



TOPEKA METRO

**REQUEST FOR BIDS
Technology for Buses
TM-19-03**

**Appendix 2
Functionality and Quantities**

REQUIRED

QUANTITY

Equipment will be installed on twenty-six (26) fixed route buses. Please refer to Appendix 1 for existing equipment on the buses.

AUTOMATED VEHICLE LOCATION/COMPUTER AIDED DISPATCH (CAD/AVL)

- Integrate with existing headsigns (all existing equipment is detailed in Appendix 1)
- Integrate with or replace existing automated passenger counters
- Provide real-time location of buses
- Provide location updates every 15 seconds or less
- 4G LTE cellular connectivity
- Ability to easily import initial route and stop information
- Ability to easily and intuitively update routes and stop information from a desktop interface, including the input of temporary stops and detours
- Ability to schedule detours and route deviations which are reflected in all internal and customer-facing real-time maps
- Ability to add or modify bus annunciator announcements from the desktop
- Ability to update inside and outside headsigns messages from the desktop including upcoming stops and PR messaging
- Ability to define the geofence to trigger annunciators and head signs from the desktop
- Ability to define approach heading into geofences to trigger events for annunciator and headsign output
- Provide data feed using an industry-standard data format for real-time signage at stations/stops including, but not necessarily limited to, next 5 arriving buses with arrival times, and routes served
- Provide open API feed to customer-facing transit apps, e.g. Transit App, including the ability to export GTFS and GTFS-RT feeds
- Provide backend support for dispatch and other bus operations
 - Route performance analytics
 - Real-time vehicle location mapping with ability to monitor speed, buses departing from defined routes, adherence to on-time performance (OTP)
 - Ability to playback historic bus movement, speed, etc.
 - Run-time, dwell time, OTP, and headway dashboards and/or reports
 - National Transit Database (NTD) certified bus operating reports
- Provide real-time map of bus positions and stops for internal and customer-facing uses (web site, digital displays)

- For internal real-time mapping, the ability to display the following information on mouse-over or click on vehicle/stop icon:
 - Bus
 - Speed
 - Bus number/Operator designator
 - Route designator
 - Upcoming stop arrival times
 - Stop
 - Stop name and designator
 - Routes served
 - List of next arriving buses and arrival times
- Ability to predict arrival times based on both timepoints only and all stops
- Headsigns on buses running interlined routes will update automatically upon approach to the station or other interlining location
- Ability to run reports without vendor intervention or additional cost
- Support for custom report creation with no additional cost
- Provide reporting tool for system performance including, but not limited to: downtime, apps/website usage, number of customer support requests
- Ability for up to 30 internal users, or other authorized users, to access the CAD system at the same time

CUSTOMER-FACING APP/WEBSITE

- Ability to view on both desktop computers and iOS and Android smartphones with dedicated smartphone app or automatic resizing optimized for mobile screens
- Display of bus locations in real-time
- Display location of nearest bus stops based on customer smartphone GPS location
- For a defined stop, display list of routes served and upcoming bus arrivals with predicted arrival times based on real-time bus performance
- Display full route map with ability to display select individual routes
- Provide link to route data on Topeka Metro website
- Ability for Topeka Metro staff, from the desktop, to post and display system-wide notifications and service alerts to the customer-facing app/website on a scheduled or ad hoc basis

AUTOMATED PASSENGER COUNTERS (APCs)

- Integrate with (or replace) 10 currently installed APCs (all existing equipment is detailed in Appendix 1)
- Ability to use GPS data to provide boarding/alighting counts for specific locations
- Ability to transmit APC data in real-time via cellular data connection

- Ability to store and wirelessly transmit data without loss of data upon return to garage if cellular data service is lost
- Ability to produce passenger reports, including average trip length in support of NTD required reporting

WI-FI ROUTERS – Allow passengers to access internet services while traveling

- 4G LTE cellular connectivity compatible with cellular service providers' fastest service level
- Ability to filter content and throttle data usage based on type of use, e.g. passenger internet browsing

HARDWARE

- All equipment will be available off-the-shelf, non-proprietary, commercial-grade designed for transit use
- All equipment will be warranted for 3 years from date of installation
- Will support onboard or remote login of operators
- All equipment will provide for battery backup and internal storage to retain data in case of an interruption in power or cellular communications
- Operating temperature range: -40° – 120° F

