Meet the New Future of Mobility...

...Same as the Old Future of Mobility: PEOPLE
Features

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Amidst Technology, Keeping the Focus on People

Click anywhere on the above image to view the editors’ note from CTAA Executive Director Scott Bogren and DigitalCT Editor Rich Sampson.
A storm’s coming. Is your agency ready?

In the perfect storm of financial, demographical and technological challenges in transit, governments and agencies are being asked to do more with less. Finding a partner with the expertise, experience, scale, technology and vision to overcome these challenges is vital. Explore a solution to affordably replace outdated, expensive legacy systems with modern industry-changing technology.

See how Ecolane and National Express are providing the blue sky you’re looking for.

IDEAS for Mobility’s Future: So Close, And Yet So Far...

By Scott Bogren & Rich Sampson

“Oh, no, here we go again with more about mobility and the future: Uber and Lyft. Autonomous vehicles. Apps and real-time trips. It’s all too much technology. What about the people we serve?”

While the above quote isn’t a real statement of exasperation from a transit manager somewhere, it’s probably not far off the mark from what many reading this are thinking.

Often, when community and public transportation leaders consider both the short- and long-term future of our industry posed by emerging ways of providing mobility – such as Transportation Network Companies (TNCs) like Uber and Lyft, or autonomous vehicles (AVs) – they might feel a bit overwhelmed, especially in the midst of a job that leaves little free time to dig into complex topics. The impacts of these concepts are so uncertain and wide-ranging that it’s tempting to file them away as a problem for another time, another place and continue doing the important work they’ve always done: keeping people moving in their community (we reassert the importance of transit drivers as caregivers on page 13 – ed).

One general manager of a medium-sized urban transit agency who visited CTAA’s Washington, D.C., offices recently described the pressure his system faced to explore arrangements with TNCs as “dancing with the devil,” raising fair points about low pay for drivers, fuzzy insurance coverage, lack of accessible vehicles and subsidization of trips by venture capitalists. There is no one, single answer.

The truth is adapting to these ever-changing trends is no different from how mobility providers have survived for decades: engage innovations head-on and uncover the technologies and methods that underpin their appeal. Then adapt them to fit specific needs.

We first raised the specter of this emerging landscape two years ago in DigitalCT in an article exploring microtransit concepts and applications, “Unlocking the Secrets of Sharing Mobility.” Since then, the orbits of traditional transit services – ranging from fixed-routes and demand response to NEMT and mobility management – and new transportation technologies (TNCs, AVs, Mobility as a Service and more) have only moved along closer trajectories.

Some transit providers have cultivated partnerships with TNCs to serve paratransit and demand-response options for riders. We unlock some of the nuances of these arrangements by profiling two communities that worked with TNCs to provide service (learn more beginning on page __ – ed). A small town in Ontario, Canada – wanting to launch a new transit system – utilized Uber’s services from the outset, avoiding purchasing vehicles and hiring drivers altogether. In these cases and others, the results have been mixed.

Meanwhile, AV shuttle buses have been deployed in a handful of
limited applications, carrying passengers without a driver to college campuses and sports stadiums (see our analysis on page __ – ed). Every so often, a publication questions whether community and public transportation will exist at all, considering these and other examples. Articles in publications ranging from The Atlantic to The Guardian have posed this question.

After listening to its members from across the nation for the past few years – along with mobility partners and advocates – CTAA believes that mobility’s future is not one fraught with peril in an increasingly automated age, or facing a Borg-like ultimatum that resistance to TNCs & AVs is futile. We believe the need for community-based mobility solutions is fundamental and – by its nature – versatile.

At the same time, our members and allies have told us that doing nothing is likewise not an option, and that in order to adapt, improvise and compromise to survive and thrive, they need resources and, better yet, IDEAS for Mobility’s Future: Innovations, Demonstrations, Examples, Analysis and Strategies.

We’ll share Innovations from communities and companies around the nation and the world; Demonstrations of strategies and technologies in practice; Examples from your peers; Analysis from CTAA staff of federal and state legislation, policy, regulations and programs; and Strategies that ensure our industry’s values for the future.

This edition of DigitalCT – our official rollout of this series – is not a definitive opus or manifesto of what this all means, but rather the start of a conversation we expect to continue for years that is only just beginning. We don’t have all the answers, but neither does anyone else.

You’ll see these ideas shared not only in the pages of this publication, our biweekly Fast Mail e-newsletter, monthly webinars and our various Twitter handles, but also in CTAA’s advocacy work with leaders in Congress and the Administration, through our training and certification programs and at events like our annual EXPO and Small Urban Network conference. For instance, at EXPO 2018 in Pittsburgh, we’ll feature workshop sessions on Mobility As A Service, incorporating microtransit strategies and developing partnerships to engage TNCs. We hope you’ll let us know specific challenges you’re encountering, as well as sharing innovations and solutions that are working in your community.

And while this emerging landscape may appear to be a daunting challenge, engaging these concepts and technologies does not require a quantum leap forward. In fact, incremental steps are the only way to responsibly and effectively implement new tools and strategies. At one agency, that could be implementing easier-to-use fare collection methods or launching an on-demand trip-scheduling app. At another, trying out an autonomous shuttle vehicle on a targeted, high-volume route may make sense. Throughout their histories, CTAA members have wisely applied technologies to
The Commentary

improve efficiency while maintaining outstanding safety performance and customer service.

CTAA and its members have long avoided any one-size-fits-all thinking, especially in policies and regulations, and integrating technologies with mobility is no different. What works well for one organization might be the entirely wrong approach for another. IDEAS for Mobility’s Future will provide analysis on which concepts and platforms are right for you and your service, while connecting you with experiences and examples that your peers have examined and deployed. That’s why we’re sharing Seattle’s New Mobility Playbook as one such concept worth exploring (see page 30 – ed). In a way, this edition serves as an extended version of our ongoing How To series of practical tips for transit management and operations.

