ALAMEDA-CONTRA COSTA TRANSIT DISTRICT

STAFF REPORT

MEETING DATE: 5/14/2025   **Staff Report No.** 25-271

TO: **AC Transit Board of Directors**

FROM: **Kathleen Kelly, Interim General Manager/Chief Executive Officer**

SUBJECT: **Service Disruptions Notifications in Real Time**

BRIEFING ITEM

AGENDA PLANNING REQUEST: ☒

RECOMMENDED ACTION(S):

Consider receiving a report related to the communication of detours and other service disruptions in real time [Requested by Director Walsh - 6/26/24].

Staff Contact:
Claudia Burgos, Interim Executive Director of External Affairs, Marketing & Communications
Ahsan Baig, Chief Information Officer

STRATEGIC IMPORTANCE:

Goal - Convenient and Reliable Service
Initiative - Service Quality

Accurate real-time transit information supports the goal of convenient and reliable service and generally increases transit ridership.

BUDGETARY/FISCAL IMPACT:

There is no fiscal impact associated with receiving this report.

Two additional full-time Social Media Coordinators would enhance detour notifications by providing coverage during off hours and would cost approximately $320,000 per year. Staff has not proposed adding any Coordinators, in light of the budget shortfall.

Additional technological improvements to the CAD/AVL system are currently being scoped by the Innovation & Technology Department and there would be costs associated with those improvements.

BACKGROUND/RATIONALE:

At AC Transit, information about bus movements is provided by a Computer Aided Dispatch/ Automatic Vehicle Locator (CAD/AVL) system furnished by vendor Clever Devices (Clever). Clever software and hardware are present on all buses and in the Operations Control Center (OCC). Staff use Clever hardware and software to communicate with bus operators and to update public-facing live information, including AC Transit's real-

time information (available on web, via text message, and via the AC Transit Official App) and the industry-standard General Transit Feed Specification (GTFS), used by third-party apps such as Google Maps and Transit app. The District also uses software tools by Swiftly Inc. in conjunction with Clever CAD/AVL to enhance Realtime and GTFS live predictions and to provide staff with easy-to-access live bus information.

When there are unplanned changes to bus service (usually called disruptions), staff from several departments work to update the CAD/AVL system and provide information to riders. The barriers to providing completely accurate real-time information are both technical and workflow related. The complexity of workflows addressing disruptions depends on the type of disruption, the degree of automation, and the digital tools to be employed. This report provides an overview of the existing processes used to respond to unplanned disruptions, practices used by peer agencies, and work underway to improve disruption management and information for our riders.

For more information about how staff communicate planned disruptions and detours, please see Staff Report 25-162, presented on March 12, 2025.

Disruption Workflows

Detours and Stop Closures
These types of complex unplanned disruptions are the most challenging to manage. Once an operator calls in to the Operations Control Center (OCC) about an unexpected barrier to a route, a series of time and labor-intensive activities take place with the aims of ensuring operator and rider safety. The primary objectives of the activity are instructing operators on how to proceed, and notifying riders of the disruption.

Detour Management
OCC and Transportation Supervisors in the field work in collaboration to investigate the service disruption by communicating with operators and visiting the location. Staff must identify a safe detour and communicate that detour to operators, including turn-by-turn directions, for buses to proceed in service, or for other buses to continue to serve an impacted route or stop. The processes involved in detour management are time-consuming, therefore, some detour management activities are only undertaken if the detour is expected to last an hour or longer, so that the detour is not over by the time the detour management activities are put in place. OCC Controllers use past experience with different kinds of disruptions as well as field information to estimate the length of the disruption. OCC determines the detour route and publishes it in the CAD/AVL system, using a Clever Devices software feature called "Dynamic Detour." A Dynamic Detour is an alternate bus route that is published in the CAD/AVL system for the affected line to follow. Once a Dynamic Detour is entered in the system, staff members work to provide public notification.

