized Officer is hereby further authorized to conduct the sale and award of the Series 2018 Bonds on the basis of a competitive bid, pursuant to the terms of a notice of sale,

including bid form (the “Notice of Sale”), in a form, including any limitations on permitted bidders and a description of the basis for determining the winning bidder or bidders, determined by such Authorized Officer. Each Authorized Officer is hereby authorized to conduct such competitive sale of the Series 2018 Bonds in a manner consistent with this Supplemental Resolution and to utilize the services of the Authority’s financial advisor and the services of an electronic bidding service, as such Authorized Officer shall determine, and the execution by such Authorized Officer of a letter of award shall be conclusive evidence of such award.

Each Authorized Officer is hereby authorized to make public and to authorize the use and distribution by said purchasers or other appropriate parties of a preliminary official statement, offering circular, or other disclosure document (the “Preliminary Official Statement”) in connection with each public offering or any direct or private placement of the Series 2018 Bonds, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, with such changes, omissions, insertions and revisions as such officer shall deem advisable. The Issuer authorizes any of said officers to deliver a certification to the effect that such Preliminary Official Statement or Official Statement, if deemed necessary or appropriate, together with such other documents, if any, described in such certificate, was deemed final as of its date for purposes of Rule 15c2-12 of the Securities and Exchange Commission as applicable.

Each Authorized Officer is hereby authorized to make public and to authorize distribution of a final Official Statement in substantially the form of each Preliminary Official Statement or the most recently executed and delivered Official Statement if there is not a Preliminary Official Statement, with such changes, omissions, insertions and revisions as such officer shall deem advisable, to sign such Official Statement and to deliver such Official Statement to the purchasers of such issue of the Series 2018 Bonds, such execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

Each Authorized Officer is hereby authorized to execute and deliver for and on behalf and in the name of the Issuer, to the extent determined by such Authorized Officer to be necessary or convenient, a Continuing Disclosure Agreement, substantially in the form appended to the Purchase Agreement or Notice of Sale, with such changes, omissions, insertions and revisions as such officer shall deem advisable (the “Continuing Disclosure Agreement”), said execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

The proceeds of each good faith check, if any, received by the Issuer from the purchasers of each issue of the Series 2018 Bonds under the terms of the related Purchase Agreement or Notice of Sale may be invested by the Issuer pending application of the proceeds of such good faith check for the purposes provided in Section 2.02 of this Supplemental Resolution at the time of the issuance and delivery of such Series 2018 Bonds.

Each Authorized Officer (including any Assistant Secretary of the Issuer) is hereby authorized and directed to execute, deliver, amend, replace or terminate any and all documents and instruments (including any remarketing agreements, dealer agreements, broker-dealer agreements, tender agent agreements, or auction agency agreements, any investment agreements or arrangements, or any reimbursement agreements or documents or instruments relating to a Credit Facility deemed appropriate to a given form or mode of an Obligation) and to do and

cause to be done any and all acts necessary or proper for carrying out each Purchase Agreement or Notice of Sale, each Continuing Disclosure Agreement, the terms of any Credit Facility or other such agreement or arrangement, and the issuance, sale and delivery of each issue of the Series 2018 Bonds and for implementing the terms of each issue of the Series 2018 Bonds and the transactions contemplated hereby or thereby.

When reference is made in this Supplemental Resolution to the authorization of an Authorized Officer to do any act, such act may be accomplished by any of such officers individually.

Section 2.11 Forms of Series 2018 Bonds and Trustee's Authentication Certificate. Subject to the provisions of the Resolution, the form of registered Series 2018 Bonds, and the Trustee's certificate of authentication, shall be substantially in the form set forth in Exhibit One to the Resolution including, if necessary, any changes to comply with the requirements of DTC or the provisions of this Supplemental Resolution or the related Certificate of Determination.

Section 2.12 Appointment of Trustee and Paying Agent. Unless otherwise provided in the related Certificate of Determination, The Bank of New York Mellon, as successor in interest to JPMorgan Chase Bank, N.A., shall be the Trustee under the Resolution and the Paying Agent for the Series 2018 Bonds.

ARTICLE III

DISPOSITION OF SERIES 2018 BOND PROCEEDS

Section 3.01 Disposition of Series 2018 Bond Proceeds. Any proceeds of the sale of the Series 2018 Bonds, other than accrued interest and capitalized interest, if any, shall be deposited, simultaneously with the issuance and delivery of the Series 2018 Bonds, at one time or from time to time in one or more Series or subseries, in the Proceeds Account which is deemed to be established for each Series in the Proceeds Fund to be applied, or shall otherwise be applied pursuant to a Certificate of Determination to:

- (a) the payment of all or any part of the Capital Costs; and
- (b) the balance of such proceeds, exclusive of accrued interest, shall be deposited in the COI Account and applied to the payment of Costs of Issuance or otherwise applied to the payment of Costs of Issuance.

Unless otherwise provided in the related Certificate of Determination, accrued interest and capitalized interest, if any, received on the sale of the Series 2018 Bonds shall be deposited in the Debt Service Fund.

ARTICLE IV

TAX COVENANTS AND DEFEASANCE

Section 4.01 Tax Covenants Relating to the Series 2018 Bonds. The Issuer covenants that, in order to maintain the exclusion from gross income for Federal income tax purposes of the interest on the Series 2018 Bonds issued as Tax-Exempt Obligations, the Issuer

will satisfy, or take such actions as are necessary to cause to be satisfied, each provision of the Code necessary to maintain such exclusion. In furtherance of this covenant, the Issuer agrees to comply with such written instructions as may be provided by Bond Counsel. In furtherance of the covenant contained in the preceding sentence, the Issuer agrees to continually comply with the provisions of any “Arbitrage and Use of Proceeds Certificate” or “Tax Certificate” to be executed by the Issuer in connection with the execution and delivery of any Series 2018 Bonds issued as Tax-Exempt Obligations, as amended from time to time.

Notwithstanding any other provision of the Resolution to the contrary, upon the Issuer’s failure to observe, or refusal to comply with the above covenant (a) the Owners of the Series 2018 Bonds, or the Trustee acting on their behalf, shall be entitled to the rights and remedies provided to Owners or the Trustee under Section 702 of the Resolution, other than the right (which is hereby abrogated solely as to the Issuer’s failure to observe, or refusal to comply with the above covenant) to declare the principal of all Obligations then Outstanding, and the interest accrued thereon, to be due and payable pursuant to Section 567 of the Issuer Act, and (b) neither the Owners of the Obligations of any Series or holders of any Parity Debt (other than the Series 2018 Bonds or the Trustee acting on their behalf), nor the Trustee acting on their behalf, shall be entitled to exercise any right or remedy provided to the Owners, the Parity Debt holders or the Trustee under the Resolution based upon the Issuer’s failure to observe, or refusal to comply with, the above covenant.

Section 4.02 Additional Covenants.

1. The Issuer covenants and agrees that it will not issue any Senior Obligations under the Senior Resolution (other than pursuant to Section 205 thereof) unless in addition to satisfying the requirements of the Senior Resolution, an Authorized Officer delivers to the trustee under the Senior Resolution a certificate demonstrating that for any period of 12 consecutive calendar months out of the 18 complete calendar months next preceding the date of authentication and delivery such issue of Senior Obligations, Net Revenues are at least equal to 1.10 times the Combined Maximum Annual Calculated Debt Service for all Subordinate Revenue Obligations, Parity Debt, Senior Obligations and Senior Parity Debt.

2. The Issuer covenants and agrees that in addition to complying with the provisions of Section 604 of the Resolution, the Issuer shall at all times establish, levy, maintain and collect, or cause to be established, levied, maintained and collected, such tolls, rentals and other charges in connection with the TBTA Facilities as shall always be sufficient, together with other money available therefor (including the anticipated receipt of proceeds of sale of Obligations or other bonds, notes or other obligations or evidences of indebtedness of the Issuer that will be used to pay the principal of Obligations issued in anticipation of such receipt, but not including any anticipated or actual proceeds from the sale of TBTA Facilities), to equal or exceed in each calendar year the greater of (a) an amount equal to the sum of amounts necessary in such calendar year (i) to pay all Operating Expenses of the Issuer, plus (ii) to pay the sum of Calculated Debt Service as defined in the Resolution and Calculated Debt Service as defined in the Senior Resolution, plus (iii) to maintain any reserve established by the Issuer pursuant to the Senior Resolution, in such amount as may be determined from time to time by an Authorized Officer in his or her judgment, or (b) an amount such that Revenues less Operating Expenses shall equal at least 1.10 times the sum of Calculated Debt Service as defined in the Senior Resolution and Calculated Debt Service as defined in the Resolution for such calendar year.

Section 4.03 Defeasance. In the event the Issuer shall seek, prior to the maturity or redemption date thereof, to pay or cause to be paid, within the meaning and with the effect expressed in the Resolution, all or less than all Outstanding Series 2018 Bonds issued as Tax-Exempt Obligations and the provisions of Section 4.01 hereof shall then be of any force or effect, then, notwithstanding the provisions of Article A-XI of the Resolution, the Series 2018 Bonds issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid shall not be deemed to have been paid within the meaning and with the effect expressed in Section A-1101 of the Resolution unless (i) the Issuer has confirmed in writing that the Owners of the Series 2018 Bonds issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid will continue, after such action, to have the benefit of a covenant to the effect of the covenant of the Issuer contained in Section 4.01 hereof or (ii) there shall have been delivered to the Trustee an Opinion of Bond Counsel to the effect that non-compliance thereafter with the applicable provisions of the Code will not affect the then current treatment of interest on the Series 2018 Bonds issued as Tax-Exempt Obligations in determining gross income for Federal income tax purposes.

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

**MULTIPLE SERIES 2018 BOND ANTICIPATION NOTES AND RELATED
SUBORDINATED INDEBTEDNESS
GENERAL REVENUE BOND SUPPLEMENTAL RESOLUTION**

Adopted December 13, 2017

**MULTIPLE SERIES 2018 BOND ANTICIPATION NOTES AND
RELATED SUBORDINATED INDEBTEDNESS
GENERAL REVENUE BOND SUPPLEMENTAL RESOLUTION**

BE IT RESOLVED by the Board of Triborough Bridge and Tunnel Authority (the “Issuer”), as follows:

**ARTICLE I
DEFINITIONS AND STATUTORY AUTHORITY**

SECTION 1.01. Supplemental Resolution. This resolution is supplemental to, and is adopted in accordance with Article II, Article A-II and Article A-VIII of, a resolution adopted by the Issuer on March 26, 2002, entitled “General Resolution Authorizing General Revenue Obligations”, as heretofore supplemented (the “Resolution”).

SECTION 1.02. Definitions.

1. All terms which are defined in Section 102 of the Resolution shall have the same meanings, respectively, in this Multiple Series 2018 Bond Anticipation Notes and Related Subordinated Indebtedness General Revenue Bond Supplemental Resolution (hereinafter referred to as the “Supplemental Resolution”) as such terms are given in said Section 102 of the Resolution.

2. In this Supplemental Resolution:

“Authorized Officer” shall include the officers designated as such in the Resolution, and the Chairman, the Managing Director, the Chair of the Finance Committee, the Vice Chairman, the Chief Financial Officer or the Director, Finance of the MTA, as well as any officer duly designated as “Acting” in said officer’s capacity, except that, for the purposes of any delegation set forth herein that does not expressly include any Assistant Secretary, “Authorized Officer” shall not include any Assistant Secretary of the Issuer.

“Board” shall mean, when used with respect to the Issuer, the board of the Issuer acting as such pursuant to the provisions of the Issuer Act, and when used with respect to the MTA, the members of the MTA acting as such pursuant to the provisions of the MTA Act.

“Bond Counsel” shall mean Nixon Peabody LLP, Orrick, Herrington & Sutcliffe LLP, D. Seaton and Associates, P.A., P.C., Bryant Rabbino LLP or any other attorney or firm of attorneys of nationally recognized standing in the field of law relating to the issuance of obligations by state and municipal entities, selected by the Issuer.

“Code” shall mean the Internal Revenue Code of 1986, as amended, and regulations thereunder.

“Noteholder”, “Holder” or “Holder of Notes”, or any similar term, means any person who shall be the registered owner of any Outstanding Series 2018 Note or Notes.

“Notice of Sale” shall mean the form of Notice of Sale to be distributed with the Preliminary Official Statement, hereinafter defined, and published in the event of a competitive sale of the Series 2018 Notes.

“Series 2018 Bonds” shall mean the General Revenue Bonds, Series 2018, authorized by Article II of the Resolution and pursuant to a resolution of the Issuer adopted as of the date that this resolution is adopted.

“Series 2018 Notes” shall mean the General Revenue Bond Anticipation Notes, Series 2018, authorized to be issued, in accordance with Section A-203 of the Standard Resolution Provisions, pursuant to this Supplemental Resolution.

SECTION 1.03. Authority for this Supplemental Resolution. This Supplemental Resolution is adopted pursuant to the provisions of the Issuer Act and the Resolution.

ARTICLE II AUTHORIZATION OF SERIES 2018 NOTES

SECTION 2.01. Principal Amount, Designation and Series. In accordance with the provisions of the Resolution, one or more Series of General Revenue Bond Anticipation Notes constituting Obligation Anticipation Notes under the Resolution (which may be issued in one or more Series or subseries and from time to time, which for purposes of this Supplemental Resolution shall collectively be referred to herein as the “Series 2018 Notes”, subject to redesignation as hereinafter provided) and entitled to the benefit, protection and security of this Supplemental Resolution are hereby authorized to be issued in an aggregate principal amount not exceeding the principal amount necessary so that, after giving effect to any net original issue discount and underwriters’ discount from the principal amount, the amount to be deposited in the Series 2018 Note Proceeds Account pursuant to, or otherwise applied to effectuate the purposes of, Section 2.02 and Section 3.01 of this Supplemental Resolution (exclusive of the amount so deposited therein determined in any Certificate of Determination as estimated to be necessary to pay capitalized interest or to pay any Costs of Issuance of the Series 2018 Notes), shall not exceed \$200 million at any one time Outstanding reduced by the amount of bonds issued under (1) the Triborough Bridge and Tunnel Authority Multiple Series 2018 General Revenue Bond Supplemental Resolution, adopted December 13, 2017, and (2) the Triborough Bridge and Tunnel Authority Multiple Series 2001 Subordinate Revenue Bond Supplemental Resolution adopted December 13, 2017 (but, for purposes of clarification, not including both the Series 2018 Notes and Series 2018 Bonds issued thereunder to refinance Series 2018 Notes). The Series 2018 Notes may be issued in the form of a loan agreement, line of credit, revolving credit agreement or similar facility (each, a “Loan Facility”). For all purposes of this Section such General Revenue Bond Anticipation Notes shall be designated as, and shall be distinguished from the General Revenue Bond Anticipation Notes of all other Series by the title, “General Revenue Bond Anticipation Notes, Series 2018”, or with such further or different designations as may be provided in any Certificate of Determination.

The authority to issue Obligation Anticipation Notes and take related actions granted under previous resolutions of the Issuer shall continue in full force and effect. The authorization to issue the Series 2018 Notes shall continue in effect until the adoption by the Issuer’s Board of a subsequent new money note issuance supplemental resolution relating to 2019 new money

financings, provided, however, the authorization to issue the Series 2018 Bonds to refinance the Series 2018 Notes authorized hereunder shall continue in effect until all of such Series 2018 Notes have been refinanced by Series 2018 Bonds.

SECTION 2.02. Use of Proceeds. The proceeds of the Series 2018 Notes shall be used only for the purposes set forth in one or more Certificates of Determination and may include (i) the payment of all or any part of the Capital Costs, including Costs of Issuance related to the Series 2018 Notes and (ii) the payment of the principal and interest of Outstanding Series 2018 Notes.

SECTION 2.03. Date, Maturity and Interest for Series 2018 Notes; Redemption. The Series 2018 Notes shall be dated the date or dates determined in any Certificate of Determination. The Series 2018 Notes shall mature on the date or dates and in the principal amount or amounts, and shall bear interest at the rate or rates per annum, if any, determined in any Certificate of Determination. Except as otherwise provided in any Certificate of Determination, the Series 2018 Notes shall not be subject to redemption prior to maturity.

SECTION 2.04. Interest Payments. The Series 2018 Notes shall bear interest from the dates determined in any Certificate of Determination, payable on such date or dates as may be determined pursuant to any Certificate of Determination. Except as otherwise provided in any Certificate of Determination, interest on the Series 2018 Notes shall be computed on the basis of twelve (12) 30-day months and a 360-day year.

SECTION 2.05. Denominations, Numbers and Letters. Unless otherwise provided in any Certificate of Determination, the Series 2018 Notes shall be issuable in fully registered form in the denomination of \$5,000 or any integral multiple thereof. The Series 2018 Notes shall be numbered and lettered as provided in any Certificate of Determination.

SECTION 2.06. Places of Payment and Paying Agents. Except as otherwise provided in any Certificate of Determination, the principal and Redemption Price of the Series 2018 Notes shall be payable to the registered owner of each Series 2018 Note when due upon presentation of such Series 2018 Note at the principal corporate trust office of the Trustee. Except as otherwise provided in any Certificate of Determination, interest on the registered Series 2018 Notes will be paid by check or draft mailed on the interest payment date by Paying Agent to the registered owner at his address as it appears on the registration records or, at the option of any Holder of at least one million dollars (\$1,000,000) in principal amount of the Series 2018 Notes, by wire transfer in immediately available funds on each interest payment date to such Holder thereof upon written notice from such Holder to the Trustee, at such address as the Trustee may from time to time notify such Holder, containing the wire transfer address (which shall be in the continental United States) to which such Holder wishes to have such wire directed, if such written notice is received not less than twenty (20) days prior to the related interest payment date (such notice may refer to multiple interest payments).

SECTION 2.07. Sources of Payment

1. The principal of and interest on the Series 2018 Notes may be payable solely from (i) the proceeds of any other Series 2018 Notes, (ii) the proceeds of the Series 2018 Bonds, and (iii) the proceeds of notes or other evidences of indebtedness or any other amounts (which other

amounts are not pledged under the Resolution), in each case if and to the extent such amounts may lawfully be used to make such payments. The interest on the Series 2018 Notes may also be payable from amounts available for transfer pursuant to Section 503(c) of the Resolution for the payment of Subordinated Indebtedness.

2. There are hereby pledged to the payment of principal and interest on the Series 2018 Notes (i) the proceeds of other Series 2018 Notes issued to refinance such Series 2018 Notes, and (ii) the proceeds of the Series 2018 Bonds issued to refinance such Series 2018 Notes, and such pledge has priority over any other pledge thereof created by the Resolution, including Section 501. There is also hereby pledged to the payment of interest on the Series 2018 Notes amounts available for transfer pursuant to Section 503(c) of the Resolution for the payment of Subordinated Indebtedness in accordance with and subject to the limitations contained in Section 507 of the Resolution. Proceeds and amounts described in clause (iii) of Section 2.07(1) hereof may be pledged to the payment of principal and interest on the Series 2018 Notes to the extent set forth in a Certificate of Determination.

SECTION 2.08. Delegation to an Authorized Officer.

1. There is hereby delegated to each Authorized Officer, subject to the limitations contained in this Supplemental Resolution, the following powers with respect to the Series 2018 Notes:

(a) to determine whether and when to issue any Series 2018 Notes, the amount of the Series 2018 Notes to be applied to pay Capital Costs or other uses as provided in Section 2.02 of this Supplemental Resolution and the amount of the proceeds of the Series 2018 Notes estimated to be necessary to pay the Costs of Issuance of the Series 2018 Notes;

(b) to determine the purposes or purposes for which the Series 2018 Notes are being issued, which shall be one or more of the purposes set forth in Section 2.02 of this Supplemental Resolution;

(c) to determine the principal amount of the Series 2018 Notes to be issued, which principal amount shall not exceed the amount described in Section 2.01 of this Supplemental Resolution, and whether such Series 2018 Notes shall be issued in one or more Series or subseries;

(d) to determine the maturity date and principal amount of each maturity of the Series 2018 Notes; provided that the Series 2018 Notes shall mature no later than five years after the date of issuance of such Series 2018 Notes;

(e) to determine the date or dates which the Series 2018 Notes shall be dated and the interest rate or rates of the Series 2018 Notes, provided that the true interest cost (as calculated by the officers of the Issuer executing any Certificate of Determination, which calculation shall be conclusive) on the Series 2018 Notes bearing a fixed rate of interest shall not exceed 4.00% per annum and for Series 2018 notes bearing interest at a variable interest rate shall not exceed a rate equal to SIFMA or one-month or three-month LIBOR or any short-term index generally accepted in the marketplace, in each case,

plus 4.00% and any default rate or equivalent rate shall not exceed the sum of 4.00% plus either a specified prime rate or the federal funds rate;

(f) to determine the Redemption Price or Redemption Prices, if any, and the redemption terms, if any, for the Series 2018 Notes; provided, however, that if the Series 2018 Notes are to be redeemable at the election of the Issuer, the Redemption Price (except in the case of taxable Series 2018 Notes) shall not be greater than one hundred three percent (103%) of the principal amount of the Series 2018 Notes to be redeemed, plus accrued interest thereon up to but not including the date of redemption and in the case of taxable Series 2018 Notes the Redemption Price may be determined pursuant to provisions relating to pro rata redemption and/or make-whole redemption;

(g) to determine the advisability of conducting the sale of all or any portion of the Series 2018 Notes through competitive bidding or through a negotiated sale or a direct purchase transaction, and to determine the purchase price for the Series 2018 Notes to be paid by the purchasers pursuant to either a competitive bid process or by the purchasers referred to in the Purchase Agreement described in Section 2.09 of this Supplemental Resolution in the event the Series 2018 Notes are sold, in such officer's discretion, through a negotiated sale or a direct purchase transaction, which may include such original premium and original issue discount as shall be determined in any Certificate of Determination, provided, however, that in the case of a negotiated transaction, underwriters' discount reflected in such purchase price shall not exceed \$3.50 for each one thousand dollars (\$1,000) principal amount of the Series 2018 Notes;

(h) to determine the advisability, as compared to an unenhanced transaction, of obtaining municipal bond insurance or any other credit or liquidity facility, to determine and accept the terms and provisions and price thereof, to determine the items to be pledged to the Series 2018 Notes from those permitted by Section A-203 of the Resolution, and to determine such other matters as the officer executing any Certificate of Determination shall consider necessary or appropriate and to effect such determinations by making any changes in or additions to this Supplemental Resolution required by bond insurers or the provider of any other credit or liquidity facility, if any, or required by the bond rating agencies in order to attain or maintain specific ratings on the Series 2018 Notes, or relating to the mechanism for the payment of insurance premium, credit or liquidity facility fees or direct purchase fees, notices, the provision of information, and such other matters of a technical, mechanical, procedural or descriptive nature necessary or appropriate to implement an insurance policy or any other credit or liquidity facility with respect to the Series 2018 Notes, and to make any changes in connection therewith. Such changes may include, but are not limited to, the making of any additional covenants with Holders or other parties deemed necessary or appropriate by the officer executing any Certificate of Determination;

(i) to take all actions required for the Series 2018 Notes to be eligible under the rules and regulations of The Depository Trust Company ("DTC") for investment and trading as uncertificated securities, to execute and deliver a standard form letter of representation with, or other form of document required by, DTC and, notwithstanding any provisions to the contrary contained in this Supplemental Resolution, to include in any Certificate of Determination such terms and provisions as may be appropriate or

necessary to provide for uncertificated securities in lieu of Notes issuable in fully registered form; and

(j) to determine whether to issue all or any part of the Series 2018 Notes as Tax-Exempt Obligations or Taxable Obligations;

(k) to make such changes in or from the form of this Supplemental Resolution as may be required by a Rating Agency in order to attain or maintain specific ratings on the Series 2018 Notes;

(l) to make such changes in or from the form of this Supplemental Resolution as may be necessary or desirable in order to cure any ambiguities, inconsistencies or other defects; and

(m) to determine any other matters provided for herein, including the matters set forth in Sections 2.11 and 2.12 hereof.

2. Any Authorized Officer shall execute one or more Certificates of Determination evidencing the determinations made pursuant to this Supplemental Resolution and any such Certificate of Determination shall be conclusive evidence of the determinations of such Authorized Officer, as stated therein. More than one Certificate of Determination may be delivered to the extent more than one Series or subseries of Series 2018 Notes are delivered from time to time, or other authority is exercised under this Supplemental Resolution from time to time and each such Certificate of Determination shall be delivered to the Trustee prior to the authentication and delivery of the respective Series or subseries of Series 2018 Notes by the Trustee or other documentation. Determinations set forth in any Certificate of Determination shall have the same effect as if set forth in this Supplemental Resolution. Any such Authorized Officer may exercise any authority delegated under this Supplemental Resolution from time to time following issuance of any Series 2018 Notes, as appropriate for any purposes, including, if any Series 2018 Notes shall consist of multiple subseries, to change the principal amounts and number of the individual subseries or to combine all subseries into a single Series, if any Series 2018 Notes consist of a single Series, to divide such Series into two or more subseries and to determine the principal amount of such subseries, obtain a substitute or additional Credit Facility, or to appoint new or additional agents or other parties deemed appropriate to a particular form or mode of Obligation or manner of sale.

SECTION 2.09. Sale of Series 2018 Notes. Each Authorized Officer is hereby authorized either (i) to sell and award all or any portion of the Series 2018 Notes through a competitive bidding process to purchasers meeting the requirements of one or more Notices of Sale (as hereinafter defined) to be published in order to give notice of the competitive sale of the Series 2018 Notes; (ii) to sell and award all or any portion of the Series 2018 Notes through a negotiated sale to the purchasers who are referred to in the note purchase agreement and who shall be selected from the then current list of approved underwriters; (iii) to sell and award all or any portion of the Series 2018 Notes through a direct sale to the financial institution or institutions selected by the Authorized Officer who shall be referred to in the continuing covenant, direct purchase or similar agreement; or (iv) to issue all or any portion of the Series 2018 Notes in the form of a Loan Facility to any financial institution or institutions selected by the Authorized Officer. Each Authorized Officer is hereby authorized to sell and

award the Series 2018 Notes to the purchasers referred to in the preceding sentence in the case of a note purchase agreement, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, or, with respect to a Loan Facility or a continuing covenant, direct purchase or similar agreement, containing bank facility terms and provisions (including, without limitation, increased costs, term-out, events of default and remedies) in substantially the form set forth in a letter of credit reimbursement agreement most recently executed or delivered by the Issuer, including, if applicable, that the requirement that the Loan Facility issuer or direct purchaser offer to the Issuer a term-out provision of no less than five years, with such revisions to reflect the terms and provisions of the Series 2018 Notes as may be approved by the officer executing the note purchase, Loan Facility, continuing covenant or similar agreement (each, a "Purchase Agreement"). Each Authorized Officer is hereby authorized to agree to the selection of the representative of the underwriters or the other purchasers or facility providers as referred to in the Purchase Agreement or Agreements and to execute and deliver the Purchase Agreement or Agreements for and on behalf and in the name of the Issuer with such changes, omissions, insertions and revisions as may be approved by the officer executing the Purchase Agreement or Agreements, said execution being conclusive evidence of such approval and concurrence in the selection of the representative of the underwriters.

If it is determined that any sale of Series 2018 Notes shall be conducted on a competitive bid basis, each Authorized Officer is hereby further authorized to conduct the sale and award of the Series 2018 Notes on the basis of a competitive bid, pursuant to the terms of a notice of sale, including bid form (the "Notice of Sale"), in a form, including any limitations on permitted bidders and a description of the basis for determining the winning bidder or bidders, determined by such Authorized Officer. Each Authorized Officer is hereby authorized to conduct such competitive sale of the Series 2018 Notes in a manner consistent with this Supplemental Resolution and to utilize the services of the Authority's financial advisor and the services of an electronic bidding service, as such Authorized Officer shall determine, and the execution by such Authorized Officer of a letter of award shall be conclusive evidence of such award.

Each Authorized Officer is hereby authorized, to the extent required, to make public and to authorize the use and distribution by said purchasers of a Preliminary Official Statement (the "Preliminary Official Statement"), in connection with the public offering of the Series 2018 Notes, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations of the Issuer, with such changes, omissions, insertions and revisions as such Authorized Officer shall deem advisable, said distribution being conclusive evidence of the approval of such changes, omissions, insertions and revisions. The Issuer authorizes any of said officers to deliver a certification to the effect that the Preliminary Official Statement, together with such other documents, if any, described in such certificate, was deemed final as of its date for purposes of Rule 15c2-12 of the Securities and Exchange Commission.

Each Authorized Officer is hereby authorized, to the extent required, to make public and to authorize distribution of a final Official Statement in substantially the form of the Preliminary Official Statement or the most recently executed and delivered Official Statement if there is not a Preliminary Official Statement, with such changes, omissions, insertions and revisions as such Authorized Officer shall deem advisable, to sign such Official Statement and to deliver such Official Statement to the purchasers of the Series 2018 Notes, said execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

Notwithstanding the preceding two paragraphs, however, each Authorized Officer may make public and authorize the use and distribution of a final Official Statement in connection with the public offering of the Series 2018 Notes meeting the requirements of the preceding two paragraphs and may deem such Official Statement final as of its date for purposes of Rule 15c2-12 of the Securities and Exchange Commission.

Each Authorized Officer is hereby authorized to execute and deliver for and on behalf and in the name of the Issuer, to the extent determined by such Authorized Officer to be necessary or convenient, a Continuing Disclosure Agreement, substantially in the form of the Continuing Disclosure Agreement most recently executed and delivered by the Issuer in connection with the sale of Obligations, or such other form authorized by the Issuer in connection with other financings prior to the issuance of the Series 2018 Notes, with such changes, omissions, insertions and revisions as such Authorized Officer shall deem advisable (the "Continuing Disclosure Agreement"), said execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

Each Authorized Officer (including any Assistant Secretary of the Issuer) is hereby authorized and directed to execute and deliver any and all documents and instruments and to do and cause to be done any and all acts necessary or proper for carrying out the Notice of Sale, the Purchase Agreement, the Continuing Disclosure Agreement, the terms of any municipal bond insurance or any other credit or liquidity facility, and the issuance, sale and delivery of the Series 2018 Notes, and for implementing the terms of the Series 2018 Notes and the transactions contemplated hereby or thereby.

When reference is made in this Supplemental Resolution to the authorization of an Authorized Officer to do any act, such act may be accomplished by any of such officers individually.

SECTION 2.10. Forms of Series 2018 Notes and Authentication Certificate. The form of registered Series 2018 Notes, and the certificate of authentication, shall be of substantially the form and tenor provided in any Certificate of Determination.

SECTION 2.11. Appointment of Trustee, Paying Agent and other Agents. There is hereby delegated to any Authorized Officer executing any Certificate of Determination the right and authority to appoint any trustee, paying agent, fiscal agent or other agent with respect to the Series 2018 Notes deemed advisable by such Authorized Officer and to determine the terms and provisions of any arrangements with any such parties.

SECTION 2.12. General Provisions. As and to the extent provided in any Certificate of Determination, the provisions of Articles A-III, IV, A-IV, A-VII, A-IX and A-XI of the Resolution may apply equally to the Series 2018 Notes as though set forth in full herein but with each reference to Bonds being a reference to Series 2018 Notes, except as affected by the terms hereof and the procedures of the Securities Depository; provided that the Authorized Officer executing any Certificate of Determination may, in the alternative, set forth in any Certificate of Determination provisions relating to any such matters as deemed necessary or appropriate by such Authorized Officer.

ARTICLE III

DISPOSITION AND ALLOCATION OF SERIES 2018 NOTE PROCEEDS

SECTION 3.01. Disposition of Series 2018 Note Proceeds. Except as otherwise provided in any Certificate of Determination, the proceeds of the sale of the Series 2018 Notes shall be deposited in the Series 2018 Note Proceeds Account which is hereby established in the Proceeds Fund and applied pursuant to the related Certificate of Determination to the payment of Capital Costs, including any Costs of Issuance and accrued interest, and the payment of principal and interest on Outstanding Series 2018 Notes.

ARTICLE IV

TAX COVENANT PROVISIONS AND DEFEASANCE

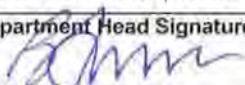

SECTION 4.01. Tax Covenants Relating to the Series 2018 Notes. The Issuer covenants that, in order to maintain the exclusion from gross income for Federal income tax purposes of the interest on the Series 2018 Notes issued as Tax-Exempt Obligations, the Issuer will satisfy, or take such actions as are necessary to cause to be satisfied, each provision of the Code necessary to maintain such exclusion. In furtherance of this covenant, the Issuer agrees to comply with such written instructions as may be provided by Bond Counsel. In furtherance of the covenant contained in the preceding sentence, the Issuer agrees to continually comply with the provisions of any "Arbitrage and Use of Proceeds Certificate" or "Tax Certificate" to be executed by the Issuer in connection with the execution and delivery of any Series 2018 Notes issued as Tax-Exempt Obligations, as amended from time to time.



Notwithstanding any other provision of the Resolution to the contrary, upon the Issuer's failure to observe, or refusal to comply with, the above covenant (a) the Holders of the Series 2018 Notes, or the Trustee acting on their behalf, shall be entitled to the rights and remedies provided to Bondholders under Section 702 of the Resolution (as though such provisions related to Series 2018 Notes rather than Bonds), other than the right (which is hereby abrogated solely as to the Issuer's failure to observe, or refusal to comply with, the above covenant) to declare the principal of all Notes then Outstanding, and the interest accrued thereon, to be due and payable pursuant to Section 567 of the Issuer Act, and (b) neither the Holders of the Notes of any Series (other than the Series 2018 Notes or the Trustee acting on their behalf) nor the Trustee acting on their behalf, shall be entitled to exercise any right or remedy provided to Noteholders under the Resolution based upon the Issuer's failure to observe, or refusal to comply with, the above covenant.

SECTION 4.02. Defeasance. In the event the Issuer shall seek, prior to the maturity or redemption date thereof, to pay or cause to be paid, within the meaning and with the effect expressed in this Supplemental Resolution, all or less than all Outstanding Series 2018 Notes issued as Tax-Exempt Obligations and the provisions of Section 4.01 hereof shall then be of any force or effect, then, notwithstanding the provisions of this Supplemental Resolution, the Series 2018 Notes issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid shall not be deemed to have been paid within the meaning and with the effect expressed in this Supplemental Resolution unless (i) the Issuer has confirmed in writing that the Holders of the Series 2018 Notes issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid will continue, after such action, to have the benefit of a covenant to the

effect of the covenant of the Issuer contained in Section 4.01 hereof or (ii) there shall have been delivered to the Trustee an opinion of Bond Counsel to the effect that non-compliance thereafter with the applicable provisions of the Code will not affect the then current treatment of interest on the Series 2018 Notes issued as Tax-Exempt Obligations in determining gross income for Federal income tax purposes.

Staff Summary

Subject Authorization to Issue Transportation Revenue Refunding Bonds, Dedicated Tax Fund Refunding Bonds, Triborough Bridge and Tunnel Authority General Revenue Refunding Bonds and Subordinate Revenue Refunding Bonds	Date December 13, 2017
Department Finance	Vendor Name N/A
Department Head Name Robert E. Foran, Chief Financial Officer	Contract Number
Department Head Signature 	Contract Manager Name
Project Manager Name Patrick McCoy, Director of Finance 	Table of Contents Ref #

Board Action						Internal Approvals			
Order	To	Date	Approval	Info	Other	Order	Approval	Order	Approval
1	Finance Comm.	12/11	X			1	Legal 	2	Chief of Staff 
2	Board	12/13	X						

PURPOSE:

The MTA Finance Department is seeking MTA and TBTA Board authorization and approval of the necessary documentation to issue refunding bonds, from time to time, subject, if applicable, to the refunding policy attached hereto adopted by the Board in May, 2010, as amended from time to time, and provided that the MTA Chief Financial Officer or the MTA Director, Finance makes a determination that the refunding of such bonds or other obligations will be beneficial to the obligors thereof and/or their affiliates and subsidiaries. The MTA Finance Department is also seeking authority to allow for a portion of the Transportation Revenue Refunding Bonds and Dedicated Tax Fund Refunding Revenue Bonds to be issued as variable rate securities to refund bonds that already meet the refunding policy requirements based on a fixed rate refunding. MTA's portfolio of outstanding indebtedness is \$36.5 billion (exclusive of State Service Contract Bonds, which debt service is paid by the State).

DISCUSSION:

MTA and TBTA Board approval is sought for the following resolutions, documents and activities in connection with the issuance of refunding bonds:

- MTA Multiple Series Transportation Revenue Refunding Bond Supplemental Resolution (2018) authorizing Metropolitan Transportation Authority Transportation Revenue Refunding Obligations, including providing for the issuance of the following:
 - Parity Reimbursement Obligations and Parity Debt in an amount sufficient to secure any Credit Facilities entered into in connection with the issuance of the Transportation Revenue Refunding Obligations.
- MTA Multiple Series Dedicated Tax Fund Refunding Bond Supplemental Resolution (2018) authorizing Metropolitan Transportation Authority Dedicated Tax Fund Refunding Obligations, including providing for the issuance of the following:

- Parity Reimbursement Obligations and Parity Debt in an amount sufficient to secure any Credit Facilities entered into in connection with the issuance of the Dedicated Tax Fund Revenue Refunding Obligations.
- TBTA Multiple Series General Revenue Refunding Bond Supplemental Resolution (2018) authorizing Triborough Bridge and Tunnel Authority General Revenue Refunding Obligations, including providing for the issuance of the following:
 - Parity Reimbursement Obligations and other Parity Debt in an amount sufficient to secure any Credit Facilities entered into in connection with the issuance of the General Revenue Refunding Obligations.
- TBTA Multiple Series 2001 Subordinate Revenue Refunding Bond Supplemental Resolution (2018) authorizing Triborough Bridge and Tunnel Authority Subordinate Revenue Refunding Obligations, including providing for the issuance of the following:
 - Parity Reimbursement Obligations and other Parity Debt in an amount sufficient to secure any Credit Facilities entered into in connection with the issuance of the Subordinate Revenue Refunding Obligations.

With respect to the above-referenced financial transactions, MTA and TBTA Board approval, as applicable, is sought:

(a) delegating authority to the Chairman, the Managing Director, the Chair of the Finance Committee, the Vice Chairman, the Chief Financial Officer or the Director, Finance to award the obligations either pursuant to competitive bid or to members (or entities related to such firms) of the Board-approved MTA underwriting syndicate and to execute and/or deliver in each case, where appropriate:

- Notices of Sale and bid forms,
- Purchase Agreements with underwriters,
- Direct Purchase Agreements,
- Official Statements and other disclosure documents,
- Continuing Disclosure Agreements and related filings,
- Remarketing Agreements,
- Dealer and Broker/Dealer Agreements,
- Issuing and Paying Agent Agreements,
- Credit Facilities and related Parity Reimbursement Obligations and Parity Debt,
- Related Subordinated Contract Obligations,
- Verification Reports,
- Escrow Agreements, and
- Investment Agreements.

Any such documents will be in substantially the form of any document previously entered into by MTA or TBTA for previous issues, with such changes as approved by any one or more of the foregoing officers.

(b) authorizing such officers to terminate, amend, supplement, replace or extend any such documents, including existing Credit Facilities (and related Parity Reimbursement Obligations and Parity Debt), as they shall deem advisable, and to take such other actions as may be necessary or desirable to effectuate the issuance of the refunding bonds and other financial transactions set forth above, on behalf of MTA, TBTA or other MTA subsidiaries and affiliates.

ALTERNATIVES:

The Board could determine that staff seek specific approval for each refunding contemplated in advance of undertaking such refunding. This alternative is not advised as the timing of the Board cycle could result in missed market opportunities.

RECOMMENDATION:

The MTA and TBTA Boards approve the above-referenced resolutions and documents and all other actions described above, including the execution and delivery of such other documents, and the taking of all other actions, from time to time deemed necessary or desirable by such officers in connection therewith. The authorization to issue

Staff Summary

the refunding bonds and take other related actions hereunder shall continue in effect without any further action by the MTA or TBTA Boards, until the adoption by the MTA and TBTA Boards, of subsequent refunding bond supplemental resolutions relating to 2019 refundings unless (a) the MTA and TBTA Boards shall have confirmed the effectiveness of this authorization for an additional period, or (b) the MTA and TBTA Boards shall have modified or repealed this authorization.

Adopted May 26, 2010

BOND AND OTHER DEBT OBLIGATIONS REFUNDING POLICY

WHEREAS, The Metropolitan Transportation Authority has a large portfolio of outstanding bonds and other debt obligations; and

WHEREAS, The Metropolitan Transportation Authority desires to achieve the lowest possible interest cost for such bonds; and

WHEREAS, The Metropolitan Transportation Authority desires, from time to time, to benefit from favorable capital market conditions to undertake refundings of the outstanding bonds and other obligations; and

WHEREAS, The Metropolitan Transportation Authority has determined that in order to provide guidance in the issuance of refunding bonds, a refunding policy ("Refunding Policy") is desirable.

WHEREAS, such refunding bonds must be authorized by the Board in accordance with a supplemental resolution for each of the MTA and TBTA credits, such supplemental resolutions are attached hereto;

BE IT RESOLVED by the Metropolitan Transportation Authority that, except as otherwise provided by separate action of the Authority relating to a particular refunding, the Refunding Policy as set forth below shall be adopted and shall apply to all refundings of bonds or other debt obligations described therein hereafter.

<p style="text-align: center;">Metropolitan Transportation Authority and Triborough Bridge and Tunnel Authority Bond and Other Debt Obligations Refunding Policy</p>

This bond and other debt obligations refunding policy establishes conditions precedent to any issuance of fixed rate bonds for the purposes of refunding fixed rate bonds previously issued by the MTA or any of the Related Entities.

- For a standard fixed rate refunding, each individual bond maturity is expected to have net present value (NPV) savings (expressed as a percentage of the par amount of refunded bonds) of at least the following amounts at the time of mailing the Preliminary Official Statement and at the time of the initial pricing of the refunding bonds (nothing herein precludes the addition of individual bond maturities that meet the savings criteria, or the deletion of bond maturities that do not meet the savings criteria on the day of pricing):

		Years to Call		
Years From Call To Maturity		0 to 2	3 to 7	8 plus
	0 to 5	0.5%	1.0%	2.0%
	6 to 10	1.0%	2.5%	4.0%
	11 to 15	3.0%	4.0%	5.0%
	16 plus	4.0%	5.05%	5.5%

- In addition to achieving the above maturity-by-maturity NPV savings, aggregate NPV savings must be at least 3.0 percent of the par amount of refunded bonds.
- The arbitrage yield must be utilized in calculating NPV savings.
- Actual escrow investments must be used in calculation of refunding savings at the time of pricing.