As CTAA staff recently shared its thoughts on what we’re calling Mobility’s Future, our web designer, Tony Frederick, noted the 1993 film by German director Wim Wenders, entitled *Im Witere Ferne So Nah!*, or *Faraway, So Close!* That notion almost perfectly captures where our industry stands today as new technologies and strategies enter the mobility arena: the future at once seems so far and yet so far. We take comfort in knowing the path to that future has the same, clear signposts that have led us this far: the people who depend on mobility options to live their lives to the fullest. CT

![Contact](www.ctaa.org)

**OBJECTIVES**

- Gain understanding of their leadership skills
- Learn industry history, current practices, funding & future trends
- Become knowledgeable about what it takes to be a leader
- Complete a project demonstrating leadership principles & application to a real-world situation

**ACADEMY TIMELINE**

- November 2017: Registration Opens
- May 2018: Leadership Assessments Completed
- June 2018: Two-Day Kickoff at EXPO 2018
- July 2018-May 2019: Individual & Group Work
- JUNE 2019: Poster Session & Graduation at EXPO 2019

CTAA’s Emerging Leaders Academy offers promising community and public transportation leaders the tools to shape their future.

**NOTE:** A minimum of 15 participants are required for the academy to take place.

**ASSESS**

Assess the participant’s current leadership style and potential

**CHALLENGE**

Challenge the participant through a rigorous combination of workshops, seminars, independent study and projects

**SUPPORT**

Support the participant through mentors, peer groups, access to course consultants and CTAA staff

Visit www.ctaa.org/ELA to register for additional details. For more information on CTAA’s Emerging Leaders Academy, contact CTAA’s Charles Dickson at dickson@ctaa.org or 800.891.0590 x708
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Before we begin exploring how trends and technologies may and will shape the future of mobility for community and public transportation providers, we need to get a better understanding of some of the terms and nomenclature at the heart of these concepts.

This quick glossary is not intended to include every possible interpretation of these terms, but rather position them in the appropriate context for our industry. In most cases, we synthesize a definition that we hope make sense to our members and affiliates. For a few others, we thought another organization or publication defined a term the best [referenced in brackets].

We’ll continue to update and revise this glossary as these terms are engaged by practitioners and evolve through implementation. Please let us know by contacting cteditor@ctaa.org if there’s a term we’re missing, or you understand one of these ideas a little differently.

**Autonomous Vehicle (AV):** A vehicle that can sense its environment and guide itself without human input (Abbreviated plural: AVs). AVs are sometimes referred to as HAVs (Highly Autonomous Vehicles) or as having ADS (Automated Driving Systems).

**Cloud Connected Device(s):** Devices linked through the cloud, i.e. the Internet. Most wireless devices that speak to each other are cloud connected, sending information wireless to the Internet, which then another device reads by connecting wirelessly to the Internet to read.

**GTFS:** The General Transit Feed Specification (GTFS) defines a common format for public transportation schedules and associated geographic information, which also supports its Google Transit platform. GTFS feeds allow public transit agencies to publish their transit data and developers to use that data to write applications. This is ideal for fixed-route transit but less so for demand-response service.

**Intelligent Transportation Systems (ITS):** Refers to a broad range of wireless and wire line communications-based information and electronic technologies. When integrated into the transportation system’s infrastructure and into vehicles themselves, these technologies relieve congestion, improve safety and enhance productivity. ITS is made up of 16 types of technology based systems, divided into intelligent infrastructure systems and intelligent vehicle systems.

**Level of Autonomy:** The degree to which a vehicle utilizes automation technology, including six unique levels of autonomy (1-6) as defined by the Society of Automotive Engineers (SAE), covered thoroughly on page 31.

**Microtransit:** IT-enabled private multi-passenger transportation services, such as Chariot, and Via, that serve passengers using dynamically generated routes, and that expect passengers to make their way to and from common pick-up or drop-off points. Vehicles can range from large SUVs to vans to shuttle buses. Because they provide transit-like service but on a smaller, more flexible scale, these new services have been referred to as microtransit. [TCRP Research Report 188]

**Mobile Ticketing:** The process whereby customers can order, pay for, obtain, or validate and use tickets using mobile phones or other mobile handsets.

**Mobility As A Service (MaaS):** Puts users at the core of transport services, offering them tailor-made mobility solutions based on their individual needs and incorporates multiple mobility options into a single, intuitive and...
Mobility’s Future: A Glossary

Mobility’s Future: A Glossary

Mobility Management: A systems approach to managing transportation resources that focuses on individual needs in an innovative manner, and involves coordinated community-wide transportation partnerships between trip providers.

Mobility On Demand: An integrated and connected multi-modal network of safe, affordable, and reliable transportation options that are available and accessible to all travelers. [FTA Office of Research, Demonstration and Innovation]

On-Demand: A product or service available immediately, or as soon as or whenever required. Twenty-four or 48-hour advance reservation trips are NOT on-demand.

Platooning: Synchronous operation of multiple vehicles, often in a convoy, to increase road capacity and efficiency.

Predictive Modeling: The process of creating, testing and validating a model to best predict the probability of an outcome.

Real-Time: Information transmitted and delivered to reflect current status as much as possible.

Shared-Use Mobility: Transportation services that are shared among users, including public transit; taxis and limos; bikesharing; carsharing (round-trip, one-way, and personal vehicle sharing); ridesharing (car-pooling, van-pooling); ridesourcing (such as Uber and Lyft); scooter sharing; shuttle services; neighborhood jitneys; and commercial delivery vehicles providing flexible goods movement. [TCRP Research Report 188]

Smart Cities/Communities: Promotes cities or communities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of smart solutions and technologies.

Smartphone: A cellular telephone with an integrated computer and other features not originally associated with telephones, such as an operating system, Web browsing and the ability to run software applications.

Surge Pricing: The practice of charging more for a product or service during periods when it is in high demand. (See also: Variable Pricing)

Telecommuting: The substitution, either partially or completely, of the use of computer and telecommunications technologies (e.g., telephones, personal computers, modems, facsimile machines, electronic mail) for transportation to a conventional place of work. Implies either working at home or at a satellite work center that is closer to an employee’s home than the conventional place of work.

