# Paratransit Communications Capabilities

A White Paper

September 2019

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# Overview

The purpose of this White Paper is to:

1) Summarize the main technical communications configurations for paratransit agencies in the Bay Area and associated challenges that arise from inadequate communications and lack of redundancies;

2) Describe the vulnerabilities to technical communications systems used by paratransit agencies, particularly when they are not interoperable with other paratransit providers and first responders;

3) Offer possible solutions for consideration, based on best practices and options to link into the appropriate interoperable communications area.

This White Paper acknowledges that the presence or lack of mutual aid agreements, memoranda of understanding (MOUs), and policies/plans/procedures that directly impacts critical communications capabilities and in turn, a paratransit agency's effectiveness to respond readily and efficiently during disasters. While in some instances, gaps may be addressed with the addition or upgrade of equipment and physical infrastructure, there also are opportunities where gaps can be addressed and existing regional assets can be leveraged through the development and institution of policies/plans/procedures, and agency-to-agency agreements related to critical communications capabilities.

As a point of clarification, this White Paper speaks to technical and logistical communications capabilities to internal stakeholders (within paratransit agencies, among paratransit agencies, with Emergency Operations Center/s, local-state-federal government agencies, and with the first responder community.) It is *not*

*meant* to address external communications and messaging issues to the public at large.

This White Paper focuses on communications capabilities of paratransit agencies serving the Bay Area, including:

- East Bay Paratransit Consortium (EBPC)

- Eastern Contra Costa Transit Authority (ECCTA)

- Livermore Amador Valley Transit Authority (LAVTA)

- Marin Transit

- Napa Vine Transit

- Petaluma Transit

- SamTrans

- Santa Rosa Paratransit

- Soltrans

- Sonoma County Transit

- Union City Paratransit

- Santa Clara County Transportation Authority Paratransit (VTA)

- Western Contra Costa Transit Authority (WestCAT)

# Background

Transportation plays an essential support role during incidents that require a participatory paratransit response. A paratransit provider's focus is to serve patrons limited by access and mobility per standards outlined in the Americans with Disabilities Act (ADA) and Title VI of the Civil Rights Act. Paratransit agencies provide flexible passenger transportation that does not follow fixed routes or schedules and can vary considerably by the degree of flexibility they provide patrons. Paratransit services can consist of a taxi or small bus that runs on a loosely defined route, stopping to pick up or discharge passengers on request, or can be a fully demand-responsive transport that offers on-demand, call-up, and/or door-to-door service from virtually any origin to virtually any destination in a service area.

Paratransit services are operated by public transit agencies, community groups, or non-governmental organizations (NGOs), as well as for-profit private companies and operators. Paratransit services exist throughout the Bay Area and are either complementary paratransit (as required by the ADA), or general public demand-response transportation.

Paratransit service providers have a special role in supporting the mobility of people within their service areas, including people with access and functional needs (AFN), and in fulfilling critical transportation requirements during emergencies. Paratransit's primary responsibility during emergencies is to provide transportation services to existing customers. Generally speaking, the types of paratransit vehicles provided and the degree of flexibility in service delivery is determined by the agency's capabilities and system capacities, including internal communications between an agency's employees (staff and contracted), as well as externally (to other

transportation providers, emergency management, and first responders locally and regionally).

Transit and paratransit agencies are critical transportation assets and service providers throughout the Bay Area, during normal operations as well as high-demand periods, such as during unplanned emergency events, both natural and human-caused. These 13 agencies are valuable partners in emergency preparedness, response, and recovery operations across a wide geographic footprint that includes urban, suburban, and rural areas in an 11-county region. However, the disparities in the communications capabilities of these paratransit providers – particularly relative to reliability, redundancy, and interoperability – require careful examination to address vulnerability and service inefficiencies during local and regional emergencies.

The observations and best practices put forth in this White Paper are deliberately consistent with the Federal Emergency Management Agency's (FEMA) National Preparedness Goal (NPG) to "focus on enabling the participation in national preparedness activities of a wider range of players from the private and nonprofit sectors, including nongovernmental organizations and the general public, in conjunction with the participation of all levels of governmental in order to foster better coordination and working relationships."[1] The NPG is capabilities-based and is organized into the five mission areas: (1) Prevention; (2) Protection; (3) Mitigation; (4) Response; and (5) Recovery.

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[1] US Department of Homeland Security, Federal Emergency Management Agency. National Preparedness Goal, 2nd Edition, 2015.

*The NPG identifies 32 distinct core capabilities (including critical transportation, operational coordination, and situational awareness and others).*

The core capabilities serve as preparedness tools and provide a common language for preparedness activities. These capabilities are highly interdependent and require: the use of existing preparedness networks and activities; coordination of efforts; training and exercise programs; innovation in approach to maximize resources, including emerging technologies; and ensure that the administrative, finance, and logistics systems are in place to support these capabilities.

# Table 1: National Preparedness Goal Core Capabilities by Mission Area

| Prevention | Protection | Mitigation | Response | Recovery |
|---|---|---|---|---|
| Planning | | | | |
| Public Information and Warning | | | | |
| Operational Coordination | | | | |
| Intelligence and Information Sharing | | Community Resilience | Infrastructure Systems | |
| Interdiction and Disruption | | Long-term Vulnerability Reduction | | |
| Screening, Search, and Detection | | Risk and Disaster Resilience Assessment | | |
| Forensics and Attribution | Access Control and Identity Verification<br><br>Cybersecurity<br><br>Physical Protective Measures<br><br>Risk Management for Protection Programs and Activities<br><br>Supply Chain Integrity and Security | Threats and Hazards Identification | Critical Transportation<br><br>Environmental Response/Health and Safety<br><br>Fatality Management Services<br><br>Fire Management and Suppression<br><br>Logistics and Supply Chain Management<br><br>Mass Care Services<br><br>Mass Search and Rescue Operations<br><br>On-scene Security, Protection, and Law Enforcement<br><br>Operational Communications<br><br>Public Health, Healthcare, and Emergency Medical Services<br><br>Situational Assessment | Economic Recovery<br><br>Health and Social Services<br><br>Housing<br><br>Natural and Cultural Resources |

# The Challenge

Emergency responders, supporting agencies, and response partners have long had inadequate and unreliable communications that have compromised their ability to perform mission-critical duties with optimal effectiveness. Responders often have difficulty communicating when adjacent agencies are assigned to different radio bands, use incompatible proprietary systems and infrastructure, and lack adequate standard operating procedures and effective multi-jurisdictional, multi-disciplinary governance structures.

The issue of paratransit critical communications capacity in the Bay Area has arisen in several contexts in recent history. These issues are captured: in the Bay Area UASI Paratransit Toolkit, which identifies critical gaps in paratransit emergency preparedness and provides guidance and multiple resources to support all-hazards emergency planning efforts for both planned and unplanned events; as feedback acquired during two workshops that examined this toolkit and discussed the need for information sharing and mutual aid; and in the development of the Bay Area UASI Paratransit Critical Capabilities Assessment, which examines strengths and identified areas of improvement across all Bay Area paratransit agencies relative to emergency preparedness and response capabilities.

During the recent North Bay fires, an estimated 90 percent of commercial cell towers were knocked out of service. This became problematic for the many paratransit agencies that rely on staff members and contracted drivers using cell phones for communication during both normal and emergency operations.

The need for this White Paper is emphasized by the divergent sizes of paratransit agencies operating in the Bay Area, both publicly and privately operated; the significant differences in geographic service areas and numbers of patrons among agencies; and the variances in fleets, staff depth, and support facilities (including communications capacities). Without predictable, reliable communications capacities that are both internal (from dispatch to and among drivers) and external (to the EOC, other paratransit agencies, and first responders), this critical transportation asset is not being fully leveraged as a vital resource in emergency response and recovery efforts in the Bay Area.

