CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
SCOTT M. STRINGER

MARJORIE LANDA
DEPUTY COMPTROLLER FOR
AUDIT

BUREAU OF AUDIT

June 28, 2018

By Electronic Mail
Joseph J. Lhota
Chairman
Metropolitan Transportation Authority
2 Broadway
New York, NY 10004

Re: Letter Audit Report on the Telecommunication Services on the Metropolitan Transportation Authority Manhattan Buses Phase I (Audit Number SZ18-116AL)

Dear Chairman Lhota:

This Letter Report presents the results of our audit of the installation of Wi-Fi service and Universal Serial Bus (USB) charging ports in the New York City bus system in Manhattan. The objective of this audit was to determine whether the telecommunication services that have been installed in the Metropolitan Transportation Authority (MTA) buses in Manhattan enable Wi-Fi and USB charging capabilities and are operating effectively.[1] This is the second in a series of audits of the ongoing installation of Wi-Fi service and USB charging ports in the New York City bus system.

Background

In December 2015, the MTA entered into a contract with Cellco Partnership, doing business as Verizon Wireless, in which the MTA granted Verizon Wireless the right to supply and deliver wireless voice and data services for a period of five years on the MTA bus system.[2] The contract stipulates that Verizon Wireless will provide services, certain hardware, software and other components and data plans in connection with the MTA's project to purchase, install, and integrate an onboard public Wi-Fi system.[3] According to the contract's "Wi-Fi Terms of Service" provision, "the service is provided as a free amenity to New York City Transit Authority (NYCTA)

[1] The term "MTA buses" refers to the fleets owned and operated by both the New York City Transit Authority's Department of Buses (DOB) and the MTA Bus Company. Wi-Fi is a wireless networking technology that allows computers and other devices to communicate over a wireless signal. USB, short for Universal Serial Bus, is an industry standard that was developed to define cables, connectors and protocols for connection, communication, and power supply between personal computers and their peripheral devices.

[2] Cellco Partnership, Inc., doing business as Verizon Wireless Inc., provides wireless, residential, and business telecommunications products and services.

[3] NYCTA is a subsidiary of the MTA that owns, operates, and repairs the buses. The MTA purchased the new-look buses and has the contract with Verizon Wireless.

customers for entertainment and educational purposes and it's not intended to be a designated public forum." The terms of service provision further states that the service is not supposed to be used for multi-media streaming, continuous data transmission or broadcasts, automatic data feeds, automated machine to machine connections or peer to peer file sharing, voice over internet protocol or any application that is not made available to customer-users by the NYCTA and that uses excessive network capacity. Further, the service is not intended to be used as a substitute or a back-up for private lines or a dedicated data connection.

In March 2016, Governor Andrew Cuomo announced that the MTA would add 2,042 new buses to its transportation fleet over a five-year period. The new buses, which have a distinctive blue-and-yellow color scheme (new-look buses), represent a $1.3 billion investment of capital program resources and will replace almost 40 percent of the pre-existing fleet. The MTA intends that the new buses will include free Wi-Fi hotspots and 35-55 USB charging ports located throughout each bus.[4] The Governor later stated that the "new state-of-the-art buses will better connect passengers who are on-the-go, [and] create a stronger mass-transit system to bring New York into the future."[5]

In May 2016, the MTA began putting the first 75 new-look-buses, equipped with Wi-Fi service and USB charging ports, into service.[6] The service began in Queens along four routes; one additional bus was later added, and the 76 buses were in service in Queens by December 2017. In April 2017, the MTA began putting 79 new-look-buses equipped with Wi-Fi and USB charging ports in service along the M14, M15, M101, M102, and M103 routes in Manhattan. (See Table I below for the timetable for new-look regular and new-look SBS buses in Phase I).[7]

[4] The number of USB ports will range from 35-55 depending on the make and model of the buses.
[5] *Governor Cuomo Announces Roll Out of New Buses with Wifi and USB Charging Ports in the Bronx*, March 21, 2017 press release.
[6] During our previous testing in Queens, one additional new-look bus began operating for a total of 76 new-look buses.
[7] Select Bus Service (SBS) is New York City Transit's bus service designed to reduce travel time and increase the level of comfort for customers.

TABLE I

Installation of New-Look and SBS Buses on Various Routes throughout the City

Borough	Date Service Began	Service Completed	Number of Buses	Type of Bus	Routes	Depot(s)
Queens	May 2016	December 2017	76	New-Look	Q10, Q111, Q113 & Q114	JFK and Baisley Park
Queens	March 2017	March 2017	43	New-Look-SBS	Q44-SBS	Casey Stengel
Bronx	March 2017	December 2017	83	New- Look	Bx1, Bx2, Bx9, Bx15, Bx6, Bx8, Bx11, Bx17, Bx21, Bx27, Bx31, Bx32, Bx33, Bx35 and Bx46	Kingsbridge and West Farms
Brooklyn	April 2017	November 2017	86	New-Look	B4, B8, B9, B11, B16, B35, B37, B43, B61, B63, B67, B68, B69 and B70	Grand Avenue and Jackie Gleason
Manhattan	April 2017	December 2017	79	New- Look	M14, M15, M101, M102 and M103	Tuskegee Airmen
TOTAL			**367 buses**		**39 routes**	

The remaining 1,675 new-look buses will be assigned to various routes throughout the five boroughs from 2018 to 2020.