Additional Criteria and Instructions

- The evaluation of refunding opportunities with respect to the State Bond Issuance Charge (BIC) shall be factored in as a cost of issuance with respect to total NPV savings requirement calculations. The individual bond-by-bond maturity evaluations shall also include BIC as a factor.
- If it is possible to meet the arbitrage yield in a refunding escrow with SLGS, they should be used. In the event SLGS could provide a yield higher than the arbitrage yield, as many rolling 0 percent SLGS as possible should be used to blend down the arbitrage yield. If the arbitrage yield cannot be met with SLGS or the SLGS window is not open, treasury securities and other open market securities can be considered, consistent with the investment restrictions in the bond resolution.

METROPOLITAN TRANSPORTATION AUTHORITY

**MULTIPLE SERIES
TRANSPORTATION REVENUE REFUNDING BOND
SUPPLEMENTAL RESOLUTION**

Adopted December 13, 2017

TABLE OF CONTENTS

Page

ARTICLE I

DEFINITIONS AND STATUTORY AUTHORITY

Section 1.01. Supplemental Resolution	1
Section 1.02. Definitions.....	1
Section 1.03. Authority for this Supplemental Resolution	2

ARTICLE II

AUTHORIZATION OF REFUNDING BONDS

Section 2.01. Authorized Principal Amount, Designation and Series	3
Section 2.02. Purposes	3
Section 2.03. Dates, Maturities, Principal Amounts and Interest	3
Section 2.04. Interest Payments	4
Section 2.05. Denominations, Numbers and Letters.....	4
Section 2.06. Places of Payment and Paying Agent	4
Section 2.07. Sinking Fund Installments	4
Section 2.08. Redemption Prices and Terms	4
Section 2.09. Delegation to an Authorized Officer.....	5
Section 2.10. Sale of Refunding Bonds	7
Section 2.11. Forms of Refunding Bonds and Trustee's Authentication Certificate.....	9
Section 2.12. Appointment of Trustee and Paying Agent	9

ARTICLE III

DISPOSITION OF REFUNDING BOND PROCEEDS

Section 3.01. Disposition of Refunding Bond Proceeds.....	11
---	----

ARTICLE IV

TAX COVENANTS AND DEFEASANCE

Section 4.01. Tax Covenants Relating to the Refunding Bonds.....	12
Section 4.02. Defeasance	12

**MULTIPLE SERIES
TRANSPORTATION REVENUE REFUNDING BOND
SUPPLEMENTAL RESOLUTION**

BE IT RESOLVED by the Metropolitan Transportation Authority (the “Issuer”), as follows:

ARTICLE I

DEFINITIONS AND STATUTORY AUTHORITY

Section 1.01. Supplemental Resolution. This resolution is supplemental to, and is adopted in accordance with Article II and Article A-VIII of, a resolution of the Issuer adopted on March 26, 2002, entitled “General Resolution Authorizing Transportation Revenue Obligations” (the “Resolution”).

Section 1.02. Definitions.

1. All capitalized terms which are used but not otherwise defined in this Multiple Series Transportation Revenue Refunding Bond Supplemental Resolution (the “Supplemental Resolution”) shall have the same meanings, respectively, as such terms are given by Section 102 of the Resolution.

2. In this Supplemental Resolution:

“Authorized Officer” shall include the officers designated as such in the Resolution, and the Chairman, the Managing Director, the Chair of the Finance Committee, the Vice Chairman, the Chief Financial Officer or the Director, Finance, as well as any officer duly designated as “Acting” in said officer’s capacity, except that, for the purposes of any delegation set forth herein that does not expressly include any Assistant Secretary, “Authorized Officer” shall not include any Assistant Secretary of the Issuer.

“Board” shall mean the members of the Issuer acting as such pursuant to the provisions of the Issuer Act.

“Bond Counsel” shall mean Nixon Peabody LLP, Orrick, Herrington & Sutcliffe LLP, D. Seaton and Associates, P.A., P.C., Bryant Rabbino LLP or any other attorney or firm of attorneys of nationally recognized standing in the field of law relating to the issuance of obligations by state and municipal entities, selected by the Issuer.

“Code” shall mean the Internal Revenue Code of 1986, as amended, and regulations thereunder.

“Cross-Credit Obligations” shall mean indebtedness or other obligations issued or incurred by the Issuer or any other Related Entity as described in clause (iii) of the definition of “Capital Costs”, but excluding Obligations.

“Refunding Bonds” shall mean the Transportation Revenue Bonds authorized by Article II of this Supplemental Resolution in one or more Series or subseries.

Section 1.03. Authority for this Supplemental Resolution. This Supplemental Resolution is adopted pursuant to the provisions of the Issuer Act and the Resolution.

[Remainder of page intentionally left blank]

ARTICLE II

AUTHORIZATION OF REFUNDING BONDS

Section 2.01. Authorized Principal Amount, Designation and Series.

1. Pursuant to the provisions of the Resolution and in order to issue (a) Refunding Obligations, and (b) Obligations for the purpose of refunding Cross-Credit Obligations, multiple Series of Transportation Revenue Obligations (which may be issued at one time or from time to time in any number of Series or subseries, which for purposes of this Supplemental Resolution shall collectively be referred to herein as the “Refunding Bonds”, subject to redesignation as hereinafter provided) entitled to the benefit, protection and security of such provisions are hereby authorized to be issued in an aggregate principal amount not exceeding the principal amount necessary so that, after giving effect to any net original issue discount or premium and underwriters’ discount from the principal amount, the amount to be deposited in the Proceeds Account pursuant to, or otherwise applied to effectuate the purposes of, Section 2.02 and Section 3.01 of this Supplemental Resolution (exclusive of the amount so deposited therein determined in any Certificate of Determination as estimated to be necessary to pay any Costs of Issuance of the Refunding Bonds payable from such Proceeds Account or otherwise applied to pay such Costs of Issuance), shall not exceed the amount or amounts determined in one or more Certificates of Determination to be necessary to effectuate the purposes set forth in Section 2.02 hereof; provided, however, that any Refunding Bonds issued pursuant to this Supplemental Resolution shall be issued in compliance with any Board policies relating to the issuance of refunding bonds as may be in effect from time to time.

2. Nothing in this Supplemental Resolution is intended to preclude the issuance of Refunding Bonds as refunding obligations in accordance with Section 203 of the Resolution.

Refunding Bonds shall be designated as, and shall be distinguished from the Obligations of all other Series by the title, “Transportation Revenue Bonds, Series [insert calendar year of issuance]” or such other title or titles set forth in the related Certificate of Determination.

The authority to issue Obligations and take related actions granted under previous resolutions of the Issuer shall continue in full force and effect. The authorization to issue the Refunding Bonds and take other related actions hereunder shall continue in effect without any further action by the Issuer until the adoption by the MTA Board of a subsequent refunding bond supplemental resolution relating to 2019 refundings.

Section 2.02. Purposes. The purposes for which the Refunding Bonds are issued shall be set forth in one or more Certificates of Determination and may include the refunding, restructuring or payment, including by purchasing, exchanging or tendering therefor, of all or any portion of any Outstanding Obligations or Parity Debt or Cross-Credit Obligations deemed advisable by an Authorized Officer in accordance with Section 203 or 204 of the Resolution, as applicable.

Section 2.03. Dates, Maturities, Principal Amounts and Interest. The Refunding Bonds, except as otherwise provided in the Resolution, shall be dated the date or dates determined

in the related Certificate of Determination. The Refunding Bonds shall mature on the date or dates and in the year or years and principal amount or amounts, and shall bear interest at the rate or rates per annum, if any, specified in or determined in the manner provided in the related Certificate of Determination.

Section 2.04. Interest Payments. The Refunding Bonds shall bear interest from their date or dates and be payable on such date or dates as may be determined pursuant to the related Certificate of Determination. Except as otherwise provided in the related Certificate of Determination, interest on the Refunding Bonds shall be computed on the basis of twelve 30-day months and a 360-day year.

Section 2.05. Denominations, Numbers and Letters. Unless otherwise provided in the related Certificate of Determination, the Refunding Bonds shall be issued in fully registered form without coupons in the denomination of \$5,000 or any integral multiple thereof.

The Refunding Bonds shall be lettered and numbered as provided in the related Certificate of Determination.

Section 2.06. Places of Payment and Paying Agent. Except as otherwise provided in the related Certificate of Determination, principal and Redemption Price of the Refunding Bonds shall be payable to the registered owner of each Refunding Bond when due upon presentation of such Refunding Bond at the principal corporate trust office of the Trustee. Except as otherwise provided in the related Certificate of Determination, interest on the registered Refunding Bonds will be paid by check or draft mailed on the interest payment date by the Paying Agent, to the registered owner at his address as it appears on the registration books or, at the option of any Owner of at least one million dollars (\$1,000,000) in principal amount of the Refunding Bonds, by wire transfer in immediately available funds on each interest payment date to such Owner thereof upon written notice from such Owner to the Trustee, at such address as the Trustee may from time to time notify such Owner, containing the wire transfer address (which shall be in the continental United States) to which such Owner wishes to have such wire directed, if such written notice is received not less than twenty (20) days prior to the related interest payment date (such notice may refer to multiple interest payments).

Section 2.07. Sinking Fund Installments. The Refunding Bonds, if any, determined in the related Certificate of Determination shall be subject to redemption (a) in part, by lot, (b) pro rata (in the case of taxable Refunding Bonds), or (c) otherwise as determined in accordance with Section A-404 of the Resolution, as set forth in the Certificate of Determination, on each date in the year or years determined in the Certificate of Determination at the principal amount thereof plus accrued interest up to but not including the date of redemption thereof, from mandatory Sinking Fund Installments which are required to be made in amounts sufficient to redeem on each such date the principal amount of such Refunding Bonds.

Section 2.08. Redemption Prices and Terms. The Refunding Bonds may also be subject to redemption prior to maturity, at the option of the Issuer, upon notice as provided in Article A-IV of the Resolution, at any time as a whole or in part (and by lot within a maturity, or otherwise as determined in accordance with Section A-404 of the Resolution, if less than all of a maturity is to be redeemed), from maturities designated by the Issuer on and after the date and in the years and

at the Redemption Prices (expressed as a percentage of principal amount) determined in the related Certificate of Determination, plus accrued interest up to but not including the redemption date. Notwithstanding the foregoing, in the case of taxable Refunding Bonds, if set forth in the Certificate of Determination, the taxable Refunding Bonds may be made subject to pro rata redemption and/or a make-whole redemption premium.

Section 2.09. Delegation to an Authorized Officer. 1. There is hereby delegated to each Authorized Officer, subject to the limitations contained in this Supplemental Resolution, the following powers with respect to the Refunding Bonds:

(a) to determine whether and when to issue any Refunding Bonds constituting Refunding Obligations or Obligations issued to refund Cross-Credit Obligations, and to determine the amount of the proceeds of the Refunding Bonds to be applied to refunding purposes as well as the specific Obligations or Parity Debt or Cross-Credit Obligations, or portions of either to be refunded and the date or dates, if any, on which such refunded obligations shall be redeemed, and the amount of the proceeds of the Refunding Bonds estimated to be necessary to pay the Costs of Issuance of the Refunding Bonds;

(b) to determine the purpose or purposes for which the Refunding Bonds are being issued, which shall be one or more of the purposes set forth in Section 2.02 of this Supplemental Resolution;

(c) to determine the principal amounts of the Refunding Bonds to be issued for the purposes set forth in Section 2.02 of this Supplemental Resolution and whether such principal amounts constitute a separate Series or a subseries of Refunding Bonds, and to determine Accreted Values and Appreciated Values, if applicable;

(d) to determine the maturity date and principal amount of each maturity of the Refunding Bonds and the amount and due date of each Sinking Fund Installment, if any;

(e) to determine the date or dates which the Refunding Bonds shall be dated and the interest rate or rates of the Refunding Bonds or the manner of determining such interest rate or rates; provided, however, that any Obligations issued as fixed rate Tax-Exempt Obligations shall be subject to a maximum interest rate of not greater than 10% per annum, any Obligations issued as fixed rate Taxable Obligations shall be subject to a maximum interest rate of not greater than 12% per annum, any Variable Interest Rate Obligations issued as Tax-Exempt Obligations shall be subject to a maximum interest rate of not greater than 15% per annum, any Variable Interest Rate Obligations issued as Taxable Obligations shall be subject to a maximum interest rate of not greater than 18% per annum and any Parity Reimbursement Obligations shall be subject to a maximum interest rate of not greater than 25% per annum, or, in each such case, such higher rate or rates as determined by the Issuer's Board;

(f) to determine the Redemption Price or Redemption Prices, if any, and the redemption terms, if any, for the Refunding Bonds; provided, however, that if the Refunding Bonds are to be redeemable at the election of the Issuer, the Redemption Price (except in the case of taxable Refunding Bonds) shall not be greater than one hundred three percent (103%) of the principal amount of the Refunding Bonds to be redeemed, plus accrued interest thereon up to but

not including the date of redemption and in the case of taxable Refunding Bonds the Redemption Price may be determined pursuant to provisions relating to pro rata redemption and/or make-whole redemption;

(g) to determine whether the sale of the Refunding Bonds shall be conducted on either a negotiated or competitive bid basis and, as applicable, to determine the purchase price for the Refunding Bonds to be paid by the purchaser or purchasers referred to in one or more Purchase Agreements or a bank direct purchase agreement, or the purchase price for the Refunding Bonds to be paid by the winning bidder, if such sale is conducted by competitive bid pursuant to a Notice of Sale, in either case as such document is described in Section 2.10 of this Supplemental Resolution, which may include such original issue discount and original issue premium as shall be determined in the related Certificate of Determination; provided, however, that the underwriters' discount reflected in such purchase price shall not exceed \$10.00 for each one thousand dollars (\$1,000) principal amount of the Refunding Bonds;

(h) to take all actions required for the Refunding Bonds to be eligible under the rules and regulations of The Depository Trust Company ("DTC") for investment and trading as uncertificated securities, to execute and deliver a standard form of letter of representation with DTC and, notwithstanding any provisions to the contrary contained in this Supplemental Resolution, to include in the related Certificate of Determination such terms and provisions as may be appropriate or necessary to provide for uncertificated securities in lieu of Refunding Bonds issuable in fully registered form;

(i) to determine whether to issue all or any portion of the Refunding Bonds as Tax-Exempt Obligations, Taxable Obligations, Put Obligations, Variable Interest Rate Obligations or as any other form of Obligations permitted by the Resolution and any matters related thereto, including (i) the terms and provisions of any such Obligations, (ii) the selection of remarketing agents, tender agents, auction agents, dealers, calculation agents, bidding agents or any other agents or parties to ancillary arrangements and the terms of any such arrangements, and (iii) the methods for determining the accrual of Debt Service;

(j) to determine the advisability, as compared to an unenhanced transaction, of obtaining one or more Credit Facilities, to select a provider or providers thereof and to determine and accept the terms and provisions and price thereof, to determine such other matters related thereto as in the opinion of the officer executing the related Certificate of Determination shall be considered necessary or appropriate and to effect such determinations by making any changes in or additions to this Supplemental Resolution required by Credit Facility providers, if any, or required by a Rating Agency in order to attain or maintain specific ratings on the Refunding Bonds, or relating to the mechanisms for the repayment of amounts advanced thereunder or payment of fees, premiums, expenses or any other amounts, notices, the provision of information, and such other matters of a technical, mechanical, procedural or descriptive nature necessary or appropriate to obtain or implement a Credit Facility with respect to the Refunding Bonds, and to make any changes in connection therewith;

(k) to make such changes in or from the form of this Supplemental Resolution as may be required by a Rating Agency in order to attain or maintain specific ratings on the Refunding Bonds;

(l) to make such changes in or from the form of this Supplemental Resolution as may be necessary or desirable in order to cure any ambiguities, inconsistencies or other defects;

(m) to determine whether to (i) enter into an escrow agreement or other arrangement in connection with the issuance of Refunding Bonds, including the selection of escrow agents, verification agents and the manner of determining specified matters relating to the defeasance of the refunded obligations and (ii) purchase SLGs or open market securities and the form and substance thereof and any related investment agreement, and to determine the application of any amounts released in connection with any such refunding;

(n) to determine that fixed rate Refunding Bonds comply with all Board policies relating to the issuance of refunding obligations in effect at the time of such determination;

(o) to determine that Refunding Bonds issued as Variable Interest Rate Obligations comply with all Board policies relating to Refunding Bonds relating to the issuance of refunding obligations in effect at the time of such determination as if such bonds were issued as fixed rate Refunding Bonds; and

(p) to determine such other matters specified in or permitted by (i) Sections 202, 203, 204 and A-201 of the Resolution or (ii) this Supplemental Resolution, and to determine matters relating to the payment or defeasance of Obligation Anticipation Notes, including preparation of any documentation therefor.

2. Any Authorized Officer shall execute one or more Certificates of Determination evidencing the determinations made pursuant to this Supplemental Resolution and any such Certificate of Determination shall be conclusive evidence of the determinations of such Authorized Officer, as stated therein. More than one Certificate of Determination may be delivered to the extent more than one Series or subseries of Refunding Bonds are delivered from time to time, or other authority is exercised under this Supplemental Resolution from time to time and each such Certificate of Determination shall be delivered to the Trustee prior to the authentication and delivery of the respective Series or subseries of Refunding Bonds by the Trustee or other documentation. Determinations set forth in any Certificate of Determination shall have the same effect as if set forth in this Supplemental Resolution. Any such Authorized Officer may exercise any authority delegated under this Supplemental Resolution from time to time following issuance of any Refunding Bonds, as appropriate for any purposes, including, in order to change interest rate modes or auction periods, if any Refunding Bonds shall consist of multiple subseries, to change the principal amounts and number of the individual subseries or to combine all subseries into a single Series, if any Refunding Bonds consist of a single Series, to divide such Series into two or more subseries and to determine the principal amount of such subseries, obtain a substitute or additional Credit Facility, enter into a bank direct purchase agreement or similar instrument, or to appoint new or additional agents or other parties deemed appropriate to a particular form or mode of Obligation or manner of sale.

Section 2.10. Sale of Refunding Bonds. Each Authorized Officer is hereby authorized either (i) to sell and award all or any portion of the Refunding Bonds through a competitive bidding process to purchasers meeting the requirements of one or more Notices of Sale (as hereinafter defined) to be published in order to give notice of the competitive sale of the Refunding Bonds;

(ii) to sell and award all or any portion of the Refunding Bonds through a negotiated sale to the purchasers who are referred to in the bond purchase agreement and who shall be selected from the then current list of approved underwriters; or (iii) to sell and award all or any portion of the Refunding Bonds through a direct sale to the financial institution or institutions selected by the Authorized Officer who shall be referred to in the continuing covenant, direct purchase or similar agreement. Each Authorized Officer is hereby authorized to sell and award the Refunding Bonds to the purchasers referred to in the preceding sentence in the case of a bond purchase agreement, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, or, with respect to a continuing covenant, direct purchase or similar agreement, containing bank facility terms and provisions (including, without limitation, increased costs, term-out, events of default and remedies) in substantially the form set forth in a letter of credit reimbursement agreement most recently executed or delivered by the Issuer, including, if applicable, that the direct purchaser offer to the Issuer a term-out provision of no less than five years, with such revisions to reflect the terms and provisions of the Refunding Bonds as may be approved by the officer executing the bond purchase, continuing covenant or similar agreement (each, a "Purchase Agreement"). Each Authorized Officer is hereby authorized to agree to the selection of the representative of the underwriters or the other purchasers or facility providers as referred to in the Purchase Agreement or Agreements and to execute and deliver the Purchase Agreement or Agreements for and on behalf and in the name of the Issuer with such changes, omissions, insertions and revisions as may be approved by the officer executing the Purchase Agreement or Agreements, said execution being conclusive evidence of such approval and concurrence in the selection of the representative of the underwriters..

If it is determined that any sale of Bonds shall be conducted on a competitive bid basis, each Authorized Officer is hereby further authorized to conduct the sale and award of the Refunding Bonds on the basis of a competitive bid, pursuant to the terms of a notice of sale, including bid form (the "Notice of Sale"), in a form, including any limitations on permitted bidders and a description of the basis for determining the winning bidder or bidders, determined by such Authorized Officer. Each Authorized Officer is hereby authorized to conduct such competitive sale of the Refunding Bonds in a manner consistent with this Supplemental Resolution and to utilize the services of the Authority's financial advisor and the services of an electronic bidding service, as such Authorized Officer shall determine, and the execution by such Authorized Officer of a letter of award shall be conclusive evidence of such award.

Each Authorized Officer is hereby authorized to make public and to authorize the use and distribution by said purchasers or other appropriate parties of a preliminary official statement, offering circular, or other disclosure document (the "Preliminary Official Statement") in connection with each public offering or any private placement of the Refunding Bonds, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, with such changes, omissions, insertions and revisions as such officer shall deem advisable. The Issuer authorizes any of said officers to deliver a certification to the effect that such Preliminary Official Statement or Official Statement, if deemed necessary or appropriate, together with such other documents, if any, described in such certificate, was deemed final as of its date for purposes of Rule 15c2-12 of the Securities and Exchange Commission as applicable.

Each Authorized Officer is hereby authorized to make public and to authorize distribution of a final Official Statement in substantially the form of each Preliminary Official Statement or

the most recently executed and delivered Official Statement if there is not a Preliminary Official Statement, with such changes, omissions, insertions and revisions as such officer shall deem advisable, to sign such Official Statement and to deliver such Official Statement to the purchasers of such issue of the Refunding Bonds, such execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

Each Authorized Officer is hereby authorized to execute and deliver for and on behalf and in the name of the Issuer, to the extent determined by such Authorized Officer to be necessary or convenient, a Continuing Disclosure Agreement, substantially in the form appended to the Purchase Agreement or Notice of Sale, with such changes, omissions, insertions and revisions as such officer shall deem advisable (the "Continuing Disclosure Agreement"), said execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

The proceeds of each good faith check, if any, received by the Issuer from the purchasers of each issue of Refunding Bonds under the terms of the related Purchase Agreement or Notice of Sale may be invested by the Issuer pending application of the proceeds of such good faith check for the purposes provided in Section 2.02 of this Supplemental Resolution at the time of the issuance and delivery of such Refunding Bonds.

Each Authorized Officer (including any Assistant Secretary of the Issuer) is hereby authorized and directed to execute, deliver, amend, replace or terminate any and all documents and instruments (including any remarketing agreements, dealer agreements, broker-dealer agreements, tender agent agreements, or auction agency agreements, any escrow agreements, any investment agreements or arrangements, or any reimbursement agreements or documents or instruments relating to a Credit Facility deemed appropriate to a given form or mode of an Obligation) and to do and cause to be done any and all acts necessary or proper for carrying out each Purchase Agreement or Notice of Sale, each Continuing Disclosure Agreement, the terms of any Credit Facility or other such agreement or arrangement, and the issuance, sale and delivery of each issue of the Refunding Bonds and for implementing the terms of each issue of the Refunding Bonds and the transactions contemplated hereby or thereby.

When reference is made in this Supplemental Resolution to the authorization of an Authorized Officer to do any act, such act may be accomplished by any of such officers individually.

Section 2.11. Forms of Refunding Bonds and Trustee's Authentication Certificate. Subject to the provisions of the Resolution, the form of registered Refunding Bonds, and the Trustee's certificate of authentication, shall be substantially in the form set forth in Exhibit One to the Resolution including, if necessary, any changes to comply with the requirements of DTC or the provisions of this Supplemental Resolution or any Certificate of Determination.

Section 2.12. Appointment of Trustee and Paying Agent. Unless otherwise provided by Certificate of Determination, The Bank of New York Mellon, as successor in interest to JPMorgan Chase Bank, N.A. shall be the Trustee under the Resolution and the Paying Agent for the Refunding Bonds.

[Remainder of page intentionally left blank]

ARTICLE III

DISPOSITION OF REFUNDING BOND PROCEEDS

Section 3.01. Disposition of Refunding Bond Proceeds. Any proceeds of the sale of the Refunding Bonds, other than accrued interest, if any, shall be deposited, simultaneously with the issuance and delivery of the Refunding Bonds, at one time or from time to time in one or more Series or subseries, in the Proceeds Account which is deemed to be established for each Series in the Proceeds Fund to be applied, or shall otherwise be applied pursuant to a Certificate of Determination to:

(a) the refunding of any Obligations, Parity Debt or Cross-Credit Obligations, or portions of any of them, in accordance with Section 2.02 hereof; and

(b) the balance of such proceeds, exclusive of accrued interest, shall be deposited in the Costs of Issuance Account and applied to the payment of Costs of Issuance or otherwise applied to the payment of Costs of Issuance.

Unless otherwise provided in a Certificate of Determination, the accrued interest, if any, and any capitalized interest received on the sale of the Refunding Bonds shall be deposited in the Debt Service Fund.

ARTICLE IV

TAX COVENANTS AND DEFEASANCE

Section 4.01. Tax Covenants Relating to the Refunding Bonds. The Issuer covenants that, in order to maintain the exclusion from gross income for Federal income tax purposes of the interest on the Refunding Bonds issued as Tax-Exempt Obligations, the Issuer will satisfy, or take such actions as are necessary to cause to be satisfied, each provision of the Code necessary to maintain such exclusion. In furtherance of this covenant, the Issuer agrees to comply with such written instructions as may be provided by Bond Counsel. In furtherance of the covenant contained in the preceding sentence, the Issuer agrees to continually comply with the provisions of any “Arbitrage and Use of Proceeds Certificate” or “Tax Certificate” to be executed by the Issuer in connection with the execution and delivery of any Refunding Bonds issued as Tax-Exempt Obligations, as amended from time to time.

Notwithstanding any other provision of the Resolution to the contrary, upon the Issuer’s failure to observe, or refusal to comply with, the above covenant (a) the Owners of the Refunding Bonds, or the Trustee acting on their behalf, shall be entitled to the rights and remedies provided to Owners or the Trustee under Section 702 of the Resolution, and (b) neither the Owners of the Obligations of any Series or holders of any Parity Debt (other than the Refunding Bonds or the Trustee acting on their behalf), nor the Trustee acting on their behalf, shall be entitled to exercise any right or remedy provided to the Owners, the Parity Debt holders or the Trustee under the Resolution based upon the Issuer’s failure to observe, or refusal to comply with, the above covenant.

The provisions of the foregoing covenants set forth in this Section shall not apply to any Refunding Bonds, including any subseries thereof, which the Issuer determines pursuant to the applicable Certificate of Determination to issue as Taxable Obligations.

Section 4.02. Defeasance. In the event the Issuer shall seek, prior to the maturity or redemption date thereof, to pay or cause to be paid, within the meaning and with the effect expressed in the Resolution, all or less than all Outstanding Refunding Bonds issued as Tax-Exempt Obligations and the provisions of Section 4.01 hereof shall then be of any force or effect, then, notwithstanding the provisions of Article A-XI of the Resolution, the Refunding Bonds issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid shall not be deemed to have been paid within the meaning and with the effect expressed in Section A-1101 of the Resolution unless (i) the Issuer has confirmed in writing that the Owners of the Refunding Bonds issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid will continue, after such action, to have the benefit of a covenant to the effect of the covenant of the Issuer contained in Section 4.01 hereof or (ii) there shall have been delivered to the Trustee an Opinion of Bond Counsel to the effect that non-compliance thereafter with the applicable provisions of the Code will not affect the then current treatment of interest on the Refunding Bonds issued as Tax-Exempt Obligations in determining gross income for Federal income tax purposes.

METROPOLITAN TRANSPORTATION AUTHORITY

**MULTIPLE SERIES
DEDICATED TAX FUND REFUNDING BOND
SUPPLEMENTAL RESOLUTION**

Adopted December 13, 2017

TABLE OF CONTENTS

Page

ARTICLE I

DEFINITIONS AND STATUTORY AUTHORITY

Section 1.01. Supplemental Resolution	1
Section 1.02. Definitions.....	1
Section 1.03. Authority for this Supplemental Resolution	2

ARTICLE II

AUTHORIZATION OF REFUNDING BONDS

Section 2.01. Authorized Principal Amount, Designation and Series	3
Section 2.02. Purposes	3
Section 2.03. Dates, Maturities, Principal Amounts and Interest	3
Section 2.04. Interest Payments	4
Section 2.05. Denominations, Numbers and Letters.....	4
Section 2.06. Places of Payment and Paying Agent	4
Section 2.07. Sinking Fund Installments	4
Section 2.08. Redemption Prices and Terms	4
Section 2.09. Delegation to an Authorized Officer.....	5
Section 2.10. Sale of Refunding Bonds	7
Section 2.11. Forms of Refunding Bonds and Trustee's Authentication Certificate.....	9
Section 2.12. Appointment of Trustee and Paying Agent	9

ARTICLE III

DISPOSITION OF REFUNDING BOND PROCEEDS

Section 3.01. Disposition of Refunding Bond Proceeds.....	10
---	----

ARTICLE IV

TAX COVENANTS AND DEFEASANCE

Section 4.01. Tax Covenants Relating to the Refunding Bonds.....	11
Section 4.02. Defeasance	11

**MULTIPLE SERIES
DEDICATED TAX FUND REFUNDING BOND
SUPPLEMENTAL RESOLUTION**

BE IT RESOLVED by the Metropolitan Transportation Authority (the “Issuer”), as follows:

ARTICLE I

DEFINITIONS AND STATUTORY AUTHORITY

Section 1.01. Supplemental Resolution. This resolution is supplemental to, and is adopted in accordance with Article II and Article A-VIII of, a resolution of the Issuer adopted on March 26, 2002, entitled “Dedicated Tax Fund Obligation Resolution” (the “Resolution”).

Section 1.02. Definitions.

1. All capitalized terms which are used but not otherwise defined in this Multiple Series Dedicated Tax Fund Refunding Bond Supplemental Resolution (the “Supplemental Resolution”) shall have the same meanings, respectively, as such terms are given by Section 102 of the Resolution.

2. In this Supplemental Resolution:

“Authorized Officer” shall include the officers designated as such in the Resolution, and the Chairman, the Managing Director, the Chair of the Finance Committee, the Vice Chairman, the Chief Financial Officer or the Director, Finance, as well as any officer duly designated as “Acting” in said officer’s capacity, except that, for the purposes of any delegation set forth herein that does not expressly include any Assistant Secretary, “Authorized Officer” shall not include any Assistant Secretary of the Issuer.

“Board” shall mean the members of the Issuer acting as such pursuant to the provisions of the Issuer Act.

“Bond Counsel” shall mean Nixon Peabody LLP, Orrick, Herrington & Sutcliffe LLP, D. Seaton and Associates, P.A., P.C., Bryant Rabbino LLP or any other attorney or firm of attorneys of nationally recognized standing in the field of law relating to the issuance of obligations by state and municipal entities, selected by the Issuer.

“Code” shall mean the Internal Revenue Code of 1986, as amended, and regulations thereunder.

“Cross-Credit Obligations” shall mean indebtedness or other obligations issued or incurred by the Issuer or any other Related Entity as described in clause (iii) of the definition of “Capital Costs”, but excluding Obligations.

“Refunding Bonds” shall mean the Dedicated Tax Fund Bonds authorized by Article II of this Supplemental Resolution in one or more Series or subseries.

Section 1.03. Authority for this Supplemental Resolution. This Supplemental Resolution is adopted pursuant to the provisions of the Issuer Act and the Resolution.

[Remainder of page intentionally left blank]

ARTICLE II

AUTHORIZATION OF REFUNDING BONDS

Section 2.01. Authorized Principal Amount, Designation and Series.

1. Pursuant to the provisions of the Resolution and in order to issue (a) Refunding Obligations, and (b) Obligations for the purpose of refunding Cross-Credit Obligations, multiple Series of Dedicated Tax Fund Obligations (which may be issued at one time or from time to time in any number of Series or subseries, which for purposes of this Supplemental Resolution shall collectively be referred to herein as the “Refunding Bonds”, subject to redesignation as hereinafter provided) entitled to the benefit, protection and security of such provisions are hereby authorized to be issued in an aggregate principal amount not exceeding the principal amount necessary so that, after giving effect to any net original issue discount or premium and underwriters’ discount from the principal amount, the amount to be deposited in the Proceeds Account pursuant to, or otherwise applied to effectuate the purposes of, Section 2.02 and Section 3.01 of this Supplemental Resolution (exclusive of the amount so deposited therein determined in any Certificate of Determination as estimated to be necessary to pay any Costs of Issuance of the Refunding Bonds payable from such Proceeds Account or otherwise applied to pay such Costs of Issuance), shall not exceed the amount or amounts determined in one or more Certificates of Determination to be necessary to effectuate the purposes set forth in Section 2.02 hereof; provided, however, that any Refunding Bonds issued pursuant to this Supplemental Resolution shall be issued in compliance with any Board policies relating to the issuance of refunding bonds as may be in effect from time to time.

2. Nothing in this Supplemental Resolution is intended to preclude the issuance of Refunding Bonds as refunding obligations in accordance with Section 203 of the Resolution.

Refunding Bonds shall be designated as, and shall be distinguished from the Obligations of all other Series by the title, “Dedicated Tax Fund Bonds, Series [insert calendar year of issuance]” or such other title or titles set forth in the related Certificate of Determination.

The authority to issue Obligations and take related actions granted under previous resolutions of the Issuer shall continue in full force and effect. The authorization to issue the Refunding Bonds and take other related actions hereunder shall continue in effect without any further action by the Issuer until the adoption by the MTA Board of a subsequent refunding bond supplemental resolution relating to 2019 refundings.

Section 2.02. Purposes. The purposes for which the Refunding Bonds are issued shall be set forth in one or more Certificates of Determination and may include the refunding, restructuring or payment, including by purchasing, exchanging or tendering therefor, of all or any portion of any Outstanding Obligations or Parity Debt or Cross-Credit Obligations deemed advisable by an Authorized Officer in accordance with Section 203 or 204 of the Resolution, as applicable.

Section 2.03. Dates, Maturities, Principal Amounts and Interest. The Refunding Bonds, except as otherwise provided in the Resolution, shall be dated the date or dates determined

in the related Certificate of Determination. The Refunding Bonds shall mature on the date or dates and in the year or years and principal amount or amounts, and shall bear interest at the rate or rates per annum, if any, specified in or determined in the manner provided in the related Certificate of Determination.

Section 2.04. Interest Payments. The Refunding Bonds shall bear interest from their date or dates and be payable on such date or dates as may be determined pursuant to the related Certificate of Determination. Except as otherwise provided in the related Certificate of Determination, interest on the Refunding Bonds shall be computed on the basis of twelve 30-day months and a 360-day year.

Section 2.05. Denominations, Numbers and Letters. Unless otherwise provided in the related Certificate of Determination, the Refunding Bonds shall be issued in fully registered form without coupons in the denomination of \$5,000 or any integral multiple thereof.

The Refunding Bonds shall be lettered and numbered as provided in the related Certificate of Determination.

Section 2.06. Places of Payment and Paying Agent. Except as otherwise provided in the related Certificate of Determination, principal and Redemption Price of the Refunding Bonds shall be payable to the registered owner of each Refunding Bond when due upon presentation of such Refunding Bond at the principal corporate trust office of the Trustee. Except as otherwise provided in the related Certificate of Determination, interest on the registered Refunding Bonds will be paid by check or draft mailed on the interest payment date by the Paying Agent, to the registered owner at his address as it appears on the registration books or, at the option of any Owner of at least one million dollars (\$1,000,000) in principal amount of the Refunding Bonds, by wire transfer in immediately available funds on each interest payment date to such Owner thereof upon written notice from such Owner to the Trustee, at such address as the Trustee may from time to time notify such Owner, containing the wire transfer address (which shall be in the continental United States) to which such Owner wishes to have such wire directed, if such written notice is received not less than twenty (20) days prior to the related interest payment date (such notice may refer to multiple interest payments).

Section 2.07. Sinking Fund Installments. The Refunding Bonds, if any, determined in the related Certificate of Determination shall be subject to redemption (a) in part, by lot, (b) pro rata (in the case of taxable Refunding Bonds), or (c) otherwise as determined in accordance with Section A-404 of the Resolution, as set forth in the Certificate of Determination, on each date in the year or years determined in the Certificate of Determination at the principal amount thereof plus accrued interest up to but not including the date of redemption thereof, from mandatory Sinking Fund Installments which are required to be made in amounts sufficient to redeem on each such date the principal amount of such Refunding Bonds.

Section 2.08. Redemption Prices and Terms. The Refunding Bonds may also be subject to redemption prior to maturity, at the option of the Issuer, upon notice as provided in Article A-IV of the Resolution, at any time as a whole or in part (and by lot within a maturity, or otherwise as determined in accordance with Section A-404 of the Resolution, if less than all of a maturity is to be redeemed), from maturities designated by the Issuer on and after the date and in the years and

at the Redemption Prices (expressed as a percentage of principal amount) determined in the related Certificate of Determination, plus accrued interest up to but not including the redemption date. Notwithstanding the foregoing, in the case of taxable Refunding Bonds, if set forth in the Certificate of Determination, the taxable Refunding Bonds may be made subject to pro rata redemption and/or a make-whole redemption premium.

Section 2.09. Delegation to an Authorized Officer. 1. There is hereby delegated to each Authorized Officer, subject to the limitations contained in this Supplemental Resolution, the following powers with respect to the Refunding Bonds:

(a) to determine whether and when to issue any Refunding Bonds constituting Refunding Obligations or Obligations issued to refund Cross-Credit Obligations, and to determine the amount of the proceeds of the Refunding Bonds to be applied to refunding purposes as well as the specific Obligations or Parity Debt or Cross-Credit Obligations, or portions of either to be refunded and the date or dates, if any, on which such refunded obligations shall be redeemed, and the amount of the proceeds of the Refunding Bonds estimated to be necessary to pay the Costs of Issuance of the Refunding Bonds;

(b) to determine the purpose or purposes for which the Refunding Bonds are being issued, which shall be one or more of the purposes set forth in Section 2.02 of this Supplemental Resolution;

(c) to determine the principal amounts of the Refunding Bonds to be issued for the purposes set forth in Section 2.02 of this Supplemental Resolution and whether such principal amounts constitute a separate Series or a subseries of Refunding Bonds, and to determine Accreted Values and Appreciated Values, if applicable;

(d) to determine the maturity date and principal amount of each maturity of the Refunding Bonds and the amount and due date of each Sinking Fund Installment, if any;

(e) to determine the date or dates which the Refunding Bonds shall be dated and the interest rate or rates of the Refunding Bonds or the manner of determining such interest rate or rates; provided, however, that any Obligations issued as fixed rate Tax-Exempt Obligations shall be subject to a maximum interest rate of not greater than 10% per annum, any Obligations issued as fixed rate Taxable Obligations shall be subject to a maximum interest rate of not greater than 12% per annum, any Variable Interest Rate Obligations issued as Tax-Exempt Obligations shall be subject to a maximum interest rate of not greater than 15% per annum, any Variable Interest Rate Obligations issued as Taxable Obligations shall be subject to a maximum interest rate of not greater than 18% per annum and any Parity Reimbursement Obligations shall be subject to a maximum interest rate of not greater than 25% per annum, or, in each such case, such higher rate or rates as determined by the Issuer's Board;

(f) to determine the Redemption Price or Redemption Prices, if any, and the redemption terms, if any, for the Refunding Bonds; provided, however, that if the Refunding Bonds are to be redeemable at the election of the Issuer, the Redemption Price (except in the case of taxable Refunding Bonds) shall not be greater than one hundred three percent (103%) of the principal amount of the Refunding Bonds to be redeemed, plus accrued interest thereon up to but

not including the date of redemption and in the case of taxable Refunding Bonds the Redemption Price may be determined pursuant to provisions relating to pro rata redemption and/or make whole redemption;

(g) to determine whether the sale of the Refunding Bonds shall be conducted on either a negotiated or competitive bid basis and, as applicable, to determine the purchase price for the Refunding Bonds to be paid by the purchaser or purchasers referred to in one or more Purchase Agreements or a bank direct purchase agreement, or the purchase price for the Refunding Bonds to be paid by the winning bidder, if such sale is conducted by competitive bid pursuant to a Notice of Sale, in either case as such document is described in Section 2.10 of this Supplemental Resolution, which may include such original issue discount and original issue premium as shall be determined in the related Certificate of Determination; provided, however, that the underwriters' discount reflected in such purchase price shall not exceed \$10.00 for each one thousand dollars (\$1,000) principal amount of the Refunding Bonds;

(h) to take all actions required for the Refunding Bonds to be eligible under the rules and regulations of The Depository Trust Company ("DTC") for investment and trading as uncertificated securities, to execute and deliver a standard form of letter of representation with DTC and, notwithstanding any provisions to the contrary contained in this Supplemental Resolution, to include in the related Certificate of Determination such terms and provisions as may be appropriate or necessary to provide for uncertificated securities in lieu of Refunding Bonds issuable in fully registered form;

(i) to determine whether to issue all or any portion of the Refunding Bonds as Tax-Exempt Obligations, Taxable Obligations, Put Obligations, Variable Interest Rate Obligations or as any other form of Obligations permitted by the Resolution and any matters related thereto, including (i) the terms and provisions of any such Obligations, (ii) the selection of remarketing agents, tender agents, auction agents, dealers, calculation agents, bidding agents or any other agents or parties to ancillary arrangements and the terms of any such arrangements, and (iii) the methods for determining the accrual of Debt Service;

(j) to determine the advisability, as compared to an unenhanced transaction, of obtaining one or more Credit Facilities, to select a provider or providers thereof and to determine and accept the terms and provisions and price thereof, to determine such other matters related thereto as in the opinion of the officer executing the related Certificate of Determination shall be considered necessary or appropriate and to effect such determinations by making any changes in or additions to this Supplemental Resolution required by Credit Facility providers, if any, or required by a Rating Agency in order to attain or maintain specific ratings on the Refunding Bonds, or relating to the mechanisms for the repayment of amounts advanced thereunder or payment of fees, premiums, expenses or any other amounts, notices, the provision of information, and such other matters of a technical, mechanical, procedural or descriptive nature necessary or appropriate to obtain or implement a Credit Facility with respect to the Refunding Bonds, and to make any changes in connection therewith;

(k) to make such changes in or from the form of this Supplemental Resolution as may be required by a Rating Agency in order to attain or maintain specific ratings on the Refunding Bonds;

(l) to make such changes in or from the form of this Supplemental Resolution as may be necessary or desirable in order to cure any ambiguities, inconsistencies or other defects;

(m) to determine whether to (i) enter into an escrow agreement or other arrangement in connection with the issuance of Refunding Bonds, including the selection of escrow agents, verification agents and the manner of determining specified matters relating to the defeasance of the refunded obligations and (ii) purchase SLGs or open market securities and the form and substance thereof and any related investment agreement, and to determine the application of any amounts released in connection with any such refunding;

(n) to determine that fixed rate Refunding Bonds comply with all Board policies relating to the issuance of refunding obligations in effect at the time of such determination;

(o) to determine that Refunding Bonds issued as Variable Interest Rate Obligations comply with all Board policies relating to Refunding Bonds relating to the issuance of refunding obligations in effect at the time of such determination as if such bonds were issued as fixed rate Refunding Bonds; and

(p) to determine such other matters specified in or permitted by (i) Sections 202, 203, 204 and A-201 of the Resolution or (ii) this Supplemental Resolution, and to determine matters relating to the payment or defeasance of Obligation Anticipation Notes, including preparation of any documentation therefor.