## Prevailing Issues

As called out in the Paratransit Critical Capabilities Assessment, Paratransit Toolkit, workshops, and follow-on communications with paratransit agency representatives, following are the prevailing communications capabilities issues that have and could impact the effectiveness of Bay Area paratransit agencies' communications and response capabilities during emergencies, both locally and regionally. They do not necessary appear here in priority order.

1) Currently, the majority of paratransit agencies do not have situational awareness or a common operating picture during emergencies. Situational awareness is enhanced in an environment of reliable communications, both voice and data.

2) Most paratransit service operations are contracted, which means that paratransit drivers are not mandated Disaster Service Workers (DSWs) under California state law. Unaddressed, this can result in a communication (and response) gap between drivers, dispatch, other agencies, and first responders.

3) The Bay Area Transit Operators Mutual Aid Agreement does not directly include paratransit.

4) Many agencies reportedly do not have formal MOUs or MOAs with neighboring transit agencies or vendors. While relationships are important to address gaps related to surge, formal agreements enable all parties to understand expectations, available resources, and roles. This is especially important in the instance of staff turnover, where relationships may not exist, or when cell phone service (on which many drivers rely exclusively) is compromised or overloaded.

5) Protocols and guidance are needed for when paratransit agencies should manage mutual aid vertically – through the local EOC – and when it should be managed laterally, from agency-to-agency. This is of direct relevance to communications and response capabilities, as many agencies' drivers rely on person cell phones as a primary – and often exclusive – communications conduit.

6) Bay Area paratransit agencies do not have a clear process or procedures by which they communicate to gain situational awareness or a common operating picture. Communications need to reliably occur both vertically and laterally to deploy critical transportation assets efficiently and effectively during emergencies.

7) Paratransit and fixed-route transit often do not coordinate their efforts; in an emergency, this could lead to gaps or duplication of effort. Communications capabilities and protocols are key here.

8) Many paratransit agencies rely on staff and drivers (many of whom are contracted) to use personal cell phones serviced by commercial vendors and which rely on cell phone towers that are not hardened, resilient infrastructure.

These are vulnerable to earthquakes, fires, and other Bay Area hazards and vulnerabilities.

9) There is an unrealistically heavy reliance on social media and web postings to keep drivers (and customers) apprised of service interruptions, suspension/resumption of service, and schedule changes. While this offers real-time accessibility among patrons, as well as drivers with smart phones and tablets in their vehicles, this means of internal communication can be easily compromised and unavailable during emergencies if communications infrastructure is interrupted, compromised, or overloaded.

10)    There are unexplored opportunities to overcome perceived barriers to entry to more reliable modes and means of interoperable communications. A cost-benefit analysis is necessary to evaluate all considerations.

# Digital Radio Systems in Bay Area

Following are the digital radio systems in the Bay Area:
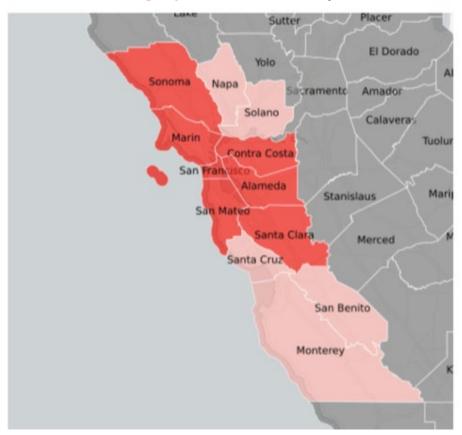
- Alameda and Contra Costa County: EBRCSA - East Bay Communications System (EBRCS)

    o Owner/Manager: East Bay Regional Communications System Authority

- Marin County: Marin County is in planning and buildout stage for its P25 system

    o Owner/Manager: Marin Emergency Radio Authority (MERA)

- San Francisco City and County: San Francisco 700 MHz Interoperability System

- o Owner/Manager: San Francisco Department of Emergency Management

- San Mateo County: San Mateo Interoperable Regional Communications System (SMIRC)

  - o Owner/Manager: San Mateo Information Services Division

- Santa Clara County: Silicon Valley Regional Communication System (SVRCS)

  - o Owner/Manager: SVRIA

Note: Sonoma County is a member of the Bay Area Regional Interoperable Communications Systems Authority (BayRICS), but does not currently have a digital, standards-based system.

**Figure 1: Bay Area County Membership in Bay Area UASI and BayRICS (Note: Areas colored light pink are UASI; dark pink areas are BayRICS.)**

# The Interoperability Continuum: A National Best Practice

Designed to improve emergency response communications and interoperability, the "Interoperability Continuum" was developed by the US Department of Homeland Security's SAFECOM program as a tool to assist emergency response agencies and policymakers to plan and implement interoperability solutions for data and voice communications. Considered a practitioner-driven approach, the intent of the Interoperability Continuum is to create the capacity for increased levels of interoperability by developing tools, best practices, and methodologies that emergency response agencies can put into effect.

The Interoperability Continuum supports the National Preparedness Strategy and aligns with national frameworks such as the National Response Framework, the National Incident Management System, the National Emergency Communications Plan, and the National Communications Baseline Assessment.

## Key Principles

1. Gain leadership commitment from all disciplines (e.g., EMS, fire-rescue response, and law enforcement). Note: While paratransit is not among the "first-tier" of the disciplines typically considered "responders," paratransit plays a vital role in the transportation of access and functional needs (AFN) populations and as such, represents a critical asset during emergencies.

2. Foster collaboration across disciplines through leadership support.

3. Interface with policymakers to gain leadership commitment and resource support.

4. Use interoperability solutions regularly.

5. Plan and budget for ongoing updates to systems, procedures, and documentation.

Ensure collaboration and coordination across all Interoperability Continuum elements.

# Five Critical Success Elements

The Interoperability Continuum can be used by jurisdictions to track progress in strengthening interoperable communications and identifies five critical success elements that must be addressed to achieve a sophisticated interoperability solution: governance; standard operating procedures; technology; training and exercises; and usage of interoperable communications.

**Figure 1: Interoperability Continuum Five Critical Success Elements**

Source: US Department of Homeland Security, Office for Interoperability and Compatibility, SAFECOM Program, Interoperability Continuum.

## Governance

Communications interoperability cannot be solved by any one entity but requires a partnership among emergency response organizations across all levels of government within an identified region in a pre-disaster environment. A governing structure to address interoperability issues will improve the policies, processes, and procedures of any local or regional efforts to enhance communication, coordination, and cooperation among partnering responders. A governance framework facilitates collaborative decision-making around a common objective. Collaboration should involve agencies and organizations that may be critical in supporting the mission of emergency responders, including paratransit agencies, other transportation providers, and beyond.

While technology is typically seen as being at the heart of improving interoperability, it is not the sole driver. Importantly, successful implementation of data and voice communications technology is supported by strong governance and depends on effective collaboration and training among participating agencies and jurisdictions.

Additionally, communications interoperability is not a one-time investment. Once a governing body is set up, it must be prepared to meet on a regular basis, drawing on operational and technical expertise to plan and budget for continual updates to systems, procedures, and training and exercise programs. An interoperability program should include both short- and long-term solutions to bolster sustainability.

Intelligence gathering has yielded the following:

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- » Individual agencies working independently tend to lack coordination with transportation partners and other responding organizations;

- » Informal coordination between agencies results in loose agreements that provide minimal incident interoperability and are at risk for unreliability during demand surge periods;

- » Key, multi-disciplinary staff and partners who regularly collaborate create an ideal environment for governance to advance interoperability throughout the Bay Area; and

- » Formal, written agreements (MOUs/MOAs) promote optimal interoperability as partners know with a measure of certainty what resources may be available to them during demand surge periods.