In addition, in 2016, the MTA began the process of upgrading its pre-existing express buses to include Wi-Fi and USB charging ports. As of January 2018, the MTA had 1,019 express buses in operation throughout the five boroughs; by mid-October 2017, according to the MTA, all had been retrofitted with the USB charging ports, and 910 had been retrofitted with Wi-Fi. The MTA also informed us that all express buses were expected to be retrofitted with Wi-Fi and USB charging ports by the end of 2017.

Audit Findings

We found that, overall, the telecommunication services provided by Verizon Wireless are generally operating as intended on the MTA's Manhattan buses. We tested 28 new-look buses

with Wi-Fi and USB capability on 6 routes in Manhattan.[8] Our tests showed that the MTA's Wi-Fi network operated effectively on 26 out of the 28 tested buses (93 percent). On those 26 buses, we were able to connect to the wireless network and browse various websites such as news, entertainment and social media. We also found that the MTA's Wi-Fi network appropriately restricted access to multi-media video streaming websites such as YouTube, Netflix, Hulu, and VuDu. However, as shown in Table II below, we also found that the Wi-Fi network did not operate effectively on 2 of the 28 new-look buses (7 percent).

We tested the USB ports on the same 28 new-look buses for a total of 1,540 ports.[9] We found that 1,535 of the 1,540 USB charging ports we tested (99.7 percent) were working as intended; in those instances, we were able to connect and charge phones utilizing the tested buses' USB ports. However, we also found that 5 of the 1,540 USB ports (.3 percent) on a total of 4 buses were not operational.

Table II

Testing of the Wi-Fi on the MTA's New-look Buses in Manhattan

Route	Type of Bus	Number of Buses	Number of Buses With Working Wi-Fi	Percentage of Buses With Working Wi-Fi	Number of Buses Without Working Wi-Fi	Percentage of Buses Without Working Wi-Fi
M101	New-Look	12	11	92%	1	8%
M102	New-Look	5	5	100%	0	0%
M103	New-Look	7	7	100%	0	0%
M34A-SBS	New-Look	1	1	100%	0	0%
M79-SBS	New-Look	2	1	50%	1	50%
M23-SBS	New- Look	1	1	100%	0	0%
TOTAL		**28**	**26**	**93%**	**2**	**7%**

During the course of the audit, we notified MTA officials of any Wi-Fi connectivity or USB charging capability malfunction that we found during our field testing. The MTA initiated repair orders and we observed ongoing repair work. To ensure that the malfunctioning Wi-Fi connectivity and USB charging capabilities were properly repaired and operating, we re-

[8] We tested MTA express buses in the boroughs where they originate; because no express buses originate from Manhattan depots, express buses were not tested in Manhattan. In addition, because the MTA often transfers bus assignments between depots, we were not able to test all 79 new-look buses. During the course of the audit, some of the 79 buses that were originally planned to be assigned to the Tuskegee Depot in Manhattan were transferred to depots located in other boroughs, including the Gun Hill depot and the Grand Ave depot. On several occasions, we also attempted to test new-look buses on other Manhattan routes; however, after spending multiple hours on the routes, we didn't observe any of the aforementioned buses.

[9] The new-look buses tested in Manhattan were either the New Flyer XD-60 or Nova Bus LFS model, which average 55 USB ports per bus (55 X 28), for a total of 1,540 USB ports tested.

boarded the six buses in which we previously found issues and retested the Wi-Fi connectivity and USB charging capability. In all six buses, the retesting showed that the issues were resolved.

Recommendation

We recommend that the MTA and the NYCTA periodically perform tests to ensure that their wireless network and USB charging capabilities, once installed, are functioning properly.

Scope and Methodology

We conducted this performance audit in accordance with generally accepted government auditing standards (GAGAS). Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. This audit was conducted in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, §93, of the New York City Charter.

The audit covered the period of June 1, 2017, through March 2, 2018. Our audit tested buses in Manhattan with Wi-Fi and/or USB charging ports that were reportedly operational.

To determine which buses garaged in the depots had Wi-Fi service and/or USB charging ports, we reviewed the requested spreadsheets submitted by MTA that included the bus numbers, bus models, and bus depots in Manhattan with fully operational Wi-Fi connectivity and/or USB charging ports. To determine the reliability of the list provided we tested 28 new-new look buses in Manhattan that were listed as having Wi-Fi and/or the 1,540 USB charging ports along the various routes.