Transport-Oriented Development (TOD): A type of community development that includes a mixture of housing, office, retail and/or other amenities integrated into a walkable neighborhood and located within a half-mile of quality public transportation. Successful TOD provides people from all walks of life with convenient, affordable and active lifestyles and create places where our children can play and our parents can grow old comfortably [Reconnecting America].

Transportation Demand Management (TDM): Focuses on understanding how people make their transportation decisions and helping people use the infrastructure in place for transit, ridesharing, walking, biking, and telework. It is cost-effective in guiding the design of our transportation and physical infrastructure so that alternatives to driving are naturally encouraged and our systems are better balanced. [Mobility Lab]

Transportation Network Company (TNC): A company that uses an online-enabled or digital platform to connect passengers with compensated drivers using their personal, non-commercial, vehicles. (Often referred to as ridehailing or ridesourcing; Examples: Uber, Lyft, Liberty Mobility Now, Via)

Travel Aide: In individual who assists a passenger or passengers navigate all elements a trip on a community or public transportation service, either routinely or on occasion. (also: Mobility Aide; Travel Navigator; Mobility Navigator)
Variable Pricing: Manages demand on transportation networks by providing customers with carefully constructed financial cues. These cues encourage travelers to use the available infrastructure or services in a more efficient manner. Includes time-of-day and dynamic (real-time) pricing changes. (See also: Surge Pricing).

Vehicle to Vehicle/Infrastructure Communication (V2V communication): The wireless transmission of data between motor vehicles. The goal of V2V communication is to prevent accidents by allowing vehicles in transit to send position and speed data to one another over an ad hoc mesh network.
Embracing Community Transportation’s Role as Caretakers – Today and Tomorrow

By Rich Sampson

In 2011, then-CTAA Communications Director Scott Bogren (now our Executive Director) and myself were traveling over dirt roads outside of Philippi, W. Wa., learning about the region’s Here & There Transit for our annual state edition of DigitalCT Magazine. During the demand-response trip they invited us to ride-along on, Here & There Transit’s driver Larry Kelly went out of his way to care for the medical and physical needs of the husband and wife that were his riders for that trip: the husband (Jacob) required portable oxygen to help him breathe (see photo at right – ed); the wife (Nancy) was hobbled by leg pain. Larry took them safely and courteously to their appointments at Broaddus Hospital.

It’s that memory of Larry, Jacob and Nancy in rural West Virginia that comes to my mind most often when the tantalizing future of AVs, TNCs and wizbang technology is connected to the reality of the transit realm. We know that TNCs are making on-demand mobility a pre-requisite of modern life. We hear about how AVs will save lives, reduce congestion and alter land-use decisions. All these are good and worthy outcomes.

But few observers spend time on how these technologies connect with the heart of community and public transportation: serving the essential, diverse and changing needs of the people who need mobility. On that trip outside of Philippi, Larry’s work and skill in driving the vehicle was important and perfectly executed. But it was his sensitivity and experience in attending to the needs of his riders that was the most essential element of his job.

There’s no mistaking that driving any sort of vehicle is hard, skilled and valuable work. And for the immediate future, manually-operated vehicles are likely to remain the backbone of community and public transportation fleets even as AV technologies are conceptualized, tested and implemented. CTAA’s Passenger Assistance Safety and Sensitivity (PASS) Training certifies drivers in these essential duties. We’ve added an additional training curriculum to assist TNC drivers in improving their passenger sensitivity skills (for more, see page __ – ed). Because CTAA and its members know that there’s way more to being a driver than just driving.

But anyone who’s traveled on a demand-response trip in a community of any size know that the women and men who operate our industry’s buses and vans do much more than pilot their vehicle. They conduct pre-trip inspections to ensure the vehicle’s safety and oper-
ability, often in the wee, small hours of the morning and in all sorts of weather. They know how to safety operate a wheelchair lift and securement system and where to pull up at a curb or driveway to make boarding as easy as possible for each individual passenger.

They review their trip assignments and keep tabs on who shows but, more importantly, who’s missing. They call family or caregivers if something doesn’t seem right. And when everything’s going fine, they engage in welcome socialization. They lug everything from oxygen tanks to groceries and recommend programs and events that may be useful, serving as de-facto, mobile case managers. They’re trained in handling both emergency situations and routine procedures for customers receiving dialysis or chemotherapy treatment. They react and problem-solve in real-time to changing conditions, such as a downed tree or road closure.

Meanwhile, fixed-route drivers – as well as rail transit operators and conductors – can spot when something’s not right with their passengers and have administered first aid, settled quarrels and brightened many days through their important blend of professionalism and compassion. Many transit providers have formally designated their vehicles and stations as safe spaces for victims of domestic abuse and lost or runaway children, and trained their drivers and other personnel to deliver support to people in these times of crisis. On page 15, we outline the crucial work of mobility providers in helping their communities prepare for and respond to emergency and disaster situations.

All these – and other – responsibilities are the products of experience and empathy rather than processing instructions from a GPS program or an on-demand trip request. It’s unlikely any degree of automation can ever replace these vital duties.

As a counterpoint to our time with Larry and his passengers in W. Va., Scott and I were also recently presenting at a state transit association conference on the future of mobility. From the back of
the room, the director of a large, growing regional transit provider in the state – his arms raised in bewilderment – wondered what the future had in store for systems like his (and others) in a world of potential when vehicles drive themselves and schedules are a relic. It’s a legitimate concern shared by many.

The answer to that manager’s unease is the reality that the need for people-focused and customer-oriented mobility options will never disappear. Professional and personal care is inseparable from effective community transportation service. If passengers suffer re-admissions to hospitals or are too intimated by technology, all the potential cost savings of autonomous technology or on-demand mobility will be for naught. That’s why CTAA has always stressed that our members don’t operate vehicles – they move people.