## Standard Operating Procedures

Standard operating procedures (SOPs) are formal written guidelines or instructions for incident response that typically have both operational and technical components. Many paratransit agencies in the Bay Area do not have established SOPs to request services from or to provide services to other transportation providers in the region. In several cases, requests are handled by one or two people and are based solely on existing relationships (which can change as people move, retire, or change jobs). Established SOPs enable all types of emergency responders to successfully coordinate an incident response across jurisdictions. Clear and effective SOPs are essential to develop and deploy interoperable communications solutions. Regional communications SOPs for multi-agency/multi-discipline/multi-hazard responses can be an integral step to achieving optimal interoperability and should be consistent with the National Incident Management System (NIMS).

Moreover, when individual agency SOPs only exist only within individual agencies and are not shared, the result is an uncoordinated procedure and/or incompatible data systems that can hinder effective multi-agency/multi-disciplinary emergency response. The disparities in SOPs among Bay Area paratransit agencies became particularly evident during recent fire incidents, when some staff and drivers could not be reached or were not available to respond to calls for assistance.

> *It is suggested that relative to advancing interoperability, paratransit agencies consider joint SOPs for planned events, before there is a demand for surge-level capacities.*

## Technology

Technologies should meet the needs of those on the frontlines, including all in response capacities, such as paratransit drivers, dispatchers, and those within the activated EOC. Technology choices should address regional needs, existing infrastructure, costs vs. benefits, necessary redundancies, reliability, and sustainability. Technologies must be scalable to effectively support planned events and unplanned emergencies of various sizes. Security and authentication challenges should always be considered.

While there are a variety of technology data options, each has its own considerations, concerns, and limitations.

### Swap Files

Swapping files involves the exchange of stand-alone data/application files or documents through physical or electronic media (e.g., universal serial bus devices,

network drives, emails, faxes). This process effectively creates a static "snapshot" of information in a given time period.

## *Limitations*

Though swapping files requires minimal planning and training, it can become difficult to manage beyond one-to-one sharing. With data frequently changing, there may be issues concerning the age and synchronization of information, timing of exchanges, and version control of documents. Each of these issues can hinder real-time collaborative efforts. In addition, the method of sharing files across unprotected networks raises security concerns.

## Common Application

The use of common proprietary applications requires agencies to purchase and use the same or compatible applications and a common vocabulary (e.g., time stamps) to share data. Common proprietary applications can increase access to information, improve user functionality, and permit real-time information sharing between agencies.

## *Limitations*

However, the use of common proprietary applications requires strong governance to coordinate operations and maintenance among multiple independent agencies and users. These coordinated efforts are further compounded as the region expands and additional agencies use applications. Common proprietary applications also limit functionality choices, as all participating agencies must use compatible applications.

## Custom-Interface Applications

These allow multiple agencies to link disparate proprietary applications using single, custom "one-off" links or a proprietary middleware application. As with common applications, this system can increase access to information, improve user functionality, and permit real-time information sharing among agencies. Improving on common applications, this system allows agencies to choose their own application and control the functionality choices. However, if using one-to-one interfaces, the use of multiple applications requires custom interfaces for each linked system. As the region grows and additional agencies participate, the required number of one-to-one links will grow significantly.

### *Limitations*

Proprietary middleware applications allow for a more simplified regional expansion. However, all participants must invest in a single "one-off" link to the middleware. Additionally, custom-interfaced applications typically require more expensive maintenance and upgrade costs. Changes to the functionality of linked systems often require changes to the interfaces, as well.

## One-Way Standards-Based Sharing

One-way standards-based sharing enables applications to "broadcast/push" or "receive/pull" information from disparate applications and data sources. This system enhances the real-time common operating picture and is established without direct access to the source data. This system can also support one-to-many relationships through standards-based middleware.

### *Limitations*

One-way standards-based sharing is not interactive and does not support real-time collaboration between agencies.

## Two-Way Standards-Based Sharing

Two-way standards-based sharing is the ideal solution for data interoperability. The Motorola radios in use throughout the Bay Area are two-way standards-based devices. Using standards, this approach permits applications to share information from disparate applications and data sources, and to process the information seamlessly. As with other solutions, a two-way approach can increase access to information, improve user functionality, and permit real-time collaborative information sharing between agencies. This form of sharing allows participating agencies to choose their own applications. Two-way standards-based sharing does not face the same problems as other solutions because it can support many relationships through standards-based middleware. Building on the AT&Tributes of other solutions, this system is most effective in establishing interoperability.

There are also several voice options, each presenting with its own considerations, concerns, and limitations.

## Swap Radios

Swapping radios, or maintaining a cache of standby radios, is an age-old solution.

### *Limitations*

This option is time-consuming, management-intensive, and likely to provide limited results due to channel availability.

## Gateways

Gateways retransmit across multiple frequency bands, providing an interim interoperability solution as agencies move toward shared systems.

### Limitations

Gateways are inefficient because they require twice as much spectrum, since each participating agency must use at least one channel in each band per common talk path, and because they are tailored for communications within the geographic coverage area common to all participating systems.

## Shared Channels

Interoperability is promoted when agencies share a common frequency band or air interface (analog or digital) and are able to agree on common channels.

### Limitations

The general frequency congestion that exists nationwide can place severe restrictions on the number of independent interoperability talk paths available in some bands.

## Proprietary Shared Systems and Standards-Based Shared Systems

Regional shared systems are the optimal solution for interoperability. While proprietary systems limit the user's choice of product with regard to manufacturer and competitive procurement, standards-based shared systems promote competitive procurement and a wide selection of products to meet specific user needs. With proper planning of the talk group architecture, interoperability is provided as a byproduct of system design, thereby creating an optimal technology solution.

### Limitations

Given that agencies with radios (monopolized in the market by Motorola) may have invested significantly (on average, $4K/radio), a standards-based shared system

configuration may not be feasible in the Bay Area in the short term for all agencies. However, standards-based shared systems currently exist in the region.

## Training and Exercises

Implementing effective training and exercise programs to practice communications interoperability is essential to ensure the technology works and users are able to effectively communicate during emergencies. There are a wide variety of emergency management training options and exercises available, ranging from tabletop to functional and full-scale.

Considerations

- Currently, the vast majority of paratransit agencies report that they do not participate in regional trainings and exercises. Moreover, in many instances across paratransit agencies in the Bay Area, not all managers, supervisors, and dispatchers have been trained on the National Incident Management System (NIMS) and the Incident Command System (ICS). This is even less likely among drivers.

- Internal drills are not always conducted by all paratransit agencies in the Bay Area to prepare staff (including drivers) to effectively support emergency response and recovery operations.

- Consideration should be given to training personnel in EOC operations, particularly to ensure coordination with partners in emergency communications to patrons.

- A move toward improving paratransit critical communications should include a corollary increase in training and exercises, both in emergency management principles, as well as critical communications for both localized and regional planned events and unplanned emergencies.

## Usage

Success in usage depends on progress and interplay among the other four elements on the Interoperability Continuum (governance, standard operating procedures, technology, and training and exercises). Critical communications may be used for localized emergency incidents that involve multiple intra-jurisdictional responding agencies, such as a vehicle collision on an interstate highway; this may impact paratransit if routes are impassable. Regional incident management usage typically involves routine coordination of responses to natural and human-caused emergencies; this may impact paratransit circulation or backup modes of transportation.

More commonly, interoperability systems are used to manage routine incidents (as well as emergencies). Optimally, users collaborate and coordinate efforts.

## Considerations

Paratransit agencies may consider ways and means to improve the resilience and reliability of communications as they strive to enhance situational awareness and a common operating picture, both during normal operations and emergencies.

### *Bay Area Regional Interoperable Communications Systems Authority (BayRICS)*

The 12-member Bay Area Regional Interoperable Communications System Joint Powers Authority (BayRICS) was established in August 2011 in the San Francisco Bay Area and is responsible for planning, policy, and oversight of regional public safety communications projects. Members of BayRICS include six Bay Area Counties (Alameda, Contra Costa, Marin, San Mateo, Santa Clara, Sonoma) plus the City and County of San Francisco, City of Oakland, and City of San Jose, CA.