2. Any Authorized Officer shall execute one or more Certificates of Determination evidencing the determinations made pursuant to this Supplemental Resolution and any such Certificate of Determination shall be conclusive evidence of the determinations of such Authorized Officer, as stated therein. More than one Certificate of Determination may be delivered to the extent more than one Series or subseries of Refunding Bonds are delivered from time to time, or other authority is exercised under this Supplemental Resolution from time to time and each such Certificate of Determination shall be delivered to the Trustee prior to the authentication and delivery of the respective Series or subseries of Refunding Bonds by the Trustee or other documentation. Determinations set forth in any Certificate of Determination shall have the same effect as if set forth in this Supplemental Resolution. Any such Authorized Officer may exercise any authority delegated under this Supplemental Resolution from time to time following issuance of any Refunding Bonds, as appropriate for any purposes, including, in order to change interest rate modes or auction periods, if any Refunding Bonds shall consist of multiple subseries, to change the principal amounts and number of the individual subseries or to combine all subseries into a single Series, if any Refunding Bonds consist of a single Series, to divide such Series into two or more subseries and to determine the principal amount of such subseries, obtain a substitute or additional Credit Facility, enter into a bank direct purchase agreement or similar instrument or to appoint new or additional agents or other parties deemed appropriate to a particular form or mode of Obligation or manner of sale.

Section 2.10. Sale of Refunding Bonds. Each Authorized Officer is hereby authorized either (i) to sell and award all or any portion of the Refunding Bonds through a competitive bidding process to purchasers meeting the requirements of one or more Notices of Sale (as hereinafter defined) to be published in order to give notice of the competitive sale of the Refunding Bonds;

(ii) to sell and award all or any portion of the Refunding Bonds through a negotiated sale to the purchasers who are referred to in the bond purchase agreement and who shall be selected from the then current list of approved underwriters; or (iii) to sell and award all or any portion of the Refunding Bonds through a direct sale to the financial institution or institutions selected by the Authorized Officer who shall be referred to in the continuing covenant, direct purchase or similar agreement. Each Authorized Officer is hereby authorized to sell and award the Refunding Bonds to the purchasers referred to in the preceding sentence in the case of a bond purchase agreement, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, or, with respect to a continuing covenant, direct purchase or similar agreement, containing bank facility terms and provisions (including, without limitation, increased costs, term-out, events of default and remedies) in substantially the form set forth in a letter of credit reimbursement agreement most recently executed or delivered by the Issuer, including, if applicable, that the direct purchaser offer to the Issuer a term-out provision of no less than five years, with such revisions to reflect the terms and provisions of the Refunding Bonds as may be approved by the officer executing the bond purchase, continuing covenant or similar agreement (each, a "Purchase Agreement"). Each Authorized Officer is hereby authorized to agree to the selection of the representative of the underwriters or the other purchasers or facility providers as referred to in the Purchase Agreement or Agreements and to execute and deliver the Purchase Agreement or Agreements for and on behalf and in the name of the Issuer with such changes, omissions, insertions and revisions as may be approved by the officer executing the Purchase Agreement or Agreements, said execution being conclusive evidence of such approval and concurrence in the selection of the representative of the underwriters.

If it is determined that any sale of Bonds shall be conducted on a competitive bid basis, each Authorized Officer is hereby further authorized to conduct the sale and award of the Refunding Bonds on the basis of a competitive bid, pursuant to the terms of a notice of sale, including bid form (the "Notice of Sale"), in a form, including any limitations on permitted bidders and a description of the basis for determining the winning bidder or bidders, determined by such Authorized Officer. Each Authorized Officer is hereby authorized to conduct such competitive sale of the Refunding Bonds in a manner consistent with this Supplemental Resolution and to utilize the services of the Authority's financial advisor and the services of an electronic bidding service, as such Authorized Officer shall determine, and the execution by such Authorized Officer of a letter of award shall be conclusive evidence of such award.

Each Authorized Officer is hereby authorized to make public and to authorize the use and distribution by said purchasers or other appropriate parties of a preliminary official statement, offering circular, or other disclosure document (the "Preliminary Official Statement") in connection with each public offering or any private placement of the Refunding Bonds, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, with such changes, omissions, insertions and revisions as such officer shall deem advisable. The Issuer authorizes any of said officers to deliver a certification to the effect that such Preliminary Official Statement or Official Statement, if deemed necessary or appropriate, together with such other documents, if any, described in such certificate, was deemed final as of its date for purposes of Rule 15c2-12 of the Securities and Exchange Commission as applicable.

Each Authorized Officer is hereby authorized to make public and to authorize distribution of a final Official Statement in substantially the form of each Preliminary Official Statement or

the most recently executed and delivered Official Statement if there is not a Preliminary Official Statement, with such changes, omissions, insertions and revisions as such officer shall deem advisable, to sign such Official Statement and to deliver such Official Statement to the purchasers of such issue of the Refunding Bonds, such execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

Each Authorized Officer is hereby authorized to execute and deliver for and on behalf and in the name of the Issuer, to the extent determined by such Authorized Officer to be necessary or convenient, a Continuing Disclosure Agreement, substantially in the form appended to the Purchase Agreement or Notice of Sale, with such changes, omissions, insertions and revisions as such officer shall deem advisable (the "Continuing Disclosure Agreement"), said execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

The proceeds of each good faith check, if any, received by the Issuer from the purchasers of each issue of Refunding Bonds under the terms of the related Purchase Agreement or Notice of Sale may be invested by the Issuer pending application of the proceeds of such good faith check for the purposes provided in Section 2.02 of this Supplemental Resolution at the time of the issuance and delivery of such Refunding Bonds.

Each Authorized Officer (including any Assistant Secretary of the Issuer) is hereby authorized and directed to execute, deliver, amend, replace or terminate any and all documents and instruments (including any remarketing agreements, dealer agreements, broker-dealer agreements, tender agent agreements, or auction agency agreements, any escrow agreements, any investment agreements or arrangements, or any reimbursement agreements or documents or instruments relating to a Credit Facility deemed appropriate to a given form or mode of an Obligation) and to do and cause to be done any and all acts necessary or proper for carrying out each Purchase Agreement or Notice of Sale, each Continuing Disclosure Agreement, the terms of any Credit Facility or other such agreement or arrangement, and the issuance, sale and delivery of each issue of the Refunding Bonds and for implementing the terms of each issue of the Refunding Bonds and the transactions contemplated hereby or thereby.

When reference is made in this Supplemental Resolution to the authorization of an Authorized Officer to do any act, such act may be accomplished by any of such officers individually.

Section 2.11. Forms of Refunding Bonds and Trustee's Authentication Certificate. Subject to the provisions of the Resolution, the form of registered Refunding Bonds, and the Trustee's certificate of authentication, shall be substantially in the form set forth in Exhibit One to the Resolution including, if necessary, any changes to comply with the requirements of DTC or the provisions of this Supplemental Resolution or any Certificate of Determination.

Section 2.12. Appointment of Trustee and Paying Agent. Unless otherwise provided by Certificate of Determination, The Bank of New York Mellon shall be the Trustee under the Resolution and the Paying Agent for the Refunding Bonds.

ARTICLE III

DISPOSITION OF REFUNDING BOND PROCEEDS

Section 3.01. Disposition of Refunding Bond Proceeds. Any proceeds of the sale of the Refunding Bonds, other than accrued interest, if any, shall be deposited, simultaneously with the issuance and delivery of the Refunding Bonds, at one time or from time to time in one or more Series or subseries, in the Proceeds Account which is deemed to be established for each Series in the Proceeds Fund to be applied, or shall otherwise be applied pursuant to a Certificate of Determination to:

(a) the refunding of any Obligations, Parity Debt or Cross-Credit Obligations, or portions of any of them, in accordance with Section 2.02 hereof; and

(b) the balance of such proceeds, exclusive of accrued interest, shall be deposited in the COI Account and applied to the payment of Costs of Issuance or otherwise applied to the payment of Costs of Issuance.

Unless otherwise provided in a Certificate of Determination, the accrued interest, if any, and any capitalized interest, received on the sale of the Refunding Bonds shall be deposited in the Debt Service Fund.

ARTICLE IV

TAX COVENANTS AND DEFEASANCE

Section 4.01. Tax Covenants Relating to the Refunding Bonds. The Issuer covenants that, in order to maintain the exclusion from gross income for Federal income tax purposes of the interest on the Refunding Bonds issued as Tax-Exempt Obligations, the Issuer will satisfy, or take such actions as are necessary to cause to be satisfied, each provision of the Code necessary to maintain such exclusion. In furtherance of this covenant, the Issuer agrees to comply with such written instructions as may be provided by Bond Counsel. In furtherance of the covenant contained in the preceding sentence, the Issuer agrees to continually comply with the provisions of any “Arbitrage and Use of Proceeds Certificate” or “Tax Certificate” to be executed by the Issuer in connection with the execution and delivery of any Refunding Bonds issued as Tax-Exempt Obligations, as amended from time to time.

Notwithstanding any other provision of the Resolution to the contrary, upon the Issuer’s failure to observe, or refusal to comply with, the above covenant (a) the Owners of the Refunding Bonds, or the Trustee acting on their behalf, shall be entitled to the rights and remedies provided to Owners or the Trustee under Section 702 of the Resolution, and (b) neither the Owners of the Obligations of any Series or holders of any Parity Debt (other than the Refunding Bonds or the Trustee acting on their behalf), nor the Trustee acting on their behalf, shall be entitled to exercise any right or remedy provided to the Owners, the Parity Debt holders or the Trustee under the Resolution based upon the Issuer’s failure to observe, or refusal to comply with, the above covenant.

The provisions of the foregoing covenants set forth in this Section shall not apply to any Refunding Bonds, including any subseries thereof, which the Issuer determines pursuant to the applicable Certificate of Determination to issue as Taxable Obligations.

Section 4.02. Defeasance. In the event the Issuer shall seek, prior to the maturity or redemption date thereof, to pay or cause to be paid, within the meaning and with the effect expressed in the Resolution, all or less than all Outstanding Refunding Bonds issued as Tax-Exempt Obligations and the provisions of Section 4.01 hereof shall then be of any force or effect, then, notwithstanding the provisions of Article A-XI of the Resolution, the Refunding Bonds issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid shall not be deemed to have been paid within the meaning and with the effect expressed in Section A-1101 of the Resolution unless (i) the Issuer has confirmed in writing that the Owners of the Refunding Bonds issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid will continue, after such action, to have the benefit of a covenant to the effect of the covenant of the Issuer contained in Section 4.01 hereof or (ii) there shall have been delivered to the Trustee an Opinion of Bond Counsel to the effect that non-compliance thereafter with the applicable provisions of the Code will not affect the then current treatment of interest on the Refunding Bonds issued as Tax-Exempt Obligations in determining gross income for Federal income tax purposes.

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

**MULTIPLE SERIES
GENERAL REVENUE REFUNDING BOND
SUPPLEMENTAL RESOLUTION**

Adopted December 13, 2017

TABLE OF CONTENTS

Page

ARTICLE I

DEFINITIONS AND STATUTORY AUTHORITY

Section 1.01. Supplemental Resolution	1
Section 1.02. Definitions.....	1
Section 1.03. Authority for this Supplemental Resolution	2

ARTICLE II

AUTHORIZATION OF REFUNDING BONDS

Section 2.01. Authorized Principal Amount, Designation and Series	3
Section 2.02. Purposes	3
Section 2.03. Dates, Maturities, Principal Amounts and Interest	3
Section 2.04. Interest Payments	4
Section 2.05. Denominations, Numbers and Letters.....	4
Section 2.06. Places of Payment and Paying Agent	4
Section 2.07. Sinking Fund Installments	4
Section 2.08. Redemption Prices and Terms	4
Section 2.09. Delegation to an Authorized Officer.....	5
Section 2.10. Sale of Refunding Bonds	7
Section 2.11. Forms of Refunding Bonds and Trustee's Authentication Certificate.....	9
Section 2.12. Appointment of Trustee and Paying Agent	9

ARTICLE III

DISPOSITION OF REFUNDING BOND PROCEEDS

Section 3.01. Disposition of Refunding Bond Proceeds.....	10
---	----

ARTICLE

IV TAX COVENANTS AND DEFEASANCE

Section 4.01. Tax Covenants Relating to the Refunding Bonds.....	11
Section 4.02. Defeasance	11

**MULTIPLE SERIES
GENERAL REVENUE REFUNDING BOND
SUPPLEMENTAL RESOLUTION**

BE IT RESOLVED by the Triborough Bridge and Tunnel Authority (the “Issuer”), as follows:

ARTICLE I

DEFINITIONS AND STATUTORY AUTHORITY

Section 1.01. Supplemental Resolution. This resolution is supplemental to, and is adopted in accordance with Article II and Article A-VIII of, a resolution of the Issuer adopted on March 26, 2002, entitled “General Resolution Authorizing General Revenue Obligations” (the “Resolution”).

Section 1.02. Definitions.

1. All capitalized terms which are used but not otherwise defined in this Multiple Series General Revenue Refunding Bond Supplemental Resolution (the “Supplemental Resolution”) shall have the same meanings, respectively, as such terms are given by Section 102 of the Resolution.

2. In this Supplemental Resolution:

“Authorized Officer” shall include the officers designated as such in the Resolution, and the Chairman, the Managing Director, the Chair of the Finance Committee, the Vice Chairman, the Chief Financial Officer or the Director, Finance, as well as any officer duly designated as “Acting” in said officer’s capacity, except that, for the purposes of any delegation set forth herein that does not expressly include any Assistant Secretary, “Authorized Officer” shall not include any Assistant Secretary of the Issuer.

“Board” shall mean, when used with respect to the Issuer, the board of the Issuer acting as such pursuant to the provisions of the Issuer Act, and when used with respect to the MTA, the members of the MTA acting as such pursuant to the provisions of the MTA Act.

“Bond Counsel” shall mean Nixon Peabody LLP, Orrick, Herrington & Sutcliffe LLP, D. Seaton and Associates, P.A., P.C., Bryant Rabbino LLP or any other attorney or firm of attorneys of nationally recognized standing in the field of law relating to the issuance of obligations by state and municipal entities, selected by the Issuer.

“Code” shall mean the Internal Revenue Code of 1986, as amended, and regulations thereunder.

“Cross-Credit Obligations” shall mean indebtedness or other obligations issued or incurred by the Issuer or any other Related Entity as described in clause (iii) of the definition of “Capital Costs”, but excluding Obligations.

“Refunding Bonds” shall mean the General Revenue Bonds authorized by Article II of this Supplemental Resolution in one or more Series or subseries.

Section 1.03. Authority for this Supplemental Resolution. This Supplemental Resolution is adopted pursuant to the provisions of the Issuer Act and the Resolution.

[Remainder of page intentionally left blank]

ARTICLE II

AUTHORIZATION OF REFUNDING BONDS

Section 2.01. Authorized Principal Amount, Designation and Series.

1. Pursuant to the provisions of the Resolution and in order to issue (a) Refunding Obligations, and (b) Obligations for the purpose of refunding Cross-Credit Obligations, multiple Series of General Revenue Obligations (which may be issued at one time or from time to time in any number of Series or subseries, which for purposes of this Supplemental Resolution shall collectively be referred to herein as the “Refunding Bonds”, subject to redesignation as hereinafter provided) entitled to the benefit, protection and security of such provisions are hereby authorized to be issued in an aggregate principal amount not exceeding the principal amount necessary so that, after giving effect to any net original issue discount or premium and underwriters’ discount from the principal amount, the amount to be deposited in the Proceeds Account pursuant to, or otherwise applied to effectuate the purposes of, Section 2.02 and Section 3.01 of this Supplemental Resolution (exclusive of the amount so deposited therein determined in any Certificate of Determination as estimated to be necessary to pay any Costs of Issuance of the Refunding Bonds payable from such Proceeds Account or otherwise applied to pay such Costs of Issuance), shall not exceed the amount or amounts determined in one or more Certificates of Determination to be necessary to effectuate the purposes set forth in Section 2.02 hereof; provided, however, that any Refunding Bonds issued pursuant to this Supplemental Resolution shall be issued in compliance with any Board policies relating to the issuance of refunding bonds as may be in effect from time to time.

2. Nothing in this Supplemental Resolution is intended to preclude the issuance of Refunding Bonds as refunding obligations in accordance with Section 203 of the Resolution.

Refunding Bonds shall be designated as, and shall be distinguished from the Obligations of all other Series by the title, “General Revenue Bonds, Series [insert calendar year of issuance]” or such other title or titles set forth in the related Certificate of Determination.

The authority to issue Obligations and take related actions granted under previous resolutions of the Issuer shall continue in full force and effect. The authorization to issue the Refunding Bonds and take other related actions hereunder shall continue in effect without any further action by the Issuer until the adoption by the Issuer Board of a subsequent refunding bond supplemental resolution relating to 2019 refundings.

Section 2.02. Purposes. The purposes for which the Refunding Bonds are issued shall be set forth in one or more Certificates of Determination and may include the refunding, restructuring or payment, including by purchasing, exchanging or tendering therefor, of all or any portion of any Outstanding Obligations or Parity Debt or Cross-Credit Obligations deemed advisable by an Authorized Officer in accordance with Section 203 or 204 of the Resolution, as applicable.

Section 2.03. Dates, Maturities, Principal Amounts and Interest. The Refunding Bonds, except as otherwise provided in the Resolution, shall be dated the date or dates determined

in the related Certificate of Determination. The Refunding Bonds shall mature on the date or dates and in the year or years and principal amount or amounts, and shall bear interest at the rate or rates per annum, if any, specified in or determined in the manner provided in the related Certificate of Determination.

Section 2.04. Interest Payments. The Refunding Bonds shall bear interest from their date or dates and be payable on such date or dates as may be determined pursuant to the related Certificate of Determination. Except as otherwise provided in the related Certificate of Determination, interest on the Refunding Bonds shall be computed on the basis of twelve 30-day months and a 360-day year.

Section 2.05. Denominations, Numbers and Letters. Unless otherwise provided in the related Certificate of Determination, the Refunding Bonds shall be issued in fully registered form without coupons in the denomination of \$5,000 or any integral multiple thereof.

The Refunding Bonds shall be lettered and numbered as provided in the related Certificate of Determination.

Section 2.06. Places of Payment and Paying Agent. Except as otherwise provided in the related Certificate of Determination, principal and Redemption Price of the Refunding Bonds shall be payable to the registered owner of each Refunding Bond when due upon presentation of such Refunding Bond at the principal corporate trust office of the Trustee. Except as otherwise provided in the related Certificate of Determination, interest on the registered Refunding Bonds will be paid by check or draft mailed on the interest payment date by the Paying Agent, to the registered owner at his address as it appears on the registration books or, at the option of any Owner of at least one million dollars (\$1,000,000) in principal amount of the Refunding Bonds, by wire transfer in immediately available funds on each interest payment date to such Owner thereof upon written notice from such Owner to the Trustee, at such address as the Trustee may from time to time notify such Owner, containing the wire transfer address (which shall be in the continental United States) to which such Owner wishes to have such wire directed, if such written notice is received not less than twenty (20) days prior to the related interest payment date (such notice may refer to multiple interest payments).

Section 2.07. Sinking Fund Installments. The Refunding Bonds, if any, determined in the related Certificate of Determination shall be subject to redemption (a) in part, by lot, (b) pro rata (in the case of taxable Refunding Bonds), or (c) otherwise as determined in accordance with Section A-404 of the Resolution, as set forth in the Certificate of Determination, on each date in the year or years determined in the Certificate of Determination at the principal amount thereof plus accrued interest up to but not including the date of redemption thereof, from mandatory Sinking Fund Installments which are required to be made in amounts sufficient to redeem on each such date the principal amount of such Refunding Bonds.

Section 2.08. Redemption Prices and Terms. The Refunding Bonds may also be subject to redemption prior to maturity, at the option of the Issuer, upon notice as provided in Article A-IV of the Resolution, at any time as a whole or in part (and by lot within a maturity, or otherwise as determined in accordance with Section A-404 of the Resolution, if less than all of a maturity is to be redeemed), from maturities designated by the Issuer on and after the date and in the years and

at the Redemption Prices (expressed as a percentage of principal amount) determined in the related Certificate of Determination, plus accrued interest up to but not including the redemption date. Notwithstanding the foregoing, in the case of taxable Refunding Bonds, if set forth in the Certificate of Determination, the taxable Refunding Bonds may be made subject to pro rata redemption and/or a make-whole redemption premium.

Section 2.09. Delegation to an Authorized Officer. 1. There is hereby delegated to each Authorized Officer, subject to the limitations contained in this Supplemental Resolution, the following powers with respect to the Refunding Bonds:

(a) to determine whether and when to issue any Refunding Bonds constituting Refunding Obligations or Obligations issued to refund Cross-Credit Obligations, and to determine the amount of the proceeds of the Refunding Bonds to be applied to refunding purposes as well as the specific Obligations or Parity Debt or Cross-Credit Obligations, or portions of either to be refunded and the date or dates, if any, on which such refunded obligations shall be redeemed, and the amount of the proceeds of the Refunding Bonds estimated to be necessary to pay the Costs of Issuance of the Refunding Bonds;

(b) to determine the purpose or purposes for which the Refunding Bonds are being issued, which shall be one or more of the purposes set forth in Section 2.02 of this Supplemental Resolution;

(c) to determine the principal amounts of the Refunding Bonds to be issued for the purposes set forth in Section 2.02 of this Supplemental Resolution and whether such principal amounts constitute a separate Series or a subseries of Refunding Bonds, and to determine Accreted Values and Appreciated Values, if applicable;

(d) to determine the maturity date and principal amount of each maturity of the Refunding Bonds and the amount and due date of each Sinking Fund Installment, if any;

(e) to determine the date or dates which the Refunding Bonds shall be dated and the interest rate or rates of the Refunding Bonds or the manner of determining such interest rate or rates; provided, however, that any Obligations issued as fixed rate Tax-Exempt Obligations shall be subject to a maximum interest rate of not greater than 10% per annum, any Obligations issued as fixed rate Taxable Obligations shall be subject to a maximum interest rate of not greater than 12% per annum, any Variable Interest Rate Obligations issued as Tax-Exempt Obligations shall be subject to a maximum interest rate of not greater than 15% per annum, any Variable Interest Rate Obligations issued as Taxable Obligations shall be subject to a maximum interest rate of not greater than 18% per annum and any Parity Reimbursement Obligations shall be subject to a maximum interest rate of not greater than 25% per annum, or, in each such case, such higher rate or rates as determined by the Issuer's Board;

(f) to determine the Redemption Price or Redemption Prices, if any, and the redemption terms, if any, for the Refunding Bonds; provided, however, that if the Refunding Bonds are to be redeemable at the election of the Issuer, the Redemption Price (except in the case of taxable Refunding Bonds) shall not be greater than one hundred three percent (103%) of the principal amount of the Refunding Bonds to be redeemed, plus accrued interest thereon up to but

not including the date of redemption and in the case of taxable Refunding Bonds the Redemption Price may be determined pursuant to provisions relating to pro rata redemption and/or make whole redemption;

(g) to determine whether the sale of the Refunding Bonds shall be conducted on either a negotiated or competitive bid basis and, as applicable, to determine the purchase price for the Refunding Bonds to be paid by the purchaser or purchasers referred to in one or more Purchase Agreements or a bank direct purchase agreement, or the purchase price for the Refunding Bonds to be paid by the winning bidder, if such sale is conducted by competitive bid pursuant to a Notice of Sale, in either case as such document is described in Section 2.10 of this Supplemental Resolution, which may include such original issue discount and original issue premium as shall be determined in the related Certificate of Determination; provided, however, that the underwriters' discount reflected in such purchase price shall not exceed \$10.00 for each one thousand dollars (\$1,000) principal amount of the Refunding Bonds;

(h) to take all actions required for the Refunding Bonds to be eligible under the rules and regulations of The Depository Trust Company ("DTC") for investment and trading as uncertificated securities, to execute and deliver a standard form of letter of representation with DTC and, notwithstanding any provisions to the contrary contained in this Supplemental Resolution, to include in the related Certificate of Determination such terms and provisions as may be appropriate or necessary to provide for uncertificated securities in lieu of Refunding Bonds issuable in fully registered form;

(i) to determine whether to issue all or any portion of the Refunding Bonds as Tax-Exempt Obligations, Taxable Obligations, Put Obligations, Variable Interest Rate Obligations or as any other form of Obligations permitted by the Resolution and any matters related thereto, including (i) the terms and provisions of any such Obligations, (ii) the selection of remarketing agents, tender agents, auction agents, dealers, calculation agents, bidding agents or any other agents or parties to ancillary arrangements and the terms of any such arrangements, and (iii) the methods for determining the accrual of Debt Service;

(j) to determine the advisability, as compared to an unenhanced transaction, of obtaining one or more Credit Facilities, to select a provider or providers thereof and to determine and accept the terms and provisions and price thereof, to determine such other matters related thereto as in the opinion of the officer executing the related Certificate of Determination shall be considered necessary or appropriate and to effect such determinations by making any changes in or additions to this Supplemental Resolution required by Credit Facility providers, if any, or required by a Rating Agency in order to attain or maintain specific ratings on the Refunding Bonds, or relating to the mechanisms for the repayment of amounts advanced thereunder or payment of fees, premiums, expenses or any other amounts, notices, the provision of information, and such other matters of a technical, mechanical, procedural or descriptive nature necessary or appropriate to obtain or implement a Credit Facility with respect to the Refunding Bonds, and to make any changes in connection therewith;

(k) to make such changes in or from the form of this Supplemental Resolution as may be required by a Rating Agency in order to attain or maintain specific ratings on the Refunding Bonds;

(l) to make such changes in or from the form of this Supplemental Resolution as may be necessary or desirable in order to cure any ambiguities, inconsistencies or other defects;

(m) to determine whether to (i) enter into an escrow agreement or other arrangement in connection with the issuance of Refunding Bonds, including the selection of escrow agents, verification agents and the manner of determining specified matters relating to the defeasance of the refunded obligations and (ii) purchase SLGs or open market securities and the form and substance thereof and any related investment agreement, and to determine the application of any amounts released in connection with any such refunding;

(n) to determine that such Refunding Bonds comply with all Board policies relating to the issuance of refunding obligations in effect at the time of such determination; and

(o) to determine such other matters specified in or permitted by (i) Sections 202, 203, 204 and A-201 of the Resolution or (ii) this Supplemental Resolution, and to determine matters relating to the payment or defeasance of Obligation Anticipation Notes, including preparation of any documentation therefor.

2. Any Authorized Officer shall execute one or more Certificates of Determination evidencing the determinations made pursuant to this Supplemental Resolution and any such Certificate of Determination shall be conclusive evidence of the determinations of such Authorized Officer, as stated therein. More than one Certificate of Determination may be delivered to the extent more than one Series or subseries of Refunding Bonds are delivered from time to time, or other authority is exercised under this Supplemental Resolution from time to time and each such Certificate of Determination shall be delivered to the Trustee prior to the authentication and delivery of the respective Series or subseries of Refunding Bonds by the Trustee or other documentation. Determinations set forth in any Certificate of Determination shall have the same effect as if set forth in this Supplemental Resolution. Any such Authorized Officer may exercise any authority delegated under this Supplemental Resolution from time to time following issuance of any Refunding Bonds, as appropriate for any purposes, including, in order to change interest rate modes or auction periods, if any Refunding Bonds shall consist of multiple subseries, to change the principal amounts and number of the individual subseries or to combine all subseries into a single Series, if any Refunding Bonds consist of a single Series, to divide such Series into two or more subseries and to determine the principal amount of such subseries, obtain a substitute or additional Credit Facility, enter into a bank direct purchase agreement or similar instrument or to appoint new or additional agents or other parties deemed appropriate to a particular form or mode of Obligation or manner of sale.

Section 2.10. Sale of Refunding Bonds. Each Authorized Officer is hereby authorized either (i) to sell and award all or any portion of the Refunding Bonds through a competitive bidding process to purchasers meeting the requirements of one or more Notices of Sale (as hereinafter defined) to be published in order to give notice of the competitive sale of the Refunding Bonds; (ii) to sell and award all or any portion of the Refunding Bonds through a negotiated sale to the purchasers who are referred to in the bond purchase agreement and who shall be selected from the then current list of approved underwriters; or (iii) to sell and award all or any portion of the Refunding Bonds through a direct sale to the financial institution or institutions selected by the Authorized Officer who shall be referred to in the continuing covenant, direct purchase or similar

agreement. Each Authorized Officer is hereby authorized to sell and award the Refunding Bonds to the purchasers referred to in the preceding sentence in the case of a bond purchase agreement, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, or, with respect to a continuing covenant, direct purchase or similar agreement, containing bank facility terms and provisions (including, without limitation, increased costs, term-out, events of default and remedies) in substantially the form set forth in a letter of credit reimbursement agreement most recently executed or delivered by the Issuer, including, if applicable, that the direct purchaser offer to the Issuer a term-out provision of no less than five years, with such revisions to reflect the terms and provisions of the Refunding Bonds as may be approved by the officer executing the bond purchase, continuing covenant or similar agreement (each, a "Purchase Agreement"). Each Authorized Officer is hereby authorized to agree to the selection of the representative of the underwriters or the other purchasers or facility providers as referred to in the Purchase Agreement or Agreements and to execute and deliver the Purchase Agreement or Agreements for and on behalf and in the name of the Issuer with such changes, omissions, insertions and revisions as may be approved by the officer executing the Purchase Agreement or Agreements, said execution being conclusive evidence of such approval and concurrence in the selection of the representative of the underwriters.

If it is determined that any sale of Bonds shall be conducted on a competitive bid basis, each Authorized Officer is hereby further authorized to conduct the sale and award of the Refunding Bonds on the basis of a competitive bid, pursuant to the terms of a notice of sale, including bid form (the "Notice of Sale"), in a form, including any limitations on permitted bidders and a description of the basis for determining the winning bidder or bidders, determined by such Authorized Officer. Each Authorized Officer is hereby authorized to conduct such competitive sale of the Refunding Bonds in a manner consistent with this Supplemental Resolution and to utilize the services of the Authority's financial advisor and the services of an electronic bidding service, as such Authorized Officer shall determine, and the execution by such Authorized Officer of a letter of award shall be conclusive evidence of such award.

Each Authorized Officer is hereby authorized to make public and to authorize the use and distribution by said purchasers or other appropriate parties of a preliminary official statement, offering circular, or other disclosure document (the "Preliminary Official Statement") in connection with each public offering or any private placement of the Refunding Bonds, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, with such changes, omissions, insertions and revisions as such officer shall deem advisable. The Issuer authorizes any of said officers to deliver a certification to the effect that such Preliminary Official Statement or Official Statement, if deemed necessary or appropriate, together with such other documents, if any, described in such certificate, was deemed final as of its date for purposes of Rule 15c2-12 of the Securities and Exchange Commission as applicable.

Each Authorized Officer is hereby authorized to make public and to authorize distribution of a final Official Statement in substantially the form of each Preliminary Official Statement or the most recently executed and delivered Official Statement if there is not a Preliminary Official Statement, with such changes, omissions, insertions and revisions as such officer shall deem advisable, to sign such Official Statement and to deliver such Official Statement to the purchasers of such issue of the Refunding Bonds, such execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

Each Authorized Officer is hereby authorized to execute and deliver for and on behalf and in the name of the Issuer, to the extent determined by such Authorized Officer to be necessary or convenient, a Continuing Disclosure Agreement, substantially in the form appended to the Purchase Agreement or Notice of Sale, with such changes, omissions, insertions and revisions as such officer shall deem advisable (the "Continuing Disclosure Agreement"), said execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

The proceeds of each good faith check, if any, received by the Issuer from the purchasers of each issue of Refunding Bonds under the terms of the related Purchase Agreement or Notice of Sale may be invested by the Issuer pending application of the proceeds of such good faith check for the purposes provided in Section 2.02 of this Supplemental Resolution at the time of the issuance and delivery of such Refunding Bonds.

Each Authorized Officer (including any Assistant Secretary of the Issuer) is hereby authorized and directed to execute, deliver, amend, replace or terminate any and all documents and instruments (including any remarketing agreements, dealer agreements, broker-dealer agreements, tender agent agreements, or auction agency agreements, any escrow agreements, any investment agreements or arrangements, or any reimbursement agreements or documents or instruments relating to a Credit Facility deemed appropriate to a given form or mode of an Obligation) and to do and cause to be done any and all acts necessary or proper for carrying out each Purchase Agreement or Notice of Sale, each Continuing Disclosure Agreement, the terms of any Credit Facility or other such agreement or arrangement, and the issuance, sale and delivery of each issue of the Refunding Bonds and for implementing the terms of each issue of the Refunding Bonds and the transactions contemplated hereby or thereby.

When reference is made in this Supplemental Resolution to the authorization of an Authorized Officer to do any act, such act may be accomplished by any of such officers individually.

Section 2.11. Forms of Refunding Bonds and Trustee's Authentication Certificate. Subject to the provisions of the Resolution, the form of registered Refunding Bonds, and the Trustee's certificate of authentication, shall be substantially in the form set forth in Exhibit One to the Resolution including, if necessary, any changes to comply with the requirements of DTC or the provisions of this Supplemental Resolution or any Certificate of Determination.

Section 2.12. Appointment of Trustee and Paying Agent. Unless otherwise provided by Certificate of Determination, U.S. Bank Trust National Association shall be the Trustee under the Resolution and the Paying Agent for the Refunding Bonds.

ARTICLE III

DISPOSITION OF REFUNDING BOND PROCEEDS

Section 3.01. Disposition of Refunding Bond Proceeds. Any proceeds of the sale of the Refunding Bonds, other than accrued interest, if any, shall be deposited, simultaneously with the issuance and delivery of the Refunding Bonds, at one time or from time to time in one or more Series or subseries, in the Proceeds Account which is deemed to be established for each Series in the Proceeds Fund to be applied, or shall otherwise be applied pursuant to a Certificate of Determination to:

(a) the refunding of any Obligations, Parity Debt or Cross-Credit Obligations, or portions of any of them, in accordance with Section 2.02 hereof; and

(b) the balance of such proceeds, exclusive of accrued interest, shall be deposited in the COI Account and applied to the payment of Costs of Issuance or otherwise applied to the payment of Costs of Issuance.

Unless otherwise provided in a Certificate of Determination, the accrued interest, if any, and any capitalized interest, received on the sale of the Refunding Bonds shall be deposited in the Debt Service Fund.

ARTICLE IV

TAX COVENANTS AND DEFEASANCE

Section 4.01. Tax Covenants Relating to the Refunding Bonds. The Issuer covenants that, in order to maintain the exclusion from gross income for Federal income tax purposes of the interest on the Refunding Bonds issued as Tax-Exempt Obligations, the Issuer will satisfy, or take such actions as are necessary to cause to be satisfied, each provision of the Code necessary to maintain such exclusion. In furtherance of this covenant, the Issuer agrees to comply with such written instructions as may be provided by Bond Counsel. In furtherance of the covenant contained in the preceding sentence, the Issuer agrees to continually comply with the provisions of any “Arbitrage and Use of Proceeds Certificate” or “Tax Certificate” to be executed by the Issuer in connection with the execution and delivery of any Refunding Bonds issued as Tax-Exempt Obligations, as amended from time to time.

Notwithstanding any other provision of the Resolution to the contrary, upon the Issuer’s failure to observe, or refusal to comply with, the above covenant (a) the Owners of the Refunding Bonds, or the Trustee acting on their behalf, shall be entitled to the rights and remedies provided to Owners or the Trustee under Section 702 of the Resolution, other than the right (which is hereby abrogated solely as to the Issuer’s failure to observe, or refusal to comply with the above covenant) to declare the principal of all Obligations then Outstanding, and the interest accrued thereon, to be due and payable pursuant to Section 567 of the Issuer Act, and (b) neither the Owners of the Obligations of any Series or holders of any Parity Debt (other than the Refunding Bonds or the Trustee acting on their behalf), nor the Trustee acting on their behalf, shall be entitled to exercise any right or remedy provided to the Owners, the Parity Debt holders or the Trustee under the Resolution based upon the Issuer’s failure to observe, or refusal to comply with, the above covenant.

The provisions of the foregoing covenants set forth in this Section shall not apply to any Refunding Bonds, including any subseries thereof, which the Issuer determines pursuant to the applicable Certificate of Determination to issue as Taxable Obligations.

Section 4.02. Defeasance. In the event the Issuer shall seek, prior to the maturity or redemption date thereof, to pay or cause to be paid, within the meaning and with the effect expressed in the Resolution, all or less than all Outstanding Refunding Bonds issued as Tax-Exempt Obligations and the provisions of Section 4.01 hereof shall then be of any force or effect, then, notwithstanding the provisions of Article A-XI of the Resolution, the Refunding Bonds issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid shall not be deemed to have been paid within the meaning and with the effect expressed in Section A-1101 of the Resolution unless (i) the Issuer has confirmed in writing that the Owners of the Refunding Bonds issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid will continue, after such action, to have the benefit of a covenant to the effect of the covenant of the Issuer contained in Section 4.01 hereof or (ii) there shall have been delivered to the Trustee an Opinion of Bond Counsel to the effect that non-compliance thereafter with the applicable provisions of the Code will not affect the then current treatment of interest on the Refunding Bonds issued as Tax-Exempt Obligations in determining gross income for Federal income tax purposes.

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

**MULTIPLE SERIES
2001 SUBORDINATE REVENUE REFUNDING BOND
SUPPLEMENTAL RESOLUTION**

Adopted December 13, 2017

TABLE OF CONTENTS

Page

ARTICLE I

DEFINITIONS AND STATUTORY AUTHORITY

Section 1.01. Supplemental Resolution	1
Section 1.02. Definitions.....	1
Section 1.03. Authority for this Supplemental Resolution	2

ARTICLE II

AUTHORIZATION OF REFUNDING BONDS

Section 2.01. Authorized Principal Amount, Designation and Series	3
Section 2.02. Purposes	3
Section 2.03. Dates, Maturities, Principal Amounts and Interest	3
Section 2.04. Interest Payments	4
Section 2.05. Denominations, Numbers and Letters.....	4
Section 2.06. Places of Payment and Paying Agent	4
Section 2.07. Sinking Fund Installments	4
Section 2.08. Redemption Prices and Terms	4
Section 2.09. Delegation to an Authorized Officer.....	5
Section 2.10. Sale of Refunding Bonds	7
Section 2.11. Forms of Refunding Bonds and Trustee's Authentication Certificate.....	9
Section 2.12. Appointment of Trustee and Paying Agent	9

ARTICLE III

DISPOSITION OF REFUNDING BOND PROCEEDS

Section 3.01. Disposition of Refunding Bond Proceeds.....	10
---	----

ARTICLE IV

TAX COVENANTS, ADDITIONAL COVENANTS AND DEFEASANCE

Section 4.01. Tax Covenants Relating to the Refunding Bonds.....	11
Section 4.02. Additional Covenants.....	11
Section 4.03. Defeasance	12

**MULTIPLE SERIES
2001 SUBORDINATE REVENUE REFUNDING BOND
SUPPLEMENTAL RESOLUTION**

BE IT RESOLVED by the Triborough Bridge and Tunnel Authority (the “Issuer”), as follows:

ARTICLE I

DEFINITIONS AND STATUTORY AUTHORITY

Section 1.01. Supplemental Resolution. This resolution is supplemental to, and is adopted in accordance with Article II and Article A-VIII of, a resolution of the Issuer adopted on March 26, 2002, entitled “2001 Subordinate Resolution Authorizing General Revenue Obligations” (the “Resolution”).

Section 1.02. Definitions.

1. All capitalized terms which are used but not otherwise defined in this Multiple Series 2001 Subordinate Revenue Refunding Bond Supplemental Resolution (the “Supplemental Resolution”) shall have the same meanings, respectively, as such terms are given by Section 102 of the Resolution.

2. In this Supplemental Resolution:

“Authorized Officer” shall include the officers designated as such in the Resolution, and the Chairman, the Managing Director, the Chair of the Finance Committee, the Vice Chairman, the Chief Financial Officer or the Director, Finance, as well as any officer duly designated as “Acting” in said officer’s capacity, except that, for the purposes of any delegation set forth herein that does not expressly include any Assistant Secretary, “Authorized Officer” shall not include any Assistant Secretary of the Issuer.

“Board” shall mean, when used with respect to the Issuer, the board of the Issuer acting as such pursuant to the provisions of the Issuer Act, and when used with respect to the MTA, the members of the MTA acting as such pursuant to the provisions of the MTA Act.

“Bond Counsel” shall mean Nixon Peabody LLP, Orrick, Herrington & Sutcliffe LLP, D. Seaton and Associates, P.A., P.C., Bryant Rabbino LLP or any other attorney or firm of attorneys of nationally recognized standing in the field of law relating to the issuance of obligations by state and municipal entities, selected by the Issuer.

“Code” shall mean the Internal Revenue Code of 1986, as amended, and regulations thereunder.

“Cross-Credit Obligations” shall mean indebtedness or other obligations issued or incurred by the Issuer or any other Related Entity as described in clause (iii) of the definition of “Capital Costs”, but excluding Obligations.

“Refunding Bonds” shall mean the 2001 Subordinate Revenue Bonds authorized by Article II of this Supplemental Resolution in one or more Series or subseries.

Section 1.03. Authority for this Supplemental Resolution. This Supplemental Resolution is adopted pursuant to the provisions of the Issuer Act and the Resolution.

[Remainder of page intentionally left blank]

ARTICLE II

AUTHORIZATION OF REFUNDING BONDS

Section 2.01. Authorized Principal Amount, Designation and Series.

1. Pursuant to the provisions of the Resolution and in order to issue (a) Refunding Subordinate Obligations, and (b) Obligations for the purpose of refunding Cross-Credit Obligations, multiple Series of Subordinate Revenue Obligations (which may be issued at one time or from time to time in any number of Series or subseries, which for purposes of this Supplemental Resolution shall collectively be referred to herein as the “Refunding Bonds”, subject to redesignation as hereinafter provided) entitled to the benefit, protection and security of such provisions are hereby authorized to be issued in an aggregate principal amount not exceeding the principal amount necessary so that, after giving effect to any net original issue discount or premium and underwriters’ discount from the principal amount, the amount to be deposited in the Proceeds Account pursuant to, or otherwise applied to effectuate the purposes of, Section 2.02 and Section 3.01 of this Supplemental Resolution (exclusive of the amount so deposited therein determined in any Certificate of Determination as estimated to be necessary to pay any Costs of Issuance of the Refunding Bonds payable from such Proceeds Account or otherwise applied to pay such Costs of Issuance), shall not exceed the amount or amounts determined in one or more Certificates of Determination to be necessary to effectuate the purposes set forth in Section 2.02 hereof; provided, however, that any Refunding Bonds issued pursuant to this Supplemental Resolution shall be issued in compliance with any Board policies relating to the issuance of refunding bonds as may be in effect from time to time.