CTAA's Passenger Safety and Sensitivity (PASS) Training and Certification Program: Supporting Drivers as they Care for Passengers

For more than two decades, CTAA’s Passenger Safety and Sensitivity (PASS) program has ensured that community and public transportation drivers have current expertise in passenger assistance techniques and sensitivity skills appropriate for serving all people, and especially for persons with disabilities and seniors. The need for these essential skills is only more acute in the era of autonomous vehicles and TNCs.

PASS offers Train-the-Trainer certification for practitioners that deliver in-person PASS training across the nation, along with a basic, online version, avoiding the need for travel. Full details on PASS – including fees, our upcoming training calendar and more – are available.

NOTE: CTAA members enjoy exclusive discounts on all CTAA training and certification programs, including PASS. Learn more about CTAA membership.

Helping TNCs Better Train Drivers

CTAA has developed a training guide and provided training to TNCs to ensure their drivers have a baseline understanding of safely and sensitively transporting passengers.

Learn more about this valuable resource – A Guide to Safely & Respectfully Transporting Persons with Disabilities for Rideshare Transportation Providers – on page 17.
Transit for All

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Since Jan. 1, 2016, CTAA has added more than 300 new members!
Helping TNCs Better Train Drivers

By Charles Dickson and Joe Seitz

Since Uber and Lyft began introducing the concept of ridehailing as Transportation Network Companies (TNCs) beginning around 2012, there has been understandable concern about TNC drivers’ ability to adequately serve seniors and people with disabilities, given their status as independent contractors to TNCs and lack of uniformity among the vehicles they operate or training provided in transporting passengers.

In response to these concerns, CTAA has developed a resource for TNC drivers to become more familiar in transporting all riders more safely and with greater sensitivity: A Guide to Safely & Respectfully Transporting Persons with Disabilities for Rideshare Transportation Providers.

This guide was created to help TNCs understand and apply the Americans with Disabilities Act (ADA) in the provision of transportation services. Additionally, the guide provides TNCs with tips and techniques that may be used to safely and respectfully transport persons with disabilities; suggestions for handling on-board emergencies; and customer service basics to help drivers keep the smile on their customers’ faces.

Topics included in the 35-page guide range from a basic introduction to the Americans with Disabilities Act (ADA) to use of wheelchair ramps, lifts and securement devices, dealing with on-board emergencies, service animals and customer service.

The guide is available as part of CTAA’s portfolio of training and certification programs. To learn more about training opportunities for TNC drivers, contact CTAA Deputy Director Charles Dickson at dickson@ctaa.org or 202.247.8356.

Joe Seitz is the President of The Learning & Performance Improvement Group, LLC in Glen Rock, Pa.
SPECIAL REPORT:
Transit Plans For, Responds To And Recovers From Disasters

By Rich Sampson


In the abstract, they’re a seemingly benign collection of first names, both common and unusual. But over the past decade and a half, these are identities associated with destruction – hurricanes that have impacted both enormous metropolises and small towns. Hundreds died in their wake; thousands more were injured, homeless and facing fundamentally-changed lives.

But despite the catastrophe caused by these – and other – events, the role of community and public transportation providers has been harrowing. From the inclined plane of Johnstown, Pa., hoisting thousands to safety on three separate occasions in 1889, 1936 and 1977 to streetcars, buses and trains providing escape routes in communities from east to west, north and south, transit is and has been an indispensable element of emergency situations (see box at on page 2 for CTAA’s past coverage of transit in disasters – ed).

As part of the response system of neighbors helping neighbors, transit services are on the front lines of providing emergency evacuation options, shuttling emergency crews, relief workers and repair teams, dispatching vehicles to offer safety, shelter and comfort, and supporting long-term efforts to rebuild.

Trends and evidence suggest that the frequency and strength of disaster events – both natural and man-made – are likely to continue and intensify in the years ahead. This report brings together the experiences of CTAA members as transit professionals across the country in planning for, responding to and recovering from these tragedies so their peers elsewhere might be ready when disaster strikes again. Additionally, a summary of replies from transit providers across Florida who encountered Hurricane Irma this summer follows this article, prepared by Florida Public Transportation Association Executive Director Lisa Bacot.
Step One: Preparation

Some disasters spell out their impending arrival days in advance in weather reports and media coverage. Others – and certainly those caused by people – spring up from nowhere, usually with horrifying outcomes. But whether from a slow, agonizing build-up or a sudden, tragic reality, transit and mobility providers can and must plan for those possibilities in advance.

Those who’ve encountered disasters in the past stress the need to become involved in the local or regional emergency operations center (EOC) or emergency management agency (EMA) and the corresponding emergency operations plan (EOP) that outlines roles and activities before any large-scale emergency event occurs. Often, transportation providers will be included as standing members of an EOC committee or team and designated as a Emergency Support Function (ESF)-1 position. That role asks the agency to provide staff at the EOC to coordinate assets such as vehicles, facilities and communications networks as part of the larger response network.

These groups or plans are the path to engagement with the Federal Emergency Management Agency (FEMA) during all phases of an event. They also can offer needed jurisdictional authority to provide service beyond existing limitations, such as crossing county or state lines, or extending service hours and geographic coverage areas. They also take the lead in organizing emergency preparation drills and tabletop exercises.

“Participating in tabletop sessions and drills brings all they players in an EOC or EMA together in a room to run through emergency scenarios and reactions to them,” says Kelly Shawn, CCTM, Senior Associate at RLS & Associates, who has participated in several emergency planning and response efforts. “It is an important tool in emergency planning and can’t be replicated by phone calls or memos.”

Part of becoming familiar with the emergency support network understanding FEMA’s National Incident Management System (NIMS) – which standardizes communications language and nomenclature across agencies – and the Incident Command System (ICS), the event management process FEMA uses to coordinate emergency response. FEMA routinely offers publically-available training on both these programs.