Public Notification
Service Alerts for unplanned detours are the responsibility of Social Media Coordinators (SMCs). While AC Transit buses run 24/7, SMCs generally work Monday-Friday 7am to 7pm, and Thursday-Monday (including the weekend) from 3pm - 11pm. These hours cover 84.8% of passenger trips as estimated by automated passenger count data for a recent typical week, and a greater percentage of disruptions. When a social media coordinator is out sick, on vacation, or off duty, there are gaps in coverage, so the process outlined below only applies when there is a social media coordinator on duty. Marketing, Communications, and Customer Service department managers step in when possible for a major disruption if SMCs are not on duty. The District

currently has three SMCs.

SMCs are embedded in the OCC to facilitate communication between the OCC and the SMCs and to allow access to certain secure systems that can only be accessed inside OCC. Once a detour is finalized by controllers and given to a SMC for public notification, it takes time to write up the detour for the public, double-check the detour, and enter the information into Clever's software. That allows for a Service Alert (a short text-based message in a format defined by GTFS) to be posted electronically to the line and stop, which will be shown to the rider when they search for that line or stop in AC Transit's RealTime website, the AC Transit Official App, and in the GTFS feed that is shared with third parties like Google Maps. Clever's software applies a service alert but does not explicitly state that the stop is closed when accessed digitally, so a rider using AC Transit's tools must read the service alert for information. Google Maps and some other GTFS-based applications display the "effect" of a service alert, so "Stop Closed" is displayed to the rider when appropriate.

Detours may also be posted to the District's social media accounts, displayed on the District website, or emailed as eNews, depending on how widespread and impactful the disruption is. Push notifications with the AC Transit Official App are an option but the current app makes it difficult to time them appropriately. SMCs have additional job duties, including responding to customer inquiries and feedback received via social media channels; sometimes riders alert the District to operational barriers via social media before operators encounter them, so SMCs can also provide information to IOCC to commence or aid an investigation of a disruption.

In addition to electronic notifications of disruptions, if the coach stop is accessible during the disruption, road supervisors post signage at the closed stops, . This can take considerable time given that a road supervisor must drive to the impacted locations as well as the route endpoints, and then return to take the notices down once a bus has resumed its regular route.

Trip Cancelations

When bus trips are canceled, OCC updates the CAD system to show those trips as canceled. Full-route cancelations and full-route reinstatements are automatically reflected in Realtime/GTFS as well as on a dedicated web page, actransit.org/canceled-trips. However, when a trip is canceled or reinstated mid-route, it is difficult to update the system in a timely way, and currently Clever does not support a reinstatement message to riders.

Data Failures and Errors

While relatively rare, given the large number of AC Transit daily trips, data failures can be experienced. Data failures can include absent location tracking or errors in counting passengers, and can result erroneous predictions, ghost buses, or incorrect crowding information. Delays or mistakes in entering data can happen as well, and elements of the current workflow that require entering or recreating duplicate information are particularly vulnerable to errors.

Peer Transit Systems and GTFS

Staff have been unable to identify an example of a comparable bus transit system providing completely accurate and up-to-the-minute information to riders about unplanned disruptions without dedicating substantial staff resources. Locally, Muni, Samtrans and VTA rely on communications professionals using social

media to alert riders during defined coverage hours. Muni also appends service alerts to real-time digital information, expressed via their own system as well as GTFS, without using as many GTFS features (such as cause and effect) as AC Transit. Rail-based systems like BART and Caltrain operate on fixed lines with far fewer trips, stops, routes, hours of operations, and possible detours, and so they are able to provide some customer information during all hours of operation. Communications specialists at BART and Caltrain are available limited hours and on-call to notify the public of the most impactful disruptions. District staff continue to research other transit systems' approach to notifications and undertake other research into best practices.

The General Transit Feed Specification (GTFS) is the industry-standard way of communicating machine-readable transit information in an open format. Currently AC Transit provides peer-leading information in the GTFS format. GTFS contains specifications for disruptions-related information that are not yet fully supported by software vendors or rider-facing applications. Staff expect further improvements in disruptions communications as producers and consumers of GTFS update to the latest specifications.