BayRICS is funded by the Urban Area Security Initiative (UASI), as well as by annual fees paid by its members.

BayRICS plays a unique role in the region's complex communications landscape. It convenes the Regional Radio Operators Advisory Group and oversees regional interoperability guidelines; represents the region's needs on state and federal committees; monitors public safety communications technology advances (such as FirstNet); and provides guidance to regional decision makers as they consider options to improve interoperable communications. This guidance includes the "how-to" and considerations for emergency response agencies and partners as they develop policies and procedures for governance, as well as adoption and usage of services, such as FirstNet (see below).

Through the Radio Operators Advisory Group, BayRICS can convene paratransit agencies and regional radio system operators to begin the conversation about joining a regional radio system. Because BayRICS is UASI-funded (in part), BayRICS General Manager Corey Reynolds would be pleased to liaise on behalf of paratransit agencies throughout the UASI Bay Area. He can be reached at corey.reynolds@bayrics.net.

The Paratransit Connection

Bay RICS can serve as the liaison between paratransit agencies and the current radio systems in the region. These include: Alameda and Contra Costa County: EBRCSA - East Bay Communications System (EBRCS); Marin County: Marin County is in planning and buildout stage for its P25 system; San Francisco City and County: San Francisco 700 MHz Interoperability System; San Mateo County: San Mateo Interoperable Regional Communications System (SMIRC); Santa Clara County: Silicon Valley Regional Communication System (SVRCS). Note: Sonoma

County is a member of the Bay Area Regional Interoperable Communications Systems Authority (BayRICS), but does not currently have a digital, standards-based system. (See ownership details and map on page 5.)

Although some paratransit agencies in the Bay Area UASI region are not represented through BayRICS, BayRICS understands the importance of truly regional interoperable communications, and will support any Bay Area paratransit agency interested in joining regional radio systems or FirstNet. The BayRICS general manager has a regional understanding of communications capabilities and gaps and can liaise between paratransit agencies and communications systems managers and technicians. This can be of significant value to paratransit agencies that do not focus on communications on a daily basis, yet recognize the imperative nature of reliable, resilient, interoperable communications among all agencies and agents responding to emergencies.

### *First Responder Network Authority (FirstNet)*

In 2012, Congress created the First Responder Network Authority (FirstNet) within the US Department of Commerce. FirstNet is charged with creating a nationwide wireless broadband network for public safety that will use "Long Term Evolution" (LTE) technology standards, similar to existing commercial broadband wireless networks. Public safety groups had pressed for legislation to build a nationwide network for several years in response to the 9/11 tragedy and subsequent 9/11 Commission Report. On March 30, 2017, FirstNet awarded 25-year agreement to AT&T Inc. to build the nationwide network. In late 2017, California accepted a plan from AT&T and FirstNet to deploy FirstNet in California. Beginning in 2018, AT&T began to offer FirstNet services to public safety agencies in California. Local agencies are not required to adopt FirstNet or any other prioritized public safety

service, and may use a competing carrier service, or choose no service at all. Of note, Verizon and Sprint have similar prioritized public safety offerings, but with some distinctions. These options are among items BayRICS is happy to discuss with interested paratransit agencies. BayRICS does not endorse any particular service or provider.

## Other Possibilities

There is a spectrum of possibilities for paratransit agencies to address the communications gap that exists across the Bay Area. These possibilities range from more extensive investments in hardware – such as Motorola push-to-talk radios and associated monthly service costs per radio, to mid-range-cost options – such as public safety FirstNet, to the least reliable form of communications typically used now – such as personal cell phones.

## *Extended Users of County Radio Systems*

Currently, counties across the Bay Area have public safety radio systems used by first responders (police, fire, and EMS) and can enable inclusion of extended users, such as paratransit. Because paratransit has a critical role in disaster response and recovery operations, it is feasible these agencies could be offered a "channel" on county radio systems that offers them access to this hardened infrastructure without hearing the "traffic" of traditional first responders. This could be satisfied by mission-specific interoperable channels that connect relevant first responders or dispatch with other partners. Most county first responders use digital push-to-talk radios that transmit on locally owned towers and equipment. Push-to-talk radios are for voice only and have limited bandwidth for data. Therefore, cell phones are still used to transmit text messages and to view maps. The combination offers the benefits of reliability with expanded features to access data, as well as essential redundancies.

### Radio Equipment, System Service Costs

There are costs associated with extending use of the radio system to paratransit agencies. Lower-end push-to-talk radio models are about $4K each and do not offer all the capabilities needed by traditional first responders, who are often equipped with higher end, more costly models (typically Motorola brand). Aside from the cost of hardware, having access to the service costs about $39-$45/month for each radio as of this writing.

There may be a cache of public safety radios that are not needed on a daily basis but could be made available to a limited number of paratransit personnel as a way to limit costs, while offering system redundancies. Prioritization should be a careful consideration. Because city bus systems are already using radios in every vehicle, they do not have to be checked in and out, which would otherwise require another layer of logistical tracking. By contrast, smaller paratransit agencies may prioritize radio use by route, particularly those used for evacuation or life-sustaining transport.

Another possibility is to make available the public system channel and a limited number of radios to paratransit agencies and others with public safety requirements during emergencies or in or post-disaster environments. Essentially, this would be whenever the respective county Emergency Operations Plan is activated.

Relative to offsetting costs, an agency might propose a grant for a certain number of radios through the existing UASI funding guidelines and other mechanisms, such as possible Federal Transit Administration (FTA) grants. The UASI and FTA funding cycle generally follows the federal fiscal cycle, which is October 1-September 30. The grant proposal cycle is typically mid-September to mid-October, with funding awarded in November of the *following* year.

<u>Radio System Reliability</u>

Push-to-talk radios are 99.99 percent reliable. Radios use towers that are deliberately constructed with resilience in mind, including against earthquakes and fires. Moreover, they have generator backups and are considered "public safety grade," as opposed to traditional cell towers. During the North Bay fires of 2018, most cell towers in the impact area were compromised and resulted in communications gaps, while all public safety towers in the region remained fully operable. Moreover, radio systems in the Bay Area have a 30-40-year lifespan and typically do not change vendors.

## *FirstNet*

<u>Equipment, System Service Costs</u>

The barrier to entry to improved communications for paratransit agencies may be easier with the acquisition and use of smaller, less expensive cell phones for drivers than push-to talk-radios. These still offer increased reliability and resilience benefits over typical commercial cell phones used by the general public.

Entities that have public service requirements post-disaster (any entity called out in the Emergency Operations Plan), including paratransit agencies, are considered valid extended primary users of the FirstNet system, which uses the AT&T network and customary commercial cell phones. While anyone can walk into an AT&T store and subscribe to AT&T service and use their personal AT&T cell phone, only properly credentialed individuals who meet the public service post-disaster threshold can qualify as an extended primary user (and can either use their personal cell phone or an agency-owned cell phone for this service). Private paratransit providers are not individually eligible as off-the-street agents but must be

sponsored as an extended primary user through form completion and verification by a public agency. Other carriers offer similar options.

This characterization as a primary extended user elevates the priority level of service to these users when the FirstNet network becomes congested. FirstNet phones will always receive priority against commercial traffic. Then, in a disaster or planned event with extreme congestion, the priority against other FirstNet phones is controlled locally. As of this writing, the monthly cost of FirstNet service is about $39-$45 for unlimited talk, text, and data, plus the cost of the cell phone. Given that most people already subscribe to some form of cell service, this FirstNet rate is likely very favorable, by comparison.

FirstNet Evaluation

The decision to adopt FirstNet requires a complex review and evaluation of all options. It is essential that public safety agencies carefully review both FirstNet and competing services. BayRICS has developed a list of initial questions for agencies to help guide them through the evaluation process. Note that the list is not necessarily in order from high to lowest priority.