Coast Transit Authority (CTA) in Gulfport, Miss. – which bore the full brunt of Hurricane Katrina in 2005 – assigns staff as the transportation management position at their local EOC during and after weather events. In Monmouth County, N.J., the director of its Special Citizen Area Transportation (SCAT) transportation program is a member of the county’s Office of Emergency Management (OEM), who’s administrator regularly meets with all relevant department heads to update and implement emergency procedures. Monmouth County was the most substantially impacted county in New Jersey by Hurricane Sandy in 2012, as well as experiencing significant damage during Hurricane Irene a year earlier. Meanwhile, Mountain Line in Missoula, Mont., regularly monitors the Missoula County Health Department’s air quality alert system, to

A Look Back: CTAA Past Coverage of Transit in Disasters

“Forty Below Won’t Keep Souris Basin Off the Road” – March, 1988

“Rolling Around the Rivers” – Sept./Oct. 1993

“When Disaster Strikes, Paratransit Steps In” – Feb. 1994

“Stormy Nights…Sonoma County Transit’s Rescue” – Feb. 1995

“Surviving the Ice Storm of ‘98” – Feb./March 1998


“Passenger Rail’s Steepest and Shortest” – RAIL Magazine, Spring 2004

“Effective Communication Taps Essential Resources” – EXPO Edition 2004

Passenger Rail Security Edition (RAIL #16) – Fall 2006

“Community Transit Demonstrates Its Value in Response to Hurricane Sandy” – Winter 2012
Special Report: Transit Responds to Disasters

alert its riders to poor air quality, including during wildfires as the state experienced this summer.

“Our county’s OEM director, Terry O’Connor, went out of his way to include us and brief us on all the details and plans,” says Kathy Lotado, Director of Monmouth’s SCAT, who oversaw the system during Hurricane Sandy. “OEM helps us understand our role and avoid confusion when things start to get serious.”

“Meet with the local EMA director to determine how transit can assist the community and clearly define what transit is expected to do,” adds Kevin Coggin, CTA Executive Director. “Before each storm season, we identify the community’s needs, what we can do and what we are expected to do to support the community before, during and after a storm.”

Tangible steps to ensure coordination and effectiveness during an event include developing memorandums of understanding (MOUs) between organizations, programs and service providers that reduce bureaucratic entanglements when quick action is needed, as well as cross-training personnel with police and emergency departments and the National Guard on the details of transit vehicles. While second nature to most transit professionals and drivers, the nuances of how a wheelchair lift and securement system operates or the various controls of available to a bus driver are often unusual to those without training. This is all work that can and should be done as part of regular involvement and planning with the EOC, EMA or other entities.

That planning process should also include advance determination of shelter sites with the EOC team so that all participants know the capacity of each shelter and the degree to which transportation vehicles can access those sites,” says Kelly Shawn. “Often, emergency planners will focus on facilities with the fewest barriers to use, but won’t factor in how people will reach those locations. This is why regular involvement of mobility providers in emergency planning activities is essential not just for transit agencies, but for the overall effectiveness of the response.”

Credit: Houston Chronicle
A similar planning mechanism exists to help agencies in any industry assess their susceptibility to human-related events: a threat and vulnerability assessment (TVA). The TVA process not only helps determine assets, facilities and protocols that are at risk for intentional disruption or damage but also ways to mitigate those threats. The FTA includes details on TVAs as part of its safety preparedness resources.

As important as involvement with the local emergency operations structure is an internal plan for an organization’s assets and operations. That includes predetermining under what conditions service will be provided, when, where and how employees are to report to work and steps to ensure vehicles and facilities are protected from damage. Many systems establish graduated degrees of severity under which some service continues during an emergency event while less essential operations are curtailed. Additionally, call-down lists – or phone trees – employee contact info need to be created, prioritized and updated.

For CTA, that means the agency provides service until wind gusts exceed 45 miles per hour, after which buses are secured at its maintenance facility. A volunteer response team is established in advance to help with evacuation requests in coordination with the EOC. With Monmouth’s SCAT, it entails positioning vehicles needed to assist in the response effort when it’s determined its non-essential, demand-response trips will not operate.

Similarly, R.E.A.L., Inc., in Alice, Texas – which experienced the brunt of Hurricane Harvey this past summer – had instituted a policy in advance which would halt all service after winds topped 39 miles per hour but re-open for dialysis trips as soon as it was safe to do so, according to its Transportation Director Martin Ornelas. Meanwhile, images of Houston Metro’s preventative move of hundreds of buses to a HOV lane on high ground north of the city received national media coverage, especially in contrast to New Jersey Transit’s damage to commuter rail rolling stock during Sandy in 2012 (New Jersey Transit recently acquired land in attempt to better protect its rail equipment – ed).

“Develop a written response plan,” says the CTA’s Coggin. “Meet with key staff members to ensure everyone understands what and how things need to be done and by whom. Communicate with essential personnel as to what is expected of them. Secure your assets from wind, storm or surge damage as appropriate for the size of storm. Basically, plan the work and work the plan.”

**Step Two: Operations in the Midst of Crisis**

Certainly, no two emergency events are the same. The timing and severity of an event always presents
unique challenges, as do local needs, resources and conditions. Nonetheless, there are aspects common to disaster situations that require spontaneous, flexible responses by mobility providers.

That work most often entails ensuring access to essential healthcare treatment like dialysis to the extent that it’s available, responding to requests for evacuation as well as offering vehicles and facilities as needed through the EOC, staffing call centers and ensuring the safety and well-being of employees. In the course of those duties, obstacles or unexpected changes routinely emerge.

In Monmouth County, SCAT experienced conflicting reports of the number of people who needed to be evacuated to a shelter. Lotado explained SCAT had a request for a vehicle that could carry 24 people. When the bus showed up, 35 people were waiting. And while the system had experienced some loss of radio coverage during Hurricane Irene, it had improved its equipment and bandwidth through funds provided by the EOC by the time Sandy emerged a year later.