2. Nothing in this Supplemental Resolution is intended to preclude the issuance of Refunding Bonds as refunding obligations in accordance with Section 203 of the Resolution.

Refunding Bonds shall be designated as, and shall be distinguished from the Obligations of all other Series by the title, “Subordinate Revenue Bonds, Series [insert calendar year of issuance]” or such other title or titles set forth in the related Certificate of Determination.

The authority to issue Obligations and take related actions granted under previous resolutions of the Issuer shall continue in full force and effect. The authorization to issue the Refunding Bonds and take other related actions hereunder shall continue in effect without any further action by the Issuer until the adoption by the Issuer Board of a subsequent refunding bond supplemental resolution relating to 2019 refundings.

Section 2.02. Purposes. The purposes for which the Refunding Bonds are issued shall be set forth in one or more Certificates of Determination and may include the refunding, restructuring or payment, including by purchasing, exchanging or tendering therefor, of all or any portion of any Outstanding Obligations or Parity Debt or Cross-Credit Obligations deemed advisable by an Authorized Officer in accordance with Section 203 or 204 of the Resolution, as applicable.

Section 2.03. Dates, Maturities, Principal Amounts and Interest. The Refunding Bonds, except as otherwise provided in the Resolution, shall be dated the date or dates determined

in the related Certificate of Determination. The Refunding Bonds shall mature on the date or dates and in the year or years and principal amount or amounts, and shall bear interest at the rate or rates per annum, if any, specified in or determined in the manner provided in the related Certificate of Determination.

Section 2.04. Interest Payments. The Refunding Bonds shall bear interest from their date or dates and be payable on such date or dates as may be determined pursuant to the related Certificate of Determination. Except as otherwise provided in the related Certificate of Determination, interest on the Refunding Bonds shall be computed on the basis of twelve 30-day months and a 360-day year.

Section 2.05. Denominations, Numbers and Letters. Unless otherwise provided in the related Certificate of Determination, the Refunding Bonds shall be issued in fully registered form without coupons in the denomination of \$5,000 or any integral multiple thereof.

The Refunding Bonds shall be lettered and numbered as provided in the related Certificate of Determination.

Section 2.06. Places of Payment and Paying Agent. Except as otherwise provided in the related Certificate of Determination, principal and Redemption Price of the Refunding Bonds shall be payable to the registered owner of each Refunding Bond when due upon presentation of such Refunding Bond at the principal corporate trust office of the Trustee. Except as otherwise provided in the related Certificate of Determination, interest on the registered Refunding Bonds will be paid by check or draft mailed on the interest payment date by the Paying Agent, to the registered owner at his address as it appears on the registration books or, at the option of any Owner of at least one million dollars (\$1,000,000) in principal amount of the Refunding Bonds, by wire transfer in immediately available funds on each interest payment date to such Owner thereof upon written notice from such Owner to the Trustee, at such address as the Trustee may from time to time notify such Owner, containing the wire transfer address (which shall be in the continental United States) to which such Owner wishes to have such wire directed, if such written notice is received not less than twenty (20) days prior to the related interest payment date (such notice may refer to multiple interest payments).

Section 2.07. Sinking Fund Installments. The Refunding Bonds, if any, determined in the related Certificate of Determination shall be subject to redemption (a) in part, by lot, (b) pro rata (in the case of taxable Refunding Bonds), or (c) otherwise as determined in accordance with Section A-404 of the Resolution, as set forth in the Certificate of Determination, on each date in the year or years determined in the Certificate of Determination at the principal amount thereof plus accrued interest up to but not including the date of redemption thereof, from mandatory Sinking Fund Installments which are required to be made in amounts sufficient to redeem on each such date the principal amount of such Refunding Bonds.

Section 2.08. Redemption Prices and Terms. The Refunding Bonds may also be subject to redemption prior to maturity, at the option of the Issuer, upon notice as provided in Article A-IV of the Resolution, at any time as a whole or in part (and by lot within a maturity, or otherwise as determined in accordance with Section A-404 of the Resolution, if less than all of a maturity is to be redeemed), from maturities designated by the Issuer on and after the date and in the years and

at the Redemption Prices (expressed as a percentage of principal amount) determined in the related Certificate of Determination, plus accrued interest up to but not including the redemption date. Notwithstanding the foregoing, in the case of taxable Refunding Bonds, if set forth in the Certificate of Determination, the taxable Refunding Bonds may be made subject to pro rata redemption and/or a make-whole redemption premium.

Section 2.09. Delegation to an Authorized Officer. 1. There is hereby delegated to each Authorized Officer, subject to the limitations contained in this Supplemental Resolution, the following powers with respect to the Refunding Bonds:

(a) to determine whether and when to issue any Refunding Bonds constituting Refunding Subordinate Obligations or Obligations issued to refund Cross-Credit Obligations, and to determine the amount of the proceeds of the Refunding Bonds to be applied to refunding purposes as well as the specific Obligations or Parity Debt or Cross-Credit Obligations, or portions of either to be refunded and the date or dates, if any, on which such refunded obligations shall be redeemed, and the amount of the proceeds of the Refunding Bonds estimated to be necessary to pay the Costs of Issuance of the Refunding Bonds;

(b) to determine the purpose or purposes for which the Refunding Bonds are being issued, which shall be one or more of the purposes set forth in Section 2.02 of this Supplemental Resolution;

(c) to determine the principal amounts of the Refunding Bonds to be issued for the purposes set forth in Section 2.02 of this Supplemental Resolution and whether such principal amounts constitute a separate Series or a subseries of Refunding Bonds, and to determine Accreted Values and Appreciated Values, if applicable;

(d) to determine the maturity date and principal amount of each maturity of the Refunding Bonds and the amount and due date of each Sinking Fund Installment, if any;

(e) to determine the date or dates which the Refunding Bonds shall be dated and the interest rate or rates of the Refunding Bonds or the manner of determining such interest rate or rates; provided, however, that any Obligations issued as fixed rate Tax-Exempt Obligations shall be subject to a maximum interest rate of not greater than 10% per annum, any Obligations issued as fixed rate Taxable Obligations shall be subject to a maximum interest rate of not greater than 12% per annum, any Variable Interest Rate Obligations issued as Tax-Exempt Obligations shall be subject to a maximum interest rate of not greater than 15% per annum, any Variable Interest Rate Obligations issued as Taxable Obligations shall be subject to a maximum interest rate of not greater than 18% per annum and any Parity Reimbursement Obligations shall be subject to a maximum interest rate of not greater than 25% per annum, or, in each such case, such higher rate or rates as determined by the Issuer's Board;

(f) to determine the Redemption Price or Redemption Prices, if any, and the redemption terms, if any, for the Refunding Bonds; provided, however, that if the Refunding Bonds are to be redeemable at the election of the Issuer, the Redemption Price (except in the case of taxable Refunding Bonds) shall not be greater than one hundred three percent (103%) of the principal amount of the Refunding Bonds to be redeemed, plus accrued interest thereon up to but

not including the date of redemption and in the case of taxable Refunding Bonds the Redemption Price may be determined pursuant to provisions relating to pro rata redemption and/or make whole redemption;

(g) to determine whether the sale of the Refunding Bonds shall be conducted on either a negotiated or competitive bid basis and, as applicable, to determine the purchase price for the Refunding Bonds to be paid by the purchaser or purchasers referred to in one or more Purchase Agreements or a bank direct purchase agreement, or the purchase price for the Refunding Bonds to be paid by the winning bidder, if such sale is conducted by competitive bid pursuant to a Notice of Sale, in either case as such document is described in Section 2.10 of this Supplemental Resolution, which may include such original issue discount and original issue premium as shall be determined in the related Certificate of Determination; provided, however, that the underwriters' discount reflected in such purchase price shall not exceed \$10.00 for each one thousand dollars (\$1,000) principal amount of the Refunding Bonds;

(h) to take all actions required for the Refunding Bonds to be eligible under the rules and regulations of The Depository Trust Company ("DTC") for investment and trading as uncertificated securities, to execute and deliver a standard form of letter of representation with DTC and, notwithstanding any provisions to the contrary contained in this Supplemental Resolution, to include in the related Certificate of Determination such terms and provisions as may be appropriate or necessary to provide for uncertificated securities in lieu of Refunding Bonds issuable in fully registered form;

(i) to determine whether to issue all or any portion of the Refunding Bonds as Tax-Exempt Obligations, Taxable Obligations, Put Obligations, Variable Interest Rate Obligations or as any other form of Obligations permitted by the Resolution and any matters related thereto, including (i) the terms and provisions of any such Obligations, (ii) the selection of remarketing agents, tender agents, auction agents, dealers, calculation agents, bidding agents or any other agents or parties to ancillary arrangements and the terms of any such arrangements, and (iii) the methods for determining the accrual of Debt Service;

(j) to determine the advisability, as compared to an unenhanced transaction, of obtaining one or more Credit Facilities, to select a provider or providers thereof and to determine and accept the terms and provisions and price thereof, to determine such other matters related thereto as in the opinion of the officer executing the related Certificate of Determination shall be considered necessary or appropriate and to effect such determinations by making any changes in or additions to this Supplemental Resolution required by Credit Facility providers, if any, or required by a Rating Agency in order to attain or maintain specific ratings on the Refunding Bonds, or relating to the mechanisms for the repayment of amounts advanced thereunder or payment of fees, premiums, expenses or any other amounts, notices, the provision of information, and such other matters of a technical, mechanical, procedural or descriptive nature necessary or appropriate to obtain or implement a Credit Facility with respect to the Refunding Bonds, and to make any changes in connection therewith;

(k) to make such changes in or from the form of this Supplemental Resolution as may be required by a Rating Agency in order to attain or maintain specific ratings on the Refunding Bonds;

(l) to make such changes in or from the form of this Supplemental Resolution as may be necessary or desirable in order to cure any ambiguities, inconsistencies or other defects;

(m) to determine whether to (i) enter into an escrow agreement or other arrangement in connection with the issuance of Refunding Bonds, including the selection of escrow agents, verification agents and the manner of determining specified matters relating to the defeasance of the refunded obligations and (ii) purchase SLGs or open market securities and the form and substance thereof and any related investment agreement, and to determine the application of any amounts released in connection with any such refunding;

(n) to determine that such Refunding Bonds comply with all Board policies relating to the issuance of refunding obligations in effect at the time of such determination; and

(o) to determine such other matters specified in or permitted by (i) Sections 202, 203, 204 and A-201 of the Resolution or (ii) this Supplemental Resolution, and to determine matters relating to the payment or defeasance of Obligation Anticipation Notes, including preparation of any documentation therefor.

2. Any Authorized Officer shall execute one or more Certificates of Determination evidencing the determinations made pursuant to this Supplemental Resolution and any such Certificate of Determination shall be conclusive evidence of the determinations of such Authorized Officer, as stated therein. More than one Certificate of Determination may be delivered to the extent more than one Series or subseries of Refunding Bonds are delivered from time to time, or other authority is exercised under this Supplemental Resolution from time to time and each such Certificate of Determination shall be delivered to the Trustee prior to the authentication and delivery of the respective Series or subseries of Refunding Bonds by the Trustee or other documentation. Determinations set forth in any Certificate of Determination shall have the same effect as if set forth in this Supplemental Resolution. Any such Authorized Officer may exercise any authority delegated under this Supplemental Resolution from time to time following issuance of any Refunding Bonds, as appropriate for any purposes, including, in order to change interest rate modes or auction periods, if any Refunding Bonds shall consist of multiple subseries, to change the principal amounts and number of the individual subseries or to combine all subseries into a single Series, if any Refunding Bonds consist of a single Series, to divide such Series into two or more subseries and to determine the principal amount of such subseries, obtain a substitute or additional Credit Facility, enter into a bank direct purchase agreement or similar instrument or to appoint new or additional agents or other parties deemed appropriate to a particular form or mode of Obligation or manner of sale.

Section 2.10. Sale of Refunding Bonds. Each Authorized Officer is hereby authorized either (i) to sell and award all or any portion of the Refunding Bonds through a competitive bidding process to purchasers meeting the requirements of one or more Notices of Sale (as hereinafter defined) to be published in order to give notice of the competitive sale of the Refunding Bonds; (ii) to sell and award all or any portion of the Refunding Bonds through a negotiated sale to the purchasers who are referred to in the bond purchase agreement and who shall be selected from the then current list of approved underwriters; or (iii) to sell and award all or any portion of the Refunding Bonds through a direct sale to the financial institution or institutions selected by the Authorized Officer who shall be referred to in the continuing covenant, direct purchase or similar

agreement. Each Authorized Officer is hereby authorized to sell and award the Refunding Bonds to the purchasers referred to in the preceding sentence in the case of a bond purchase agreement, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, or, with respect to a continuing covenant, direct purchase or similar agreement, containing bank facility terms and provisions (including, without limitation, increased costs, term-out, events of default and remedies) in substantially the form set forth in a letter of credit reimbursement agreement most recently executed or delivered by the Issuer, including, if applicable, that the direct purchaser offer to the Issuer a term-out provision of no less than five years, with such revisions to reflect the terms and provisions of the Refunding Bonds as may be approved by the officer executing the bond purchase, continuing covenant or similar agreement (each, a "Purchase Agreement"). Each Authorized Officer is hereby authorized to agree to the selection of the representative of the underwriters or the other purchasers or facility providers as referred to in the Purchase Agreement or Agreements and to execute and deliver the Purchase Agreement or Agreements for and on behalf and in the name of the Issuer with such changes, omissions, insertions and revisions as may be approved by the officer executing the Purchase Agreement or Agreements, said execution being conclusive evidence of such approval and concurrence in the selection of the representative of the underwriters.

If it is determined that any sale of Bonds shall be conducted on a competitive bid basis, each Authorized Officer is hereby further authorized to conduct the sale and award of the Refunding Bonds on the basis of a competitive bid, pursuant to the terms of a notice of sale, including bid form (the "Notice of Sale"), in a form, including any limitations on permitted bidders and a description of the basis for determining the winning bidder or bidders, determined by such Authorized Officer. Each Authorized Officer is hereby authorized to conduct such competitive sale of the Refunding Bonds in a manner consistent with this Supplemental Resolution and to utilize the services of the Authority's financial advisor and the services of an electronic bidding service, as such Authorized Officer shall determine, and the execution by such Authorized Officer of a letter of award shall be conclusive evidence of such award.

Each Authorized Officer is hereby authorized to make public and to authorize the use and distribution by said purchasers or other appropriate parties of a preliminary official statement, offering circular, or other disclosure document (the "Preliminary Official Statement") in connection with each public offering or any private placement of the Refunding Bonds, in substantially the form most recently executed or delivered by the Issuer in connection with the sale of Obligations, with such changes, omissions, insertions and revisions as such officer shall deem advisable. The Issuer authorizes any of said officers to deliver a certification to the effect that such Preliminary Official Statement or Official Statement, if deemed necessary or appropriate, together with such other documents, if any, described in such certificate, was deemed final as of its date for purposes of Rule 15c2-12 of the Securities and Exchange Commission as applicable.

Each Authorized Officer is hereby authorized to make public and to authorize distribution of a final Official Statement in substantially the form of each Preliminary Official Statement or the most recently executed and delivered Official Statement if there is not a Preliminary Official Statement, with such changes, omissions, insertions and revisions as such officer shall deem advisable, to sign such Official Statement and to deliver such Official Statement to the purchasers of such issue of the Refunding Bonds, such execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

Each Authorized Officer is hereby authorized to execute and deliver for and on behalf and in the name of the Issuer, to the extent determined by such Authorized Officer to be necessary or convenient, a Continuing Disclosure Agreement, substantially in the form appended to the Purchase Agreement or Notice of Sale, with such changes, omissions, insertions and revisions as such officer shall deem advisable (the "Continuing Disclosure Agreement"), said execution being conclusive evidence of the approval of such changes, omissions, insertions and revisions.

The proceeds of each good faith check, if any, received by the Issuer from the purchasers of each issue of Refunding Bonds under the terms of the related Purchase Agreement or Notice of Sale may be invested by the Issuer pending application of the proceeds of such good faith check for the purposes provided in Section 2.02 of this Supplemental Resolution at the time of the issuance and delivery of such Refunding Bonds.

Each Authorized Officer (including any Assistant Secretary of the Issuer) is hereby authorized and directed to execute, deliver, amend, replace or terminate any and all documents and instruments (including any remarketing agreements, dealer agreements, broker-dealer agreements, tender agent agreements, or auction agency agreements, any escrow agreements, any investment agreements or arrangements, or any reimbursement agreements or documents or instruments relating to a Credit Facility deemed appropriate to a given form or mode of an Obligation) and to do and cause to be done any and all acts necessary or proper for carrying out each Purchase Agreement or Notice of Sale, each Continuing Disclosure Agreement, the terms of any Credit Facility or other such agreement or arrangement, and the issuance, sale and delivery of each issue of the Refunding Bonds and for implementing the terms of each issue of the Refunding Bonds and the transactions contemplated hereby or thereby.

When reference is made in this Supplemental Resolution to the authorization of an Authorized Officer to do any act, such act may be accomplished by any of such officers individually.

Section 2.11. Forms of Refunding Bonds and Trustee's Authentication Certificate. Subject to the provisions of the Resolution, the form of registered Refunding Bonds, and the Trustee's certificate of authentication, shall be substantially in the form set forth in Exhibit One to the Resolution including, if necessary, any changes to comply with the requirements of DTC or the provisions of this Supplemental Resolution or any Certificate of Determination.

Section 2.12. Appointment of Trustee and Paying Agent. Unless otherwise provided by Certificate of Determination, The Bank of New York Mellon shall be the Trustee under the Resolution and the Paying Agent for the Refunding Bonds.

ARTICLE III

DISPOSITION OF REFUNDING BOND PROCEEDS

Section 3.01. Disposition of Refunding Bond Proceeds. Any proceeds of the sale of the Refunding Bonds, other than accrued interest, if any, shall be deposited, simultaneously with the issuance and delivery of the Refunding Bonds, at one time or from time to time in one or more Series or subseries, in the Proceeds Account which is deemed to be established for each Series in the Proceeds Fund to be applied, or shall otherwise be applied pursuant to a Certificate of Determination to:

(a) the refunding of any Obligations, Parity Debt or Cross-Credit Obligations, or portions of any of them, in accordance with Section 2.02 hereof; and

(b) the balance of such proceeds, exclusive of accrued interest, shall be deposited in the COI Account and applied to the payment of Costs of Issuance or otherwise applied to the payment of Costs of Issuance.

Unless otherwise provided in a Certificate of Determination, the accrued interest, if any, and any capitalized interest, received on the sale of the Refunding Bonds shall be deposited in the Debt Service Fund.

ARTICLE IV

TAX COVENANTS, ADDITIONAL COVENANTS AND DEFEASANCE

Section 4.01. Tax Covenants Relating to the Refunding Bonds. The Issuer covenants that, in order to maintain the exclusion from gross income for Federal income tax purposes of the interest on the Refunding Bonds issued as Tax-Exempt Obligations, the Issuer will satisfy, or take such actions as are necessary to cause to be satisfied, each provision of the Code necessary to maintain such exclusion. In furtherance of this covenant, the Issuer agrees to comply with such written instructions as may be provided by Bond Counsel. In furtherance of the covenant contained in the preceding sentence, the Issuer agrees to continually comply with the provisions of any “Arbitrage and Use of Proceeds Certificate” or “Tax Certificate” to be executed by the Issuer in connection with the execution and delivery of any Refunding Bonds issued as Tax-Exempt Obligations, as amended from time to time.

Notwithstanding any other provision of the Resolution to the contrary, upon the Issuer’s failure to observe, or refusal to comply with, the above covenant (a) the Owners of the Refunding Bonds, or the Trustee acting on their behalf, shall be entitled to the rights and remedies provided to Owners or the Trustee under Section 702 of the Resolution, other than the right (which is hereby abrogated solely as to the Issuer’s failure to observe, or refusal to comply with the above covenant) to declare the principal of all Obligations then Outstanding, and the interest accrued thereon, to be due and payable pursuant to Section 567 of the Issuer Act, and (b) neither the Owners of the Obligations of any Series or holders of any Parity Debt (other than the Refunding Bonds or the Trustee acting on their behalf), nor the Trustee acting on their behalf, shall be entitled to exercise any right or remedy provided to the Owners, the Parity Debt holders or the Trustee under the Resolution based upon the Issuer’s failure to observe, or refusal to comply with, the above covenant.

The provisions of the foregoing covenants set forth in this Section shall not apply to any Refunding Bonds, including any subseries thereof, which the Issuer determines pursuant to the applicable Certificate of Determination to issue as Taxable Obligations.

Section 4.02. Additional Covenants.

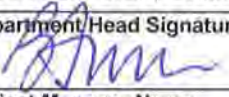

1. The Issuer covenants and agrees that it will not issue any Senior Obligations under the Senior Resolution (other than pursuant to Section 205 thereof) unless in addition to satisfying the requirements of the Senior Resolution, an Authorized Officer delivers to the trustee under the Senior Resolution a certificate demonstrating that for any period of 12 consecutive calendar months out of the 18 complete calendar months next preceding the date of authentication and delivery such issue of Senior Obligations, Net Revenues are at least equal to 1.10 times the Combined Maximum Annual Calculated Debt Service for all Subordinate Revenue Obligations, Parity Debt, Senior Obligations and Senior Parity Debt.



2. The Issuer covenants and agrees that in addition to complying with the provisions of Section 604 of the Resolution, the Issuer shall at all times establish, levy, maintain and collect, or cause to be established, levied, maintained and collected, such tolls, rentals and other charges in connection with the TBTA Facilities as shall always be sufficient, together with

other money available therefor (including the anticipated receipt of proceeds of sale of Obligations or other bonds, notes or other obligations or evidences of indebtedness of the Issuer that will be used to pay the principal of Obligations issued in anticipation of such receipt, but not including any anticipated or actual proceeds from the sale of TBTA Facilities), to equal or exceed in each calendar year the greater of (a) an amount equal to the sum of amounts necessary in such calendar year (i) to pay all Operating Expenses of the Issuer, plus (ii) to pay the sum of Calculated Debt Service as defined in the Resolution and Calculated Debt Service as defined in the Senior Resolution, plus (iii) to maintain any reserve established by the Issuer pursuant to the Senior Resolution, in such amount as may be determined from time to time by an Authorized Officer in his or her judgment, or (b) an amount such that Revenues less Operating Expenses shall equal at least 1.10 times the sum of Calculated Debt Service as defined in the Senior Resolution and Calculated Debt Service as defined in the Resolution for such calendar year.

Section 4.03. Defeasance. In the event the Issuer shall seek, prior to the maturity or redemption date thereof, to pay or cause to be paid, within the meaning and with the effect expressed in the Resolution, all or less than all Outstanding Refunding Bonds issued as Tax-Exempt Obligations and the provisions of Section 4.01 hereof shall then be of any force or effect, then, notwithstanding the provisions of Article A-XI of the Resolution, the Refunding Bonds issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid shall not be deemed to have been paid within the meaning and with the effect expressed in Section A-1101 of the Resolution unless (i) the Issuer has confirmed in writing that the Owners of the Refunding Bonds issued as Tax-Exempt Obligations which the Issuer then seeks to pay or cause to be paid will continue, after such action, to have the benefit of a covenant to the effect of the covenant of the Issuer contained in Section 4.01 hereof or (ii) there shall have been delivered to the Trustee an Opinion of Bond Counsel to the effect that non-compliance thereafter with the applicable provisions of the Code will not affect the then current treatment of interest on the Refunding Bonds issued as Tax-Exempt Obligations in determining gross income for Federal income tax purposes.

Staff Summary

Subject MTA and TBTA Reimbursement for Federal Tax purposes	Date December 13, 2017
Department Chief Financial Officer	Vendor Name
Department Head Name Robert E. Foran, Chief Financial Officer	Contract Number
Department Head Signature 	Contract Manager Name
Project Manager Name Josiane Codio, Director of Treasury 	Table of Contents Ref #

Board Action						Internal Approvals			
Order	To	Date	Approval	Info	Other	Order	Approval	Order	Approval
	Finance Comm.	12/11	X			1	Legal 	2	Chief of Staff 
	Board	12/13	X						

To obtain MTA and TBTA adoption of the annexed reimbursement resolutions, which are required by Federal tax law to preserve the ability to finance certain capital projects on a tax-exempt basis.

PURPOSE:

As it has in the past, the Metropolitan Transportation Authority (the "MTA") intends to finance the MTA's transit and commuter capital improvement program, including MTA Bus Company and Staten Island Rapid Transit Operating Authority, and Triborough Bridge and Tunnel Authority ("TBTA" or "MTA Bridges and Tunnels") intends to finance the MTA Bridges and Tunnels' bridge and tunnel capital improvement program.

It is important that MTA and MTA Bridges and Tunnels preserve the ability to finance capital projects in these capital improvement programs on a tax-exempt or tax-advantaged basis. To maintain the ability of MTA and MTA Bridges and Tunnels to finance capital projects in the capital improvement programs on such tax-exempt or tax-advantaged basis, consistent with Federal tax law, the MTA and TBTA Boards periodically adopt reimbursement resolutions. Federal tax law requires that official action that sets forth the issuer's intent to spend tax-exempt bond proceeds on a project must be taken by an issuer that wants to reimburse itself from tax-exempt bond proceeds for capital project costs that were funded from another source of revenue. Copies of the 2018 reimbursement resolutions submitted for Board adoption are attached hereto.

For purposes of the attached reimbursement resolutions, (i) in the case of MTA, the Project refers to the capital programs approved by the Metropolitan Transportation Authority Capital Program Review Board (CPRB), including, particularly, the 2000-2004 Transit and Commuter Capital Program, the 2005-2009 Transit and Commuter Capital Program, the 2010-2014 Transit and Commuter Capital Program, and the 2015-2019 Transit and Commuter Capital Program, and (ii) in the case of TBTA, the Project refers to the capital programs approved by the TBTA Board, including, particularly, the 2000-2004 TBTA Capital Program, the 2005-2009 TBTA Capital Program, the 2010-2014 TBTA Capital Program, the 2015-2019 TBTA Capital Program, and the security projects authorized to be constructed and/or installed at the TBTA bridges and tunnels.

ALTERNATIVES:

There is no alternative to preserve the ability to finance certain capital projects on a tax-exempt or tax-advantaged basis under Federal tax law.

RECOMMENDATION:

Staff Summary

The MTA and TBTA Boards approve the above-referenced resolutions. This authorization shall continue in effect until the adoption in 2018 by the MTA and TBTA Boards of subsequent reimbursement resolutions.

RESOLUTION

WHEREAS, Metropolitan Transportation Authority (“MTA”) intends to finance the MTA’s transit and commuter capital improvement program, including MTA Bus Company and Staten Island Rapid Transit Operating Authority, as more fully described in the accompanying staff summary and capital program documents referenced therein (the “MTA Project”);

WHEREAS, MTA desires to finance the MTA Project through the issuance of tax-exempt debt or tax-advantaged debt, if available, and other sources as described in the approved capital programs, including moneys derived from affiliates and subsidiaries, and expects to reimburse expenditures made from such other sources with proceeds of such tax-exempt or tax-advantaged debt;

NOW THEREFORE, BE IT:

RESOLVED, that the statements contained in this Resolution with respect to the reimbursement of the expenditures described in this resolution are intended to be statements of official intent as required by, and in conformance with, the provisions of Treasury Regulation Section 1.150-2(e); and

RESOLVED, that the expenditures in connection with the MTA Project to be reimbursed pursuant to this Resolution have been incurred and paid not more than 60 days prior to the date hereof or will be incurred and paid after the date hereof in connection with the MTA Project; and

RESOLVED, that the MTA reasonably expects that the maximum principal amount of tax-exempt or tax-advantaged debt (including bonds, commercial paper and bond anticipation notes) to be issued by MTA subsequent to the date hereof to pay MTA Project expenditures in 2018 (whether directly or as a reimbursement) is \$3,000 million (plus associated financing costs); and

RESOLVED, that this Resolution shall take effect immediately.

December 13, 2017

RESOLUTION

WHEREAS, Triborough Bridge and Tunnel Authority (“MTA Bridges and Tunnels”) intends to finance the MTA Bridges and Tunnels’ bridge and tunnel capital improvement program, as more fully described in the accompanying staff summary and capital program documents referenced therein (the “Project”);

WHEREAS, MTA Bridges and Tunnels desires to finance the Project through the issuance of tax-exempt debt or tax-advantaged debt, if available, and other sources as described in the approved capital programs, including moneys derived from the Metropolitan Transportation Authority and its affiliates and subsidiaries, and expects to reimburse expenditures made from such other sources with proceeds of such tax-exempt or tax-advantaged debt;

NOW THEREFORE, BE IT:

RESOLVED, that the statements contained in this Resolution with respect to the reimbursement of the expenditures described in this resolution are intended to be statements of official intent as required by, and in conformance with, the provisions of Treasury Regulation Section 1.150-2(e); and

RESOLVED, that the expenditures in connection with the Project to be reimbursed pursuant to this Resolution have been incurred and paid not more than 60 days prior to the date hereof or will be incurred and paid after the date hereof in connection with the Project; and

RESOLVED, that MTA Bridges and Tunnels reasonably expects that the maximum principal amount of tax-exempt or tax-advantaged debt (including bonds, commercial paper and bond anticipation notes) to be issued by MTA Bridges and Tunnels subsequent to the date hereof to pay MTA Bridges and Tunnels Project expenditures in 2018 (whether directly or as a reimbursement) is \$200 million (plus associated financing costs); and

RESOLVED, that this Resolution shall take effect immediately.

December 13, 2017

Staff Summary

Schedule F: Personal Service Contracts

Item Number: Dept & Dept Head Name: Chief Financial Officer/Bob Foran						SUMMARY INFORMATION	
Division & Acting Division Head Name: Strategic Initiatives/ Nora Ostrovskaya						Vendor Name: NYPA	
						Contract Number:	
						Description: Energy Supply Long Term Agreement and Energy Services Program Agreement	
						Total Amount: Estimated at \$198 million	
Board Reviews						Contract Term (including Options, if any): One (1) Year Extension	
Order	To	Date	Approval	Info	Other	Option(s) included in Total Amount? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
1	Finance	12/11/17	X			Renewal – two (2) one-year renewals <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
2	Board	12/13/17	X			Procurement Type: <input type="checkbox"/> Competitive <input type="checkbox"/> Non-competitive	
						Solicitation Type: <input type="checkbox"/> RFP <input type="checkbox"/> Bid <input type="checkbox"/> Other: [e.g., Ride -- Contract]	
						Funding Source: <input checked="" type="checkbox"/> Operating <input type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:	
Internal Approvals							
Order	Approval	Order	Approval				
1	Legal						
2	CFO	3	Chief of Staff				
Narrative							

I. PURPOSE/RECOMMENDATION

To obtain Board approval for an extension of the (1) long-term contract with the New York Power Authority (NYPA) to supply electricity to all of the MTA agencies for facilities and operations within the City of New York and Westchester County and (2) Energy Services Program Agreement between NYPA and the MTA.

II. DISCUSSION

NYPA has supplied the MTA and the other Southeast New York (SENY) governmental customers with electricity since 1976. In addition to the MTA, the SENY customers include the City of New York, the New York City Housing Authority, the Port Authority of New York and New Jersey, the Javits Convention Center, the New York State Office of General Services and Westchester County.

In March of 2005, the MTA entered into a long-term agreement with NYPA containing supplemental terms and conditions to the original 1976 Application for Electric Service, and providing for NYPA's continuing supply of energy and capacity to the MTA through December 31, 2017 (the "2005 LTA").

Throughout 2017 the MTA has been engaged in substantial ongoing negotiations with NYPA with regards to a new long-term agreement ("2018 LTA") and has provided revised terms and conditions for NYPA to supply energy and capacity to the MTA following the expiration of the 2005 LTA, but it appears such negotiations may not be concluded by the expiration date of the 2005 LTA.

To enable the orderly continuation and completion of negotiations, and the efficient transition to the 2018 LTA the MTA must extend the 2005 LTA through December 31, 2018. This extension will be null and void upon the execution of the 2018 LTA.

Concurrently with entering into the 2005 LTA, MTA and NYPA entered into the Energy Services Program Agreement (“ESP Agreement”) to identify energy efficiency and clean energy technology projects at MTA facilities and to implement such projects that were economically feasible. The ESP Agreement was tied to the 2005 LTA, which by its terms expires on December 31, 2017.

The MTA needs to extend the ESP Agreement through December 31, 2018 so as to maintain the continuity of services being provided on projects currently being performed under the ESP Agreement, as well as those in development, until a new agreement between the Parties is executed to implement future projects under the MTA’s Energy Services Program.

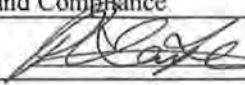
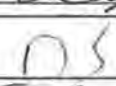
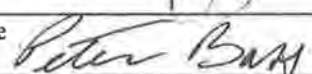
III. IMPACT ON FUNDING

There will be no impact. The extension will carry forward tariffs established for 2018 under the 2005 LTA. The actual costs of electric supply going forward will vary depending on market conditions, such as cost of fuel and demand for electric power, which in turn fluctuates based on weather and other factors. In 2016 MTA paid NYPA approximately \$166 million for electric supply. The 2017 year-to-date costs were approximately \$166 million. The estimated cost for 2018 is \$198 million.

IV. ALTERNATIVES


The alternative would be to receive electric supply from Con Edison as a supplier of “last resort” which is likely to increase the MTA’s costs, and to terminate the current ESP Agreement with NYPA which would result in disruption of projects currently being executed.

Staff Summary

Subject Executive Order 88 - Advanced Metering Infrastructure
Department Environmental Sustainability and Compliance
Director-Porie Saikia-Eapen 
Department Head Signature Donald Spero 
Division Head Name Peter Bass 

Date November 22, 2017
Vendor Name New York Power Authority
Contract Number NA
Contract Manager Name NA
Table of Contents Ref #

Board Action					
Order	To	Date	Approval	Info	Other
1	Finance	12/11/17			
2	Board	12/13/17			

Internal Approvals			
Order	Approval	Order	Approval
3	Chief of Staff 	2	Legal 
1	Chief Financial Officer 		

I. Purpose

To obtain Board approval to install advanced energy metering in MTA facilities utilizing the services of the New York Power Authority (NYPA), consistent with the MTA/NYPA Energy Services Program Agreement approved by the Board in December 2005, and in furtherance of the objectives of Executive Order 88, governing the improvement of energy efficiency in State buildings.

II. Discussion

Under the terms of the Board-approved Energy Services Program Agreement with NYPA, the MTA and its affiliated agencies undertake energy-efficiency projects that are financed and managed by NYPA and paid back through a surcharge to the subject agency's electrical bill that is equal to, or less than, the value of the project's energy savings. Utilizing this method, energy-efficiency projects can be developed and executed without negatively impacting operating or capital budgets. Over one hundred and seventy energy-efficiency projects have been completed under this program, replacing such items as lighting, compressors, motors, pumps and boilers, with new energy-efficient equipment.

Executive Order 88 targets state agency and state authority buildings greater than 20,000 square feet for 20% energy use reductions by April 2020. To help accomplish this reduction, subject buildings are to install advanced metering infrastructure (AMI), which will allow subject facilities to measure and monitor their energy usage in near real-time.

In 2016, Consolidated Edison Company of New York (Con Ed) filed a proposal, subsequently approved, with the New York State Public Utility Commission for the installation of an advanced metering system for customers in their service territory, including MTA EO 88 facilities. Con Ed AMI installation began in 2017 and is scheduled to be completed in 2022. The cost of the Con Ed AMI program will be incorporated into their rates (as opposed to a surcharge). Consequently, the MTA decided to only install its own advanced metering infrastructure in those EO 88 facilities that are not Con Ed customers for natural gas, electricity or both.

Utilizing the services of NYPA, the MTA intends to install advanced metering, predominantly for natural gas, at twenty-five MTA facilities in Brooklyn, Queens, Staten Island, Putnam and Dutchess Counties, the services for which have been competitively procured by NYPA, at a cost of \$1,650,295.82. Subsequent to MTA Board approval, the MTA intends to execute a Customer Installation Commitment (CIC) with NYPA, which set forth the terms of the metering project, including the scope of services, schedule, cost (including fees and interest) and payment.

Under the terms of the Board approval for the 2005 Energy Services Program Agreement, projects conducted pursuant to that Agreement that result in net energy savings are not required to be presented to the Board. Projects for which there are no net savings are presented to the Board for approval. Although it is anticipated that advanced metering capability will lead to improved energy management and savings, the meters in and of themselves cannot be said to produce energy savings and thus are presented for Board approval.

III. Impact on Funding

The total not-to-exceed cost of \$1,650,295.82 for the work is chargeable to the Environmental Sustainability and Compliance Department budget for Engineer Services.

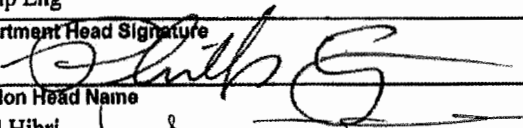
IV. Alternative

A scope of work and contract for advanced metering infrastructure could be developed and procured directly by the MTA. However, the MTA lacks advanced metering experience. NYPA has the necessary experience and expertise to implement and manage this work at a cost structure similar to, or less than, the MTA. In addition, the schedule to complete the work under Executive Order 88 is aggressive and would be difficult to achieve under standard procurement timelines. NYPA has already satisfactorily installed advanced metering on CUNY campuses and has the necessary services in place to execute this project.

V. Recommendation

It is recommended that the Board approve NYPA to perform the installation of advanced metering infrastructure at MTA buildings, and authorize the MTA to enter into a Customer Installation Commitment with NYPA for this project.

Staff Summary

Subject
Request for Authorization to Award Various Procurements
Department
Executive
Department Head Name
Phillip Eng
Department Head Signature

Division Head Name
Wael Hibri

Date
November 29, 2017
Vendor Name
Various
Contract Number
Various
Contract Manager Name
Various
Table of Contents Ref #

Board Action					
Order	To	Date	Approval	Info	Other
1	Finance	12/11/2017	X		
2	Board	12/13/2017	X		

Internal Approvals			
Order	Approval	Order	Approval
1	Procurement	3	CFO
2	Legal		

PURPOSE:

To obtain approval of the Board to award various contracts/contract modifications and purchase orders, as reviewed by the MTA Finance Committee.

DISCUSSION:

MTAHQ proposes to award Non-competitive procurements in the following categories:

of Actions \$ Amount

Schedules Requiring Majority Vote

None

MTAHQ proposes to award Competitive procurements in the following categories:

Schedules Requiring Majority Vote

Schedule F: Personal Services Contracts

	2	\$	3,133,960.00
SUBTOTAL	2	\$	3,133,960.00

MTAHQ presents the following procurement actions for Ratification:

Schedule K: Ratification of Completed Procurement Actions

	4	\$	12,035,428.00
TOTAL	6	\$	15,169,388.00

BUDGET IMPACT: The purchases/contracts will result in obligating MTAHQ operating and capital funds in the amount listed. Funds are available in the current MTAHQ operating/capital budgets for this purpose.

RECOMMENDATION: That the purchases/contracts be approved as proposed. (Items are included in the resolution of approval at the beginning of the Procurement Section.)

BOARD RESOLUTION

METROPOLITAN TRANSPORTATION AUTHORITY

WHEREAS, in accordance with Section 1265-a and Section 1209 of the Public Authorities Law and the All Agency Procurement Guidelines, the Board authorizes the award of certain non-competitive purchase and public work contracts, and the solicitation and award of request for proposals in regard to purchase and public work contracts; and

WHEREAS, in accordance with the All Agency Procurement Guidelines, the Board authorizes the award of certain non-competitive miscellaneous procurement contracts, and certain change orders to procurement, public work, and miscellaneous procurement contracts; and

WHEREAS, in accordance with Section 2879 of the Public Authorities Law and the All Agency Guidelines for Procurement of Services, the Board authorizes the award of certain service contracts and certain change orders to service contracts.

NOW, the Board resolves as follows:

1. As to each purchase and public work contract set forth in the annexed Schedule A, the Board declares competitive bidding to be impractical or inappropriate for the reasons specified therein and authorizes the execution of each such contract.

2. As to each request for proposals (for purchase and public work contracts) set forth in Schedule B for which authorization to solicit proposals is requested, for the reasons specified therein the Board declares competitive bidding to be impractical or inappropriate, declares it is in the public interest to solicit competitive request for proposals and authorizes the solicitation of such proposals.

3. As to each request for proposals (for purchase and public work contracts) set forth in Schedule C for which a recommendation is made to award the contract, the Board authorizes the execution of said contract.

4. The Board ratifies each action taken set forth in Schedule D for which ratification is requested.

5. The Board authorizes the execution of each of the following for which Board authorization is required: i) the miscellaneous procurement contracts set forth in Schedule E; ii) the personal service contracts set forth in Schedule F; iii) the miscellaneous service contracts set forth in Schedule G; iv) the modifications to personal/miscellaneous service contracts set forth in Schedule H; v) the contract modifications to purchase and public work contracts set forth in Schedule I; and vi) the modifications to miscellaneous procurement contracts set forth in Schedule J.

6. The Board ratifies each action taken set forth in Schedule K for which ratification is requested.

7. The Board authorizes the budget adjustments to estimated quantity contracts set forth in Schedule L.

LIST OF PROCUREMENTS FOR BOARD APPROVAL, NOVEMBER 2017
COMPETITIVE PROCUREMENTS

METROPOLITAN TRANSPORTATION AUTHORITY

Procurements Requiring Majority Vote:

F. Personal Service Contracts

(Staff Summaries required for items greater than: \$100k Sole Source; \$250 other Non-Competitive, \$1 million Competitive)

1. **Siwel Consulting, Inc.** **\$235,000.00**
Software License Optimization Consulting (not-to-exceed)
Contract No. 900000000002458
Competitively Negotiated 5 proposal 3 months
To obtain Board approval for the award of a competitively negotiated, personal service contract with Siwel Consulting to review MTA's Software Asset Management (SAM) environment, identify gaps and improvement opportunities, and recommend software asset optimization strategies. Siwel's not-to-exceed amount of \$235,000 includes travel costs and covers hourly rates ranging from \$116 to \$178 during the three month performance period for a total of 1526 resource hours to complete RFP deliverables. Pricing is deemed fair and reasonable.
2. **Ayuda Media Systems** **\$2,898,960** **Staff Summary Attached**
Data Management Platform (not-to-exceed)
Contract No. 15212-0100
Competitively Negotiated 3 proposal 84 months
To obtain Board approval for the purchase of off-the-shelf software from Ayuda Media Systems to facilitate MTA's realization of the benefits of the recently awarded advertising concessions. This bi-directional data management platform (DMP) will serve as a repository for data relating to these concessions, including data pertaining to agency messaging as well as advertising sales. The DMP will house data relating to pedestrian traffic within MTA stations and railcars, as well as data relating to advertising inventory, sales and revenues, and serve as a platform for agency messaging, including real time arrival/departure information, service status information and information concerning upcoming service changes. Pricing is found to be fair and reasonable.