1) In what ways will FirstNet-AT&T meet or exceed the service levels currently available with our current data/cell service?

a. Why should we consider migrating from current services to FirstNet?

b. Can we use our existing devices (handhelds and in-vehicle), and if not, can we get discounts on new equipment?

This question should also lead to a discussion of priority/preemption and new applications on the service. Agencies should ask for any available case studies from

others that have adopted the services, and request a pilot or demonstration period to allow their staff to test the new services.

2) What are the costs for FirstNet service and devices? Are they negotiable? Are there volume discounts or introductory rates? Will they be competitive with (or better than) existing commercial service plans?

3) Will the cell sites and backhaul be "public safety grade" (enhanced power back-up, redundancy tower reinforcement, physical security, fiber vs. microwave, etc.)?

4) Relative to coverage and capacity … will there be:

a. Detailed coverage maps available for our jurisdiction?

b. Expanded large event capacity, including pre-planning and enhanced capacity solutions?

c. Adequate in-building coverage, including underground parking and public transit tunnels?

d. How will AT&T address the known coverage gaps in our jurisdiction?

5) Does AT&T have any plans to use existing public agency radio sites or infrastructure (for example, to resolve any gaps in coverage or to meet public safety grade standards)?

6) Will AT&T provide adequate training for public safety users, including paratransit, prior to beginning to use the service?

7) Are there any plans for field testing the service for signal strength, throughput speeds, and to verify detailed coverage maps?

a. Will there be applications interoperability across carrier systems for seamless access to these data sets by users on FirstNet and those on competitive carriers?

8) Will there be routine technology refresh and upgrade cycles and if so, will this involve system down time? How will we be informed of down times?

FirstNet Reliability

While paratransit drivers typically do not need to be exposed to first responder traffic across radio systems, it is vital for them to have situational awareness, which is enhanced with system reliability. On a daily basis, when there is not an emergency event that results in the county EOC to stand up as the EOP is activated, FirstNet operates like any other commercial cell phone service provider. The distinction, however, is that FirstNet is a devoted spectrum the Federal Communications Commission has assigned post-9/11 and offers primary use reliability to authenticated extended users that is well beyond typical commercial cell phone use among the general population. While BayRICS does not endorse any particular vendor, it is recognized that for public works, paratransit, and other public service users, a migration to FirstNet or other vendors' public safety offerings can provide a measure of increased reliability over commercial cell phone providers.

It is notable that FirstNet has new antennas to accommodate this new spectrum band and are hardening some of its cellular infrastructure. While not as resilient as public safety radio infrastructure, FirstNet does provide more assurance of reliability than regular commercial cellular service.

FirstNet and other providers also offer deployable assets – cell on wheels and cell on wings (drones) – so that post disaster, if all cell phone service is down, satellite trucks can close the communications gap. Additionally, because it owns a dedicated FCC spectrum, FirstNet communications are more likely to come back online before

its commercial counterparts. This is because of both FCC authority and because FirstNet is deemed an "authority" by Congress. As such, FirstNet is considered a quasi-government entity, much like Amtrak, that contracts out the service to a private company, but regulates it.

<u>Memoranda of Understanding</u>

The construct of paratransit having a dedicated "channel" on an existing county public service communication system can be considered comparable to the construct used by ambulance service providers. In the Bay Area, EMS services fall under county government, yet the actual service is contracted privately. In that case, MOUs between the EMS agency and private providers specify rules for system access and use.

FirstNet may enable more streamlined opportunity for information sharing, such as enabling maps to be pushed by the Transportation Branch in the EOC to phones in the event of road closures or road hazards. Currently, this information is shared by voice, but FirstNet enables it to be shared to smart phones and digital tablet devices.

Following is an agency-by-agency summation of critical communications capabilities as reported by representatives of each named agency.

# East Bay Paratransit Consortium (EBPC)

East Bay Paratransit is a public transit service for people who are unable to use regular buses or trains, like those operated by AC Transit and BART, because of a disability or a disabling health condition. East Bay Paratransit transports riders from their origin to their destination in vans equipped with a wheelchair lift. East Bay Paratransit was established by AC Transit and BART to meet requirements of the Americans with Disabilities Act (ADA).[2]

## Technical Communications Capacity

Currently, radio is push-to-talk. All providers and drivers have units, but they are not interoperable. If radios fail, dispatch is contacted. Communication provider-dispatch also includes Slack, so drivers can still talk to each other without telephones.

EBPC communication systems are not interoperable with other transportation providers, emergency management, or first responders in the region during emergency response and recovery periods. So, while Standard Operating Procedures are in place at EPBC to notify all appropriate personnel of an emergency/event impacting the agency, compromised critical infrastructure can render these SOPs null without communications redundancies.

**Favorable Contributing Factors**

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[2] https://www.eastbayparatransit.org/

## Continuity of Operations

EBPC reports that its dispatch center has a backup power source to ensure all dispatching operations can be maintained.

## **Unfavorable Contributing Factors**

### Interagency Coordination

EPBC does not report the existence of formal Memoranda of Agreements (MOA) or Memoranda of Understanding (MOU) with external partners to support emergency response and recovery efforts.

While EBPC reports it has an identified process to prioritize paratransit response to multiple requests for assistance during non-paratransit emergencies, direct requests are coordinated by two team members without a written procedure. Further, EBPC indicates the agency currently has no in-depth language in provider contracts. Without a formal, written process to make and receive requests to bolster continuity of operations and necessary redundancies, including for communications capacity, the agency is exposed to a vulnerability.

### Continuity of Operations

Currently, primary vendors and backup resources are not identified to maintain critical operations during emergency and recovery operations.

# Eastern Contra Costa Transit Authority (ECCTA)

Eastern Contra Costa Transit Authority (Tri Delta Transit) provides nearly 3 million trips each year to a population of nearly 290,000 residents in the 225 square miles of Eastern Contra Costa County. Tri Delta Transit operates 15 local bus routes Monday-Friday, 5 local bus routes on weekends and holidays, door-to-door bus service for senior citizens and people with disabilities, and shuttle services for community events.[3]

## Technical Communications Capacity

The ECCTA communication systems do not appear to be interoperable with other transportation providers, emergency management, or first responders in the region during emergency response and recovery. Paratransit and fixed route service are now on separate bands, which keeps inbound communications controllable. If radios fail, cell phones are used. ECCTA has mobile data terminals in vehicles that connect back to dispatch systems, but these do not enable voice communications.

## **Favorable Contributing Factors**

### Interagency Coordination

Formal Memoranda of Agreement (MOA) or Memoranda of Understanding (MOU) exist between ECCTA and external partners to support, bilaterally, emergency response and recovery efforts. MOAs and/or MOUs are realistic and achievable. The ECCTA has a county-wide MOU with MTC that appears in the Eastern Contra Costa County Emergency Operations Plan.

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[3] http://trideltatransit.com/about_09.aspx

The ECCTA has an identified process to prioritize paratransit response to multiple requests for assistance during non-paratransit emergencies. The agency's contracts with other transportation providers contain formal language regarding shared roles and responsibilities during non-transit emergencies/events. All employees are disaster service workers. Specific and realistic expectations have been established for contracted services provided and requested by ECCTA during emergency response and recovery operations.

A representative has been identified from the ECCTA who participates in meetings that include all transportation agencies in the region to discuss roles and responsibilities in emergency response and recovery operations.

## Continuity of Operations

The ECCTA dispatching center has a backup power source to ensure all dispatching operations can be maintained. Backup power sources are available for all other essential functions beyond dispatching.

# Livermore Amador Valley Transit Authority (LAVTA)

The mission of the Livermore Amador Valley Transit Authority (LAVTA) is to provide equal access to a variety of safe, affordable, and reliable public transportation choices to increase the mobility and improve the quality of life of those who live or work in and visit the Tri-Valley area. These include bus connections to Bay Area Rapid Transit (BART), Altamont Commuter Express (ACE), and Central Contra County Transportation Authority (County Connection).