CTA’s Coggin noted the system participated in an effort to evacuate a nursing home during Katrina, an experience he described as “stressful” due to the complexity of accessibility and medical needs involved for the residents and the limitations of the venue that was to host them. Coggin also shared the importance of monitoring the availability of fuel for vehicles, an element that is more easily managed when part of an agency’s standing emergency preparedness plan.

Keeping track of and assisting employees became a major concern for R.E.A.L., Inc., during Harvey. Ornelas reported that several of its drivers’ lost their homes entirely and immediately left the area to shelter with relatives, while others experienced flooding and external damage. SCAT and CTA also reported that drivers and other employees found damage to homes. This October, the Napa Valley Transportation Authority suspended its entire Vine Transit network in order to dedicate its vehicles and staff to the evacuation of hundreds of residents at the Veterans Home of California in Yountville from fast-moving wildfires.

Once decisions were made to halt transit services, the agencies continued to direct calls for trips to emergency personnel, transferring essential information on location, accessibility needs and medical conditions to help provide a more effective response by police and ambulances. Transit managers reported working 24-hour (or longer) shifts during the height of these events to ensure transportation needs were coordinated. During Hurricane Irma this summer, Palmetto Breeze – which serves the Lowcountry region in South Carolina – moved more than 200 people to shelters using its motorcoach buses and smaller vehicles, operating its own call center for two days at its headquarters in Bluffton, including regular consultation with the region’s EOC. The decision to operate a call center stemmed from a review of their emergency evacuation lists in the days before...
Irma made landfall that information on those who’d been transported only a year earlier during Hurricane Matthew was already out of date. The call center allowed for a more accurate and efficient response operation.

“We took a look at what we did for Matthew and wanted to make sure we didn’t make the same mistakes all over again,” says Mary Lou Franzoni, Palmetto Breeze Executive Director. “Our community depended on us having the best information available so we put the time in to get it right.”

During hurricane events, safe travel during the storm’s greatest ferocity means threats of flooded roads, downed trees and power lines and extreme wind gusts. Moving vehicles amidst these periods demands real-time communication with the EOC to gauge weather conditions and the status of roads. Often, that information exchange is bidirectional, with transit providers updating the EOC with reports from its drivers in the field.

Also essential during any kind of event impacting safety and/or health is communication with the public. Much like how airline pilots experiencing an unexpected issue focus on the immediate viability of their aircraft before speaking to their passengers, ensuring safety of employees and the provision of essential service are the top objectives. Still, using the various platforms and outlets available is crucial to keeping the community updated on transit’s role in responding to the crisis.

During this year’s wildfire season, Missoula’s Mountain Line spread the word widely and frequently that its services were available and recommended to walkers and bikers – as well as to seniors and people with disabilities – on days with especially poor air quality, in conjunction with the Missoula County Health Department. Additionally, during Katrina and since then, Coast Transit Authority regularly contacts the EMA’s communications director to share updates on the agency’s service as a component of the region’s emergency response options.

Among all these practical and urgent concerns is an often-overlooked aspect of work during an emergency: the emotional and psychological stress it produces. Of course, the immediate danger of personal safety and threats to loved ones, personal property and getting back on your feet are fundamental concerns that can leave lasting scars. That includes not only making arrangements for employees to report to work as needed, but also care for their families, which often includes their pets, as well. A driver, dispatcher or mechanic who knows their loved ones are safe has a better ability to focus on their work during stressful times. For some agencies, that includes allowing drivers’ families to ride along in their vehicle – as space permits – to help provide peace of mind.

Less obvious – but often just as profound – is coping with the reality of transporting people back to homes that have been wiped away, children facing the loss of parents or damage to places of work, medical care or worship jarring daily life for the foreseeable future. One manager we spoke with described their medical diagnosis of post-traumatic stress disorder following the tumult of hurricane survival, as their house was the only one left occupied on their street. Their neighbors never to return.

“Going through that hurricane was absolutely heartbreaking,” says that manager, who asked not to be identified. “I faced personal stress and sickness, you encounter rude people who are having trouble coping. But I also watched our drivers come in and asked ‘what can I do?’ That’s how you’re able dig deep and act with kindness, patience and empathy.”

Step Three: The Aftermath and Recovery

In the midst of crisis, it’s hard to anticipate the day when the sky will clear, the rain subside or the danger retreat. But when that time arrives, the emergency operations process has by no means ended. In many ways, it’s just begun.

The recovery process for mobility providers begins with an immediate assessment of damage and the ability to restore operations, however gradual. That includes determining the operability of vehicles, equipment and systems, along with the status of employees needed to operate service, such as drivers, dispatchers, mechanics and supervisors.
With an inventory of people and assets compiled and service gradually returned to the streets, procedures must be followed in realizing reimbursement or emergency funding from various governmental entities. Any requests for assistance must go through the local EOC or the state Department of Transportation. Regional FTA offices often act as a coordinator, as do state transit associations. Otherwise, they will not be reimbursable by FEMA. Agencies need to track each of the activities that were provided beyond their routine service – for example, service to dialysis treatment at nights or on weekends, or trips across county or state lines – as a separate cost center to capture and provide that information.

“The day after Katrina ended, CTA staff were conducting damage assessment and damage mitigation,” says Kevin Coggin. “We were developing a plan to get as many assets as possible in service as quickly as possible. We were in the county EOC the next day to report capabilities and determine what the community needs from us. CTA immediately contacted FEMA, FTA and the Mississippi DOT to give them a status report. We conducted an initial damage assessment. We called in our accidents and emergencies consultant to begin a thorough damage assessment.”

Meanwhile, the Public Transportation Emergency Relief Fund (49 U.S. Code, Section 5324) provides assets for disaster recovery. The Cornell Law School at Cornell University which provides an easy-to-read description of the program. Additional information is also available through the FTA Chapter 53 of title 49, United States Code. If there is damage or losses as a result of the disaster to FTA-funded equipment or facilities, contact your FTA Regional office.

Additionally, many states and localities conduct an After Action Report (AAR) and assessment that review all phases of the event and response. This allows for improvements to be made to the emergency management plan for future events. FEMA provides guidance and a template for conducting AARs.