Staff Summary

Schedule F: Personal Service Contracts

Item Number: Dept & Dept Head Name: MTA IT, Sidney Gellineau						SUMMARY INFORMATION	
Division & Division Head Name: MTA IT, Dino Di Pietro & Robert Fortenza						Vendor Name: Ayuda Media Systems	
						Contract Number: 15212-0100	
						Description: Data Management Platform	
Board Reviews						Total Amount: Not to exceed \$2,898,960	
Order	To	Date	Approval	Info	Other	Contract Term (including Options, if any): Five (5) Years	
1	Finance	12/11/17	X			Option(s) included in Total Amount? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
2	Board	12/13/17	X			Renewal – two (2) one-year renewals <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
						Procurement Type: <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Non-competitive	
Internal Approvals						Solicitation Type: <input checked="" type="checkbox"/> RFP <input type="checkbox"/> Bid <input type="checkbox"/> Other: [e.g., Ride -- Contract]	
Order	Approval		Order	Approval	Funding Source: <input checked="" type="checkbox"/> Operating <input type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:		
1	Procurement		4	DDCR			
2	MTA IT		5	Legal			
3	Real Estate		6	CFO			

Narrative

I. PURPOSE/RECOMMENDATION

To obtain Board approval for the purchase of off-the-shelf software from Ayuda Media Systems to facilitate MTA's realization of the benefits of the recently awarded advertising concessions. This bi-directional data management platform (DMP) will serve as a repository for data relating to these concessions, including data pertaining to agency messaging as well as advertising sales.

II. DISCUSSION

The Board recently authorized the granting of new multi-agency advertising concessions pursuant to which the concessionaire will be required to invest hundreds of millions of dollars to create a network of tens of thousands of new screens that will significantly enhance both the revenue-generating potential of the advertising in the MTA system and MTA's ability to deliver timely, targeted messages to its customers. The proposed DMP will provide MTA with tools to assist in its administration and auditing of the complex financial arrangements underlying such concessions and enable it to interface effectively with the concessionaire-provided software and hardware by means of which the concessionaire will discharge its obligation to devote approximately 20% of the time and/or space on its screens to real-time and other agency messaging. The DMP will house data relating to pedestrian traffic within MTA stations and railcars, as well as data relating to advertising inventory, sales and revenues, and serve as a platform for agency messaging, including real time arrival/departure information, service status information and information concerning upcoming service changes.

A Request for Proposals (RFP) was sent to 25 firms, and advertised in the New York State Contract Reporter, NY Post, El Diario and Minority Commerce Weekly. Three proposals were received, of which two were deemed technically qualified. The third proposal failed to address data retention and other core service requirements contained in the RFP.

The selection committee was comprised of personnel from MTAHQ Office of Strategic Initiatives, MTA Office of Information Technology, MTA Real Estate, NYCT Operations Support, LIRR Public Affairs, LIRR Engineering, MNR Customer Service and Stations and MTA Buses Customer Information Systems. The evaluation criteria were: (1) experience and qualifications; (2) quality of the proposed software (3) cost; (4) responsiveness to the RFP; and (5) the proposer's diversity practices.

Ayuda offered the lowest cost option proposed and scored higher than the other qualified proposal on technical criteria as well. Its proprietary software platform offers a variety of functions including asset management, contract management, rate card management and emergency messaging. Ayuda's platform is built for use by large clients with expansive network applications, minimizing the need for costly software customizations. It is highly scalable and can accommodate the growing data retention requirements typically associated with a large and expanding screen networks. Ayuda's references confirmed its extensive experience with large networks, an important advantage since MTA's network is expected to contain tens of thousands of individually-addressable screens.

Ayuda's original proposal valued the development, implementation and 5-year license at \$3,042,360, including \$207,360 for scope development and training in year one and a \$567,000 annual licensing fee per year for five years. Negotiations focused on training and licensing needs, as well as the inclusion of software components for interfaces to store ridership data that may be used for operations and planning and to communicate all-agency messaging to the advertising concessionaire. Negotiations yielded a best and final offer (BAFO) of \$2,898,960. Pricing for the development and implementation of the platform increased to \$216,960 because of enhanced functionality that requires bi-directional interfaces for messaging. Annual licensing fees were reduced to \$536,400 annually (a 5.4% reduction for the same services) per year for five years. Ayuda's BAFO of \$2,898,960 is 41% lower than the other responsive proposal and the non-responsive proposal was even higher priced. Based on the foregoing, the BAFO of \$2,898,960 is found to be fair and reasonable.

In connection with the review of the contractor's responsibility pursuant to the All-Agency Responsibility Guidelines, the Contractor was found to be responsible and qualified for the contract award.

III. D/M/WBE INFORMATION

The MTA Department of Diversity and Civil Rights (DDCR) did not assign MWBE goals to this contracts due to the insufficient number of available MWBE firms in the marketplace that were able to provide the software and licenses required for the solicitation.

IV. IMPACT ON FUNDING

The total not-to-exceed cost of \$2,898,960 will be funded by MTA Real Estate using funds generated by the advertising concessions.

V. ALTERNATIVES

The alternative would be to rely exclusively on reports generated by the advertising concessionaire or data the concessionaire provides MTA access to, and to endeavor to make due with an ad hoc, uncoordinated approach to delivering agency messages to the concessionaire.

LIST OF PROCUREMENTS FOR BOARD APPROVAL, DECEMBER 2017
PROCUREMENTS FOR RATIFICATION

METROPOLITAN TRANSPORTATION AUTHORITY

Procurements Requiring Majority Vote:

K. Ratifications of Completed Procurement Actions (Involving Schedules E-J)

(Staff Summaries required for unusually large or complex items which otherwise would require Board approval)

4. Various	\$12,035,428	<u>Staff Summary Attached</u>
Executive Order 168		

This is a request that the Board ratify procurement actions awarded pursuant to Executive Order 168 ("E.O. 168") and its extensions. The procurement actions listed in Attachment 1 were procured without a formal competitive process. In accordance with the emergency provisions in Article III(B)(1) of the All Agency General Contract Procurement Guidelines and Article III(C)(3) of the All Agency Service Contract Procurement Guidelines, the E.O. 168 procurement actions listed in Attachment 1 are being submitted to the Board for ratification. The total estimated value for the four actions is \$12,035,428. All four actions are for NYC Transit.

Staff Summary

Schedule K: Ratification of Completed Procurement Actions (Involving Schedules E-J)

Page 1 of 1

Item Number:

Vendor Name (& Location): Various	Contract Number: Various	Renewal? <input type="checkbox"/> Yes <input type="checkbox"/> No
Description: Ratification of Executive Order 168 Actions	Total Amount: \$ 12,035,428	
Contract Term (including Options, if any): Various	Funding Source: <input checked="" type="checkbox"/> Operating <input type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:	
Option(s) included in Total Amount? <input type="checkbox"/> Yes <input type="checkbox"/> No	Requesting Dept/Div & Dept/Div Head Name: Chief Operating Officer, Phillip Eng	
Procurement Type: <input type="checkbox"/> Competitive <input type="checkbox"/> Non-competitive <input checked="" type="checkbox"/> Various	Contract Manager: Chief Procurement Officer, David N. Ross	
Solicitation Type: <input type="checkbox"/> RFP <input type="checkbox"/> Bid <input checked="" type="checkbox"/> Other: Various		

PURPOSE:

This is a request that the Board ratify procurement actions awarded pursuant to Executive Order 168 ("E.O. 168") and its extensions.

DISCUSSION:

On June 29, 2017, Governor Andrew M. Cuomo issued Executive Order No. 168, in which he declared a disaster emergency as a result of continued failures of tracks, signals, switches and other transportation infrastructure on MTA rail and subway systems and resulting outages, derailments, and service disruptions that have had a deleterious effect on MTA customers and the regional and New York State economy. The Governor declared that significant and immediate action must be taken to assist in the repair of such transportation infrastructure, and in remediation of track outages and service disruptions. E.O. 168, as extended, provides for the temporary suspension of statutory provisions and any implementing rules, regulations and guidelines for purposes of awarding any contracts, leases, licenses, permits or other written agreements to mitigate the disaster emergency.

Since time is of the essence in addressing the disaster emergency, the procurement actions listed in Attachment 1 were procured without a formal competitive process. In accordance with the emergency provisions in Article III(B)(1) of the All Agency General Contract Procurement Guidelines and Article III(C)(3) of the All Agency Service Contract Procurement Guidelines, the E.O. 168 procurement actions listed in Attachment 1 are being submitted to the Board for ratification. The total estimated value for the four actions is \$12,035,428. All four actions are for NYC Transit. Three of the four actions were conducted using informal competition.

One action is a non-competitive, five-year, contract for ultrasonic rail testing services. The contractor, using NYC Transit's existing ultrasonic test equipment, detects and verifies internal flaws that can develop in rails, thereby facilitating preemptive track repairs. This test equipment was originally developed and manufactured by DAPCO Technologies, LLC (DAPCO). The awardee, DPR Ultrasonic Technologies, LLC (DPR), is the only qualified contractor who has the requisite expertise to provide the full complement of ultrasonic testing services required by NYC Transit, including support of the existing equipment. DPR is owned by the former principal of DAPCO. A cost analysis was performed using certified cost data provided by DPR.

Pricing for all four actions was found to be fair and reasonable.

Attachment 1
Executive Order 168 Procurement Actions

<u>Award Date</u>	<u>Contract #</u>	<u>Description</u>	<u>Contractor</u>	<u>Solicitation Method</u>	<u>Value</u>
11/1/2017	NYCTA 19339	Ultrasonic rail testing services to detect rail flaws including maintenance and repair of the NYCT owned equipment used to conduct said services.	DPR Ultrasonic Technologies, LLC	Non-competitive	\$10,352,334
11/6/2017	NYCTA 19228	Two (2) Railcar movers to move subway cars and work equipment within NYCT's maintenance yards.	Railquip, Inc	Informal Competition	\$431,843
11/14/2017	NYCTA CMM-1463B	Additional emergency medical technicians to aid sick subway passengers and reduce associated subway delays.	TemPositions Health Care, Inc.	Informal Competition	\$990,000
11/14/2017	NYCTA 19397	Coil for air conditioner condenser assembly	Bombardier Mass Transit Corp.	Informal Competition	\$261,251
				Total	\$12,035,428

[THIS PAGE INTENTIONALLY LEFT BLANK]

DECEMBER 2017
MTA REAL ESTATE
LIST OF REAL ESTATE ACTION ITEMS FOR BOARD APPROVAL

No board items this month

PROCUREMENTS

The Procurement Agenda this month includes 8 actions for a proposed expenditure of \$57.8M.

Subject Request for Authorization to Award Various Procurements					
Department Materiel – NYCT					
Department Head Name Stephen M. Plochochi					
Department Head Signature 					
Project Manager Name Rose Davis					
Board Action					
Order	To	Date	Approval	Info	Other
1	Committee	12/11/17			
2	Board	12/13/17			

December 5, 2017			
Department Law and Procurement – MTACC			
Department Head Name Evan Eisland			
Department Head Signature 			
Internal Approvals			
	Approval		Approval
	President NYCT		President MTACC
	Executive VP		President MTA Bus
X	Capital Prog. Management	X	Subways
	Law	X	Diversity/Civil Rights

Internal Approvals (cont.)

Order	Approval	Order	Approval	Order	Approval	Order	Approval

PURPOSE:

To obtain approval of the Board to award various contracts and purchase orders, and to inform the NYC Transit Committee of these procurement actions.

DISCUSSION:

NYC Transit proposes to award Noncompetitive procurements in the following categories:

<u>Procurements Requiring Two Thirds Vote:</u>		<u># of Actions</u>	<u>\$ Amount</u>
Schedule A:	Non-Competitive Purchases and Public Work Contracts	2	\$ 43.2 M
	• Plasser American Corp. \$ 15.2 M		
	• Vapor Stone Rail Systems, \$ 28.0 M		
	A Division of Wabtec Corp.		
SUBTOTAL		2	\$ 43.2 M

MTA Capital Construction proposes to award Noncompetitive procurements in the following categories: None

MTA Bus Company proposes to award Noncompetitive procurements in the following categories: None

NYC Transit proposes to award Competitive procurements in the following categories:

<u>Procurements Requiring Two-Thirds Vote:</u>	<u># of Actions</u>	<u>\$ Amount</u>
Schedule B: Competitive Requests for Proposals (Solicitation of Purchase and Public Work Contracts)	1	\$ TBD M
<u>Schedules Requiring Majority Vote:</u>		
Schedule F: Personal Service Contracts	2	\$ 11.1 M
SUBTOTAL	3	\$ 11.1 M

MTA Capital Construction proposes to award Competitive procurements in the following categories: None

MTA Bus Company proposes to award Competitive procurements in the following categories: None

MTA Bus Company proposes to award Ratifications in the following categories: None

NYC Transit proposes to award Ratifications in the following categories:

<u>Schedules Requiring Majority Vote:</u>		
Schedule K: Ratification of Completed Procurement Actions	2	\$ 2.7 M
SUBTOTAL	2	\$ 2.7 M

MTA Capital Construction proposes to award Ratifications in the following categories:

<u>Schedules Requiring Majority Vote:</u>		
Schedule K: Ratification of Completed Procurement Actions	1	\$ 0.8 M
SUBTOTAL	1	\$ 0.8 M
TOTAL	9	\$ 57.8 M

COMPETITIVE BIDDING REQUIREMENTS: The procurement actions in Schedules A, B, C, and D are subject to the competitive bidding requirements of PAL 1209 or 1265-a relating to contracts for the purchase of goods or public work. Procurement actions in the remaining Schedules are not subject to these requirements.

BUDGET IMPACT: The purchases/contracts will result in obligating funds in the amounts listed. Funds are available in the current operating/capital budgets for this purpose.

RECOMMENDATION: That the purchases/contracts be approved as proposed. (Items are included in the resolution of approval at the beginning of the Procurement Section.)

BOARD RESOLUTION

WHEREAS, in accordance with Section 1265-a and 1209 of the Public Authorities Law and the All-Agency General Contract Procurement Guidelines, the Board authorizes the award of certain noncompetitive purchase and public work contracts, and the solicitation and award of requests for proposals in regard to purchase and public work contracts; and

WHEREAS, in accordance with the All-Agency Service Contract Procurement Guidelines and General Contract Procurement Guidelines the Board authorizes the award of certain noncompetitive miscellaneous service and miscellaneous procurement contracts, certain change orders to purchase, public work, and miscellaneous service and miscellaneous procurement contracts, and certain budget adjustments to estimated quantity contracts; and

WHEREAS, in accordance with Section 2879 of the Public Authorities Law and the All-Agency Service Contract Procurement Guidelines, the Board authorizes the award of certain service contracts and certain change orders to service contracts.

NOW, the Board resolves as follows:

1. As to each purchase and public work contract set forth in annexed Schedule A, the Board declares competitive bidding to be impractical or inappropriate for the reasons specified therein and authorizes the execution of each such contract.

2. As to each request for proposals (for purchase and public work contracts) set forth in Schedule B for which authorization to solicit proposals is requested, for the reasons specified therein, the Board declares competitive bidding to be impractical or inappropriate, declares it is in the public interest to solicit competitive request for proposals, and authorizes the solicitation of such proposals.

3. As to each request for proposals (for purchase and public work contracts) set forth in Schedule C for which a recommendation is made to award the contract, the Board authorizes the execution of said contract.

4. As to each action set forth in Schedule D, the Board declares competitive bidding impractical or inappropriate for the reasons specified therein, and ratifies each action for which ratification is requested.

5. The Board authorizes the execution of each of the following for which Board authorization is required: (i) the miscellaneous procurement contracts set forth in Schedule E; (ii) the personal service contracts set forth in Schedule F; (iii) the miscellaneous service contracts set forth in Schedule G; (iv) the modifications to personal/miscellaneous service contracts set forth in Schedule H; (v) the contract modifications to purchase and public work contracts set forth in Schedule I; and (vi) the modifications to miscellaneous procurement contracts set forth in Schedule J.

6. The Board ratifies each action taken set forth in Schedule K for which ratification is requested.

7. The Board authorizes the budget adjustments to estimated contracts set forth in Schedule L.

DECEMBER 2017

LIST OF NONCOMPETITIVE PROCUREMENTS FOR BOARD APPROVAL

Procurements Requiring Two-Thirds Vote:

A. Noncompetitive Purchases and Public Work Contracts

(Staff Summaries required for all items greater than: \$100K Sole Source; \$750K Other Noncompetitive.) Note – in the following solicitations, NYC Transit attempted to secure a price reduction. No other substantive negotiations were held except as indicated for individual solicitations.)

- | | | |
|---|----------------------------|--------------------------------------|
| 1. Plasser American Corp. | \$15,182,152 (Est.) | <u>Staff Summary Attached</u> |
| Noncompetitive – Five-year contract | | |
| RFQ# 21162 | | |
| Multi-agency contract for the purchase of replacement parts, equipment upgrades, troubleshooting, repair services and training. | | |
| | | |
| 2. Vapor Stone Rail Systems | \$28,000,000 (Est.) | <u>Staff Summary Attached</u> |
| A Division of Wabtec Corp. | | |
| Sole Source - Three-year omnibus | | |
| Purchase of non-inventory and inventory replacement door operator parts and other sole-source parts for subway cars. | | |

Schedule A: Noncompetitive Purchases and Public Work Contracts

Item Number: 1

Vendor Name (Location) Plasser American Corp. (Chesapeake, Virginia)
Description Purchase of replacement parts, equipment upgrades, troubleshooting, repair services and training
Contract Term (including Options, if any) Five years
Option(s) included in Total Amount? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> n/a
Procurement Type <input type="checkbox"/> Competitive <input checked="" type="checkbox"/> Noncompetitive
Solicitation Type <input type="checkbox"/> RFP <input type="checkbox"/> Bid <input checked="" type="checkbox"/> Other: Sole-Source

Contract Number RFQ 139819	Renewal? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Total Amount: \$8,497,172 NYCT \$5,028,488 LIRR \$1,656,492 MNR	
Funding Source <input checked="" type="checkbox"/> Operating <input type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:	
Requesting Dept./Div., Dept./Div. Head Name: Department of Subways, Frank Jezycki	

Discussion:

It is requested that the Board declare competitive bidding impractical or inappropriate pursuant to Public Authorities Law Section 1209, Subsection 9(b) due to the existence of a single responsible source, and approve the award of a multi-agency estimated quantity contract to Plasser American Corporation ("Plasser") for replacement parts, equipment upgrades, troubleshooting, repair services, and training for various track-work equipment ("equipment") for NYC Transit, Metro-North Railroad ("MNR"), and Long Island Rail Road ("LIRR") with NYC Transit as the lead agency.

All equipment and related sub-systems were manufactured by Plasser or other sub-system suppliers and integrated by Plasser. The equipment is comprised of sophisticated electronic and mechanical devices, tailor-made to perform various functions required for installing, testing, and maintaining each agency's rail system. Plasser is a worldwide leader in the transit and rail industries. Only Plasser has the factory-trained personnel capable of properly troubleshooting the equipment, recommending and/or performing repair work, and training in-house forces in the appropriate repair procedures. Replacement parts will be installed either by Plasser or by trained MTA agency personnel tasked with the responsibility of day-to-day maintenance. Equipment that is unable to be repaired by MTA agency personnel will be repaired by Plasser.

NYC Transit's equipment includes four track geometry cars ("TGC"), two flash butt rail welding units, eight switch and production tampers, and two ballast distributors/regulators. Included in this contract are upgrades to NYC Transit's TGC3/TGC4 cars. These upgrades will include (1) a new video camera system on the TGC3 and new video cameras on the TGC4 that will allow NYC Transit to regularly conduct detailed video inspections of the mainline tracks, and (2) a new platform position measuring system on the TGC3, using lasers to accurately measure the height and gauge of the platform edge to ensure proper clearance for trains in stations. LIRR's equipment includes one track geometry car, three ballast regulators, and four switch/panel tilt transport cars. MNR's equipment includes one ballast regulator, two tampers, and one track stabilizer. All Plasser equipment used by the agencies during the term of this agreement will be covered by this contract.

This contract includes pricing for all three agencies as follows: Plasser parts (\$8.4M) and labor (\$2.4M), upgrades for TGC3/TGC4 (\$4.3M) as described above, and non-Plasser parts (\$92K). Pricing for parts and labor is based on the *Plasser Parts and Service Price List*, published to the industry for which a discount is applied. The MTA agencies receive a greater discount on Plasser parts than any other transit agency in North America. Plasser's initial proposal of \$15,382,318 was reduced to \$15,182,153 through negotiations conducted using input from MTA Audit. Plasser has stated that the MTA agencies are receiving its most favored customer pricing for both parts and service. Prices have been deemed to be fair and reasonable.

This award will not be subject to prior approval by the OSC, as Executive Order 168 has been invoked to expedite the award of the upgrades to TGC3 and TGC4 to ensure that the track geometry cars are equipped with the latest technology to more efficiently support a safe and reliable system.

Item Number: 2

Vendor Name (Location) Vapor Stone Rail Systems, a Division of Wabtec Corp. (Plattsburgh, New York)
Description Purchase of non-inventory and inventory replacement door operator parts and other sole-source parts for subway cars
Contract Term (including Options, if any) December 14, 2017–December 13, 2020
Option(s) included in Total Amount? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> n/a
Procurement Type <input type="checkbox"/> Competitive <input checked="" type="checkbox"/> Noncompetitive
Solicitation Type <input type="checkbox"/> RFP <input type="checkbox"/> Bid <input checked="" type="checkbox"/> Other: Omnibus Sole-Source Approval

Contract Number NONE	Renewal? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Total Amount: \$28,000,000 (Est.)	
Funding Source <input checked="" type="checkbox"/> Operating <input type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:	
Requesting Dept./Div., Dept./Div. Head Name: Division of Materiel, Stephen M. Plochochi	

Discussion:

This is an omnibus approval request for items identified as obtainable only from Vapor Stone Rail (“Vapor”), and will eliminate the need to advertise and prepare individual procurement staff summaries for Board approval for each procurement over the small purchase threshold. NYC Transit is not obligated to generate any purchase orders pursuant to an omnibus approval. Any purchases made under this approval will be made pursuant to paragraph 9(b) of Public Authorities Law 1209, which allows for purchases of items that are available from only a single responsible source to be conducted without competitive bidding.

There are approximately 5,823 items covered by this approval for the purchase of replacement door operator parts, monitoring and diagnostic parts, and other sole-source items such as heating, ventilation, and air conditioning (“HVAC”) parts supplied by Vapor. These items are identified as obtainable only from Vapor for the following reasons: sole pre-qualified item on the Qualified Products List and not available from any distributors or other sources; publicly advertised within a 12-month period without an acceptable alternate supplier, or proprietary to Vapor. These items are advertised a minimum of once every 12 months to seek competition. A list of Vapor’s sole-source items, as well as NYC Transit’s intention to buy items on the list without competitive bidding, is available for download from the NYC Transit website at any time by any prospective vendor. These sole-source replacement parts will be used by the Division of Car Equipment (“DCE”) for Scheduled Maintenance System (“SMS”) and normal maintenance for door operator parts for 5,006 subway cars in NYC Transit’s fleet (all subway cars with the exception of the 660 Kawasaki-built R160 and 752 R46 cars). Vapor will also be supplying HVAC parts for approximately 2,788 cars (all pre-R142/A cars), as well as monitoring and diagnostic parts for 1,030 R142 subway cars.

In December 2014 the Board approved the existing Vapor omnibus approval. The existing approval, in the amount of \$25,800,000, expires on December 30, 2017, and has a remaining balance of \$70,578 in unexpended funds that will be used for additional purchases until this new Vapor omnibus approval is in place.

Procurement performed an analysis on 113 contracts issued during the term of the existing omnibus approval that exceeded the small purchase threshold, which represents a total contract value of \$24,449,028. Of the 113 contracts, 25 items have comparative price history. A comparative price analysis of the 25 items revealed an annual weighted average price increase of 1.33%. The Producer Price Index, over the same time period, shows an annual average price increase of 1.02%.

Based on the current forecasts as well as projections for 2018 through 2020, it is anticipated that DCE will require approximately \$28,000,000 for the purchase from Vapor of sole-source items exceeding the small purchase threshold. During this omnibus approval, the HVAC system is overhauled every seven and 14 years and the door operating system is overhauled every 14 years. During the term of the new omnibus approval, the R62A, R68, and R68A subway cars will undergo a seven-year overhaul and R32, R46, R62, R142, R142A, and R160 subways cars will undergo a 14-year overhaul.

Procurement believes that the amount requested will be sufficient to procure all sole-source materials that exceed the small purchase threshold from Vapor for the next three-year period. Procurement and DCE will continue to research alternate sources of supply wherever possible. Under this new omnibus approval, pricing for any procurement is established by requesting a quote for each item from Vapor on an as-required basis. Each item to be purchased under the new omnibus approval will be subject to a cost and/or price analysis, and determination that the price is found to be fair and reasonable.

In connection with a previous contract awarded to Vapor, Wabtec Corp. (the parent company of Vapor) and its subsidiaries and affiliates were found to be responsible notwithstanding significant adverse information (“SAI”) pursuant to the All-Agency Responsibility Guidelines and such responsibility finding was approved by the MTA Executive Director and Chief Executive Officer in consultation with the MTA General Counsel in July 2008. No new SAI has been found relating to Wabtec, and Vapor has been found to be responsible.

DECEMBER 2017

LIST OF COMPETITIVE PROCUREMENTS FOR BOARD APPROVAL

Procurements Requiring Two-Thirds Vote:

B. Competitive Requests for Proposals (Solicitation of Purchase and Public Work Contracts)
(Staff Summaries required for items estimated to be greater than \$1M.)


- | | | |
|--|------------------------------|--------------------------------------|
| 1. Contractor To Be Determined
Contract Term To Be Determined
Contract# C-32518 | Cost To Be Determined | <u>Staff Summary Attached</u> |
| <p>RFP Authorizing Resolution for a pilot project to Design-Build, Furnish, Install, and Maintain a Platform Barrier Door System at the 3rd Avenue Station, Canarsie Line in the borough of Manhattan.</p> | | |

Procurements Requiring Majority Vote:

F. Personal Service Contracts
(Staff Summaries required for all items greater than: \$100K Sole Source; \$750K Other Noncompetitive; \$1M Competitive.)

- | | | |
|---|---------------------|--------------------------------------|
| Parsons Transportations Group
of New York, Inc.
SYSTRA Engineering, Inc.
Two Proposals – 75-month and
84-month contracts | \$11,090,258 | <u>Staff Summary Attached</u> |
| 2. Contract# CM-1236 | \$4,948,157 | ↓ |
| 3. Contract# CM-1567 | \$6,142,101 | ↓ |
| <p>Consulting services contracts for the design, procurement, and construction support for Communications-Based Train Control and Auxiliary Wayside Signal Systems for the Culver Line (CM-1236) and the 8th Avenue Line (CM-1567).</p> | | |

Staff Summary

Item Number 1			
Division, Department Head Name: SVP Operations Support, Stephen M. Plochochi			
			
Internal Approvals			
Order	Approval	Order	Approval
1 WP	Materiel	6 X	CFO
2 X	Law	7 ②	EVP
3 X	Budget	8 OE	Acting President
4 X	CPM	9	
5 X	Subways	10	

SUMMARY INFORMATION	
Vendor Name RFP Authorizing Resolution	Contract No. C-32518
Description Design-Build, Furnish, Install, and Maintain a Platform Barrier Door System at the 3rd Avenue Station on the Canarsie Line, Borough of Manhattan	
Total Amount TBD	
Contract Term 20 Months	
Option(s) included in Total Amount? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Renewal? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Procurement Type <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Noncompetitive	
Solicitation Type <input checked="" type="checkbox"/> RFP <input type="checkbox"/> Bid <input type="checkbox"/> Other:	
Funding Source <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:	

PURPOSE:

To request that the Board adopt a resolution declaring that competitive bidding is impractical or inappropriate for a pilot project to Design-Build, Furnish, Install, and Maintain a Platform Barrier Door System at the 3rd Avenue Station on the Canarsie Line, Borough of Manhattan, and that it is in the public interest to issue a competitive Request for Proposal ("RFP") pursuant to Public Authorities Law, Section 1209, Subdivision 9(f). This project will be managed by NYC Transit Capital Program Management.

DISCUSSION:

NYC Transit is pursuing a more streamlined design and construction strategy for certain types of capital projects as well as alternate project delivery and procurement methods to achieve overall best value and approach for NYC Transit and the public. As a result, this project is part of a Design-Build program within the 2015–2019 timeframe, which promises efficient and faster delivery of projects while achieving best value benefits.

In an effort to improve customer safety, convenience, security, and overall station appearance, NYC Transit has embarked on an initiative to research, study, and pilot a platform barrier door system ("PBDS") in its subway infrastructure. The goal is to improve customer safety by (1) deterring both the occurrence of customers jumping or falling onto the tracks, and unauthorized individuals from gaining track access, and (2) reducing the accumulation of debris on the track. Legacy transit systems, such as those in London and Paris, have retrofitted platforms with barrier systems to create a safer and more comfortable station environment for passengers.

In 2016, NYC Transit commissioned an international study on the state of the PBDS industry. The effort provided NYC Transit with critical information and a greater understanding of the requirements for installing, operating, and maintaining various types of PBDSs. The various types of PBDSs identified in use by various transit agencies are:

1. Platform Screen Doors ("PSD"): full height
2. Automatic Platform Gates ("APG"): half height
3. Rope Platform Screen Doors ("RPSD"): vertically opening gate system

There are a number of challenges involved in installing any of these systems, including their impact on compliance with the Americans with Disabilities Act and New York State Building Codes, where platforms are narrow and are constrained by column and staircase locations. Consequently, in March 2017, a comprehensive study of all 472 stations was started to determine where it would be feasible to install PSDs, APGs, or RPSDs. The pilot will be designed and implemented to assemble data to evaluate and take into account the operational and safety issues for both our employees and our customers.

A study of potential locations was performed, and resulted in the recommendation of the 3rd Avenue Station along the Canarsie Line (Manhattan) to pilot an APG system to be installed during the Canarsie Tube shutdown scheduled to start in 2019. The contract delivery method for this first platform door installation will be via a design-build, furnish, install and maintain contract. The 3rd Avenue Station was selected because the platforms were free of obstructions and will not be in service and therefore, would not disrupt passengers during the Canarsie tube shutdown.

The pilot consists of the installation of APGs measuring approximately 54 inches in height on both platforms at the 3rd Avenue "L" Line (Canarsie) Station. These APGs are built at the platform edge in a continuous line with bi-parting doors coordinated with the location of the train car doors when a train is in the station. Related work includes structural modifications, new construction, architectural, electrical, communications, and APG-related berthing, gap detection, closed-circuit television, and door control systems. The APG system will require the addition of a control room and a spare parts storage room on each platform. The pilot will also include operations training of NYC Transit employees, and options for maintenance and maintenance training.

Selection will be accomplished by using a competitive RFP process. As part of the process, prospective Design-Build teams will propose their design and construction approach, and will be encouraged to provide alternate proposals to NYC Transit requirements in addition to proposed costs. In accordance with MTA policy regarding the use of the Design-Build contracting strategy, a stipend will be paid to Design-Build teams that were not selected, yet provided detailed proposals. This will be done in order to enhance competition and defray proposal costs.

Utilizing the RFP process will allow NYC Transit to evaluate alternatives as well as take into account proposals that can possibly shorten the project duration, and introduce innovations. Compliance with the APG system specifications as well as project schedule will be important requirements. Proposers will also be required to provide prices for an optional maintenance agreement (including hardware and software) to cover the useful life of the system.

Given the complex nature of this pilot project, it is in the best interest of NYC Transit to be able to consider factors such as technical expertise and alternative approaches to the work as well as past performance and experience on similar projects in addition to cost in order to determine which proposal offers the best overall value. Unlike a bid, the RFP process will also allow NYC Transit flexibility to negotiate alternative contract terms and conditions that could potentially result in a lower overall cost for the project while continuing to achieve NYC Transit's requirements.

ALTERNATIVES:

The use of a sealed bid process in which factors other than cost cannot be comparatively considered is not recommended as it does not provide the best flexibility in assessing the alternative means toward accomplishing this complex project. An RFP is a better means to evaluate different technical approaches and to enable the best consideration of alternative proposals.


IMPACT ON FUNDING:

This project is funded by MTA and will be managed by NYC Transit under the MTA Capital Program. Maintenance of the APG system will be funded from the operating budget.

RECOMMENDATION:

That the Board adopt a resolution declaring that competitive bidding is impractical or inappropriate for a pilot project to Design-Build, Furnish, Install, and Maintain a Platform Barrier Door System at the 3rd Avenue Station on the Canarsie Line, Borough of Manhattan, and that it is in the public interest to issue a competitive RFP pursuant to Public Authorities Law, Section 1209, Subdivision 9(f).

Staff Summary

Item Number 2-3			
Division, Department Head Name: SVP Operations Support, Stephen M. Plochochi			
			
Internal Approvals			
Order	Approval	Order	Approval
1	Materiel	6 X	Subways
2 X	Law	7 X	CFO
3 X	Budget	8	EVP
4 X	DDCR	9	Acting President
5 X	CPM	10	

SUMMARY INFORMATION	
Vendor Names	Contract No.
Parsons Transportation Group	CM-1236
SYSTRA Engineering	CM-1567
Description	
Consulting Services – Design, Procurement, and Construction Support for Communications-Based Train Control and Auxiliary Wayside Signal Systems for the Culver Line (CM-1236) and the 8th Avenue Line (CM-1567).	
Total Amount	\$11,090,258
Culver Line to PTG	\$4,948,157
8th Ave. Line to SYSTRA	\$6,142,101
Contract Term (including Options, if any)	
75 months - Culver Line	
84 months - 8th Avenue Line	
Option(s) included in Total Amount?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Renewal?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Procurement Type	
<input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Noncompetitive	
Solicitation Type	
<input checked="" type="checkbox"/> RFP <input type="checkbox"/> Bid <input type="checkbox"/> Other:	
Funding Source	
<input type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:	

To obtain Board approval to award two competitively negotiated contracts for Consulting Services – Design, Procurement, and Construction Support for Communications-Based Train Control and Auxiliary Wayside Signal (“CBTC/AWS”) systems for the Culver Line (CM-1236) to Parsons Transportation Group of New York, Inc. in the estimated amount of \$4,948,157 with a term of 75 months, and for the 8th Avenue Line (CM-1567) to SYSTRA Engineering, Inc. in the estimated amount of \$6,142,101 with a term of 84 months. Each contract allows NYC Transit the option to have both consultants propose on additional signals and systems work at established rates. Award of the option(s) for additional signals and systems work will be subject to Board approval.

DISCUSSION:

NYC Transit is seeking to procure professional services from experienced consultants to (1) engage in the identification of operational needs, (2) assist in both the development of performance and design specifications, and the selection of qualified contractors/suppliers, (3) provide construction management support, and (4) provide technical support during the design, procurement, and construction phases for the CBTC/AWS systems on the Culver Line that runs from West 8th Street to Church Avenue in Brooklyn, and will include wayside CBTC/AWS equipment only as the cars are already equipped with CBTC. The 8th Avenue Line runs from Fulton Street to 59th Street in Manhattan and will include the installation of CBTC carborne equipment on R211 cars and wayside CBTC/AWS equipment. In order to provide the maximum flexibility, Procurement structured the Request for Proposal (“RFP”) so it could result in one award for both projects, or could be split with a selection of different consultants for each line based on their capacity and expertise to perform the work.

A one-step RFP was advertised, which resulted in submittals from three firms: Gannett Fleming Engineers and Architects, PC (“Gannett”); Parsons Transportation Group of New York, Inc. (“PTG”); and SYSTRA Engineering, Inc. (“SYSTRA”).

Staff Summary

The Selection Committee ("SC") reviewed and evaluated each written technical proposal in accordance with the established evaluation criteria, which included: experience in relevant areas, plan of approach, experience of project team, experience of prime and subconsultant key personnel, current workload of prime and subconsultants, management approach, quality assurance plan, and diversity practices. The SC also participated in oral presentations with all three firms. After oral presentations, the SC recommended two firms for negotiations: PTG and SYSTRA.

Both firms were considered the most qualified teams to perform the work based on their current and past experience in project management and consultant oversight of signal/CBTC and communications projects. The SC concluded that both proposers were essentially of equal technical ability as they both have extensive experience with NYC Transit's CBTC projects. Gannett was not recommended because its technical approach was not as strong as that of the other two firms, specifically with respect to past and current experience with CBTC projects.

After being selected for negotiations, PTG and SYSTRA's cost proposals were opened and evaluated. Negotiations were conducted and focused on hours, hourly rates and overhead rates for prime and subconsultants, and an option for additional signals and systems work was introduced. At the conclusion of negotiations, a request for a Best and Final Offer ("BAFO") was made to both consultants, which included revised price schedules for both Culver and 8th Avenue to reflect fixed labor hours and fixed out-of-pocket expenses to facilitate an equal price comparison and evaluation. Confirmation of rates for option work was also obtained.

BAFOs were received and the table below shows a comparison of the two firms' initial cost proposals and their BAFOs:

	8th Avenue	Culver	Total
Estimate	\$8,934,261	\$6,564,128	\$15,498,389
SYSTRA Initial Proposal	\$13,909,622	\$9,980,756	\$23,890,378
SYSTRA BAFO	\$6,142,101	\$4,496,819	\$10,638,920
PTG Initial Proposal	\$10,305,073	\$6,550,636	\$16,855,709
PTG BAFO	\$6,601,387	\$4,948,157	\$11,127,227

Prior to voting, the SC determined that the resource requirements for both the Culver and 8th Avenue lines were too great for one firm and voted unanimously to award two separate contracts. This also affords NYC Transit the ability to employ the expertise of both consultants in areas of high technical complexity. Both firms were deemed to have strong teams and expertise to perform the work, thus offering the best overall value to NYC Transit. The 8th Avenue Line was the first line to be voted on for selection; SYSTRA received the majority of votes and was recommended by the SC for award based on their involvement in developing the specifications for CBTC carborne equipment on new car fleets. Consequently, PTG was recommended for award of the Culver Line. Procurement finds, and Capital Program Management concurs, that both BAFOs are fair and reasonable based on the competitive nature of the RFP and comparison to the in-house estimate of \$6,564,128 for Culver and \$8,934,261 for 8th Avenue. The cost reductions were achieved by obtaining lower rates from the consultants without any decrease in estimated hours of effort.

SYSTRA's relevant project experience of similar complexity with MTA includes the CBTC Queens Boulevard Line ("QBL") (NYC Transit), Positive Train Control Systems (LIRR/MNR), and St. George Interlocking Modernization (NYC Transit/SIR). PTG is providing construction management services for CBTC signal modernization on the QBL West Phase and the Flushing Line. PTG has also performed similar work related to signals and train control systems that includes such projects as the Second Avenue Subway, Canarsie Line CBTC, Culver Line – CBTC Interoperability Project and Positive Train Control Systems (LIRR/MNR).

One of PTG's significant subconsultants is CH2M Hill New York, Inc. ("CH2M Hill"). In connection with a previous contract, CH2M Hill, was found to be responsible notwithstanding significant adverse information ("SAI") pursuant to the All-Agency Responsibility Guidelines, and such responsibility finding was approved by the MTA Chairman/CEO in consultation with the MTA General Counsel in December 2013. No new SAI has been found relating to CH2M Hill and CH2M Hill has been found to be responsible.

M/W/DBE INFORMATION:

Based on the specialized nature of the work and lack of available firms, the MBE/WBE goals were established by DDCR as 0% MBE and 0% WBE. PTG and SYSTRA have achieved their previous M/W/DBE goals on previous MTA contracts.

IMPACT ON FUNDING:

The contract is 100% MTA funded. Contracts will not be awarded until WAR Certificates are received.

ALTERNATIVES:

None. Currently, NYC Transit lacks available in-house personnel to perform the specific tasks required under the scope of work for these contracts.

CAPITAL PROGRAM REPORTING:

These contracts have been reviewed for compliance with the requirements of the 1986 legislation applicable to Capital Contract Awards and the necessary inputs have been secured from the responsible functional departments.

RECOMMENDATION:

It is recommended that the Board approve the awards of Contracts CM-1236 to PTG for the Culver Line in the estimated amount of \$4,948,157 for a term of 75 months and CM-1567 to SYSTRA for the 8th Avenue line in the estimated amount of \$6,142,101 for a term of 84 months.

DECEMBER 2017

LIST OF RATIFICATIONS FOR BOARD APPROVAL

Procurements Requiring Majority Vote:

K. Ratification of Completed Procurement Actions (Involving Schedule E-J)
(Staff Summaries required for items requiring Board approval.)

Henningson, Durham & Richardson		\$2,669,337	<u>Staff Summary Attached</u>
Architecture and Engineering, P.C.			
1. Contract# CM-1333.19	\$1,392,822		↓
2. Contract# CM-1333.20	\$1,276,515		↓
Modification to the contracts for design and construction support services for the rehabilitation of nine stations and line structure on the Sea Beach Line, in order to provide additional design and construction support services.			

Schedule K: Ratification of Completed Procurement Actions

Item Number: 1–2

Vendor Name (Location) Henningson, Durham & Richardson Architecture and Engineering, P.C. (New York, New York)	
Description: Design and Construction Phase Support for Rehabilitation of Nine Stations on the Sea Beach Line	
Contract Term (including Options, if any) June 20, 2007–July 13, 2019	
Option(s) included in Total Amount? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> n/a	
Procurement Type <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Noncompetitive	
Solicitation Type <input type="checkbox"/> RFP <input type="checkbox"/> Bid <input checked="" type="checkbox"/> Other: Modification	
Funding Source <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:	
Requesting Dept./Div., Dept./Div. Head Name: Capital Program Management, John O’Grady	

Contract Number	AWO/Mod. #:
CM-1333	19 and 20
Original Amount:	\$ 9,754,283
Option Amount:	\$ 3,144,833
Total Amount:	\$ 12,899,116
Prior Modifications:	\$ 11,973,488
Prior Budgetary Increases:	\$ 0
Current Amount:	\$ 24,872,604
This Request:	
Mod 19: \$1,392,822	\$ 2,669,337
Mod 20: \$1,276,515	
% of This Request to Current Amount:	10.7%
% of Modifications (including This Request) to Total Amount:	113.5%

Discussion:

These retroactive modifications are for additional design and additional construction support services (“CSS”) performed by Henningson, Durham & Richardson Architecture and Engineering, P.C. (“HDR”) for the rehabilitation of nine stations and line structure on the Sea Beach Line in the borough of Brooklyn.