VENDOR SUPPORT

- Topeka Metro will retain exclusive ownership of all data produced by on-board systems
- Vendor will develop and supply custom reports at no additional cost
- All collected data will be stored for the duration of the service agreement with the ability to transfer data in an openly accessible format at the end of the service agreement for no additional cost
- All collected data will be accessible to Topeka Metro at all times during the duration of the service agreement at no additional cost
- Vendor will supply on-site training for all dispatchers, supervisors, operators, administrators, planners, and maintenance staff at no additional cost
- Vendor will provide additional remote training via webinar and phone as requested at no additional cost for the duration of the service agreement
- Vendor will supply full Users' Manuals for systems and software at no additional cost
- Vendor will be proactive in development of improvements in the supplied products and will provide the most recent stable updates for software and other systems at no additional expense and provide the necessary support and training to ensure successful deployment
- Vendor will notify Topeka Metro (the Agency) of all software updates and provide training to implement any additional functionality and capabilities
- Vendor will include a maintenance/hosting agreement for the first 5 years along with an annual breakdown of the cost to add up to 5 additional one-year extensions

PREFERRED

CAD/AVL

- Ability to reuse previously defined detours
- For internal Agency real-time mapping, ability to:
- Customize bus “flags” on real-time map with bus numbers, driver designators, and OTP status, and other bus-specific information
- Display the following information on mouse-over or click on icon:
 - Bus
 - Dwell time
 - Stop
 - Amenities and accessibility
 - Photos
- Ability to set alerts for performance parameters, e.g. OTP parameters, bus speed
- Display available open capacity of bus based on APC data
- Ability to define a speed fence where alerts can be sent if an Agency defined speed is exceeded
- Ability to provide on-bus annunciator announcements in Spanish

CUSTOMER-FACING APP/WEBSITE

- Display available open capacity of bus based on APC data
- Ability to push notifications about “favorite” stops and routes to app/website users
- Ability to display amenities available at a given stop
- Ability to display a photo of a given stop

APCs

- Vendor will provide all needed services to attain NTD certification of passenger counts, average trip length, and all other NTD required passenger reports at no additional charge.

PASSENGER CUSTOMER SERVICE SUPPORT

- Automated text response service which delivers information about upcoming bus stop arrivals based on customer location or selected bus stop
- Automated voice response service which delivers information about upcoming bus stop arrivals based on selected bus stop

HARDWARE

- All equipment will be warrantied for 5 years from date of installation
- All onboard equipment uses wired connections
- Router(s) will be 5G forward-compatible
- Ability to live-stream on-board surveillance (cameras and audio) through secure link to Topeka Metro operations or authorized law enforcement
- Support for LCD displays onboard buses
- Ability to integrate with existing fareboxes (All existing equipment is detailed in Appendix 1)
- Ability to trigger the playback of MP3 audio files based on geofences with files and geofences loaded remotely from the desktop

OPTIONAL

DMS – Real-time Dynamic Message Signs

- Displays will be installed at the main bus station, transfer centers, and selected shelters
- Ability to take a data feed from the CAD/AVL solution specified above to provide:
 - Real-time status update on fixed route buses arriving at a particular stop
 - Service outage alerts
- The signage system should allow users to perform functions from the desktop, including but not limited to, the following:
 - Post emergency and safety alerts to a specific, multiple specific, or all signs
 - Ability to monitor the health of the system and its components
 - Ability to assign routes to signs
 - Ability to configure each sign in terms of update rate, sequencing of estimated times of arrival, messages, current time display, and other similar functions
 - Ability to declare a sign “out of service” and post a message on the sign to that effect
 - Ability to adjust other system operational parameters as required
 - Ability to add authorized users
 - Ability to track changes to notification content and messages dispatched
- Displays
 - Displays will be ADA compliant
 - Ability to display multiple lines of monochrome or color characters
 - Ability to display entire 128 ASCII character set
 - Size/Capabilities, seventeen (17) total
 - Two (2) with a minimum of 12 lines displayed, AC powered
 - Three (3) with a minimum of 4 lines displayed, solar powered
 - Two (2) with a minimum of 3 lines displayed, solar powered
 - Three (3) with a minimum of 2 lines display, solar powered
 - Seven (7) with a minimum of 1 line displayed, solar powered
 - Solar powered signs will have battery backup sufficient to operate 24 hours on full charge
 - Vendor will install signs and assure connectivity and functionality with CAD system and DMS Administration software