Monmouth County’s SCAT had three vehicles that were damaged beyond repair by Hurricane Sandy. Through the county OEM, FEMA provided the same number of replacements. Kathy Lotado described FEMA following-up with about 30 questions to clarify the request. At the same time, the OEM processed the forms to reimburse the agency for overtime pay for drivers. She describes those funds arriving from the county in a matter of weeks.

“Our relationship with everyone involved with the OEM really paid off after the storm,” says Lotado. “When we were hustling to return service, they made our lives easier by handling all the paperwork. Financially, we were able to get everything sorted out fairly quickly.”

Transit: An Invaluable Asset in Emergencies

More than a decade ago, an image of a lighthouse served as the cover for an edition of
There is no doubt as to why transit providers spring to action during times of distress: it is simply the right thing to do. The fundamental reason for existence for every mobility service is to help people most in need. That identity is only more urgent and apparent during disasters.

But, moreover, the examples of the transit and mobility professions profiled here speaks to the importance of serving as an asset – immediately-available and dependable – to local leaders and program managers when times are tough or a situation emerges unexpectedly. The public has invested in community and public transportation vehicles, buildings and – most importantly – the people who manage and operate them.

When those investments demonstrate their value in emergency situations only serves to reinforce their importance as an essential community service – dependable, effective and responsive – to elected officials, community leaders and the public at large. More often than not, those memories and impressions become lasting understandings that make funding decisions easier and solidify ongoing support in the future.

In all, the role of transit in disaster has become more refined as, unfortunately, more circumstances have presented themselves and experiential knowledge is accumulated and shared throughout our industry. Lessons are learned, preparation is improved and procedures are updated.

“The experience has improved since Katrina as we all learn from each event together and are constantly assessing strengths and weaknesses,” says CTA’s Kevin Coggan. “Again, it comes down to plan the work and work the plan.”

In response to hurricanes Harvey and Irma, the South West Transit Association (SWTA) and Florida Public Transportation Association (FPTA) coordinated donations from the community and public transportation industry. SWTA distributed more than 500 gift cards to in-need employees at Houston METRO (see photo below), Harris County Transit and Fort Bend Community Transportation, with FPTA receiving more than $8,700 in donations.
Following Hurricane Irma’s path across Florida in September 2017, Lisa Bacot – Executive Director of the Florida Public Transportation Association – collected and summarized the experiences submitted by the following transit providers across the state: Baker County Council on Aging; Citrus Connection (Polk County); Clay Transit (Clay County); Collier Area Transit (Naples); Council on Aging of St. Lucie, Inc.; Hillsborough Area Regional Transit Authority (HART – Tampa); Jacksonville Transportation Authority (JTA); LYNX (Orlando); Manatee County Area Transit (MCAT); Palm Tran (Palm Beach County); Sarasota County Area Transit (SCAT); South Florida Regional Transportation Authority (TriRail); Voltran (Volusia County) – ed.

How do transit providers prepare ahead of the storm?

First, the transit agency should have a well-documented plan on how it is to operate pre, during, and post-storm. This plan should be rehearsed annually, at a minimum. If storms – or any other emergency event – are infrequent in an area, then the rehearsals should be more frequent.

It is imperative that transit providers monitor the projected path at least five days out and meet with their staff at least every four hours, beginning 72 to 48 hours before the storm to ensure that plans are progressing in the direction that is outlined by the agency’s plan. Checklists and reporting mechanisms must be used to track progress. Employee work plans should be created with roles and responsibilities that are clearly-defined to ensure efficiency and shared focus.

If the agency requires or encourages its staff to stay overnight at the agency’s facility, employee accommodations must be addressed for basic needs such as food and sleep. Supplies must be measured to ensure that the agency can operate as soon as practicable after the storm has passed. One system secured 10 hotel rooms to be available during and following the hurricane for those essential employees who could not prepare for the hurricane. This was deeply appreciated, as 13 of their employees lost their homes.

Fuel usage should be projected at least a week in advance and compared to your service plan. Having contracts in place to ensure that the agency can adequately procure the necessary items to restore service is very important. Supplies become very scarce before and after a storm.

All plans should address asset protection. Potential projectile objects must be secured and/or removed from your facilities and bus stops. Equipment must be positioned to avoid all possible damage. Service plans must be discussed in detail. When to stop service and what source(s) will be used to determine wind speeds must be determined prior to the storm.
Florida’s Transit Hurricane Experience

A well-prepared communications plan that addresses all forms of media and internal communication must be reviewed to ensure a consistent message. A back-up payroll system must be implemented. Emergency contact list for all staff must be updated and readily available.

As the storm comes closer, the transit systems evaluate how long they can operate normal services as they support the Emergency Operations (EOC) requests for shelter transport. Senior leadership along with the Emergency Response Team (ERT) are meeting twice a day as more information becomes available on the projected path. The transit providers are reviewing their internal resources to make sure that following the hurricane they have enough assets to support the EOC. Open the shelters for special needs and transit dependent as early as possible, this may be out of your control, but it is important to ask that it be done. Pre-hurricane impact preparations are completed – securing items on property from becoming a projectile; covering electrical devices (computers, printers, copiers, etc.) from water damage; parking vehicle assets in safe areas to prevent damage.

What challenges do they face during the storm?

As a result of damage/supply shortages, fuel delivery is unpredictable following a storm. Otherwise, during the storm it is a waiting game as vehicles come off the road when winds are sustained at 35 mph. Emergency evacuations during a storm are sometimes needed. Communicating with staff can be a challenge. However, one of our system’s uses a notification system (Everbridge Mass Notification) to notify operators, supervisors, maintenance employees and other staff of updates and their schedules. Emergency message call in centers are also useful. Debris and weather conditions are significant challenges.