Operated by the Livermore Amador Valley Transit Authority (LAVTA), Wheels plays a vital role in providing transportation and mobility options for those who do not drive, either by choice or necessity. Wheels connects people to work, school, medical appointments, and to recreational opportunities. The Authority was established in 1985 under a Joint Powers Agreement to provide public transit in the cities of Dublin, Livermore, Pleasanton, and in unincorporated areas of Alameda County. LAVTA is governed by a seven-member Board of Directors.[4]

## Technical Communications Capacity

The LAVTA communication systems are not interoperable with other transportation providers, emergency management, or first responders in the region during emergency response and recovery. While paratransit uses cellular communications between dispatch and drivers for voice communications, mobile data terminals are also used for fixed routes. If there is a complete communication failure, drivers

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[4] https://www.wheelsbus.com/about/

report to base. Of note, LAVTA is part of the East Bay Regional Communications System.

## Favorable Contributing Factors

### Continuity of Operations

The LAVTA's dispatching center has a backup power source to ensure all dispatching operations can be maintained. Backup power sources are available for all essential functions. Primary vendors and backup resources are available to maintain critical operations during emergency and recovery operations.

## Unfavorable Contributing Factors

### Interagency Coordination

While the LAVTA has an identified process for prioritizing paratransit response to multiple requests for assistance during non-paratransit emergencies, formal Memoranda of Agreement (MOA) or Memoranda of Understanding (MOU) do not exist between the LAVTA and external partners to support, bilaterally, emergency response and recovery efforts.

### Emergency Operations

The LAVTA does not have contingency plans to ensure access to fuel, power, and other resources essential to the continuity of agency operations, or to address the transportation needs of its customers who are "in system" when a no-notice emergency occurs.

# Marin Transit

Marin County Transit District (Marin Transit) was formed by a vote of the people of Marin County in 1964 to provide local transit service in Marin County. Marin Transit contracts for operations and maintenance of services. Staff members are directly responsible for planning, capital investments, financial management, and operations oversight.[5]

## Technical Communications Capacity

Marin Transit has mobile data terminals and Motorola radios are used. If these fail, written manifests and phones are used. Marin Transit communication systems are not interoperable with other transportation providers, emergency management, or first responders in the region during emergency response and recovery. Marin Transit's revenue service fleet does, however, have programmable route guidance, and its dispatch center is able to track revenue vehicle locations. Both its revenue and non-revenue vehicles are equipped with radio communications. Some of Marin Transit's revenue vehicles are equipped with security cameras, but they cannot be monitored live or remotely.

### **Favorable Contributing Factors**

### Continuity of Operations

Backup power sources are available for dispatching.

### **Unfavorable Contributing Factors**

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[5] https://marintransit.org/

## Interagency Coordination

Formal Memoranda of Agreement (MOA) or Memoranda of Understanding (MOU) do not exist between Marin Transit and external partners to support, bilaterally, emergency response and recovery efforts. (Note: the agency indicated this was not applicable.) Specific and realistic expectations have not been established for contracted services Marin Transit has requested during emergency response and recovery operations. Further, Marin Transit has not identified a process to prioritize paratransit response to multiple requests for assistance during non-paratransit emergencies.

## Emergency Operations

Marin Transit does not have an identified process to prioritize paratransit response to internal emergencies/events. There is no clear, written policy for smaller emergencies. Marin Transit does not yet have procedures in place to communicate with partner transportation agencies before, during, and after a community emergency/event.

## Continuity of Operations

Backup power sources are not available for all essential functions, aside from dispatching. Primary vendors and backup resources are not available to maintain critical operations during emergency and recovery operations. (Note: the agency indicates this item is not applicable.)

# Napa Vine Transit

Napa Vine Transit provides safe, affordable, accessible public transportation for all residents and visitors in Napa County. In 2012, the Vine system was redesigned to provide more frequent service and a greater number of neighborhood routes to meet the needs of the average rider. The Vine has eight local routes (in the City of Napa), five regional routes with connections to Solano County, Bay Area Rapid Transit (BART), and the San Francisco Ferry in Vallejo.[6]

## Technical Communications Capacity

Napa Vine Transit communication systems are interoperable with other regional transportation providers, emergency management, and first responders during emergency response and recovery. Napa Vine uses open mic radio systems between vehicles and dispatch and has mobile data terminals for computer-aided dispatch, to enable text to vehicles. Those are primary forms of communication and are interoperable with other first responders. The system runs on Napa County repeaters.

Plans are in place to document procedures for what drivers should do in case of a communications failure, and drivers are familiar with them. Once drivers secure their family and themselves, and if they can make it to the designated meeting point (maintenance yard), they do so. If drivers are out in the field and cannot communicate, they would do one of two things: (1) if they are out with no one on the vehicles, they return to base or (2) if someone is on board, they complete the drop

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[6] http://www.vinetransit.com/vine

off, because they have a paper manifest. Once drop off is complete, they return to the maintenance yard to be redeployed, if needed.

## **Favorable Contributing Factors**

Formal Memoranda of Agreement (MOA) or Memoranda of Understanding (MOU) exist between the agency and external partners to support, bilaterally, emergency response and recovery efforts.

### Interagency Coordination

The agency reportedly has an MOU with MTC to assist other agencies in a disaster if MTC requests it. Napa Vine Transit has an informal understanding with Napa County to provide support in the event of a disaster; it does not appear to be a formal agreement.

## **Unfavorable Contributing Factors**

### Interagency Coordination

Napa Vine Transit does not have an identified process to prioritize the paratransit response to multiple requests for assistance during non-paratransit emergencies. Note: The agency responds to county-identified priorities for evacuation or other demands for service. There are opportunities to assist with paratransit for non-ambulatory evacuation, rather than relying solely on EMS.

Napa Vine Transit does not yet have procedures in place to communicate with partner transportation agencies before, during, and after a community emergency/event. However, a satellite phone is used as a primary form of communication. There is heavy reliance on personal cell phones.

Employees are contracted through TransDev, but it is uncertain if their contract includes specific language about roles/response in an emergency beyond providing "staff support." Specific and realistic expectations have not yet been established for contracted services provided by Napa Vine Transit during emergency response and recovery operations.

## Continuity of Operations

Primary vendors and backup resources are not available to maintain critical operations during emergency and recovery operations.

# Petaluma Transit

A Petaluma Transit rider's guide, routes and schedules, fares and passes, free travel training, and paratransit services can be found on the agency website.[7]

## Technical Communications Capacity

Communication systems are not interoperable with other transportation providers, emergency management, or first responders in the region during emergency response and recovery operations. Fixed route drivers use Motorola walkies; paratransit relies on push-to-talk on a dedicated band. There is no generator backup at the office, and messaging is predicated on cell phone networks. The longest route is 25 minutes, 2 hubs, and 1.5 miles apart. Messages are sent to hubs to direct employees in the instance of an emergency. Drivers would go to the hub or return to the yard. The electronic manifest system is vulnerable, but this can be accomplished manually, if necessary.

## Favorable Contributing Factors

### Continuity of Operations

Petaluma Transit's dispatching center has a backup power source to ensure all dispatching operations can be maintained.

## Unfavorable Contributing Factors

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[7] http://transit.cityofpetaluma.net/

## Interagency Coordination

Formal Memoranda of Agreement (MOA) or Memoranda of Understanding (MOU) do not exist between Petaluma Transit and external partners to support, bilaterally, emergency response and recovery efforts. (Note: the agency indicates it believes MOAs and MOUs are not applicable.)

Petaluma Transit's contract(s) with other transportation providers do not contain formal language regarding shared roles and responsibilities during non-transit emergencies/events. The agency indicates there is no specific language in contracts with other agencies for emergency operations roles and responsibilities; this is a potential issue if Petaluma Transit workforce is inaccessible.