The base contract covers design services and optional CSS for the rehabilitation of nine stations on the Sea Beach Line (8th Avenue, Fort Hamilton Parkway, New Utrecht Avenue, 18th Avenue, 20th Avenue, Bay Parkway, Kings Highway, Avenue U, and 86th Street), and the structural repair of the retaining walls and associated infrastructure from north of the 8th Avenue Station to south of the 86th Street Station. The CSS option was exercised in March 2015, and will continue through July 2019.

HDR began design work in 2007 that was suspended in 2009 due to lack of funding in the MTA Capital Plan for construction. At that time, approximately 90 percent of the work was completed. Funds were secured in 2012, and the work was restarted with a projected construction award in December 2014. Subsequent to restart of the design, and in an effort to reduce construction costs, the project was split into two construction contracts comprised of six and three stations, and changed from a full station rehabilitation approach to a component renewal approach that included the addition of Americans with Disabilities Act (“ADA”) upgrades at two stations. The two construction contracts were awarded to John P. Picone, Inc. (six stations) and Skanska USA Civil Northeast, Inc. (three stations), as projected.

Modification 19

After award of the base contract, Capital Program Management (“CPM”) requested several additional design tasks at the 8th Avenue Station, including the design of: (1) two ADA elevators on the northbound and southbound platform locations, (2) two new and one modified stair, (3) an addition of a drainage system, and (4) a new fire alarm system at the 8th Avenue Control House. The two new stairs and one modified stair redesign was a result of the addition of ADA elevators and provided for more efficient passenger flow on the platform and through passageways. The drainage system is required to prevent pooling of water under the ballast at 8th Avenue. Work under this modification involves the completion of the design work on the ADA elevators, full design for the three stairs, conceptual design of the drainage system, and the complete design of the new fire alarm system for code compliance.

In order to continue design services, retroactive approval was received from the Senior Vice President, CPM to continue work pending negotiations and award of this modification. HDR’s proposal for the additional design services was in the amount of \$1,472,868. The revised in-house estimate was \$1,452,853. After detailed analyses of various HDR proposal submissions, scope clarification meeting negotiations resulted in the agreed-upon amount of \$1,392,822. This reflects \$334,000 for retro work from June 2017 through early September 2017 and approximately \$1.05 million for the remaining work to be performed and was deemed to be fair and reasonable.

Modification 20

As a result of the additional design services at the 8th Avenue Station (as described in Modification 19 above), increased CSS is required. This modification covers the increased CSS and includes: (1) work related to more unforeseen site conditions uncovered during demolition and construction of the newly added items as well as design revisions/changes, (2) additional site visits, meetings, and conference calls, (3) the review of approximately 340 additional submittals, and (4) increased project management.

Due to the critical phasing of the work and the need for continued CSS during construction, retroactive approval was received from the Senior Vice President, CPM to continue the work pending negotiations and award of this modification. The revised in-house estimate was \$1,280,584. After detailed analyses of various HDR proposal submissions, scope clarification meetings, negotiations resulted in the agreed-upon amount of \$1,276,515. This reflects \$350,000 for retro work from May 2017 through mid-September 2017 and approximately \$926,000 for the remaining work to be performed through July 2019 and was deemed to be fair and reasonable.

DECEMBER 2017

LIST OF RATIFICATIONS FOR BOARD APPROVAL

Procurements Requiring Majority Vote:

K. Ratification of Completed Procurement Actions (Involving Schedule E-J)
(Staff Summaries required for items requiring Board approval.)

- | | | |
|--|------------------|--------------------------------------|
| 1. E.E. Cruz/Tully Construction
Company, JV
Contract# C-26010.249 | \$815,000 | <u>Staff Summary Attached</u> |
|--|------------------|--------------------------------------|

Modifications to the contract for the Second Avenue Subway Route 132A – 96th Street Station
Finishes, in order to furnish and install stainless steel wire mesh around the elevator at Entrance 3.

Schedule K: Ratification of Completed Procurement Actions



Item Number: 1

Vendor Name (Location) E.E. Cruz/Tully Construction Company, Joint Venture LLC (New York, New York)
Description Second Avenue Subway Route 132A – 96th Street Station Finishes
Contract Term (including Options, if any) June 22, 2012–August 7, 2017
Option(s) included in Total Amount? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> n/a
Procurement Type <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Noncompetitive
Solicitation Type <input type="checkbox"/> RFP <input type="checkbox"/> Bid <input checked="" type="checkbox"/> Other: Modification
Funding Source <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input checked="" type="checkbox"/> Federal <input type="checkbox"/> Other:
Requesting Dept./Div., Dept./Div. Head Name: MTA Capital Construction, John N. Lieber

Contract Number	AWO/Mod. #
C-26010	249
Original Amount:	\$ 324,600,000
Prior Modifications:	\$ 69,919,979
Prior Budgetary Increases:	\$ 0
Current Amount:	\$ 387,421,755
This Request:	\$ 815,000
% of This Request to Current Amount:	0.25%
% of Modifications (including This Request) to Original Amount:	21.79%

Discussion:

This retroactive modification provides for the furnishing and installation of stainless steel wire mesh around the elevator at Entrance 3 of the 96th Street station along the Second Avenue line.

Work under the original contract includes (1) rehabilitation and retrofit of the existing 99th–105th Street Tunnel, (2) construction of invert slabs and benches in the newly constructed 87th–92nd Street tunnels and in the northern section of the 97th–99th Street Tunnel, (3) installation of mechanical systems including heating, ventilation, and air-conditioning, electrical medium voltage and 120-volt systems, (4) supply and installation of elevators and escalators in the station and entrances, (5) construction of the station platform, mezzanine levels, ancillaries, entrances, and interior walls and rooms, (6) restoration of the surface of Second Avenue and adjacent streets, and (7) removal of the temporary road deck installed under previous contracts.

The work under this modification was necessitated by the determination by the NYC Transit Code Compliance group (“Code Compliance”) that the hoistway (elevator shaft) of the mezzanine elevator, as designed and constructed, did not comply with the New York State Building Code (“the code”). Specifically, it was determined that the gap between the east and west walls of the hoistway and the elevator car exceeded the gap allowed by the code, presenting the danger of someone entering the hoistway and being injured by a moving elevator car. The north and south walls were found to be in compliance with the code. To address the code issue, the Designer of Record provided for steel wire mesh to enclose the east and west sides of the hoistway, preventing entry into the hoistway. The north side of the hoistway had already been enclosed by mesh, but only for the purpose of preventing debris from entering the hoistway. Therefore, in addition to the installation of mesh on the east and west sides, the mesh on the north side required reinforcement to meet the deflection/rigidity criteria necessary to prevent entry by a person into the hoistway. The south hoistway wall is steel reinforced concrete covered with art tile, and presented no code compliance issues relevant to this modification.

Work under this modification includes (1) removal, modification and re-installation of existing stainless steel wire mesh and supports forming the north wall of the hoistway, and (2) installation of new stainless steel wire mesh and supports to form the east and west sides of the elevator hoistway walls. In order not to delay revenue service, retroactive approval was obtained from the MTA Capital Construction (“MTACC”) Program Executive and E.E. Cruz/Tully Construction Company, Joint Venture, LLC (“CTJV”) was directed to proceed with the work on July 27, 2016.

CTJV submitted its proposal in the amount of \$880,967. MTACC’s revised estimate was \$802,304. Negotiations resulted in the agreed-upon lump-sum price of \$815,000. Savings of \$65,967 were achieved. The negotiated price was found to be fair and reasonable. MTACC is currently reviewing this issue to determine whether an errors and omission claim against the designer is warranted.

On November 9, 2017, the Sr. Vice President, Operations Support, authorized payment to CTJV, prior to approval of this modification.



Subject	Request for Authorization to Award Various Procurements
Department	Procurement and Material Management
Department Head Name	Alfred Muir, Sr. Director
Department Head Signature	
Project Manager Name	

Date	December 4, 2017
Vendor Name	Various
Contract Number	Various
Contract Manager Name	Various
Table of Contents Ref #	

Board Action					
Order	To	Date	Approval	Info	Other
1	MNR Comm. Mtg.	12-11-17	X		
2	MTA Board Mtg.	12-13-17	X		

Internal Approvals			
	Approval		Approval
X	Acting President		
X	Executive V		V.P. Capital Programs
X	Sr. V.P. Operations		V.P. & General Counsel
X	V.P. Finance & IT		

Internal Approvals (cont.)							
Order	Approval	Order	Approval	Order	Approval	Order	Approval

PURPOSE:

To obtain approval of the Board to award various contracts/contract modifications and purchase orders, and to inform the MTA Metro-North Railroad Committee of these procurement actions.

DISCUSSION:

MNR proposes to award non-competitive procurements in the following categories:

	# of Actions	\$ Amount
<u>Schedules Requiring Two-Thirds Vote (or more, where noted)</u>	NONE	
<u>Schedules Requiring Majority Vote</u>		
Schedule G: Miscellaneous Service Contracts	1	\$498,160
Waterfall Security Solutions, Ltd.		\$498,160
SUB TOTAL:	1	\$498,160

**MNR proposes to award competitive procurements in the following categories:**

<u>Schedules Requiring Two-Thirds Vote (or more, where noted)</u>		<u># of Actions</u>	<u>\$ Amount</u>
Schedule C: Competitive Requests for Proposals (Award of Purchase and Public Work Contracts)		2	\$110,216,472
• Tomex Electronics, Inc.	\$18,730,572		
• Halmar International	\$91,485,900		
SUB TOTAL:		2	\$110,216,472

MNR presents the following procurement actions for Ratification:

<u>Schedules Requiring Two-Thirds Vote (or more, where noted)</u>	NONE
<u>Schedules Requiring Majority Vote</u>	NONE
SUB TOTAL:	
TOTAL:	3 \$110,714,632

The contractors noted above and on the following Staff Summary Sheets have been found in all respects responsive and responsible, and are in compliance with State laws and regulations concerning procurements.

BUDGET IMPACT: The purchases/contracts will result in obligating MNR operating and capital funds in the amount listed. Funds are available in the current MNR operating/capital budgets for this purpose.

RECOMMENDATION: That the purchases/contracts be approved as proposed. (Items are included in the resolution of approval at the beginning of the Procurement Section.)

METROPOLITAN TRANSPORTATION AUTHORITY

WHEREAS, in accordance with Section 1265-a and Section 1209 of the Public Authorities law and the All Agency Procurement Guidelines, the Board authorizes the award of certain non-competitive purchase and public work contracts, and the solicitation and award of request for proposals in regard to purchase and public work contracts; and

WHEREAS, in accordance with the All Agency Procurement Guidelines, the Board authorizes the award of certain non-competitive miscellaneous procurement contracts, and certain change orders to procurement, public work, and miscellaneous procurement contracts; and

WHEREAS, in accordance with Section 2879 of the Public Authorities Law and the All Agency Guidelines for Procurement of Services, the Board authorizes the award of certain service contracts and certain change orders to service contracts.

NOW, the Board resolves as follows:

1. As to each purchase and public work contract set forth in the annexed Schedule A, the Board declares competitive bidding to be impractical or inappropriate for the reasons specified therein and authorizes the execution of each such contract.

2. As to each request for proposals (for purchase and public work contracts) set forth in Schedule B for which it is deemed in the public interest to obtain authorization to solicit competitive proposals through a publicly advertised RFP for the reasons specified therein the Board declares it to be impractical or inappropriate to utilize a procurement process inviting sealed bids with award to the lowest responsive/responsible bidder.

3. As to each request for proposals (for purchase and public work contracts) set forth in Schedule C for which a recommendation is made to award the contract, the Board authorizes the execution of said contract.

4. The Board ratifies each action taken set forth in Schedule D for which ratification is requested.

5. The Board authorizes the execution of each of the following for which Board authorization is required: i) the miscellaneous procurement contracts set forth in Schedule E; ii) the personal service contracts set forth in Schedule F; iii) the miscellaneous service contracts set forth in Schedule G; iv) the modifications to personal/miscellaneous service contracts set forth in Schedule H; v) the contract modifications to purchase and public work contracts set forth in Schedule I; and vi) the modifications to miscellaneous procurement contracts set forth in Schedule J.

6. The Board ratifies each action taken set forth in Schedule K for which ratification is requested.

DECEMBER 2017

METRO-NORTH RAILROAD

LIST OF NON-COMPETITIVE PROCUREMENTS FOR BOARD APPROVAL

Schedules Requiring Majority Vote:

G. Miscellaneous Service Contracts

(Staff Summaries required for all items greater than: \$100K Sole Source; \$250K Other Non-Competitive; \$1M RFP; No Staff Summary required if Sealed Bid Procurement.)

1. Waterfall Security Solutions, Ltd. \$498,160 (not-to-exceed) Staff Summary Attached
Unidirectional Security Gateway Expansion & Upgrade

Approval is requested for a non-competitive miscellaneous 41 month service agreement in the not to exceed amount of \$498,160 with Waterfall Security Solutions, Ltd. (Waterfall) for the expansion and upgrade of the unidirectional data-flow security

The scope of work includes the upgrading of the MNR Waterfall Security Solutions currently used to enable secure data transfer for the MNR Protection System as well as hardware and software maintenance. The new version of the Waterfall Security Solutions support additional network application protocol data to flow from a secured environment to a less secure environment. This unidirectional data flow will enable Security Administrators to secure mission-critical systems against Cyber-attacks. As a result, it will prevent cyber attackers from accessing the mission-critical systems.

In an effort to evaluate cyber security throughout the MTA, MTA-IT secured the services of AECOM, an industry leader in cyber security, to perform a threat, vulnerability, and risk assessment (TVRA) of MNR's systems. MNR's evaluation was one of the first completed after conducting the comprehensive security threat review in July 2017. As a result of this study, AECOM recommended the implementation of the upgraded Waterfall Security Solutions to protect the systems at MNR. In the same report, AECOM noted that the Waterfall gateways provide the best methods of protection when connecting multiple networks by eliminating all possible means of communicating into the systems using one-way optical signals. In addition, Waterfall's solution is designed to ensure security and can be deployed in redundant configurations for high levels of system availability. Waterfall's approach to unidirectional gateways is unique from a cyber-security point of view, these components provide a unique application-layer approach that inspects and filters all data that enters and leaves the gateways. This unique benefit eliminates one of the most common attack techniques where malicious communications are "piggy-backed" on normal traffic. This upgrade will also allow MNR to provide real-time data to MTA-IT for security monitoring. There were two other companies in the market that provide unidirectional services, both were contacted and were unable to secure the specific network application protocols used by MNR. Waterfall possesses capabilities that no other vendor can provide and MTA – IT Security and its consultant strongly support this non-competitive award.

A cost proposal was solicited from Waterfall and received in the amount of \$1,112,250 and negotiated to \$498,160. This reduction is directly related to a refinement of the proposed scope which resulted in a reduction of \$614,090 and is 7% less or (\$37,094) than the engineer's estimate of \$535,254 and therefore deemed to be fair and reasonable. Waterfall does business with both government and

commercial entities and is providing MNR with a very favorable and discounted pricing as a government entity for these services.

MNR completed a responsibility review of Waterfall Security Solutions as defined in the All Agency Responsibility Guidelines in connection with this award recommendation, which yielded no significant adverse information (SAI).

The MTA Department of Diversity and Civil Rights assigned 0% MBE/WBE Goals to this Procurement

The expansion & software upgrade in the amount of \$498,160 (base = \$391,300, maintenance = \$106,860) will be completed in 41 months and is to be funded by the MNR Operating Budget.

Schedule G: Miscellaneous Service Contracts

Item Number: G

Vendor Name (& Location) Waterfall Security Solutions, Ltd.	
Description Unidirectional Security Gateway Expansion & Upgrade	
Contract Term (including Options, if any) 41 months	
Option(s) included in Total Amount? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Procurement Type Competitive <input checked="" type="checkbox"/> Non-competitive <input type="checkbox"/>	
Solicitation Type RFP <input type="checkbox"/> Bid <input type="checkbox"/> Other: Sole Source <input checked="" type="checkbox"/>	

Contract Number	AWO/Modification #
Renewal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Total Amount:	\$498,160
Funding Source <input checked="" type="checkbox"/> Operating <input type="checkbox"/> Capital <input type="checkbox"/> Federal <input checked="" type="checkbox"/> Other	
Requesting Dept/Div & Dept/Div Head Name: Procurement & Material Management, Al Muir, Sr. Director	

Discussion:

I. PURPOSE/RECOMMENDATION:

Approval is requested for a non-competitive miscellaneous 41 month service agreement in the not to exceed amount of \$498,160 with Waterfall Security Solutions, Ltd. (Waterfall) for the expansion and upgrade of the unidirectional data-flow security.

II. DISCUSSION:

The scope of work includes the upgrading of the MNR Waterfall Security Solutions currently used to enable secure data transfer for the MNR Protection System as well as hardware and software maintenance. The new version of the Waterfall Security Solutions support additional network application protocol data to flow from a secured environment to a less secure environment. This unidirectional data flow will enable Security Administrators to secure mission-critical systems against Cyber-attacks. As a result, it will prevent cyber attackers from accessing the mission-critical systems.

In an effort to evaluate cyber security throughout the MTA, MTA-IT secured the services of AECOM, an industry leader in cyber security, to perform a threat, vulnerability, and risk assessment (TVRA) of MNR's systems. MNR's evaluation was one of the first completed after conducting the comprehensive security threat review in July 2017. As a result of this study, AECOM recommended the implementation of the upgraded Waterfall Security Solutions to protect the systems at MNR. In the same report, AECOM noted that the Waterfall gateways provide the best methods of protection when connecting multiple networks by eliminating all possible means of communicating into the systems using one-way optical signals. In addition, Waterfall's solution is designed to ensure security and can be deployed in redundant configurations for high levels of system availability. Waterfall's approach to unidirectional gateways is unique from a cyber-security point of view, these components provide a unique application-layer approach that inspects and filters all data that enters and leaves the gateways. This unique benefit eliminates one of the most common attack techniques where malicious communications are "piggy-backed" on normal traffic. This upgrade will also allow MNR to provide real-time data to MTA-IT for security monitoring. There were two other companies in the market that provide unidirectional services, both were contacted and were unable to secure the specific network application protocols used by MNR. Waterfall possesses capabilities that no other vendor can provide and MTA – IT Security and its consultant strongly support this non-competitive award.

A cost proposal was solicited from Waterfall and received in the amount of \$1,112,250 and negotiated to \$498,160. This reduction is directly related to a refinement of the proposed scope which resulted in a reduction of \$614,090 and is 7% less or (\$37,094) than the Engineer's estimate of \$535,254 and therefore deemed to be fair and reasonable. Waterfall does business with both government and commercial entities and is providing MNR with a very favorable and discounted pricing as a government entity for these services.

MNR completed a responsibility review of Waterfall Security Solutions as defined in the All Agency Responsibility Guidelines in connection with this award recommendation, which yielded no significant adverse information (SAI).

III. D/M/WBE INFORMATION:

The MTA Department of Diversity and Civil Rights assigned 0% MBE/WBE Goals to this Procurement

IV. IMPACT ON FUNDING:

The expansion & software upgrade in the amount of \$498,160 (base = \$391,300, maintenance = \$106,860) will be completed in 41 months and is to be funded by the MNR Operating Budget.

V. ALTERNATIVES:

There are no available alternatives to Waterfall proposed system upgrade. MNR does not have the resources or technical skill level necessary to upgrade and maintain the Waterfall systems.

DECEMBER 2017

METRO-NORTH RAILROAD

LIST OF COMPETITIVE PROCUREMENTS FOR BOARD APPROVAL

Schedules Requiring Two-Thirds Vote:

C. Competitive Requests for Proposals (Award of Purchase and Public Work Contracts)
(Staff Summaries required for items requiring Board approval)

1. Tomex Electronics, Inc. \$18,730,572 (not-to-exceed) *Staff Summary Attached*
Design, Furnish, Deliver and Integrate Metro-North's Security Systems

Approval is requested to award a 32-month competitively solicited and negotiated contract (RFP process; three proposals received; two technically non-compliant; one short-listed) to Tomex Electronics, Inc. (Tomex) to design, furnish, deliver, install, test and integrate new security systems. This contract is an integral part of the multi-part, multi-phase Customer Service Initiative (CSI) in Grand Central Terminal (GCT), and other outlying passenger stations and facilities. The various CSI projects are being implemented in a coordinated manner to improve and upgrade the level and quality of information being provided to MNR customers.

In April 2016, the Board approved use of the Request for Proposal (RFP) process. An RFP, dated May 9, 2017, was prepared and advertised in the New York State Contract Reporter, New York Post, El Diario, Daily Challenge and posted on MNR's website.

The Selection Committee (SC) determined that Tomex's proposal was technically responsive and Tomex was invited in to discuss their proposal in greater detail. Tomex's proposal was submitted in the amount of \$16,825,849 for the base sixteen station package. The MNR Engineers estimate was \$13,424,353. The disparity between the Engineer's estimate and Tomex's proposal was determined to be scope that was added by MNR during the clarification stage but was not reflected in the Engineers estimate. In addition, the MNR estimate understated the total amount of effort needed to fully integrate the new system with the preexisting systems. Following these discussions, the SC, in consultation with key MNR leadership recommended refining the scope of this 16 station project (Port Chester, Rye, Harrison, Mamaroneck, Larchmont, New Rochelle, Pelham, Mt. Vernon East, Tremont, Melrose, Harlem 125th St., Morris Heights, Spuyten Duyvil, Riverdale, Tarrytown, and Ossining).

On September 28, 2017, Tomex submitted its revised cost proposal in the amount of \$14,599,164 for the base scope of services and \$1,531,408 for five years of maintenance. MNR elected to incorporate five years of maintenance to receive the economies of the design team maintaining the new system. Future maintenance for this system can be provided through a competitively solicited systems integrator contract that would not be bound to any one specific manufactured product and will be competitively solicited after the initial five year period. Notwithstanding MNR failing to receive other technically compliant proposals despite a broad vendor outreach, it was determined that it would not be advantageous to resolicit this project. Adopting a design-bid-build approach would require additional costs to finalize a design and would greatly delay the overall implementation of the CSI project. The final agreed upon cost

of \$14,599,164 for the base work and \$1,531,408 for five years of maintenance is deemed to be fair and reasonable.

In addition to the base work noted above, MNR is currently developing the work scopes for four additional stations: Poughkeepsie, Southeast, Nanuet and Harriman. Preliminary pricing has been included in the not to exceed amount of \$2,600,000. The final contract pricing for these stations will be negotiated and finalized when the design is in sufficient detail to ensure fair and reasonable pricing.

MNR completed a responsibility review of Tomex as defined in the All Agency Responsibility Guidelines in connection with this award recommendation which yielded no significant adverse information (SAI). A responsibility review is currently being performed on all subcontractors whose scope of work was proposed to be in excess of \$1,000,000. No significant adverse information was found during those reviews.

The MTA Department of Diversity and Civil Rights (DDCR) established a 15% MBE and 15%WBE goal for this project. Tomex's pre award M/WBE submittal package is currently under review by DDCR. The contract will not be awarded until DDCR requirements have been satisfied.

Board approval is requested in the amount of \$17,199,164 (the 16 base stations plus four additional stations). In addition, MNR is also requesting a not to exceed amount of \$1,531,408 for 5 years of maintenance to be approved at this time. These services are to be provided on an as needed basis, as well as scheduled maintenance. This procurement is to be funded by the 2015-2019 Capital Program and MNR's Operating Budget (maintenance).

2. Halmar International \$91,485,900 (not-to-exceed) Staff Summary Attached
Enhanced Station Initiative ("ESI") for the Design and Construction of Improvements at Five Stations

To obtain Board approval to award a contract for Enhanced Station Initiative ("ESI") (four proposals received, two shortlisted) for the Design and Construction of Improvements at five stations (White Plains, Harlem 125th Street, Crestwood, Port Chester and Riverdale,) to Halmar International ("Halmar ") in the not to exceed amount of \$91,485,900 and a duration of 36 months.

In accordance with MTA policy regarding the use of design-build, and to enhance competition and defray proposal costs, this solicitation includes a stipend of \$200,000 to be paid to each unsuccessful proposer whose proposal met a defined standard. Accordingly, permission is also requested to pay a total stipend of \$200,000 to ECCO/Skanska.

The ESI Program's focus is on improving the customer experience and the development of underlying station aesthetics through design innovation. These enhancements will result in stations that are cleaner and brighter, and through the use of more intuitive way-finding signage and twenty-first century amenities such as Wi-Fi and cellular connectivity. This program includes five stations: White Plains, Harlem 125th Street, Crestwood, Port Chester and Riverdale. The scope of work includes: (1) final design, (2) demolition/removals, (3) upgraded electrical and communication systems including new closed-circuit TV cameras (4) platform replacement, (5) new signage and navigation systems providing information at street level, fare control areas, and platforms (dashboards and totems), (6) improved street entrances, (7) new LED lighting and illuminated handrails, (8) charging stations, benches, and leaning bars, and (9) art installations coordinated with MTA Arts and Design. In addition to the station enhancements there is

considerable amount of State of Good repair work being accomplished at these stations, with White Plains receiving the most rehabilitation with complementary improvements. In order to emphasize the schedule as a critical component of the ESI Program, this project includes early completion incentives for the achievement of expedited milestone date durations as well as liquidated damages for extended durations resulting from contractor delays.

An Authorizing Resolution requesting the use of a two-step competitive Request for Proposal ("RFP") procurement process was approved by the Board in July 2016. During late 2016 and 2017, Metro-North had preliminary designs prepared along with cost estimates for use in the design-build procurement. On August 16, 2017 in advance of the formal procurement solicitation an informational meeting was held with both Contractors and Designers. In addition, MNR contacted NYS Construction Associations and they were invited to attend and were notified of the intended procurement in an attempt to garner as much interest in this project as possible. This meeting was well attended by the contracting community.

On August 14, 2017, a Request for Interest (RFI) was prepared and advertised in the New York State Contract Reporter, Minority Commerce Weekly, New York Post, El Diario, and Daily Challenge and posted on MNR's website. On September 18, 2017 four responses were received from: ECCO III Enterprises, Inc. ("ECCO III") - Skanska USA Civil Northeast ("Skanska") JV, Halmar International, Citnalta & RCC and EE Cruz & Haks.

The Step-1 qualification packages were evaluated against pre-established selection criteria addressing relevant experience, general responsibility, financial resources, and safety record. On September 13, 2017 two teams were selected who best met the requirements: ECCO III Enterprises, Inc. ("ECCO III") - Skanska USA Civil Northeast ("Skanska") JV and Halmar International (Halmar). Citnalta & RCC and EE Cruz & Haks were not selected for further consideration. The teams of Citnalta & RCC and EE Cruz & Haks qualification proposals were determined to be the least preferred of the four proposals. A strong emphasis was placed on familiarity and past experience in working in and around MNR stations. The work scope identified to be completed at White Plains will require a substantial amount of coordination with MNR and the City of White Plains to ensure no disruption to rail, vehicular and pedestrian traffic in the busy White Plains central business district. In addition, the Harlem Line at White Plains has a significant amount of train traffic at the 3rd largest station in MNR's system in only a two track territory. The ability to work in this constrained environment with minimal disruption to service is critical. The two non-selected teams had less demonstrated experience in these areas.

Proposals were requested and received on December 5, 2017 from Ecco /Skanska – \$119,380,000; and Halmar International – \$87,895,900 for base work only. The submitted cost proposals contained pricing for various MNR requested options not included in the base price. The MNR engineers estimate is \$108,600,000. ECCO/Skanska and Halmar affirmed their ability to complete the work per the contract schedule but could not commit to compressing the already aggressive schedule without scope reduction. Each team confirmed their commitment to meet all mandatory interim milestone dates. After MNR's internal review of both proposals, MNR and both Design Build teams met separately on December 7, 2017 to discuss their submitted proposals. The proposals were evaluated by the Selection Committee (SC) utilizing pre-established selection criteria addressing the proposer's design and construction approach; overall project schedule; team experience; project management, safety, quality, and M/WBE plans; qualifications and coordination of subcontractors; and other relevant matters. After technical factors including schedule, the overall project cost was considered. After review and consideration of the two proposals, the SC recommended that MNR should negotiate solely with Halmar given the significant cost

differential (\$31.484M). The SC noted that both teams had provided excellent technical proposals, with each team very clearly demonstrating a capacity to do this project on time and within budget.

Halmar's technical proposal was deemed to be more comprehensive in outlining the means and methods on how they would achieve a successful completion of the project. Halmar also offered multiple construction innovations in the area of the proposed precast construction at White Plains. Proposed materials are in keeping with MNR's architect who provided preliminary designs. Additionally, Halmar has included the Design firm ARUP, who is currently working on NYC Transit Station projects and has demonstrated a willingness to carry forward many of the design elements already successfully incorporated at MTA stations.

The SC unanimously recommended Halmar International for award, determining that its proposal offered the best overall value to MNR based on the selection criteria. Halmar International's final proposal of \$91,485,900 which includes select options and cost savings measures is \$35,839,100 less than the revised proposals from ECCO/Skanska - \$127,325,000 and \$17,114,100 less than the Engineer's estimate and is considered fair and reasonable.

MNR completed a responsibility review of Halmar International as defined in the All Agency Responsibility Guidelines in connection with this award recommendation, which yielded no significant adverse information (SAI). A responsibility review was completed on all subcontractors whose scope of work was proposed to be in excess of \$1,000,000. No significant adverse information was found during those reviews.

The MTA Department of Diversity and Civil Rights has established goals at 15% MBE and 15% WBE and 6% SDVOB Halmar proposes to meet the established goals. Award will not be made until the Department of Diversity and Civil Rights' approval is obtained. Halmar has achieved the M/W/DBE goals on previous MTA contracts.

Funding for this action will come from the 2015-2019 Capital Program – Enhanced Station project including a \$25 million transferred from the \$440 million Fleet Replacement project. Sufficient funding remains in the MNR 2015-2019 Fleet Replacement project to continue implementing planned rolling stock investments.

Staff Summary

Item Number C						SUMMARY INFORMATION	
Dept. & Dept. Head Name: Procurement & Material Management, Al Muir, Sr. Director						Vendor Name Tomex Electronics, Inc.	
Division & Division Head Name: Executive Vice President - Catherine Rinaldi						Contract Number 1000058051	
Description Design, Furnish, Deliver and Integrate Metro-North's Security Systems						Total Amount \$18,730,572	
Board Reviews						Contract Term (Including Options, if any) 32 Months	
Order	To	Date	Approval	Info	Other	Option(s) included in Total Amount? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
1	M-N Comm.Mtg.	12-11-17	X			Renewal? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
2	MTA Board Mtg.	12-13-17	X			Procurement Type <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Non-competitive	
Internal Approvals						Solicitation Type <input checked="" type="checkbox"/> RFP <input type="checkbox"/> Bid <input type="checkbox"/> Other:	
Order	Approval	Approval	Approval	<input checked="" type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:			
X	Acting President	X	Sr. V.P. Operations				
X	V.P. Finance & IT	X	V.P. & General Counsel				
X	V.P. Capital Projects						

Narrative

I. PURPOSE/RECOMMENDATION:

Approval is requested to award a 32-month competitively solicited and negotiated contract (RFP process; three proposals received; two technically non-compliant; one short-listed) to Tomex Electronics, Inc. (Tomex) to design, furnish, deliver, install, test and integrate new security systems. This contract is an integral part of the multi-part, multi-phase Customer Service Initiative (CSI) in Grand Central Terminal (GCT), and other outlying passenger stations and facilities. The various CSI projects are being implemented in a coordinated manner to improve and upgrade the level and quality of information being provided to MNR customers.

II. DISCUSSION:

MNR currently manages a variety of integrated and stand-alone Video Surveillance System (VSS) throughout the operating territory. At Grand Central Terminal (GCT), over 300 cameras are monitored and additional camera feeds are provided by outlying stations including 125th Street, Yankees 153rd Street, Yonkers, Tarrytown and Fordham from the Security Control Center (SCC).

The CSI projects will provide an infrastructure that will support the ultimate expansion of video surveillance systems and access control to all stations and facilities, efficiently distribute video to all authorized users across the enterprise network, centralize all video system administration, management and distribution in the SCC, and most importantly, centralize control and command functions to the SCC including Video Surveillance monitoring, elevator/escalator real-time status alarm indications, access control and monitoring of fire alarms and intrusion detection systems.

The subject contract is to design, furnish, deliver, install, test and integrate a security system. Major elements of the contract include:

- New Security Network System, including integration with existing networks.
- New Head End / Physical Security Infrastructure Management System, including integration with existing systems.
- New Elevator/Escalator Maintenance System (EEMS), including integration with new localized equipment used to communicate with remote elevators and escalators in real-time to maintenance and the public.

- d) Integrate the existing Video Surveillance System (VSS) cameras, access control systems and intercoms to the existing SCC including those from the all-agency security system into the new system.
- e) New VSS, including integration with existing video management systems;
- f) Access Control System, including integration with existing access control systems;
- g) Intercom System, including integration with existing intercom systems;
- h) SCC Equipment Room equipment.
- i) Backup SCC equipment (to be temporarily housed in the SCC equipment room for the purposes of this contract)
- j) Security Monitoring and System Administration Workstations and associated user account setup.

In April 2016, the Board approved use of the Request for Proposal (RFP) process. An RFP, dated May 9, 2017, was prepared and advertised in the New York State Contract Reporter, New York Post, El Diario, Daily Challenge and posted on MNR's website. Prior to the formal solicitation, an Expression of Interest was sent to known security firms. In addition, MNR's Procurement and Communication and Signal Departments conducted a direct outreach to the vendor community.

The selection criteria established in the RFP was as follows:

1. Cost.
2. Technical Capability: Ability to provide technical services, equipment and systems as required in the RFP, included but not limited to quality and completeness of the required engineering, testing, training and documentation.
3. Project Plan: Proposer's demonstrated ability to manage and coordinate the work in the RFP.
4. Experience: Identified previous work over the last 10 years similar to the requirements of the RFP. Demonstrated qualifications and availability of key personnel, including a commitment that the key resources remain constant throughout the project, including subconsultant/subcontractor services.
5. Diversity practices: Evaluation of the diversity practices of the proposer.

On August 2, 2017, the Selection Committee (SC) comprised of members representing MNR's Procurement and Material Management, M of W Communications and Signals, and Safety Departments met to review the initial technical and cost proposals from three firms: Tomex, Schneider Electric Buildings Americas, Inc. and Securitas Electronic Security. After the initial review by the SC, it was determined that there remained multiple ambiguities in the RFP responses and that further clarifications were warranted by all three proposers.

On August 8, 2017, clarification requests were sent to the three firms that submitted proposals. On August 18, 2017, Tomex and Securitas responded to the requested clarifications. Schneider was provided an opportunity to clarify its proposal however elected to not address the technical shortcomings in their proposal. The SC deemed them to be non-responsive and no longer considered them for this project. After reviewing the revised proposals for technical and commercial compliance, it was determined that despite the request for clarification, Securitas continued to take exceptions to the technical scope of work. Securitas did not furnish all the requested technical information, omitted pricing for several line items and took numerous exceptions to the scope of work, including not providing a fully integrated system. In addition, Securitas failed to adequately describe their project plan to address the integration portion of the work scope. Securitas was given multiple opportunities to address these shortcomings but failed to do so and was determined to be non-responsive to the RFP.

The SC determined that Tomex's proposal was technically responsive and Tomex was invited in to discuss their proposal in greater detail. Tomex's proposal was submitted in the amount of \$16,825,849 for the base sixteen station package. The MNR Engineers estimate was \$13,424,353. The disparity between the Engineer's estimate and Tomex's proposal was determined to be scope that was added by MNR during the clarification stage but was not reflected in the Engineers estimate. In addition, the MNR estimate understated the total amount of effort needed to fully integrate the new system with the preexisting systems. Following these discussions, the SC, in consultation with key MNR leadership recommended

refining the scope of this 16 station project (Port Chester, Rye, Harrison, Mamaroneck, Larchmont, New Rochelle, Pelham, Mt. Vernon East, Tremont, Melrose, Harlem 125th St., Morris Heights, Spuyten Duyvil, Riverdale, Tarrytown, and Ossining). These revisions were necessary as the initial cost proposal exceeded MNR's original project budget. It was determined that the final station selection should coincide with those stations previously identified under the CSI program. In an effort to achieve further cost reductions Tomex was provided written clarifications to the scope of work reflecting alternative equipment, project allowances and reduction in the recommended spare parts for reliable operation. Alternate equipment and allowances were identified in the base scope of work.

On September 28, 2017, Tomex submitted its revised cost proposal in the amount of \$14,599,164 for the base scope of services and \$1,531,408 for five years of maintenance. MNR elected to incorporate five years of maintenance to receive the economies of the design team maintaining the new system. Future maintenance for this system can be provided through a competitively solicited systems integrator contract that would not be bound to any one specific manufactured product and will be competitively solicited after the initial five year period. The final agreed upon cost of \$14,599,164 for the base work and \$1,531,408 for five years of maintenance is deemed to be fair and reasonable.

In addition to the base work noted above, MNR is currently developing the work scopes for four additional stations: Poughkeepsie, Southeast, Nanuet and Harriman. Preliminary pricing has been included in the not to exceed amount of \$2,600,000. The final contract pricing for these stations will be negotiated and finalized when the design is in sufficient detail to ensure fair and reasonable pricing.

MNR completed a responsibility review of Tomex as defined in the All Agency Responsibility Guidelines in connection with this award recommendation which yielded no significant adverse information (SAI). A responsibility review is currently being performed on all subcontractors whose scope of work was proposed to be in excess of \$1,000,000. No significant adverse information was found during those reviews.

III. D/M/WBE INFORMATION:

The MTA Department of Diversity and Civil Rights (DDCR) established a 15% MBE and 15%WBE goal for this project. Tomex's pre award M/WBE submittal package is currently under review by DDCR. The contract will not be awarded until DDCR requirements have been satisfied.

IV. IMPACT ON FUNDING:

Board approval is requested in the amount of \$17,199,164 (the 16 base stations plus four additional stations). In addition, MNR is also requesting a not to exceed amount of \$1,531,408 for 5 years of maintenance to be approved at this time. These services are to be provided on an as needed basis, as well as scheduled maintenance. This procurement is to be funded by the 2015-2019 Capital Program and MNR's Operating Budget (maintenance).

V. ALTERNATIVES:

MNR does not have the available in-house staff with both the expertise and capability to perform the required design and construction services as specified. Notwithstanding MNR failing to receive other technically compliant proposals despite a broad vendor outreach, it was determined that it would not be advantageous to resolicit this project. Adopting a design-bid-build approach would require additional costs to finalize a design and would greatly delay the overall implementation of the CSI project.

Staff Summary

Item Number C					
Dept & Dept Head Name: Procurement & Material Management - Al. Muir, Sr. Director					
Division & Division Head Name: Executive Vice President, Catherine Rinaldi					
Board Reviews					
Order	To	Date	Approval	Info	Other
1	M-N Comm.Mtg.	12-11-17	x		
2	MTA Board Mtg.	12-13-17	x		
Internal Approvals					
Order	Approval	Order	Approval		
x	Acting President				
x	Sr. V.P. Operations	x	V.P. Finance & IT		
x	V.P. & General Counsel	x	V. P. Capital Programs		

SUMMARY INFORMATION	
Vendor Name Halmar International	Contract Number TBD
Description Enhanced Station Initiative ("ESI") for the Design and Construction of Improvements at Five stations (White Plains, Harlem 125 th Street, Crestwood, Port Chester and Riverdale,)	
Total Amount \$ 91,485,900 (not-to-exceed)	
Contract Term (including Options, if any)	
Option(s) included in Total Amount? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Renewal? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Procurement Type <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Non-competitive	
Solicitation Type <input checked="" type="checkbox"/> RFP <input type="checkbox"/> Bid <input type="checkbox"/> Other:	
Funding Source <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:	

Narrative

I. PURPOSE/RECOMMENDATION:

To obtain Board approval to award a contract for Enhanced Station Initiative ("ESI") (four proposals received, two shortlisted) for the Design and Construction of Improvements at five stations (White Plains, Harlem 125th Street, Crestwood, Port Chester and Riverdale,) to Halmar International ("Halmar") in the not to exceed amount of \$91,485,900 and a duration of 36 months.

In accordance with MTA policy regarding the use of design-build, and to enhance competition and defray proposal costs, this solicitation includes a stipend of \$200,000 to be paid to each unsuccessful proposer whose proposal met a defined standard. Accordingly, permission is also requested to pay a total stipend of \$200,000 to ECCO/Skanska.

II. DISCUSSION:

The ESI Program's focus is on improving the customer experience and the development of underlying station aesthetics through design innovation. These enhancements will result in stations that are cleaner and brighter, and through the use of more intuitive way-finding signage and twenty-first century amenities such as Wi-Fi and cellular connectivity. This program includes five stations: White Plains, Harlem 125th Street, Crestwood, Port Chester and Riverdale. The scope of work includes: (1) final design, (2) demolition/removals, (3) upgraded electrical and communication systems including new closed-circuit TV cameras (4) platform replacement, (5) new signage and navigation systems providing information at street level, fare control areas, and platforms (dashboards and totems), (6) improved street entrances, (7) new LED lighting and illuminated handrails, (8) charging stations, benches, and leaning bars, and (9) art installations coordinated with MTA Arts and Design. In addition to the station enhancements there is considerable amount of State of Good repair work being accomplished at these stations, with White Plains receiving the most rehabilitation with complementary improvements. In order to emphasize the schedule as a critical component of the ESI Program, this project includes early completion incentives for the achievement of expedited milestone date durations as well as

liquidated damages for extended durations resulting from contractor delays.

An Authorizing Resolution requesting the use of a two-step competitive Request for Proposal (“RFP”) procurement process was approved by the Board in July 2016. During late 2016 and 2017, Metro-North had preliminary designs prepared along with cost estimates for use in the design-build procurement. On August 16, 2017 in advance of the formal procurement solicitation an informational meeting was held with both Contractors and Designers. In addition, MNR contacted NYS Construction Associations and they were invited to attend and were notified of the intended procurement in an attempt to garner as much interest in this project as possible. This meeting was well attended by the contracting community.