The Metropolitan Transportation Commission, and the state of California, offer technical assistance for agencies to publish transit information using GTFS, and provide additional ways to access these data such as the 511-telephone system. District staff work with 511.org to ensure that regional transit information accurately reflects the District. As outlined above, AC Transit provides more real-time information than peer agencies, and remaining gaps are primarily operational in nature.

The agenda planning request provides some examples of other agencies improving their disruption notifications. Transit App - a third-party for-profit vendor - offers an AI-powered prediction service that seeks to capture detours and communicate them to riders, but staff analysis finds that it would not offer an improvement over the District's current practices, as Transit App's algorithm takes about an hour to determine that there is a detour, and risks providing erroneous information to riders. Swiftly Inc. offers a competitor to Clever's Dynamic Detour module, but it does not appear to be significantly better than Clever's current and near-future offerings. Overall, staff analysis finds that AC Transit leads or matches all of its peers in communicating disruptions to passengers.

Summary of Obstacles to Real Time Disruptions Notifications

The following factors limit staff's ability to get information about unplanned detours and disruptions to riders in real time.
- High volume and fast pace of work in the Operations Control Center (OCC)
- Limited Social Media Coordinator staffing at OCC
- Duplicate information is entered into the same system at various points
- Difficult to indicate stop closures in Clever and Realtime/GTFS
- Time-consuming process of drawing detours and marking stops
- Information that's contained in Clever has to be extracted and posted to the public by a staff member
- Indirect relationship between Clever Devices software and industry standard GTFS
- Far-flung bus routes in some areas and traffic congestion in other areas limit ability of road supervisors to post closure notices at stops

Improvements underway

Several activities are underway to enhance real time notification of service disruptions. As part of updating the AC Transit Official App, staff are refining push and other app notification features for communicating disruptions. Crowding information has been provided in RealTime since 2020, and crowding information has been added to the GTFS standard. Staff is refining processes around crowding information to improve accuracy and usefulness, including how it is calculated and communicated to the rider. Additionally, a bug regarding crowding notifications in the mobile app was identified and fixed.

Clever Devices software upgrades are rolling out over the course of the calendar year. These improvements are likely to ameliorate many of the most time-consuming and least user-friendly aspects of the detour process. The planned improvements will allow controllers to:
- save and reuse detours
- schedule detours for arbitrary and repeating times
- more easily identify impacted stops
- improve detour driving direction dissemination to bus operators
- easily note "effect" of service disruptions (e.g., stop closed)

Planned upgrades also include additional support for the new GTFS protocols for detours. Staff is optimistic about the improvements expected from these upgrades and awaits their planned installation by the end of the calendar year.

Staff is currently scoping potential additional software updates to the CAD/AVL system, whether furnished by Clever Devices or another vendor. Improvements to disruption notifications will be included as a prioritized need. AC Transit's IT Department is working with multiple departments to scope and cost out potential improvements to bring forward.

Next Steps
As detailed above, improvements to Clever are underway, and staff are scoping additional CAD/AVL software needs. Staff are exploring app notification improvements, software solutions, and industry best practices. Due to the nature of running bus service in a large and highly urbanized area, it is unlikely that all disruptions to planned service will be instantaneously communicated to riders, but planned improvements should address the majority of disruptions in a timely fashion. Staff propose to return to the Board in one year with updates on improvements.

ADVANTAGES/DISADVANTAGES:

Advantages: Improvements to real time notification of transit disruptions enhance perceived reliability and support quality service for riders. Work is currently underway to make improvements without significant direct costs to the District, and to estimate costs for additional technological improvements.

Disadvantages: Further improvements may require additional staff or financial resources.

ALTERNATIVES ANALYSIS:

Staff could cease work on disruptions improvements and focus technical and other resources on other priorities. Staff could communicate to riders that unplanned disruptions are inevitable and cannot be fully

captured by notifications.

PRIOR RELEVANT BOARD ACTION/POLICIES:

Staff Report 25-162

ATTACHMENTS:

1.   Disruptions Notifications Overview Presentation
2.   Agenda Planning Request Form

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