## Emergency Operations

City staff have an emergency channel, but this is inoperable if phones are down.

## Continuity of Operations

Primary vendors and backup resources are not available to maintain critical operations during emergency and recovery operations.

# SamTrans

The San Mateo County Transit District is the administrative body for the principal public transit and transportation programs in San Mateo County: SamTrans bus service, including Redi-Wheels & RediCoast paratransit service; Caltrain commuter rail; and the San Mateo County Transportation Authority.[8]

## Technical Communications Capacity

SamTrans communication systems reportedly are interoperable with other transportation providers, emergency management, and first responders in the region during emergency response and recovery. SamTrans has a Motorola-equipped radio network with GPS; there are five (5) repeaters in the area.

## **Favorable Contributing Factors**

### Interagency Coordination

The agency's contract(s) with other transportation providers contain formal language regarding shared roles and responsibilities during non-transit emergencies/events. SamTrans has identified a representative to participate in meetings that include all transportation agencies in the region to discuss roles and responsibilities in emergency response and recovery operations. Paratransit staff members are part of the Operations Department, which participates in the EOC. Paratransit is directed by the EOC.

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[8] http://www.samtrans.com/about.html

## Continuity of Operations

SamTrans' dispatching center has a backup power source to ensure all dispatching operations can be maintained.

## **Unfavorable Contributing Factors**

### Interagency Coordination

Although Formal Memoranda of Agreement (MOA) or Memoranda of Understanding (MOU) do not exist between SamTrans and external partners to support, bilaterally, emergency response and recovery efforts, it may be because the primary transit organization does.

### Emergency Operations

There is no formal requirement for drivers to be available during emergencies, although administrative staff is instructed to "show up" for an emergency.

### Risk Management

SamTrans does not have procedures in place to communicate with partner transportation agencies before, during, and after a community emergency/event.

### Continuity of Operations

Primary vendors and backup resources are not available to maintain critical operations during emergency and recovery operations. (Note: the agency indicated this is not applicable.)

# San Francisco Municipal Transportation Agency (SFMTA)

The San Francisco Municipal Transportation Agency (SFMTA), a department of the City and County of San Francisco, is responsible for the management of all ground transportation in the city. The SFMTA was established by voter mandate in 1999.[9]

## Technical Communications Capacity

The SFMTA's notes a "texting chain, exercised daily" as a means to contact drivers for their report-to-work status. The agency's communication systems are not interoperable with other transportation providers, emergency management, or first responders in the region during emergency response and recovery.

## **Favorable Contributing Factors**

### Interagency Coordination

Formal Memoranda of Agreement (MOA) or Memoranda of Understanding (MOU) exist between the SFMTA and external partners to support, bilaterally, emergency response and recovery efforts. These MOAs or MOUs have been updated in the past 12 months and do not over-extend response commitments from the SFMTA.

The SFMTA has an identified process to prioritize paratransit response to multiple requests for assistance during non-paratransit emergencies. Its contract(s) with other transportation providers contain formal language regarding shared roles and responsibilities during non-transit emergencies/events. Specific and realistic

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[9] https://www.sfmta.com/about-sfmta

expectations have been established for contracted services provided by and requested from the SFMTA during emergency response and recovery operations.

## Risk Management

Procedures are in place to communicate with partner transportation agencies before, during, and after a community emergency/event.

## Continuity of Operations

The SFMTA dispatching center has a backup power source to ensure all dispatching operations can be maintained.

# Unfavorable Contributing Factors

## Emergency Operations

The SFMTA does not have contingency plans to ensure access to fuel, power, and other resources essential to the continuity of the agency's operations.

# Santa Rosa Paratransit

The City of Santa Rosa offers next-day ADA paratransit transportation service seven days a week to those who are unable (temporarily or permanently) to independently use Santa Rosa CityBus, due to a disability or health condition. This service is provided within three-quarters of a mile from existing CityBus routes as part of the requirements of the Americans with Disabilities Act. The service is shared-ride public transportation available for all trip purposes. Santa Rosa Paratransit is highly subsidized. The City of Santa Rosa has hired contractors to perform paratransit services.[10]

## Technical Communications Capacity

Santa Rosa Paratransit's dispatch center is able to track revenue vehicle locations, and its revenue vehicles are equipped with security cameras. Additionally, all revenue vehicles are equipped with radio communications. However, the agency's revenue service fleet (accessible) does not have programmable route guidance.

Communication systems are interoperable with emergency management and first responders during emergency response and recovery. However, communication systems are not interoperable with other transportation provides in the region during emergency response and recovery. (Note: the agency indicated the IAT&Ter was not applicable.)

**<u>Favorable Contributing Factors</u>**

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[10] https://www.srcity.org/1696/Paratransit

### Interagency Coordination

Santa Rosa Paratransit participates in local or regional emergency planning and preparedness activities. The agency reportedly has an identified process to prioritize paratransit responses to multiple requests for assistance during non-paratransit emergencies. Santa Rosa Paratransit's contract(s) with other transportation providers contain formal language regarding shared roles and responsibilities during non-transit emergencies/events. (Note: this seems to conflict with the agency-provided information that formal MOA/MOU do not exist with external partners; see above.)

### Risk Management

Santa Rosa Paratransit reportedly works with local law enforcement to gather, collect, and share information, and has procedures in place to communicate partner transportation agencies before, during, and after a community emergency/ event. Coordination with responders occurs through the EOC.

## Unfavorable Contributing Factors

### Personnel

There are no drivers/operators in "extra board," "part-time," or "off duty" classifications who could be called in during high-demand or emergency periods.

### Interagency Coordination

Formal Memoranda of Agreement (MOA) or Memoranda of Understanding (MOU) do not exist between Santa Rosa Paratransit and external partners to support, bilaterally, emergency response and recovery efforts.

# SolTrans

Solano County Transit (SolTrans) is a Joint Powers Authority that provides public transportation to the southern Solano County cities of Vallejo and Benicia. SolTrans has a six-member Board of Directors with four City Council members from Benicia and Vallejo and two members from regional planning agencies boards of directors, the Metropolitan Transportation Commission (MTC), and the Solano Transportation Authority (STA).[11]

## Technical Communications Capacity

Communication systems are interoperable with other transportation providers in the region during emergency response and recovery. However, communication systems are not interoperable with emergency management and first responders during emergency response and recovery. There is currently no back-up plan to communicate with drivers when communications are down beyond instructing them to return to the yard.

## Favorable Contributing Factors

### Continuity of Operations

The Soltrans dispatching center has a backup power source that ensures all dispatching operations can be maintained.

## Unfavorable Contributing Factors

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[11] https://soltrans.org/more/about/

## Interagency Coordination

Formal Memoranda of Agreement (MOA) or Memoranda of Understanding (MOU) do not exist between Soltrans and external partners to support, bilaterally, emergency response and recovery efforts. Soltrans has "implicit handshake agreements" with Vallejo, Benecia, and Solano County OES through the sheriff's department. Soltrans has not identified a process to prioritize paratransit response to multiple requests for assistance during non-paratransit emergencies.

Soltrans' contract(s) with other transportation providers do not contain formal language regarding shared roles and responsibilities during non-transit emergencies/events. Contracted providers have clear expectations, but they are not formalized in the contract. Specific and realistic expectations have not been established for contracted services provided by Soltrans or requested by SolTrans during emergency response and recovery operations.

## Emergency Operations

The agency relies on a phone tree and by sharing contact information with all staff and 911 dispatchers. Contacting staff will be problematic if cell phone service is down.

Soltrans does not have a Continuity of Operations Plan (COOP). **THE AGENCY** does not have contingency plans to ensure access to fuel, power, and other resources essential to the continuity of the agency's operations.

## Risk Management

Soltrans does not have procedures in place to communicate partner transportation agencies before, during, and after a community emergency/event.