On August 14, 2017, a Request for Interest (RFI) was prepared and advertised in the New York State Contract Reporter, Minority Commerce Weekly, New York Post, El Diario, and Daily Challenge and posted on MNR’s website. On September 18, 2017 four responses were received from: ECCO III Enterprises, Inc. (“ECCO III”) - Skanska USA Civil Northeast (“Skanska”) JV, Halmar International, Citnalta & RCC and EE Cruz & Haks.

The Step-1 qualification packages were evaluated against pre-established selection criteria addressing relevant experience, general responsibility, financial resources, and safety record. On September 13, 2017 two teams were selected who best met the requirements: ECCO III Enterprises, Inc. (“ECCO III”) - Skanska USA Civil Northeast (“Skanska”) JV and Halmar International (Halmar). Citnalta & RCC and EE Cruz & Haks were not selected for further consideration. The teams of Citnalta & RCC and EE Cruz & Haks qualification proposals were determined to be the least preferred of the four proposals. A strong emphasis was placed on familiarity and past experience in working in and around MNR stations. The work scope identified to be completed at White Plains will require a substantial amount of coordination with MNR and the City of White Plains to ensure no disruption to rail, vehicular and pedestrian traffic in the busy White Plains central business district. In addition, the Harlem Line at White Plains has a significant amount of train traffic at the 3rd largest station in MNR’s system in only a two track territory. The ability to work in this constrained environment with minimal disruption to service is critical. The two non-selected teams had less demonstrated experience in these areas.

In an effort to ensure that both short listed teams had a complete understanding of the scope of work, meetings were held independently on September 18, 2017, which afforded them the ability to voice concerns or questions on scope or logistics. MNR elected to conduct additional one on one conversation with both teams prior to the submission of their Technical and Commercial proposals. Those meetings were conducted on November 21, 2017. These one on one meetings were important to insure a clear understanding of the project scope and the challenges of the project including working around the active railroad, minimizing impacts on customers and meeting defined deliverable dates.

Proposals were requested and received on December 5, 2017 from Ecco /Skanska – \$119,380,000; and Halmar International – \$87,895,900 for base work only. The submitted cost proposals contained pricing for various MNR requested options not included in the base price. The MNR Engineers estimate is \$108,600,000. ECCO/Skanska and Halmar affirmed their ability to complete the work per the contract schedule but could not commit to compressing the already aggressive schedule without scope reduction. Each team confirmed their commitment to meet all mandatory interim milestone dates. After MNR’s internal review of both proposals, MNR and both Design Build teams met separately on December 7, 2017 to discuss their submitted proposals. The proposals were evaluated by the Selection Committee (SC) utilizing pre-established selection criteria addressing the proposer’s design and construction approach; overall project schedule; team experience; project management, safety, quality, and M/WBE plans; qualifications and coordination of subcontractors; and other relevant matters. After technical factors including schedule, the overall project cost was considered. After review and consideration of the two proposals, the SC recommended that MNR should negotiate solely with Halmar given the significant cost differential (\$31.484M). The SC noted that both teams had provided excellent technical proposals, with each team very clearly demonstrating a capacity to do this project on time and within budget.

Staff Summary

Halmar's technical proposal was deemed to be more comprehensive in outlining the means and methods on how they would achieve a successful completion of the project. Halmar also offered multiple construction innovations in the area of the proposed precast construction at White Plains. Proposed materials are in keeping with MNR's architect who provided preliminary designs. Additionally, Halmar has included the Design firm ARUP, who is currently working on NYC Transit Station projects and has demonstrated a willingness to carry forward many of the design elements already successfully incorporated at MTA stations.

The SC unanimously recommended Halmar International for award, determining that its proposal offered the best overall value to MNR based on the selection criteria. Halmar International's final proposal of \$91,485,900 which includes select options and cost savings measures is \$35,839,100 less than the revised proposals from ECCO/Skanska - \$127,325,000 and \$17,114,100 less than the Engineer's estimate and is considered fair and reasonable.

MNR completed a responsibility review of Halmar International as defined in the All Agency Responsibility Guidelines in connection with this award recommendation, which yielded no significant adverse information (SAI). A responsibility review was completed on all subcontractors whose scope of work was proposed to be in excess of \$1,000,000. No significant adverse information was found during those reviews

III. D/M/WBE INFORMATION:

The MTA Department of Diversity and Civil Rights has established goals at 15% MBE and 15% WBE and 6% SDVOB Halmar proposes to meet the established goals. Award will not be made until the Department of Diversity and Civil Rights' approval is obtained. Halmar has achieved the M/W/DBE goals on previous MTA contracts.

IV. IMPACT ON FUNDING:

Funding for this action will come from the 2015-2019 Capital Program – Enhanced Station project including a \$25 million transferred from the \$440 million Fleet Replacement project. Sufficient funding remains in the MNR 2015-2019 Fleet Replacement project to continue implementing planned rolling stock investments.

V. ALTERNATIVES:

Perform the work using in-house personnel. Not recommended as in-house forces do not have the resources to perform the scope of this project.

LONG ISLAND RAIL ROAD

PROCUREMENTS

FOR

BOARD ACTION

December 13, 2017

Staff Summary



Long Island Rail Road

Subject : Request for Authorization to Award Various Procurements						Date December 13, 2017			
Department Procurement and Logistics									
Department Head Name Dennis L. Mahon, Chief Procurement and Logistics Officer									
Department Head Signature 									
Board Action						Internal Approvals			
Order	To	Date	Approval	Info	Other	Order	Approval	Order	Approval
1	LI Committee	12.11.17				1	President 12/6/17		
2	MTA Board	12.13.17				2	Executive VP 12/14/17		

PURPOSE:

To obtain approval of the Board to award various contracts and purchase orders, and to inform the Long Island Rail Road Committee of these procurement actions.

DISCUSSION:

LIRR proposes to award Non-Competitive Procurements in the following categories: # of Actions \$ Amount

None

LIRR proposes to award Competitive Procurements in the following categories: # of Actions \$ Amount

Schedules Requiring Two-Thirds Vote

Schedule C: Competitive Requests for Proposals	2	\$1,921,124,918.25
SUBTOTAL:	2	\$1,921,124,918.25

LIRR proposes to award Ratifications in the following categories: # of Actions \$ Amount

None

TOTAL:	2	\$1,921,124,918.25
--------	---	--------------------

BUDGET IMPACT:

The purchases/contracts will result in obligating LIRR operating and capital funds in the amounts listed. Funds are available in the current operating budget for this purpose.

RECOMMENDATION:

That the purchases/contracts be approved as proposed. (Items are included in the resolution of approval at the beginning of the Procurement Section.)

METROPOLITAN TRANSPORTATION AUTHORITY

WHEREAS, in accordance with Section 1265-a and Section 1209 of the Public Authorities law and the All Agency Procurement Guidelines, the Board authorizes the award of certain non-competitive purchase and public work contracts, and the solicitation and award of request for proposals in regard to purchase and public work contracts; and

WHEREAS, in accordance with the All Agency Procurement Guidelines, the Board authorizes the award of certain non-competitive miscellaneous procurement contracts, and certain change orders to procurement, public work, and miscellaneous procurement contracts; and

WHEREAS, in accordance with Section 2879 of the Public Authorities Law and the All Agency Guidelines for Procurement of Services, the Board authorizes the award of certain service contracts and certain change orders to service contracts.

NOW, the Board resolves as follows:

1. As to each purchase and public work contract set forth in the annexed Schedule A, the Board declares competitive bidding to be impractical or inappropriate for the reasons specified therein and authorizes the execution of each such contract.
2. As to each request for proposals (for purchase and public work contracts) set forth in Schedule B for which it is deemed in the public interest to obtain authorization to solicit competitive proposals through a publicly advertised RFP for the reasons specified therein the Board declares it to be impractical or inappropriate to utilize a procurement process inviting sealed bids with award to the lowest responsive/responsible bidder.
3. As to each request for proposals (for purchase and public work contracts) set forth in Schedule C for which a recommendation is made to award the contract, the Board authorizes the execution of said contract.
4. The Board ratifies each action taken set forth in Schedule D for which ratification is requested.
5. The Board authorizes the execution of each of the following for which Board authorization is required: i) the miscellaneous procurement contracts set forth in Schedule E; ii) the personal service contracts set forth in Schedule F; iii) the miscellaneous service contracts set forth in Schedule G; iv) the modifications to personal/miscellaneous service contracts set forth in Schedule H; v) the contract modifications to purchase and public work contracts set forth in Schedule I; and vi) the modifications to miscellaneous procurement contracts set forth in Schedule J.
6. The Board ratifies each action taken set forth in Schedule K for which ratification is requested.

DECEMBER 2017

MTA LONG ISLAND RAIL ROAD

LIST OF COMPETITIVE PROCUREMENTS FOR BOARD APPROVAL

Procurements Requiring Two-Thirds Vote

Schedule C: Competitive Request for Proposals (Award of Purchase and Public Work Contracts) (Staff Summaries only required for items requiring Board approval)

1. **Railroad Construction Company** **\$107,950,000** *Staff Summary Attached*
Competitive RFP (lump sum –
Contract No. 6259 **includes five options)**

Pursuant to a competitive RFP, Long Island Rail Road (LIRR) requests MTA Board approval to award a firm fixed price contract to Railroad Construction Company, in the amount of \$107,950,000.00 (Base (\$105,699,651.00) + Options (\$2,250,349.00)) to provide Design-Build Services for the New Mid-Suffolk Electric Yard.

2. **3rd Track Constructors** **\$1,813,174,918.25** *Staff Summary Attached*
Competitive RFP
Contract No. 6240

The Long Island Rail Road (LIRR) requests Board approval for MTA Capital Construction Company (MTACC) to award a Public Works contract to 3rd Track Constructors (3TC) in the total amount of \$1,813,174,918.25 to provide Design-Build Services for the Long Island Rail Road Expansion Project (the “Project”). As set forth in greater detail below, the total amount includes Base Contract Work in the amount of \$1,457,117,009.99, and options for a completion scope of work (the “Completion Scope”), in the amount of \$270,608,499.00, and a garages scope of work (the “Garage Scope”), in the maximum combined amount of \$85,449,409.26.

The scope of work for the Project includes the construction of approximately ten miles of third track, including third rail, ties, switches, cable, signal equipment, utility poles and other items needed to support railroad operations, and the elimination of seven street-level train crossings (“grade crossings”) between Floral Park and Hicksville in Nassau County, New York. In addition, the project includes construction of up to 5 parking garages, construction of retaining walls, utility relocation, fencing, station improvements and construction of new station platforms, along with measures to reduce impacts on adjacent communities such as sound attenuation barriers and landscaping.

Staff Summary



Long Island Rail Road

Page 1 of 2

Item Number:					
Dept & Dept Head Name: Procurement & Logistics, Dennis Mahon					
Department Head Signature & Date					
Division & Division Head Name: Department of Program Management – Paul Dietlin					
Division Head Signature & Date					
Board Reviews					
Order	To	Date	Approval	Info	Other
1	LI Committee	12.11.17			
2	MTA Board	12.13.17			
Internal Approvals					
Order	Approval	Order	Approval		
6	President	3	SVP Engineering		
5	Executive VP	2	VP and CFO		
4	SVP Operations	1	VP/Gen'l Counsel & Sec'y		

SUMMARY INFORMATION	
Vendor Name	Contract Number
Railroad Construction Co	6259
Description New Mid-Suffolk Electric Yard - Design-Build	
Total Amount	
\$107,950,000.00 (lump sum – includes five options).	
Contract Term (including Options, if any)	
852 days	
Options(s) included in Total Amount: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Renewal? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Procurement Type	
<input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Non-Competitive	
Solicitation Type	
<input checked="" type="checkbox"/> RFP <input type="checkbox"/> Bid <input type="checkbox"/> Other:	
Funding Source	
<input type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:	

Narrative

I. PURPOSE/RECOMMENDATION:

Pursuant to a competitive RFP, Long Island Rail Road requests MTA Board approval to award a firm fixed price contract to Railroad Construction Company, in the amount of \$107,950,000.00 (Base (\$105,699,651.00) + Options (\$2,250,349.00)) to provide Design-Build Services for the New Mid-Suffolk Electric Yard.

II. DISCUSSION:

The LIRR requires the services of a design/build contractor to provide design, engineering, and construction services for the construction of a new electric storage yard on Long Island Rail Road owned property located at Ronkonkoma in Suffolk County. With the planned opening of the new East Side Access (ESA) terminal and acquisition of the new M-9 fleet, LIRR anticipates operating additional trains across the LIRR network during the four hour AM peak period. For the Ronkonkoma Branch, the proposed Mid-Suffolk Storage Yard would allow LIRR to increase service during the AM rush by almost 50%, adding 8 westbound trains to the current schedule of 17 westbound trains that arrive at western terminals between 6-10 AM. LIRR estimates that the Ronkonkoma Branch will see an increase of up to 3,000 new AM commuters due to the opening of ESA, in addition to regular growth in LIRR ridership both before and after ESA opens. The additional trains would also benefit riders at other stations in Nassau and Queens County, particularly Hicksville, Mineola, and Jamaica.

In general, the yard will accommodate overnight storage for electric trains, light interior cleaning, toilet servicing, inspection and brake tests, and light maintenance. Work under the contract includes design and construction of a yard lead track, eleven additional yard tracks, new employee welfare and storage facilities, AC/DC substations, signal system, and other associated infrastructure and systems. The new Storage Yard is located adjacent to the south side of the existing Ronkonkoma yard located at the eastern terminus of the electrified main line.

At its October 2016 meeting, the MTA Board approved the use of the "Request for Proposal" method to procure this design-build contract. On July 6, 2017, the "Request for Proposal" (RFP) was publicly advertised. Addenda 1 through 15 were issued to answer vendor queries and extend the due date of proposals. On September 26, 2017, proposals were submitted by six firms: Skanska USA Civil/Posillico Civil ("Skanska/Posillico"), J. P. Picone ("Picone"), Halmar International ("Halmar"), Judlau, LK Comstock, and Railroad Construction Company ("RCC"). Four of the six firms,

Staff Summary



Long Island Rail Road

Page 2 of 2

Halmar, Skanska/Posillico, Picone, and RCC were requested to clarify and expand upon their technical proposal with a supplemental oral presentation. [Judlau (\$141,188,534) and LK Comstock (\$181,218,300) were excluded due to cost, their costs exceeded the competitive range and the LIRR estimate by more than 20%.]

On October 23, 2017, the LIRR Technical Evaluation Committee (“TEC”) met individually with each of the four remaining firms to hear each firm’s oral presentation, discuss and further evaluate the firm’s technical capability and to identify proposal items that each firm may wish to consider in their “best and final offer” (BAFO). At the end of the presentations, the TEC team agreed to request BAFOs from three firms, Halmar, Skanska/Posillico, and RCC. Halmar, Skanska/Posillico and RCC were each directed to submit a BAFO addressing technical as well as cost components that together would constitute “best value” to the LIRR.

The BAFO’s resulted in each of the three firms reducing their cost proposals as well as reducing the number of calendar days required to complete the work. Although RCC and Halmar both clearly showed their expertise and knowledge in advancing a project of this type, RCC’s proposal was \$5,941,536 below the second lowest proposed cost and offered a savings of \$916,281 from its initial proposal. When technical and cost factors are considered, RCC was determined to have presented the “best overall value” to the LIRR for this project. RCC’s cost is \$5,941,536 lower than the next lowest proposed total cost and \$9,522,237 or 8% below LIRR’s internal estimate, and is therefore considered “fair and reasonable”.

A responsibility review was conducted of RCC whereby no adverse or significant adverse information was found. RCC is therefore deemed responsible.

III. M/WBE INFORMATION:

The MTA Department of Diversity and Civil Rights (DDCR) has established MBE and WBE goals for this procurement at 15% and 15%, respectively, and is awaiting the submission of RCC’s final MBE/WBE Utilization Plan. An award will not be made until DDCR approval of the MBE/WBE utilization plan is obtained. Railroad Construction Company, Inc. has achieved its MBE/WBE or DBE goals on previous MTA Contracts and indicated on their 11/08/17 BAFO Technical Response that they are fully committed to meeting this goal.

IV. IMPACT ON FUNDING:

This contract will be funded by the LIRR Capital Budget.

V. ALTERNATIVES:

LIRR does not have the ability to undertake the design build services for the construction of the New Mid-Suffolk Electric Yard with in-house forces.

Staff Summary

Page 1 of 4
12/016/17

Item Number: 2					
Dept & Dept Head Name: Procurement & Logistics, Dennis Mahon					
Department Head Signature & Date <i>[Signature]</i>					
Division & Division Head Name: Engineering, SVP Bruce Pohlot					
Division Head Signature & Date <i>[Signature]</i>					
Board Reviews					
Order	To	Date	Approval	Info	Other
1	LI Committee	12.11.17			
2	MTA Board	12.13.17			
Internal Approvals					
Order	Approval	Order	Approval		
6	President <i>[Signature]</i>	3	SVP Engineering <i>[Signature]</i>		
5	Executive VP <i>[Signature]</i>	2	VP & CFO <i>[Signature]</i>		
4	SVP Operations <i>[Signature]</i>	1	VP General Counsel & Secretary <i>[Signature]</i>		

SUMMARY INFORMATION	
Vendor Name	Contract Number
3rd Track Constructors	6240
Description Design/Build Services for Long Island Rail Road Expansion Project	
Total Amount	
\$1,813,174,918.25	
Contract Term (including Options, if any)	
Up to 2,355 consecutive calendar days (Base Work plus Completion Scope and Garages Scope)	
Options(s) included in Total Amount: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Renewal?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Procurement Type	
<input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Non-Competitive	
Solicitation Type	
<input checked="" type="checkbox"/> RFP <input type="checkbox"/> Bid <input type="checkbox"/> Other:	
Funding Source	
<input type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:	

I. PURPOSE/RECOMMENDATION:

The Long Island Rail Road (LIRR) requests Board approval for MTA Capital Construction Company (MTACC) to award a Public Works contract to 3rd Track Constructors (3TC) in the total amount of \$1,813,174,918.25 to provide Design-Build Services for the Long Island Rail Road Expansion Project (the "Project"). As set forth in greater detail below, the total amount includes Base Contract Work in the amount of \$1,457,117,009.99, and options for a completion scope of work (the "Completion Scope"), in the amount of \$270,608,499.00, and a garages scope of work (the "Garage Scope"), in the maximum combined amount of \$85,449,409.26.

The scope of work for the Project includes the construction of approximately ten miles of third track, including third rail, ties, switches, cable, signal equipment, utility poles and other items needed to support railroad operations, and the elimination of seven street-level train crossings ("grade crossings") between Floral Park and Hicksville in Nassau County, New York. In addition, the project includes construction of up to 5 parking garages, construction of retaining walls, utility relocation, fencing, station improvements and construction of new station platforms, along with measures to reduce impacts on adjacent communities such as sound attenuation barriers and landscaping.

II. DISCUSSION:

The LIRR Project is a transformative improvement to the LIRR system. It will expand capacity, improve reliability, improve safety by eliminating all grade crossings along the Project corridor, and allow for bi-directional service at all times during the day. In addition, the Project will improve quality-of-life in adjacent communities by improving the appearance and functionality of stations within the corridor, reducing noise through the use of noise attenuation walls and reducing air pollution and eliminating wait time associated with idling vehicles at grade crossings.

Following finalization of the Draft Environmental Impact Statement, this Board approved the use of a "Request for Proposal" (RFP) process for this procurement at the November 2016 meeting and LIRR initiated a two-step RFP process. In Step 1, interested Design/Build teams submitted background materials outlining their teams and qualifications in response to a publicly-advertised

Staff Summary

Request for Qualifications (RFQ). These submissions were evaluated, and the four qualified proposer teams were invited to participate in a lengthier Step 2 proposal process. One proposing team dropped out at this phase and did not further pursue this project. The three remaining proposing teams were: 3rd Track Constructors (a Joint Venture of Dragados USA, Inc., John P. Picone, Inc., Halmar International LLC, and CCA Civil, Inc.); Skanska Kiewit Posillico JV (composed of Skanska USA Civil Northeast Inc., Kiewit Infrastructure Co., and Posillico Civil, Inc.); and Tutor Perini / O&G JV (composed of Tutor Perini Corporation and O&G Industries, Inc.). During Step 2, these three teams received conceptual design documents, technical specifications, and other related information and were asked to submit technical and price proposals. Proposers were requested to specifically identify innovative approaches to minimize construction impacts on surrounding communities, improve functionality and aesthetics, and shorten the construction schedule, among other objectives. Each of the three teams submitted proposals.

Technical advisory teams which included staff from LIRR, MTACC, MTAHQ, and NYSDOT reviewed the proposals and assessed their strengths and weaknesses. These assessments were then shared with a Selection Committee which included representatives from LIRR, MTACC, MTAHQ, the NYS Thruway Authority, a former Long Island State Senator, and the private sector. In addition, each of the proposers made oral presentations to the Selection Committee.

In as much as community involvement has from the outset been an integral element of this project, representatives from the Villages of Floral Park, Garden City, New Hyde Park, Mineola, and Westbury were given the opportunity to review select elements of the technical proposals and provide written comments which were shared with the Selection Committee.

Based on the written proposals, the assessments of the technical advisory teams, the oral presentations, and the information generated by the Villages, the Selection Committee evaluated each of the proposals in accordance with the Technical Criteria established in the RFP, which included the following categories: Management Approach; Project Design; Schedule and Construction Impact Mitigation; Financial Strength; and Diversity Practices and Plan. The results of this evaluation ranked the Proposers in the following order, high to low:

- 3rd Track Constructors (3TC)
- Skanska Kiewit Posillico
- Tutor Perini / O & G.

Price proposals were evaluated by a separate Price Evaluation Committee comprised of LIRR estimating and project management personnel, which analyzed the proposals for all three Proposers, factoring into the total price offerings any savings/extra costs that would be incurred by LIRR for necessary Force Account support and other Project support costs. However, neither the price proposals nor the analysis of the Price Evaluation Committee was shared with the Selection Committee until the Selection Committee had completed its technical evaluations.

Thereafter, a team comprised of representatives of MTACC, LIRR and MTAHQ met with each of the Proposers individually to discuss ways to reduce costs, and LIRR subsequently issued a formal request for revised proposals to all three Proposers. Moreover, in order to contend with budgetary constraints, as all of the initial proposals exceeded the budget for this Contract, the Proposers were asked to identify work that could be accomplished with the funds available for this Project in the 2015-2019 Capital Program (the “Base Work”) and the remaining work (the Completion Scope) which will require funding in the 2020-2024 Capital Program. Proposers were also asked to take into account schedule, such that assuming the Completion Scope is timely started, the Project’s 4-year construction schedule would not be jeopardized. Moreover, construction of certain of the parking garages were scoped separately (“Garage Scope”) to allow for potential co-development opportunities and/or the opportunity to fund them in the 2020 – 2024 Capital Program.

Revised proposals were received from all three Proposers and were provided to the Selection Committee, which, granting equal weight to the technical and price proposals, selected 3TC as the firm offering the overall “best value.”

Some of the factors that favored the 3TC proposal were:

- A well-developed communications outreach program;
- An innovative design that minimizes track and system work required by LIRR forces, simplifies the work at crossover locations, significantly reduces the amount of signal modification work, substantially reduces the number of required PSEG power poles, and, significantly, requires far fewer weekend outages than anticipated

Staff Summary

- The use of “U” shaped sub-structure elements which will reduce the track outage time needed to install new bridges;
- The use of eight-car temporary platforms, rather than the RFP-required length of six cars, which will help prevent crowding on platforms;
- The use of Autonomous “VIA” shared ride technology to provide access between LIRR stations and alternate parking provided during construction; and
- The use of Agtek 3D software to minimize required excavation and embankment, optimizing material and equipment resources and reducing material hauling, equipment noise, pollution, and vehicular traffic.

At the direction of the Selection Committee, negotiations with 3TC began and agreement was reached at the following amounts:

- Base Work: \$1,457,117.009.99
- Completion Scope : \$270,608,499.00
- Garage Scope: Construction of up to 4 garages at Mineola Second Street, Westbury North, Westbury South, and Hicksville, totaling up to \$85,449.409.26.

The Third Track Project will be operational by late 2022 (assuming Completion Scope is initiated by July 2020).

LIRR and all MTA Agencies follow the MTA All-Agency Responsibility Guidelines which prescribe a thorough review of various databases, repositories and media to assess any information that may have bearing in determining a prospective vendor’s responsibility. External sources include, but are not limited to, LexisNexis, Westlaw, Dun & Bradstreet, and Google. Internal sources include Vendex, MTA All-Agency ACE Report, and the Debarred List. Utilizing these sources, LIRR completed a responsibility review of all members of 3TC. These firms were found to be responsible by the MTA in the recent past notwithstanding significant adverse information (SAI), for which MTA “Waiver of Significant Adverse Information” memos were executed, pursuant to the All-Agency Responsibility Guidelines. No new SAI has been found relating to these firms and therefore 3TC has been found to be responsible.

This item seeks authorization from the Board to award a Public Works contract to 3TC for Design-Build Services necessary for the design, construction and installation of the Project as described above, and for its inclusion in the current MTA “Owner-Controlled Insurance Program” (OCIP). Upon approval by the Board, a notice of award for such contract will be issued by MTACC to 3rd Track Constructors and MTACC will execute and administer the contract, with ongoing involvement of LIRR Engineering, Program Management, and various operating and administrative staff as part of an integrated project team through Project completion.

This item also seeks authorization from the Board to enter into several related agreements between LIRR and third parties, necessary to effectuate the design, construction and installation of the Project. These agreements include, among others, the following:

(1) Memoranda of Understanding with Municipalities – In keeping with the LIRR’s pledge of a robust public outreach program to secure support for the Project, and of actively working together with communities to address concerns about the potential impacts of the Project on local quality of life, LIRR will enter into Memoranda of Understanding with each of the five Villages located along the Project corridor (Floral Park, New Hyde Park, Garden City, Westbury and Mineola), formalizing LIRR’s commitment to ensure that the chosen Design-Builder will implement various mitigation measures identified in the Final Environmental Impact Statement for the Project to address such concerns. Virtually all of the commitments reflected in the MOU’s such as community outreach, noise and vibration monitoring, sound attenuation walls, alternate parking during construction, environmental compliance, work site housekeeping, and work zone traffic control plans are already incorporated within the overall scope of the Project and the costs thereof are included within the contract prices quoted by 3TC. The MOU’s provide the Villages with the right to hold LIRR and our Design-Build Team accountable to deliver on these commitments. In some instances, there are a small number of Village-specific items called out in the MOUs that are not part of the Project, such as aesthetic improvements at the Floral Park station (improved lighting, benches, railings and signage/wayfinding). These Village-specific items are estimated to cost no more than approximately \$1 million in the aggregate. Two (2) Memoranda of Understanding have already been executed with the Villages of Floral Park and New Hyde Park in the Spring of 2017, in connection with securing the support of such Villages for amendment of the current MTA Capital Program (2015-2019) to include funding for the Project. The authorization being sought from the Board therefore includes a request to ratify the execution of such Memoranda of Understanding.

Staff Summary



Page 4 of 4
12/7/17

(2) Memorandum of Understanding with the New York State Department of Transportation (“NYSDOT”) – To accelerate the design and construction of the Project, it will be necessary to secure various interests in real property, primarily for the purpose of eliminating the seven grade crossings along the Project corridor. NYSDOT has offered to assist LIRR by acquiring these interests, preferably through negotiation but utilizing its power of eminent domain if negotiations are not successful. The Public Authorities Law authorizes NYSDOT to assist MTA and its agencies in this manner, and such assistance is valuable because NYSDOT’s process to acquire property by eminent domain is simpler and faster than MTA’s own process. This Memorandum of Understanding will memorialize NYSDOT’s agreement to assist LIRR in this manner, and will also memorialize NYSDOT’s commitment, at the direction of the State, to transfer \$450 million to MTA to cover the costs of such grade crossing eliminations along the corridor, including property acquisition.

(3) Drainage and Parking Agreements – Five of the seven contemplated grade crossing eliminations will depress existing roadways so that they pass under LIRR’s right of way. This will generate stormwater runoff that must be collected and disposed of, likely by way of pumping and/or piping the stormwater to an adjacent municipal storm sewerage system, or by in-ground disposal on an adjacent piece of property. In either case, agreements may be required with the County of Nassau and/or local towns or villages, to allow the necessary pumps and pipes to be installed under public streets and to accept the stormwater at municipally owned recharge basins for disposal. In addition, the Project contemplates the construction of parking facilities in certain municipalities to provide additional parking for LIRR commuters, as well as to address local concerns about loss of parking as a result of the Project. These facilities will either be located on LIRR property or on municipally-owned property, and agreements may be required to allow LIRR to construct such facilities on the latter, and to provide for proper operation and maintenance of such facilities when built.

III. D/M/WBE INFORMATION:

The MTA Department of Diversity and Civil Rights (DDCR) has established MBE, WBE and SDVOB participation goals for this procurement at 15%, 15% and 6%, respectively. DDCR is awaiting the submission of 3TC’s complete MBE/WBE Utilization Plan. An award will not be made until DDCR approval has been obtained. A review of each JV participant’s past MBE/WBE and DBE performance has revealed that John P. Picone, Inc. and Halmar International have achieved the MBE/WBE or DBE goals on previous MTA contracts. Dragados USA and CCA Civil have not completed any MTA contracts; therefore, no assessment of these firms’ MBE/WBE or DBE performance can be made at this time.

IV. IMPACT ON FUNDING:

This contract will be funded under the 2015-2019 Capital Program and the 2020 – 2024 Capital Program. In 2015 – 2019, funding is available in the MTA Capital Construction (MTACC) portion of the Capital Program under the existing project G7130101. Additionally, the Program is being amended to transfer \$100 million to the Project from various other LIRR projects with scopes of work similar to specific elements of the Project, including: a new parking facility and power substation replacement as well as investments in track, bridge, signal and communications pole and Right of Way improvement. The transfer of these funds to support like investments in the Project will not adversely impact system safety or service reliability. Further, MTA CC will work with the private sector and local municipalities to seek public private partnership funding opportunities for construction of parking garages along the corridor.

V. ALTERNATIVES:

There are no alternatives to awarding this design build contract, as neither LIRR nor MTACC have the ability to undertake the design and construction of this entire project with in-house forces. Without this contract award, this project will not progress and this critical improvement that the LIRR has sought for decades will fail to be accomplished. Reliability will continue to suffer along the Main Line and as a result the full benefit of the East Side Access project will not be realized. The delays experienced by 40% + of LIRR ridership will continue to plague commuters and gate downtime along the congested north / south roadways will increase along with air pollution from auto exhaust and noise from horn soundings and gate activations generated by additional train traffic traversing the corridor.

RESOLUTION
BOARDS OF THE
METROPOLITAN TRANSPORTATION AUTHORITY,
THE LONG ISLAND RAIL ROAD COMPANY,
and MTA CAPITAL CONSTRUCTION COMPANY

WHEREAS, the Long Island Rail Road Company (“LIRR”), a New York State public benefit corporation and an operating agency of the Metropolitan Transportation Authority (“MTA”), desires to advance its Main Line Expansion Project (the “Project”); and

WHEREAS, the Project consists generally of the construction of approximately ten miles of third track, including third rail, ties, switches, cable, signal equipment, utility poles and other items needed to support railroad operations, and the elimination of seven street-level train crossings (“grade crossings”) between Floral Park and Hicksville in Nassau County, New York; and

WHEREAS, in addition, the Project includes construction of up to 5 parking garages, construction of retaining walls, utility relocation, fencing, station improvements and construction of new station platforms, along with measures to reduce impacts on adjacent communities such as sound attenuation barriers and landscaping; and

WHEREAS, the Project will be a transformative improvement to the LIRR system, expanding capacity, improving reliability, improving safety by eliminating all seven at-grade crossings along the Project corridor, and allowing for bi-directional service at all times during the day; and in addition, the Project will improve quality-of-life in adjacent communities by improving the appearance and functionality of stations within the corridor, reducing noise through the use of noise attenuation walls and reducing air pollution and eliminating wait time associated with idling vehicles at grade crossings; and

WHEREAS, pursuant to Section 1265-a of the Public Authorities Law and the MTA’s All-Agency Procurement Guidelines, LIRR may, in appropriate circumstances where competitive bidding is impractical or inappropriate, request approval from the Board to utilize the Request for Proposals (“RFP”) procurement method to award a public works contract; and

WHEREAS, the Board previously approved LIRR’s utilization of the RFP procurement method to select and engage a contractor to provide Design-Build Services for the Project; and

WHEREAS, as described in the Staff Summary presented to the Board at its December 2017 meeting, LIRR has utilized the RFP procurement method, and a duly constituted Selection Committee has identified 3rd Track Constructors (“3TC”) as the proposer responding to LIRR’s RFP offering the best overall value in providing Design-Build Services for the Project; and

WHEREAS, LIRR is requesting that the Boards of the MTA, LIRR and MTA Capital Construction Company (“MTACC”) approve the award of a public works contract by MTACC to 3TC for Design-Build Services for the Project, such contract to be entered into by MTACC

and to be administered by MTACC with the active participation of LIRR, all as more fully described in such Staff Summary;

NOW, THEREFORE, upon recommendation of such Selection Committee, LIRR and MTACC, the Boards of the MTA, LIRR and MTACC resolve as follows:

1. The award of such public works contract by MTACC to 3TC for Design-Build Services for the Project, as more fully described in the Staff Summary presented to this meeting, be and it hereby is, approved.

2. Such public works contract shall take the form of a Design-Build Agreement between MTACC and 3TC, and each MTACC Authorized Officer (as defined below) is hereby authorized and empowered, in the name and on behalf of MTACC, to execute and deliver a Design-Build Agreement with 3TC for Design-Build services for the Project, consistent with such Staff Summary and containing such other terms and conditions as the MTACC Authorized Officer(s) executing such Agreement may approve, such approval to be conclusively evidenced by his/her/their execution thereof.

3. Each LIRR Authorized Officer (as defined below) is hereby authorized and empowered, in the name and on behalf of LIRR, to execute and deliver such Memoranda of Understanding with Municipalities, a Memorandum of Understanding with the New York State Department of Transportation, and Project Drainage and Parking Agreements, consistent with such Staff Summary and containing such other terms and conditions as the LIRR Authorized Officer(s) executing such instruments may approve, such approval to be conclusively evidenced by his/her/their execution thereof.

4. The previous execution and delivery of Memoranda of Understanding between LIRR and each of the Villages of Floral Park and New Hyde Park, consistent with and for the purposes described in such Staff Summary, is hereby ratified.

5. Each MTACC Authorized Officer and each LIRR Authorized Officer is hereby authorized and empowered, in the name and on behalf of MTACC and/or LIRR, as the case may be, to take such other and further actions, and to execute such other agreements and instruments, as may be necessary or desirable to effectuate the purposes and intent of the foregoing resolutions, and the design, construction and installation of the Project pursuant to the Design-Build Agreement executed in accordance with such resolutions. For purposes of Paragraphs 1-4 above and this Paragraph 5, the term "MTACC Authorized Officer" shall mean each of the following: the Chairman, President, Executive Vice President, Sr. Vice President-General Counsel & Secretary, Chief Financial Officer, and any Assistant Secretary of MTACC; and the term "LIRR Authorized Officer" shall mean each of the following: the Chairman, President, Executive Vice President, Vice President-Chief Financial Officer, Vice President-General Counsel & Secretary, and any Assistant Secretary of LIRR.

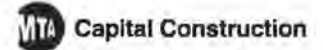
**METRO NORTH AND LONG ISLAND RAIL ROAD
JOINT COMMITTEE**

MTA BOARD

PROCUREMENT PACKAGE

DECEMBER 2017

Staff Summary



Subject Request for Authorization to Award Various Procurements					
Department Law and Procurement					
Department Head Name Evan M. Eisland					
Department Head Signature 					
Board Action					
Order	To	Date	Approval	Info	Other
1	MNR & LIRR Joint Committee	12/11/17	X		
2	Board	12/13/17	X		

Date: December 5, 2017			
Vendor Name Various			
Contract Number Various			
Contract Manager Name Various			
Internal Approvals			
	Approval		Approval
3	Vice President, Program Controls	5	President
2	Chief Financial Officer	4	Executive Vice President
1	Chief Procurement Officer		

PURPOSE

To obtain the approval of the Board to award a contract and various modifications and, to inform the Long Island Rail Road Committee of these procurement actions.

DISCUSSION

MTA Capital Construction proposes to award Competitive Procurements in the following categories:

Schedules Requiring Majority Vote:

Schedule F - Competitive Requests for Proposals
Schedule H - Modifications to Personal/Miscellaneous Service Contracts
Schedule I - Modification to Purchase or Public Work Contract

	# of Actions	\$ Amount
	1	\$ 99,996,196
	1	\$ 2,984,571
	1	\$ 1,269,507
SUBTOTAL	3	\$104,250,274

MTA Capital Construction proposes to award Ratifications in the following category

Schedule K - Ratifications of Completed Procurement Actions

	# of Actions	\$ Amount
	1	\$ 2,900,000
SUBTOTAL	1	\$ 2,900,000
TOTAL	4	\$107,150,274

Budget Impact:

The approval of the contract and the modifications will obligate MTA Capital Construction capital funds in the respective amounts listed. Funds are available in the capital budget for this purpose.

Recommendation:

That the contract and modifications be approved as proposed. (The items are included in the resolution of approval at the beginning of the Procurement Section.)

MTA Capital Construction Company

BOARD RESOLUTION

WHEREAS, in accordance with Section 1265-a and 1209 of the Public Authorities Law and the All Agency Procurement guidelines, the Board authorizes the award of certain non-competitive purchase and public works contracts, and the solicitation and award of request for proposals in regard to purchase and public work contracts; and

WHEREAS, in accordance with the All Agency Procurement Guidelines, the Board authorizes the award of certain non-competitive miscellaneous service and miscellaneous procurement contracts, certain change orders to purchase, public work, and miscellaneous service and miscellaneous procurement contracts;

WHEREAS, in accordance with Section 2879 of the Public Authorities Law and the All-Agency Guidelines for Procurement of Services, the Board authorizes the award of certain service contracts and certain change orders to service contracts.

NOW, the Board resolves as follows:

1. As to each purchase and public work contract set forth in annexed Schedule A, the Board declares competitive bidding to be impractical or inappropriate for the reasons specified therein and authorizes the execution of each such contract.
2. As to each request for proposals (for purchase and public work contracts) set forth in Schedule B for which authorization to solicit proposals is requested, for the reasons specified therein, the Board declares competitive bidding to be impractical or inappropriate, declares it is in the public interest to solicit competitive request for proposals and authorizes the solicitation of such proposals.
3. As to each request for proposals (for purchase and public work contracts set forth in Schedule C for which a recommendation is made to award the contract), the Board authorizes the execution of said contract.
4. As to each action set forth in Schedule D, the Board declares competitive bidding impractical or inappropriate for the reasons specified therein, and ratifies each action for which ratification is requested.
5. The Board authorizes the execution of each of the following for which Board authorization is required: i) the miscellaneous procurement contracts set forth in Schedule E; ii) the personal service contracts set forth in Schedule F; iii) the miscellaneous service contracts set forth in Schedule G; iv) the modifications to personal/miscellaneous service contracts set forth in Schedule H; v) the contract modifications to purchase and public work contracts set forth in Schedule I; vi) the modifications to miscellaneous procurement contracts set forth in Schedule J.
6. The Board ratifies each action taken set forth in Schedule K for which ratification is requested.
7. The Board authorizes the budget adjustments to estimated contracts set forth in Schedule L.

December 2017

LIST OF COMPETITIVE PROCUREMENTS FOR BOARD APPROVAL

Procurements Requiring Majority Vote:

Schedule F. Personal Service Contracts

(Staff Summaries required for all greater than: \$100K Sole Source; \$250K other Noncompetitive; \$1M Competitive)

- | | | | |
|----|--|-------------------------|--------------------------------------|
| 1. | Arup – Jacobs Joint Venture
Contract No. PS868
Three Years and Two One Year Options | NTE \$99,996,196 | <u>Staff Summary Attached</u> |
|----|--|-------------------------|--------------------------------------|

In accordance with Article X of the MTA All-Agency Service Contract Procurement Guidelines, MTACC seeks Board approval to award a competitively solicited negotiated personal service contract, to provide Project Management Consulting Services for the Long Island Rail Road Mainline Third Track Expansion Project.

Schedule H. Modification To Personal Service and Miscellaneous Service Contracts Awarded as Contracts for Services

(Approval/Staff Summaries required for substantial change orders and change orders that cause the original contract to equal or exceed the monetary or duration threshold required for Board approval)

- | | | | |
|----|---|---------------------|--------------------------------------|
| 2. | Parsons Brinckerhoff/STV/Parsons
Transportation Group, Joint Venture
Contract No. 98-0040-01R
Modification No. 150 | \$ 2,984,571 | <u>Staff Summary Attached</u> |
|----|---|---------------------|--------------------------------------|

In accordance with Article XI of the All-Agency Service Contract Guidelines, MTACC seeks Board approval to modify the Contract to increase the Guaranteed Maximum Cost in order to provide staff and services for Project Management and Project Controls through December 2018.

Schedule I. Modification To Purchase and Public Work Contracts

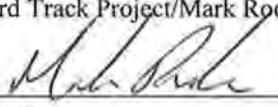
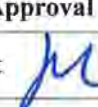


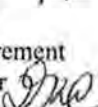
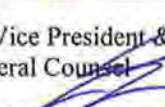
(Staff Summaries required for individual change orders greater than \$750K. Approval without Staff Summary required for change orders greater than 15% of the adjusted contract amount which are also at least \$250K)

- | | | | |
|----|---|---------------------|--------------------------------------|
| 3. | Michels Corporation
Contract No. CM005
Modification No. 20 | \$ 1,269,507 | <u>Staff Summary Attached</u> |
|----|---|---------------------|--------------------------------------|

In accordance with Article VIII of the All-Agency General Contract Procurement Guidelines, MTACC is requesting Board approval of a final contract close-out modification which will incorporate changes to the contract drawings and specifications, compensate the contractor for those changes, and resolve open claims for schedule delays, additional work and non-compliant work.