To achieve our audit objective, we used cellular phones and USB cables to assist us in testing the Wi-Fi and USB charging ports on the buses in Manhattan along the M101, M102, M103, M79 SBS, M23SBS, and M34ASBS bus routes that were listed by MTA as having Wi-Fi connectivity and/or USB charging ports. Our testing was conducted between June 22, 2017 and March 2, 2018. During our testing, we established a Wi-Fi connection and connected the phones to various USB charging ports on the bus to ensure functionality. On each bus, we took screenshots displaying Wi-Fi connectivity on the phone and a connection to the USB charging port.

To determine access to Wi-Fi hotspots on the bus, the auditors signed into the MTA's Wi-Fi network along bus routes. The auditors logged onto MTA.info and attempted to access news/information, updates to MTA's service status, as well as the MTA's Bus Time and Trip Planner features.

To determine the accessibility of social media websites, the auditors downloaded Yahoo, Google, Facebook, Twitter and Snapchat to cellular devices and attempted to read e-mail and send

messages on the tested MTA buses. The auditors also attempted to access multi-media video streaming websites such as Netflix, Pandora, Hulu, Vudu, and YouTube to determine if it was possible to watch movies, play music, and stream videos on the tested MTA buses.

Testing was performed Monday through Sunday at various times during a full day, 24-hour cycle, to ensure that the Wi-Fi network was available and the USB charging ports were operational at all times. In addition, the auditors tested service in inclement weather to determine the effect on Wi-Fi and cellular service.

MTA and NYCTA officials were notified during the audit of any issues we found with Wi-Fi connectivity or USB charging capability, and they initiated repair orders and conducted repairs as we were continuing the audit.

The matters covered in this letter report were discussed with MTA and NYCTA officials during and at the conclusion of the audit, and they agreed that an exit conference was not necessary. On May 30, 2018, we submitted a draft letter report and provided the MTA and NYCTA with the opportunity to formally respond. The MTA's and NYCTA's responses were received on June 25, 2018. In their written responses, the MTA and NYCTA agreed with the report's one recommendation and the NYCTA stated that, "[b]uses management agrees with the audit recommendation to 'periodically perform tests to ensure that their wireless network and USB charging capabilities, once installed, are functioning properly'."

The full text of the MTA's and NYCTA's comments are included as addenda to this report.

Sincerely,

Marjorie Landa

c: Patrick Foye, President, Office of the Chairman, MTA
Andy Byford, President, NYC Transit Authority
Veronique Hakim, Managing Director, Office of the Chairman, MTA
Darryl Irick, Senior Vice President, Department of Buses, President MTA Buses
Craig Cipriano, Executive Vice President, Business Strategies and Operations Support
Michael Ribosh, Vice President, Chief of Operations
Michael Ecker, Deputy General Manager
Zafira Lateef, Chief Officer, Business Strategies
Sunir Nair, Chief Officer, Customer Information Systems
David Perez-ACMO Customer Service
Roy Grey-Stewart, Controller, MTA Bus Company
Michael J. Fucilli, Auditor General, MTA

Darren Jurgens, Audit Manager, MTA
Emily Newman, Director, Mayor's Office of Operations
George Davis III, Deputy Director, Mayor's Office of Operations

MUNICIPAL BUILDING • 1 CENTRE STREET, ROOM 1100 • NEW YORK, NY 10007
PHONE: (212) 669-8459 • FAX: (212) 815-8559 • MLANDA@COMPTROLLER.NYC.GOV
WWW.COMPTROLLER.NYC.GOV

2 Broadway
New York, NY 10004
212 878-7000 Tel

Joseph J. Lhota
Chairman

Metropolitan Transportation Authority
State of New York

June 25, 2018

Ms. Marjorie Landa
Deputy Comptroller for Audit
NYC Office of the Comptroller
One Centre Street, Room 1100N
New York, NY 10007

Re: Draft Letter Audit Report #SZ18-116A (Telecommunication Services on the MTA's Manhattan Buses Phase 1)

Dear Ms. Landa:

This is in reply to your letter requesting a response to the above-referenced draft letter report.

I have attached for your information the comments of Andy Byford, President, NYC Transit, which address this report.

Sincerely,

Joseph J. Lhota

c: Veronique Hakim, MTA Managing Director
Michael J. Fucilli, Auditor General, MTA Audit Services

Attachment

Memorandum

MTA New York City Transit

Date June 12, 2018

To Joseph Lhota, Chairman, MTA

From Andy Byford, President, NYC Transit

Re **Response To New York City Comptroller Letter Report #SZ18-116A**

Buses management agrees with the audit recommendation to *"periodically perform tests to ensure that their wireless network and USB charging capabilities, once installed, are functioning properly".*

cc: D. Irick
M. Ribosh
S. Nair
J. Higgins
R. Grey-Stewart