# Sonoma County Transit

Sonoma County Transit provides local and intercity public transportation services in Sonoma County, California. Complementary paratransit services are provided by Sonoma County Paratransit. Fixed route service is contracted to TransDev; paratransit is operated by Sonoma County Volunteer Center, a nonprofit organization. Transit is a division of the county Public Works Department. [12]

## Technical Communications Capacity

The agency notes there is no mass notification of employees during emergencies; rather, employees are called via telephone. TransDev is exploring hotline advisories for driver notification; this would apply to fixed route service, not paratransit. Fixed route service is transmitted through the county's 6-8 repeater system, through the sheriff's microwave system, and back to transit. Coverage is considered to be very good. Paratransit calls go through a privatized, smaller repeater network owned by a local radio vendor, not the county. All vehicles, with the exception of a few shuttle cars, have either a radio or a mobile with the driver. Also, the sheriff can get on the radio for fixed route service only, but not paratransit.

Communication systems are not interoperable with other transportation providers, emergency management or first responders in the region during emergency response and recovery. Sonoma County Transit has automatic vehicle locators (AVL) deployed for both fixed route and paratransit vehicles; messages can be sent to paratransit via AVL. Currently, there are no plans in place for what drivers should do in the instance of a communications failure.

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[12] http://sctransit.com/

## Favorable Contributing Factors

<u>Interagency Coordination</u>

The agency reports that specific and realistic expectations have been established for contracted services provided by and requested from Sonoma County Transit during emergency response and recovery operations.

<u>Emergency Operations</u>

Sonoma County Transit has an identified process to prioritize paratransit response to internal emergencies/events, and has contingency plans to ensure access to fuel, power, and other resources essential to the continuity of the agency's operations. Also, the agency's dispatching center has a backup power source to ensure all dispatching operations can be maintained.

<u>Risk Management</u>

Sonoma County Transit has very informal, but seemingly workable procedures in place to communicate with partner transportation agencies before, during, and after a community emergency/event.

## Unfavorable Contributing Factors

<u>Interagency Coordination</u>

While Sonoma County Transit's contract(s) with other transportation providers contain formal language regarding shared roles and responsibilities during non-transit emergencies/events, formal Memoranda of Agreement (MOA) or Memoranda of Understanding (MOU) do not exist between Sonoma County Transit and external partners to support, bilaterally, emergency response and recovery efforts. The agency reports that specific and realistic expectations have been established for

contracted services provided by and requested from Sonoma County Transit during emergency response and recovery operations.

## Continuity of Operations

Primary vendors and backup resources are not available to maintain critical operations during emergency and recovery operations. The agency notes that there are no agreements for backup resources.

# Union City Paratransit

Union City Paratransit offers paratransit service within the city limits of Union City. The agency also provides Paratransit Plus, which offers limited service to southern Hayward, and northern Fremont and Newark.[13]

## Technical Communications Capacity

A Standard Operating Procedure (SOP) has not been developed by Union City Paratransit to notify all appropriate personnel of an emergency/event impacting the agency, and which evolves as the event grows/weakens in complexity. The agency depends on cell phones for notification. Compromised cell service can mean significant communications problems in notification.

Communication systems (radios) *are interoperable with emergency management* and first responders during emergency response and recovery. However, communication systems *are not interoperable with other transportation providers* in the region during emergency response and recovery. If radios fail, there is no check-in point established. Operators are instructed to return to base in an emergency; however, base is extremely vulnerable to emergency, e.g., flood zone, fault line, power lines.

### **Unfavorable Contributing Factors**

#### Interagency Coordination

Formal Memoranda of Agreement (MOA) or Memoranda of Understanding (MOU) do not exist between Union City Paratransit and external partners to support,

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[13] https://www.unioncity.org/172/Paratransit

bilaterally, emergency response and recovery efforts. There reportedly are verbal agreements between surrounding localities, but no formal agreements. Further, Union City Paratransit's contract(s) with other transportation providers do not contain formal language regarding shared roles and responsibilities during non-transit emergencies/events.

Specific and realistic expectations have not been established for contracted services provided by or requested by Union City Paratransit during emergency response and recovery operations.

## Continuity of Operations

Union City Paratransit's dispatching center does not have a backup power source to ensure all dispatching operations can be maintained.

## Risk Management

Union City Paratransit does not have procedures in place to communicate with partner transportation agencies before, during, and after a community emergency/event.

# Valley Transportation Authority (VTA)

Santa Clara Valley Transportation Authority (VTA) is an independent special district that provides bus, light rail, and paratransit services. As the county's congestion management agency, VTA is responsible for county-wide transportation planning and the promotion of transit-oriented development. VTA continually builds partnerships to deliver transportation solutions that meet the evolving mobility needs of Santa Clara County. The VTA Board of Directors has adopted a new transit service plan that will be implemented when BART service to Santa Clara County begins by the end of 2019.[14]

## Technical Communications Capacity

VTA uses AT&T push-to-talk radios. Communications systems are not interoperable with other transportation providers, emergency management, or first responders in the region during emergency response and recovery.

### **Favorable Contributing Factors**

#### Interagency Coordination

VTA has formal Memoranda of Agreements (MOA) or Memoranda of Understanding (MOU) with external partners to support, bilaterally, emergency response and recovery efforts. VTA's contracts with other transportation providers contain formal language regarding shared roles and responsibilities during non-transit emergencies/events. Specific and realistic expectations reportedly have been

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[14] https://www.vta.org/

established for contracted services provided by and requested from VTA during emergency response and recovery operations.

## Emergency Operations

VTA has developed and implemented a personnel and family notification hotline that is accessible when an emergency/event has been declared. Automated phone call capacity exists; paratransit can "plug in," as long as servers are operational.

## Risk Management

VTA reportedly has procedures in place to communicate with partner transportation agencies before, during, and after a community emergency/event.

## Continuity of Operations

VTA's dispatching center has a backup power source to ensure all dispatching operations can be maintained.

# Western Contra Costa Transit Authority (WestCAT)

Western Contra Costa Transit Authority (WestCAT) is the public transit service in western Contra Costa County, California. WestCAT serves the cities of Hercules and Pinole and is operated under contract by MV Transportation. WestCAT is governed by a seven-member Board of Directors.[15]

## Technical Communications Capacity

WestCAT still owns radio frequencies and reports it does not have a workable radio system. The agency uses tablets and Voice-Over-Internet-Protocol. Tablets are used as a backup, but the chief reliance is on a cell network. Communication systems are not interoperable with other transportation providers, emergency management, or first responders in the region during emergency response and recovery.

## Favorable Contributing Factors

### Interagency Coordination

Specific and realistic expectations have been established for contracted services WestCAT has requested during emergency response and recovery operations.

### Continuity of Operations

WestCAT's dispatching center has a backup power source to ensure all dispatching operations can be maintained.

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[15] https://www.westcat.org

# Unfavorable Contributing Factors

## Interagency Coordination

Formal Memoranda of Agreement (MOA) or Memoranda of Understanding (MOU) do not exist between WestCAT and external partners to support, bilaterally, emergency response and recovery efforts.

WestCAT's contract(s) with other transportation providers do not contain formal language regarding shared roles and responsibilities during non-transit emergencies/events. Specific and realistic expectations reportedly have not been established for contracted services provided to WestCAT during emergency response and recovery operations. (Note: WestCAT indicates this is not applicable.)

## Emergency Operations

An SOP has not been developed to notify all appropriate personnel of an emergency/event impacting WestCAT agency, and which evolves as the event grows/weakens in complexity. WestCAT relies on person-to-person calls and texts from dispatch. There is no call-in number.

## Risk Management

WestCAT reportedly does not have procedures in place to communicate with partner transportation agencies before, during, and after a community emergency/event. Relationships with partner agencies are purely personal.

## Continuity of Operations

Primary vendors and backup resources are not available to maintain critical operations during emergency and recovery operations. (Note: WestCAT indicates this is not applicable.)