Staff Summary

Page 1 of 3

Item Number 1						SUMMARY INFORMATION	
Dept & Dept Head Name: Third Track Project/Mark Roche 						Vendor Name	Contract Number
						Arup - Jacobs Joint Venture	PS868
Division & Division Head Name:						Description Project Management Consulting Services for the Long Island Rail Road Expansion Project	
Board Reviews						Total Amount Not-To-Exceed \$99,996,196	
Order	To	Date	Approval	Info	Other	Contract Term Three Years and Two Year Option	
1	LIRR Committee	12/11/17	X			Option(s) included in Total Amount? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Renewal? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Procurement Type <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Non-competitive Solicitation Type <input checked="" type="checkbox"/> RFP <input type="checkbox"/> Bid <input type="checkbox"/> Other: Funding Source <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:	
2	Board	12/13/17	X				
Internal Approvals							
Order	Approval	Order	Approval				
3	Vice President Program Controls 	6	President 				
2	Chief Financial Officer 	5	Executive Vice President 				
1	Chief Procurement Officer 	4	Sr. Vice President & General Counsel 				

I. PURPOSE/RECOMMENDATION:

Pursuant to Article X of the MTA All-Agency Service Contract Procurement Guidelines, MTACC seeks Board approval to award a competitively solicited personal service contract (the "Contract") to Arup-Jacobs Joint Venture (the "Arup/Jacobs JV") a joint venture between Ove Arup & Partners P.C. ("Arup") and Jacobs Civil Consultants Inc. ("Jacobs"). The Contract is for Project Management Consulting Services for the Long Island Rail Road Expansion Project (the "Project") in the not-to exceed amount of \$66,818,615 for a period of three years. The Contract also contains options for two additional years for the not-to-exceed amount of \$18,059,922 for the option for year four, and \$15,177,659 for the option for year five. The total not-to-exceed amount of the Contract, including the two options, is \$99,996,196.

II. DISCUSSION:

The Project is a transformative improvement to the LIRR system. It will expand capacity, improve reliability, improve safety by eliminating all grade crossings along the Project corridor, and allow for bi-directional service at all times during the day. In addition, the Project will improve quality-of-life in adjacent communities by improving the appearance and functionality of stations within the corridor, reducing noise through the use of noise attenuation walls and reducing air pollution and eliminating wait time associated with idling vehicles at grade crossings.

The scope of work for the Project includes the construction of approximately ten miles of third track, including third rail, ties, switches, cable, signal equipment, utility poles and other items needed to support railroad operations, and the elimination of seven street-level train crossings ("grade crossings") between Floral Park and Hicksville in Nassau County, New York. In addition, the project includes construction of up to 5 parking garages, construction of retaining walls, utility relocation, fencing, station improvements and construction of new station platforms, along with measures to reduce impacts on adjacent communities such as sound attenuation barriers and landscaping.

Under this Contract, the Arup/Jacobs JV will serve as the Project Manager and work as part of an integrated team with MTACC, LIRR, the New York State Department of Transportation and other consultants to manage the Project. The Project Manager will provide services and resources that include, but are not limited to, commercial management, operations management, design compliance oversight, construction compliance oversight, and community outreach.

The Request for Proposal ("RFP") was advertised on August 7, 2017 and the advertisement appeared in the New York State Contract Reporter, the New York Post, Engineering News-Record, Minority Commerce Weekly and on the MTA Website. Seventeen firms requested the RFP document and proposals were submitted by the following entities:

1. AECOM/Gannett Fleming/Tishman Joint Venture
2. Arup – Jacobs Joint Venture
3. Henningson, Durham & Richardson Architecture and Engineering, P.C.
4. LiRo Engineers – WSP, A Joint Venture

The Selection Committee for this Contract consisted of representatives from MTACC and LIRR. Based upon an initial review of the technical proposals, the Selection Committee invited the proposers to supplement their proposals with oral presentations. Each proposer gave an oral presentation to the Selection Committee and, thereafter, the Selection Committee evaluated the technical proposals in accordance with the Source Selection Plan and the established scoring criteria in each of the categories listed below:

- Qualifications and Experience of the Project Director
- Qualifications and Experience of other Proposed Key Personnel
- Proposed Management Approach
- Proposed Technical Approach
- Diversity Practices

Following the evaluation of the technical proposals, the Selection Committee opened the cost proposals which were also scored. The technical and cost scores were then combined to provide the overall final scores from which the Selection Committee unanimously determined that the proposal submitted the Arup/Jacobs JV was the highest ranked and provides the MTA with the overall best value and that the other proposers were not in the competitive range. Accordingly, the Selection Committee recommended that MTACC enter into negotiations with the Arup/Jacobs JV.

Several rounds of negotiations were held with a focus on direct labor rates, overhead and fixed fee. In addition, overhead rates were reviewed by MTA Audit. MTACC's estimate for the work is \$94,048,722 while Arup/Jacob's proposal was \$101,892,445. The parties agreed to the not-to-exceed amount of \$56,818,615 for the base contract with a duration of three years, the not-to-exceed amount of \$18,059,922 for the option for year four, and \$15,177,659 for the option for year five. The total not-to-exceed amount the base Contract and the two options is \$89,996,196.

In addition, MTACC has included in this contract a task order allowance in the amount of \$10 million for additional design services and for the retention of additional professionals with specific expertise that may be required as determined by MTACC. Task orders will be issued for these services as deemed necessary and each task order will be separately negotiated and contain a specific scope of work, budget and schedule.

The Contract will initially be awarded in the not-to-exceed amount of \$66,818,615, which includes the base Contract and the task order allowance. However, MTACC is also seeking Board approval at this time for the full not-to-exceed value, including the two options, of \$99,996,196. The Options will not be exercised until additional funding becomes available through the approved 2020-2024 Capital Program or other sources.

In connection with a previous contract awarded to Jacobs Civil Consultants Inc. ("Jacobs"), Jacobs was found to be responsible notwithstanding significant adverse information pursuant to the All-Agency Responsibility Guidelines and such responsibility finding was approved by the MTA Interim Executive Director in consultation with the MTA General Counsel in April 2013. No new SAI has been found relating to Jacobs and Jacobs was found to be responsible. No significant adverse information was found on Ove Arup & Partners P.C. they were found to be responsible.

III. MBE/WBE/SDVOB INFORMATION:

The MTA's Department of Diversity and Civil Rights ("DDCR") reviewed the requirements of the Contract and after undertaking a thorough analysis established goals of 15% MBE, 15% WBE and 6% SDVOB for this contract based on the nature of the work and the availability of MBEs, WBEs and SDVOBs capable of performing the work. The Arup/Jacobs JV has committed to meeting these goals and has submitted a utilization plan which has been approved by DDCR.

In connection with past experience meeting D/M/WBE/SDVOB goals, Ove Arup & Partners P.C. and Jacobs Civil Consultants, Inc. have achieved their goals on prior contracts.

V. IMPACT ON FUNDING

Funding for the base contract is available in the MTACC portion of the MTA's 2015 - 2019 Capital Program. The options will not be exercised until funding is made available in the 2020 – 2024 Capital Program or from other sources.

VI. ALTERNATIVES

The alternative would be for MTACC and LIRR to self-perform the services to be provided under this contract; however, neither MTACC nor LIRR have the in-house resources to provide the required services.

Item Number: 2

Vendor Name (& Location) Parsons Brinckerhoff (WSP)/STV/Parsons Transportation Group (NY), JV	
Description East Side Access General Engineering Consultant Services	
Contract Term (including Options, if any) December 31, 2017	
Option(s) included in Total Amount? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Procurement Type <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Non-competitive	
Solicitation Type <input checked="" type="checkbox"/> RFP <input type="checkbox"/> Bid <input checked="" type="checkbox"/> Other: Modification	
Funding Source <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input checked="" type="checkbox"/> Federal <input type="checkbox"/> Other:	
Requesting Dept/Div & Dept/Div Head Name: East Side Access, W. Goodrich	

Contract Number	AWO/Modification #
98-0040-01R	150
Original Amount:	
	\$ 140,000,000
Prior Modifications:	
	\$ 343,640,813
Prior Budgetary Increases:	
	\$ -0-
Current Amount:	
	\$ 483,640,813
This Request	
	\$ 2,984,571
% of This Request to Current Amount:	
	0.62%
% of Modifications (including This Request) to Original Amount:	
	248%

Discussion:

This Contract is for engineering, design and construction phase services for the LIRR East Side Access (ESA) project. In accordance with Article XI of the MTA All-Agency Service Contract Procurement Guidelines, Board approval is requested to modify the Contract to provide staff and services for Project Management ("PM") and Project Controls ("PC") through December 2018.

PM and PC services under this Contract is provided on a cost-plus-fixed-fee, level-of-effort, not-to-exceed basis. The PM staff supervise and direct the work of the Consultant while the PC staff maintain project records for engineering deliverables, configuration management, correspondence, financial accounts and cost expenditures. Given the long duration of this contract, MTACC determined it best to evaluate PM and PC services on an annual basis to ensure that the MTA is receiving the most efficient and cost-effective services.

In September 2016 the MTA Board approved a modification increasing the PM and PC services amount by \$6,200,000, from \$18,856,813 to \$22,394,501 for PM and from \$11,193,410 to \$13,855,722 for PC, to provide these services until the end of 2017. This Modification will provide for the continuation of PM/PC staff and services through December 2018. This Modification also increases funding for two Project-Wide Services, Systems Safety & Security and Positive Train Control (PTC) Coordination for Harold. The additional funding in these areas will replenish the respective budgets to continue post-Design support to MTACC in its effort to obtain LIRR approval of Systems Safety & Security Certification of various design packages, and to coordinate ESA designs with LIRR's implementation of PTC in Harold Interlocking.

The GEC submitted a cost proposal totaling \$4,064,304 for this Modification. The MTACC estimate totaled \$3,006,886. Negotiations were held and the parties agreed to the not-to-exceed amount of \$2,984,571, which is considered to be fair and reasonable. MTACC will return to the Board at the end of 2018 to request funding for PM/PC services for 2019 based on the work remaining at that time.

In connection with a previous contract awarded to Parsons Brinckerhoff (WSP) a member of the Consultant joint venture, Parsons Brinckerhoff (WSP) was found to be responsible notwithstanding significant adverse information pursuant to the All-Agency Responsibility Guidelines and such responsibility findings were approved by the MTA Chairman/CEO in consultation with the MTA General Counsel in January 2007. No new SAI has been found relating to Parsons Brinckerhoff (WSP) and they have been found to be responsible.

Item Number: 3

Vendor Name (& Location) Michels Corporation (Mount Vernon, NY)	
Description Manhattan South Structures	
Contract Term (including Options, if any) 880 Calendar Days	
Option(s) included in Total Amount? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Procurement Type <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Non-competitive	
Solicitation Type <input type="checkbox"/> RFP <input checked="" type="checkbox"/> Bid <input checked="" type="checkbox"/> Other: Modification	
Funding Source <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input checked="" type="checkbox"/> Federal <input type="checkbox"/> Other:	
Requesting Dept/Div & Dept/Div Head Name: East Side Access/W. Goodrich, P.E.	

Contract Number	AWO/Modification #
CM005	40
Original Amount:	
	\$ 200,602,743
Prior Modifications:	
	\$ 39,541,368
Prior Budgetary Increases:	
	\$ - 0-
Current Amount:	
	\$ 240,144,111
This Request	
	\$ 1,269,507
% of This Request to Current Amount:	
	5%
% of Modifications (including This Request) to Original Amount:	
	20%

Discussion:

The work under the CM005 Contract includes the fabrication and construction of the permanent structural concrete lining, interior structures, and fit-out for caverns and tunnels previously excavated by others. In accordance with Article VIII of the All-Agency General Contract Procurement Guidelines, MTACC is requesting Board approval of a final contract close-out modification which will incorporate changes to the contract drawings and specifications, compensate the contractor for those changes, and resolve open claims for schedule delays, additional work and non-compliant work.

The CM005 Contractor achieved Substantial Completion on April 22, 2016. At Substantial Completion several Contractor claims remained open. These claims included additional costs for alleged acceleration, extra work, and differing site conditions. In addition, MTACC discovered certain non-conforming work by the Contractor for which it intended to assert a back charge to cover the cost to remediate the non-conforming work. This modification resolves both the Contractor's claims and MTACC's back charge claims and also reconciles payments made under Contract allowance items.

The Contractor submitted proposals which sought a net contract increase of approximately \$16,019,200. MTACC performed its own independent cost assessment and estimate of each of the issues which resulted in a net contract increase of approximately \$2,314,358. The parties met on several occasions to discuss the merits of their respective positions and ultimately agreed to a net lump sum increase in the amount of \$2,333,000 which is considered to be fair and reasonable. However, taking into account the reduction in the Contract Price for the reconciliation of the unspent contract allowance items in the credit amount of \$1,063,493 the net value of this modification is \$1,269,507. Funding is available through the Contract's contingency.

December 2017

LIST OF RATIFICATIONS FOR BOARD APPROVAL

Procurements Requiring Majority Vote:

Schedule K. Ratification of Completed Procurement Actions (Involving Schedule E-J)
(Staff Summaries required for items requiring Board Approval)

- | | | | |
|----|---|--------------|-------------------------------|
| 4. | Ansaldo STS
Contract No. VQ033
Modification No. 1 | \$ 2,900,000 | <u>Staff Summary Attached</u> |
|----|---|--------------|-------------------------------|

In accordance with Article VIII of the All-Agency General Contract Procurement Guidelines, MTACC is requesting the Board ratify a modification to the contract to: (i) add redundant microprocessors in each of the 8 Central Instrument Locations (CIL's) in the Mid-Day Storage Yard (MDSY), (ii) extend the MDSY's signal limits and: (iii) reconfigure the west end track alignment.

Item Number: 4

Vendor Name (& Location) Ansaldo STS (Pittsburgh, PA)	Contract Number VQ033	AWO/Modification # 1
Description Mid Day Storage Yard Signal Central Instrument Location and Supervisory Control System for the East Side Access Project	Original Amount:	\$ 18,498,980
Contract Term (including Options, if any) 40.5 Months	Prior Modifications:	\$ -0-
Option(s) included in Total Amount? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Prior Budgetary Increases:	\$ -0-
Procurement Type <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Non-competitive	Current Amount:	\$ 18,498,980
Solicitation Type <input checked="" type="checkbox"/> RFP <input type="checkbox"/> Bid <input checked="" type="checkbox"/> Other: Modification	This Request	\$ 2,900,000
Funding Source <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input checked="" type="checkbox"/> Federal <input type="checkbox"/> Other:	% of This Request to Current Amount:	16%
Requesting Dept/Div & Dept/Div Head Name: East Side Access, W. Goodrich, P.E.	% of Modifications (including This Request) to Original Amount:	16%

Discussion:

This Contract is for the final design, fabrication, factory testing and delivery of a Vital Microprocessor-based Interlocking Control System (VMICS), Yard Control System and Yard Communications System for the Midday Storage Yard. In accordance with Article VIII of the All-Agency General Contract Procurement Guidelines, MTACC is requesting the Board ratify a modification to the contract to: (i) add redundant microprocessors in each of the 8 Central Instrument Locations (CIL's) in the Mid-Day Storage Yard (MDSY), (ii) extend the MDSY's signal limits and: (iii) reconfigure the west end track alignment.

Long Island Rail Road ("LIRR") has requested that redundant microprocessors be added to the 8 CIL's provided under this Contract. The addition of redundant processors will provide increased reliability in the event of a signal microprocessor failure. Without the redundant microprocessors, a failure in one CIL microprocessor would affect the operations of the entire MDSY. In order for the Contractor to provide redundant microprocessors, it must develop detailed circuit drawings for each CIL and associated Battery Hut, and also revise the dimensions of the CIL enclosures.

In addition, in order to enhance rail operations in and out of Penn Station as well as maintenance and operation of the MDSY, LIRR has requested that egress be provided at the west end of the MDSY and that the MDSY be extended west to Amtrak's Sub 4 Track. This will require the VQ033 Contractor to redesign the circuitry, the signal system network equipment and the supervisory control system which requires additional equipment (switches, wayside signals, snow melter and signal cases), revised software and a revised signal network design.

The Contractor submitted a cost proposal of \$3,241,370 while the MTACC project estimate was \$2,843,760. In addition, MTACC's delay analysis shows an excusable, non-compensable delay to Substantial Completion of 296 calendar days and the Contractor's analysis showed a delay of 312 calendar days. Negotiations were held and the parties agreed to a cost of \$2,900,000 and an increase of 292 excusable non-compensable days to the Substantial Completion date of the contract. The negotiated costs and increase to substantial completion is considered to be fair and reasonable. The delay will not impact the scheduled revenue service date of the project. This modification is being funded by the LIRR.

In order to not delay the construction of the Mid-Day Storage Yard, the President approved a limited Retroactive Memorandum on February 2, 2017 and the Contractor was directed to proceed with the Work up to the not-to-exceed amount of \$400,000. Authorization to proceed with the remainder of the Work under this Modification will be given upon Board ratification of this Modification.

In connection with a previous contract awarded to the Contractor, the Contractor was found to be responsible notwithstanding significant adverse information pursuant to the All-Agency Responsibility Guidelines and such responsibility finding was approved by MTA Interim Executive Director in consultation with the MTA General Counsel in March 2017. In addition, as a result of the review of the Contractor's responsibility since the prior contract award, new significant adverse information was identified, however the Contractor has been found responsible to receive this modification notwithstanding such new significant adverse information and such responsibility finding was approved by the MTACC President on November, 2017.



Bridges and Tunnels

Procurements December 2017



Staff Summary

Subject:	Request for Authorization to Award Various Procurements
Department:	Procurement
Department Head Name	M. Margaret Terry <i>mmt</i>
Department Head Signature	
Project Manager Name	Various

Date	12/01/2017
Vendor Name	
Contract Number	
Contract Manager Name	
Table of Contents Ref #	

Board Action					
Order	To	Date	Approval	Info	Other
1	President	12/01/2017			
2	MTA B&T Committee	12/08/2017			
3	MTA Board	12/13/2017			

Internal Approvals			
Order	Approval	Order	Approval
	President <i>[Signature]</i>		VP Operations
	Executive Vice President <i>[Signature]</i>		VP & Chief Engineer
	SVP & General Counsel <i>mm</i>		VP & Chief Procurement Officer <i>BB</i>
	VP & Chief Financial Officer		

Internal Approvals (cont.)							
Order	Approval	Order	Approval	Order	Approval	Order	Approval
	Chief Financial Officer <i>[Signature]</i>		Chief Technology Officer		Chief Health & Safety Officer		Chief EEO Officer
	Chief Security Officer		Chief Maintenance Officer		MTA Office of Civil Rights		

PURPOSE:

To obtain approval of the Board to award various contracts and purchase orders, and to inform the MTA B&T Committee of these procurement actions.

DISCUSSION:

MTA B&T proposes to award Non-Competitive procurements in the following categories: None

MTA B&T proposes to award Competitive procurements in the following categories:

<u>Schedules Requiring Majority Vote:</u>	<u># of Actions</u>	<u>\$ Amount</u>
Schedule C: Competitive Requests for Proposals (Award of Purchase and Public Work Contracts)	2	\$89.048M
Schedule I: Modifications to Purchase & Public Works Contracts	1	\$ 6.031M
SUBTOTAL	3	\$95.080M

MTA B&T presents the following procurement actions for Ratification: None

TOTAL	3	\$95.080M
--------------	----------	------------------

BUDGET IMPACT:

The purchases/contracts will result in obligating MTA B&T and Capital funds in the amount listed. Funds are available in the current MTA B&T operating/capital budgets for this purpose.

RECOMMENDATION:

That the purchases/contracts be approved as proposed. (Items are included in the resolution of approval at the beginning of the Procurement Section.)

The legal name of MTA Bridges and Tunnels is Triborough Bridge and Tunnel Authority.

MTA BRIDGES & TUNNELS
TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

WHEREAS, in accordance with §559 and §2879 of the Public Authorities Law and the All Agency Procurement Guidelines, the Board authorizes the award of certain non-competitive purchase and public work contracts, and the solicitation and award of request for proposals in regard to purchase and public work contracts; and

WHEREAS, in accordance with §2879 of the Public Authorities Law and the All Agency Procurement Guidelines, the Board authorizes the award of certain non-competitive miscellaneous procurement contracts, and certain changes orders to procurement, public work, and miscellaneous procurement contracts; and

WHEREAS, in accordance with § 2879 of the Public Authorities Law and the All Agency Guidelines for Procurement of Services, the Board authorizes the award of certain service contracts, and certain change orders to service contracts; and

NOW, the Board resolves as follows:

1. As to each purchase and public work contract set forth in annexed Schedule A, the Board declares competitive bidding to be impractical or inappropriate for the reasons specified therein and authorizes the execution of each such contract.
2. As to each request for proposals (for purchase and public work contracts) set forth in Schedule B for which authorization to solicit proposals is requested, for the reasons specified therein, the Board declares competitive bidding to be impractical or inappropriate, declares it is in the public interest to solicit competitive request for proposals and authorizes the solicitation of such proposals.
3. As to each request for proposals (for purchase and public work contracts) set forth in Schedule C for which a recommendation is made to award the contract, the Board authorizes the execution of said contract.
4. The Board ratifies each action set forth in Schedule D for which ratification is requested.
5. The Board authorizes the execution of each of the following for which Board authorization is required: i) the miscellaneous procurement contracts set forth in Schedule E; ii) the personal service contracts set forth in Schedule F; iii) the miscellaneous service contracts set forth in Schedule G; iv) the modifications to personal/miscellaneous service contracts set forth in Schedule H; the contract modifications to purchase and public work contracts set forth in Schedule I; and vi) the modifications to miscellaneous procurement contracts set forth in Schedule J.
6. The Board ratifies each action taken set forth in Schedule K for which ratification is requested.
7. The Board authorizes the budget adjustments to estimated contracts set forth in Schedule L.

LIST OF COMPETITIVE PROCUREMENTS FOR BOARD APPROVAL
DECEMBER 2017

MTA BRIDGES & TUNNELS

Procurements Requiring Two-Thirds Vote:

C: Competitive Requests for Proposals (Award of Purchase and Public Work Contracts)
(Staff Summaries required for items requiring Board approval)

- | | | |
|----------------------------------|------------------------|--------------------------------------|
| 1. Hellman Electric Corp. | \$71,797,700.00 | <u>Staff Summary Attached</u> |
| Contract No. BW-39/RK-60 | | |

3 yr. Contract- Competitive RFP

B&T is seeking Board approval under the All Agency General Contract Procurement Guidelines to award a competitively solicited public work contract for Design-Build Services for the Installation of Facility Wide Monitoring and Detection Systems at the Bronx-Whitestone Bridge and Robert F. Kennedy Bridge facilities.

- | | | |
|-----------------------------------|-------------------------|--------------------------------------|
| 2. American Bridge Company | \$17,250,000.000 | <u>Staff Summary Attached</u> |
| Contract No. VN-34 | | |

2 yr. Contract- Competitive RFP

B&T is seeking Board approval under the All Agency General Contract Procurement Guidelines to award a competitively solicited public work contract for Design-Build Services for Main Cable and Suspender Rope Inspection & Testing at the Verrazano-Narrows Bridge.

Procurements Requiring Majority Vote:

I: Modifications to Purchase & Public Works Contracts

(Approvals/Staff Summaries required for individual change orders greater than \$750K. Approvals without Staff Summaries required for change orders greater than 15% of previous approved amount which are also at least \$250K)

- | | | |
|------------------------------------|-----------------------|--------------------------------------|
| 3. Kiska Construction, Inc. | \$6,031,460.00 | <u>Staff Summary Attached</u> |
| Contract No. MP-03/MP-16 | | |

3 yr. Contract- Competitive Bid

B&T is seeking Board approval under the All Agency General Contract Procurement Guidelines to amend public work Contract MP-03/MP-16 for the following: (i) removal and replacement of the riser cables, conduits, rehabilitation of the motor control centers (MCC) and other electrical rehabilitations at the north and south towers of Marine Parkway-Gil Hodges Memorial Bridge (MPB) and (ii) increase the unit price quantities for five (5) unit price items.

Staff Summary

Page 1 of 2

Item Number 1 (Final)					
Dept. & Dept. Head Name: Engineering and Construction, Joe Keane, P.E., V.P. <i>Joe Keane</i>					
Division & Division Head Name: Engineering and Construction, Aris Stathopoulos, P.E. <i>Aris Stathopoulos</i>					
Board Reviews					
Order	To	Date	Approval	Info	Other
1	President	11/27/17			
2	MTA B&T Committee	12/11/17			
3	MTA Board	12/13/17			
Internal Approvals					
Order	Approval	Order	Approval		
1	Chief Financial Officer <i>John</i>	4	Executive Vice President <i>AD</i>		
2	General Counsel <i>MMT</i>	5	President <i>BB</i>		
3	Chief Procurement Officer <i>BB</i>				

SUMMARY INFORMATION	
Vendor Name Hellman Electric Corp.	Contract Number BW-39/RK-60
Description: Design-Build Services for the Installation of Facility Wide Monitoring and Detection Systems at the Bronx-Whitestone Bridge and Robert F. Kennedy Bridge Facilities	
Total Amount Hellman Award - \$71,797,700.00 Stipends - \$480,000	
Contract Term (including Options, if any) 36 Months	
Option(s) included in Total Amount? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Renewal? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Procurement Type <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Non-competitive	
Solicitation Type <input checked="" type="checkbox"/> RFP <input type="checkbox"/> Bid <input type="checkbox"/> Other:	
Funding Source <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:	

Narrative

I. PURPOSE/RECOMMENDATION

B&T is seeking Board approval under the All Agency General Contract Procurement Guidelines to award a competitively solicited public work contract for Design-Build Services for the Installation of Facility Wide Monitoring and Detection Systems at the Bronx-Whitestone Bridge and Robert F. Kennedy Bridge facilities for a period of 36 Months at a cost of \$71,797,700. In accordance with the MTA Design-Build Best Practice Guidance, and in order to enhance competition and defray proposal costs, this solicitation included stipends to be paid to each unsuccessful proposer in the amount of \$160,000 whose proposal met a defined standard. Accordingly, approval is also requested to pay stipends totaling \$480,000.

II. DISCUSSION

In July 2016, the Board authorized B&T to enter into a competitive Request for Proposal (RFP) process for design-build services for the installation of facility wide monitoring and detection systems at the Bronx-Whitestone Bridge and Robert F. Kennedy Bridge facilities. The work requires the design, construction and construction quality control services to install security equipment, fire/smoke detection and alarm systems at anchorages, towers, perimeter doors/hatches, undersides, fenders, tower pedestals and electrical substations along with other critical infrastructure locations at the Bronx-Whitestone Bridge and Robert F. Kennedy Bridge facilities.

{rev. 4/07/10}

Staff Summary

The service requirements were publicly advertised; seven firms submitted qualification information and based on a review of their qualifications, four firms were deemed qualified to receive the RFP. All four firms submitted proposals: Hellman Electric Corp. (Hellman) [\$73,795,200], Mass Electric Construction Company (Mass Electric) [\$65,198,000], E-J Electric Installation Co. (E-J Electric) [\$76,805,700] and Parsons Transportation Group of New York, Inc. (Parsons) [\$79,663,021.36].

The proposals were evaluated against established criteria set forth in the RFP, including design-build technical approach, key personnel and management approach, oral presentations and proposed price. The Selection Committee unanimously recommended Hellman, the highest rated firm based on several factors. Hellman's technical proposal was considered the most thorough in determining the methodologies and choices for the digital video management system (DVMS), intelligent video analytics system (IVAS), and network systems. Hellman demonstrated the best understanding of B&T's security concepts and incorporated a lessons learned component into their approach from a recently completed similar project for B&T. Also, they presented a thorough and innovative approach, demonstrated a strong understanding of the specification requirements and proposed a realistic schedule to work concurrently at both bridges to complete the Project on time. Hellman proposed a highly qualified team with extensive experience working together on similar work.

Hellman's price proposal was the second lowest. They demonstrated prior experience and a sound understanding for the anticipated successful completion of the Project as compared to the other competing firms. Mass Electric's technical proposal did not include sufficient details for critical project components and their proposed team did not demonstrate the same level of experience as compared to Hellman. The Parsons and E-J Electric technical proposals did not exhibit the same level of technical detail and submitted higher priced proposals as compared to Hellman. Accordingly, Hellman's proposal is the best overall value and is deemed most advantageous to B&T as compared to the other proposers.

Hellman submitted a proposal of \$73,795,200. Negotiations were conducted and the parties agreed to \$71,797,700 which is 3% above the Engineer's estimate of \$69,701,796 and is considered fair and reasonable. Hellman has been determined to be a responsible design-build contractor.

III. D/M/WBE INFORMATION

MTA Department of Diversity and Civil Rights have assigned goals of 15% MBE and 15% WBE to this contract. Award will not be made until the Department of Diversity and Civil Rights' approval is obtained. Hellman has achieved its previous MWDBE goals on previous MTA contracts.

IV. IMPACT ON FUNDING

Funding is available in the 2015–2019 Capital Program under Projects BW-39/D03566 (\$28,481,500) and RK-60/D03650 (\$43,316,200). Funding for stipends available under D706AW22.

V. ALTERNATIVES

There are no recommended alternatives. The Authority does not possess the resources required to perform these services.

Staff Summary

Page 1 of 2

Item Number 2 (Final)					
Dept & Dept Head Name: Aris Stathopoulos, P.E. <i>Aris Stathopoulos</i>					
Division & Division Head Name: Joe Keane, P.E., V.P. <i>Joe Keane</i>					
Board Reviews					
Order	To	Date	Approval	Info	Other
1	President	11/27/17			
2	MTA B&T Committee	12/11/17			
3	MTA Board	12/13/17			
Internal Approvals					
Order	Approval	Order	Approval		
1	Chief Financial Officer <i>AK</i>	4	Executive Vice President <i>AK</i>		
2	General Counsel <i>MMT</i>	5	President <i>JK</i>		
3	Chief Procurement Officer <i>Joe Keane B&T</i>				

SUMMARY INFORMATION	
Vendor Name American Bridge Company	Contract Number VN-34
Description Design-Build Services for Main Cable and Suspender Rope Inspection & Testing at the Verrazano-Narrows Bridge	
Total Amount \$17,250,000	
Contract Term (including Options, if any) Twenty-four (24) Months	
Option(s) included in Total Amount? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Renewal? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Procurement Type <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Non-competitive	
Solicitation Type <input checked="" type="checkbox"/> RFP <input type="checkbox"/> Bid <input type="checkbox"/> Other:	
Funding Source <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:	

Narrative

I. PURPOSE/RECOMMENDATION

B&T is seeking Board approval under the All-Agency General Contract Procurement Guidelines to award a competitively solicited public work contract for Design-Build Services for Main Cable and Suspender Rope Inspection & Testing at the Verrazano-Narrows Bridge to American Bridge Company (ABC) for a period of twenty-four (24) months at a price of \$17,250,000.

II. DISCUSSION

In July 2016, the Board authorized B&T to enter into a competitive Request for Proposal (RFP) process for design-build services for Main Cable and Suspender Rope Inspection & Testing at the Verrazano-Narrows Bridge (VNB). The Work requires design, construction, construction inspection, non-destructive testing (NDT), and materials testing of the main cables and suspender ropes at the VNB to determine main cable and suspender rope factors of safety and rate of deterioration. Also, provide long term recommendations for future maintenance and monitoring of the main cables and suspender ropes.

The service requirements were publicly advertised, four firms submitted qualification information and based on a review of their qualifications, all four firms were deemed qualified to receive the RFP. All four firms submitted proposals. The design-build proposers are: ABC; Halmar International, LLC; Kiewit Infrastructure Co.; and Tutor Perini Corporation / IHI Inc., a Joint Venture. The proposals were evaluated against established criteria set forth in the RFP, including proposed

Staff Summary

price, schedule, design-build technical approach, management approach and organizational structure. Evaluations were based on the selection criteria and oral presentations. The committee recommended ABC as the highest rated firm. The committee's basis for the selection included: (i) proposed technical design for retrofitting suspender rope socket bearing areas, which will benefit the Authority with a better and more structurally sound design, thereby mitigating future maintenance cleaning and costs; (ii) ABC's designer, Thornton Tomasetti has extensive experience in similar cable inspection and suspender ropes removal projects; (iii) ABC offered the most aggressive schedule, committing to achieve substantial completion within the first year; and (iv) the Committee's consensus is that ABC's proposal is the best overall value and is deemed most advantageous to B&T as compared to the other proposers.

ABC submitted the lowest proposal in the amount of \$17,250,000. The Engineer's estimate is \$18,346,797. The other proposed prices are as follows: Kiewit Infrastructure Co. (\$28,929,000); Tutor Perini Corporation / IHI Inc., a Joint Venture (\$29,200,000); and Halmar International LLC (\$43,550,000). During negotiations, B&T and ABC reviewed the proposal and clarified the scope. These discussions resulted in B&T accepting ABC's proposal in the amount totaling \$17,250,000, which is approximately 6% lower than the estimate and is considered fair and reasonable.

III. D/M/WBE INFORMATION

The MTA DDCR has established goals of 0% MBE and 0% WBE for the Contract.

IV. IMPACT ON FUNDING

Funding is available in the 2015-2019 Capital Program under Project D701/VN34, Task D03759.

V. ALTERNATIVES

There are no recommended alternatives. B&T does not possess the resources required to perform these services.

Schedule I: Modifications to Purchase and Public Works Contracts

Item Number: 3 (Final)

Vendor Name (& Location) Kiska Construction, Inc., Long Island City, New York		Contract Number MP-03/MP-16	AWO/Modification #
Description Electrical and Mechanical Rehabilitation, Friction Mitigation, Miscellaneous Steel Repairs, Painting and Fire Standpipe Installation at the Marine Parkway-Gil Hodges Memorial Bridge		Original Amount: \$98,500,000.00	
Contract Term (including Options, if any) December 11, 2015 – December 10, 2018		Prior Modifications: \$24,191,873.38	
Option(s) included in Total Amount? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Prior Budgetary Increases: \$0.00	
Procurement Type <input checked="" type="checkbox"/> Competitive <input type="checkbox"/> Non-competitive		Current Amount: \$122,691,873.38	
Solicitation Type <input type="checkbox"/> RFP <input checked="" type="checkbox"/> Bid <input type="checkbox"/> Other:		This Request: \$6,031,460.00	
Funding Source <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Capital <input type="checkbox"/> Federal <input type="checkbox"/> Other:		% of This Request to Current Amount: 4.9%	
Requesting Dept/Div & Dept/Div Head Name: Engineering & Construction, Joe Keane, P.E.		% of Modifications (including This Request) to Original Amount: 30.7%	

Discussion:

B&T is seeking Board approval under the All Agency General Contract Procurement Guidelines to amend public work Contract MP-03/MP-16 with Kiska Construction, Inc. (Kiska) for the following: (i) removal and replacement of the riser cables, conduits, rehabilitation of the motor control centers (MCC) and other electrical rehabilitations at the north and south towers of Marine Parkway-Gil Hodges Memorial Bridge (MPB) and (ii) increase the unit price quantities for five (5) unit price items. The amendment is in the negotiated amount totaling \$6,031,460, which includes verbal authorization to proceed in an amount not to exceed \$1,000,000 to commence procurement of long lead items and the riser cable replacement work.

The Contract was awarded to Kiska in December 2015 in the amount of \$98,500,000 subsequent to competitive bidding with a duration of three (3) years. The Scope of Work requires the following: replacement of lift span motors and drives, PLCs, droop cables and barrier gates; other lift span electrical upgrades; mechanical replacements and upgrades for the machinery room; installation of new auxiliary counterweight ropes; installation of new fire line system and hydrants; architectural upgrades and repairs; various structural steel and grid deck repairs; furnish and install structural health monitoring system; rope socket enhancements; abatement of asbestos and lead containing materials; painting; and maintenance and protection of traffic. To date, eight (8) amendments totaling \$24,191,873.38 have been issued, inclusive of \$22,217,719.67 for ORT and related initiatives at the MPB and Cross Bay Bridge facilities.


- (i) The riser cable system for the north and south towers of the MPB is deteriorated and the riser cable conduits are no longer water tight. As the MPB is a vertical lift bridge, this condition could potentially result in loss of power and communications to the bridge's most critical safety and mechanical systems that are necessary to operate the bridge. This concealed condition was not apparent during the design and could only be discovered during the course of connecting the new droop cables to the riser cable system. These riser cables feed electrical power and communication from the control desk for: lighting; safety barriers and gates; lane use signals; and other safety and security systems necessary for operating the lift span safely. The work includes but is not limited to: providing temporary connections to ensure the bridge electrical systems remain operational during riser cable replacement; removal and replacement of conduits and cable in north and south towers of the MPB; rehabilitation of the MCCs and other electrical rehabilitations.

Kiska submitted proposals totaling \$5,404,647.42. The Engineer's estimates total \$2,889,054.62. Negotiations resulted in Kiska and B&T agreeing to the negotiated lump sum amount totaling \$3,780,000. During negotiations it was determined that the estimate did not adequately account for the following: temporary electrical connections for existing systems; and labor production required to perform the riser cable replacement in winter weather conditions. The negotiated amount is considered fair and reasonable. B&T deems it prudent to include an allowance in the amount of \$200,000 to address unforeseen conditions that may arise during the riser cable replacement work.

- (ii) Four (4) unit price item quantities are anticipated to overrun. These structural steel rehabilitation related item quantity increases are primarily due to additional steel repairs being identified after sand blast cleaning of the structural steel prior to painting. B&T deems it prudent to increase these item quantities at the contract unit price. The items are as follows: 586.05-Removal of Rivets-Replacement with High Strength Bolts; 586.10-Field Drill Holes in Existing Structural Steel; 589.01-Removal of Existing Steel; and 801.564.01-Structural Steel. These unit price item increases total \$2,051,460, which is considered fair and reasonable given that the pricing is in accordance the contract unit price for these items.

Funding in the amount of \$6,031,460 is available in the 2015-2019 Capital Program under Project MP03, Task D03310 in the amount of \$3,633,000, Project MP16, Task D03315 in the amount of \$2,051,460 and the 2017 Major Maintenance Budget under Project MPM-344 in the amount of \$347,000.

Staff Summary

Subject All Agency Procurement Guidelines and All Agency Guidelines for Procurement of Services
Department Corporate Compliance
Department Head Name Lamond W. Kears, Chief Compliance Officer
Department Head Signature 
Project Manager Name Lamond W. Kears

Date December 11, 2017
Vendor Name N/A
Contract Number N/A
Contract Manager Name N/A
Table of Contents Ref # N/A

Board Action					
Order	To	Date	Approval	Info	Other
	Corporate Governance	12/11/17			
	Board	12/13/17			

Internal Approvals			
Order	Approval	Order	Approval
1	Chief Compliance Officer		
2	Legal		
3	Chief of Staff		

Purpose:

To obtain Board approval of the MTA's All Agency Procurement Guidelines and All Agency Guidelines for Procurement of Services.

Discussion:

Public Authorities Law Section 2879 requires the MTA to annually review and approve its All Agency Procurement Guidelines and All Agency Guidelines for Procurement of Services. These guidelines were last revised and approved by the Board at its November 16, 2016 meeting.

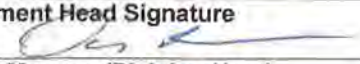


There are no proposed revisions to either guidelines.

Recommendation:

It is recommended that the MTA Board approve the annexed All Agency Procurement Guidelines and All Agency Guidelines for Procurement of Services.

Staff Summary

Page 1 of 2

Subject MTA 2015-2019 Capital Program Amendment
Department Capital Programs
Department Head Name Don Spero
Department Head Signature 
Project Manager/Division Head Stephen Berrang  Stephanie DeLisle 

Date December 13, 2017
Vendor Name
Contract Number
Contract Manager Name
Table of Contents Ref #

Board Action					
Order	To	Date	Approval	Info	Other
1	Board	12/13			

Internal Approvals			
Order	Approval	Order	Approval
4	Managing Director 		
3	Chief of Staff 		
2	Chief Financial Officer 		
1	Legal 		

Narrative

Purpose:

To obtain MTA Board approval of a proposed \$348.5 million amendment to the MTA 2015-2019 Capital Program to support the MTA's "NYC Subway Action Plan."

Discussion:

Proposed 2015-2019 Capital Program Amendment: This amendment increases the current capital program from \$32,457.3 million to \$32,805.8 million to incorporate the NYC Subway Action Plan (SAP). The increase will be reflected in the New York City Transit (NYCT) portion of the program, which will increase from \$16,315.4 million to \$16,663.9 million. Despite significant capital investment over the last 35 years to address critical deficiencies, the subway system is in distress due to a combination of factors. These include a near-record volume of customers, aging infrastructure, and insufficient capital investment. The result has been a decline in reliability in certain key service-delivery systems, a rise in service delays, and a deterioration in subway service.

The MTA has conducted a top-to-bottom analysis of how to transform the NYC Subway to deliver better service for our customers with the objective of developing a two-phase NYC Subway Action Plan. Near-term steps will stabilize and improve the system and lay the foundation for modernizing the New York City Subway. The strategy is to target personnel and equipment on the critical components of the system determined to have the highest incidence of failure. Through capital investments and complementary initiatives via the operating budget, it will jump start improvements over the next 14 months, and then maintain that level of effort going forward.

This amendment proposes to add \$348.5 million to NYCT's capital program for the following capital projects and budget elements:

- Continuous welded rail (CWR) (\$53.0 million in the Mainline Track Rehabilitation element): NYCT will increase the annual production capacity and pace over the remainder of the 2015-2019 Capital Program to provide more welded rail in place of bolted rail, to reduce track-related breakdowns and wear and tear on fleets, and to provide a more comfortable ride for customers.
- Signal Improvements (\$112.0 million in the Signal Modernization element): 30% of major incidents are related to signals. This proposed work will increase service reliability of signals and reduce maintenance on obsolete signal cables and equipment. Select signal cables, messenger brackets / straps, and stop machines will be replaced. Signal power equipment will be modernized by replacing obsolete automatic transfer panels at relay rooms, installing more emergency quick connect generator plugs, and purchasing additional temporary panels and spare plugs. The project will also assess and correct signal power equipment in relay rooms, distribution rooms, property line boxes, and trackside equipment.
- Upgrade 220 R142A Cars (\$175.0 million in the Subway Cars element): To improve reliability, 220 existing R142A A-Division cars will be modified to the newer standards of the R188 cars. Work will modify car interior, trucks, train control, propulsion, braking, monitoring and diagnostic systems. The cars also will be able to accommodate CBTC equipment.
- Purchase 59 Non-Revenue Vehicles (\$8.5 million in the Service Vehicles element): Additional non-revenue service vehicles are needed to more effectively support the SAP initiatives system-wide. These include such vehicles as heavy duty trucks, lifts, mobile washers, and vacuum trucks.

Staff Summary

Impacts on Funding:

The proposed amendment adds \$348.5 million in MTA Bonds to the 2015-2019 Capital Program to begin implementation of the Subway Action Plan, increasing the funding envelope to \$32,805.8 million. However, the 2015-2019 Capital Program funding may be revised at a later date should New York State and City capital funds be available in lieu of these added MTA Bonds. Should the funding level for the Subway Action Plan be revised, changes to the projects listed in this amendment will be required.

Alternatives:

There are no viable alternatives. The amendment is critical to halting deteriorating performance in the subway, and to continue renewing and enhancing the MTA's network to meet the mobility needs of the region.

Recommendation:

That the MTA Board approve the proposal to amend the MTA 2015-2019 Capital Program as described.