One system reported their county shelter planning was poor:

The shelters were opened late and had higher than expected populations seeking shelters. The county had to open additional shelters that were not originally prepared with food and water. Our fixed route and paratransit vehicles were picking up people and trying to access a shelter only to be turned away because the shelter was full. The buses would travel to 2-3 different shelters in order to find one that was available. We needed to have a transit dependent-only shelter where we can have a guaranteed drop of our passengers. These delays caused us not to pick up a lot of people before we needed to stop due to the wind threshold. We could have picked everyone up if we were able to drop-off efficiently.

Our county expected the storm to go to the east part of the state. We got complacent. When the storm turned, we had a huge rush to get into the shelters. Our shelters were overcrowded with higher than expected numbers.

If not planned in advance, challenges can range from lack of fuel, supplies, or food and water for emergency workers during the storm, as well as a lack of a coordinated message to the public and an inability to quickly recover and respond following the hurricane.

Another system reported:

Our biggest challenge is the with schools after the storm passes. Schools that are used as shelters are pressured to empty shelters following a storm so that students can get back to school and begin the return to normalcy process.

What agencies do they interact with (federal, state, local) and what are their general experiences with them?

The State of Florida has a very defined and coordinated method of responding to storms and other emergencies. Generally, on the local level transit, agencies work directly with their immediate city or county emergency operations center (EOC). Those EOCs work with the state’s EOC to ensure a streamlined coordinated effort. Agencies involved at some level include:

- Federal Transit Administration
- Federal Railroad Administration
- Florida Department of Transportation’s (FDOT) Central Transit Office
- FDOT District Offices
- Local offices, such as: Fire and Rescue, Department of Health, Public Works, and the County Sheriff’s Office
- Special needs providers and evacuation shelters
Florida’s Transit Hurricane Experience

Most transit providers noted that their experiences proved to be productive and aided in the process.

What steps should they take in the aftermath to restore service, replace assets, etc.?

As soon as the storm passes, the transit system must conduct damage assessments of their assets and ensure that all staff are safe. Replacement and repairs of assets are based on the damage assessments. The EOC conducts a thorough assessment of the damages to infrastructure and work very closely to restore transit services soon as it is safe to do so.

The perceived urgency to return to normalcy preempted standard the conduct of damage assessments and recovery phase operations. This area reported that the perceived sense of urgency prompted a large volume of people and vehicles onto the roadways well prior to infrastructure being in place to safety support their movement. The undesired volume of traffic must be reduced in the immediate aftermath of a tropical event to allow for proper damage assessments, the response of emergency providers, and the preservation of life.

One of our rail providers reported:

Major issue with Irma was the lack of power, which is essential for train operations. Unfortunately, it is virtually impossible to place generators at all of the crossings, so we were dependent on the efforts of FPL to enable us to resume operations.

There is coordination with county officials, shelters, Red Cross, energy providers to expedite the return from shelters to homes. Some areas dealt with limited hours of service while traffic lights were repaired and curfews remained in effect. Communicating with the public via social media about schedules proved critical.

What advice do you have for providers preparing for disasters in the future?

Have a plan in place that clearly outlines areas of responsibilities. Establish the lines of communications and maintain them to the extent possible before, during and after the storm. Make sure that employees are permitted time to secure themselves and their families in advance of the storm.

Know what areas are prone for flooding. Purchase supplies well in advance of the storm. Don’t wait until the last minute. Make sure you have multiple ways of communicating with your staff and the public. Anticipate staffing shortages due to storm damage. Make sure all your plans address the needs of persons with disabilities.

Expect that the EOC will be slow to direct transit agency to assist with emptying of shelters. The EOC is balancing many things with limited resources. Returning persons who evacuated to shelters takes time to validate that the streets and homes are safe for transporting people back. Verifications of a safe dwelling takes time: our agency helped to overcome stretched county resources in doing home checks to ensure that evacuees had a residence that had power and did not appear to be damaged.

Understand evacuations to shelters can still happen following the hurricane as hard-hit areas without power or with massive flooding requires persons to be taken to a shelter. The country became aware of the tragedy at the nursing home in Hollywood, Fla., where the air conditioning failed following Hurricane Irma which caused loss of life. This resulted in the local EOC doing checks at all ALF’s and nursing homes to ensure they had air conditioning post-hurricane. We had to go into standby again for possibly needing to evacuate a nursing home.

Following a hurricane, employees will have damage to their homes but will be required to report to work. Since returning individuals back their home will take time, drivers will be sitting around waiting and thinking of their family at home with no power, damaged roof and spoiling food. Human Resources should be on the front end to assist employees who need temporary quartering at a hotel or connecting with FEMA.
REGISTRATION OPENS SOON AT WWW.CTAA.ORG/EXPO
Webinar Podcast: Applying Lessons from Seattle’s New Mobility Playbook

Admittedly, Seattle doesn’t share many characteristics with most of the communities served by CTAA’s members: it’s a massive metropolitan area with staggering population growth and diverse array of multimodal transportation options, including a monorail, ferry network and rail transit system. But it does prioritize one central goal that unites it to rural communities, small urban areas and everywhere in between: a desire to move people as responsively and effectively as possible.

It’s within this context that the Seattle Department of Transportation’s (SDOT) New Mobility Playbook emerges as a valuable resource for community and public transportation professionals and advocates. The Playbook outlines both goals and strategies to make those goals possible: priorities that must inform any mobility decision and a set of strategies that stress measurable outcomes that benefit Seattle residents.

DigitalCT Editor Rich Sampson spoke with SDOT’s Benji de la Pena via a recorded webinar about the lessons that any community — regardless of size — can incorporate from the Playbook.

Looking for a quick snapshot of the Playbook’s goals and strategies? See the graphic below.

Principles for New Mobility

+ Put people and safety first
+ Design for customer dignity and happiness
+ Advance race and social justice
+ Forge a clean mobility future
+ Keep an even playing field

The Five Plays

▷ Play 1: Ensure new mobility delivers a fair and just transportation system for all
▷ Play 2: Enable safer, more active, and people-first uses of the public right of way
▷ Play 3: Reorganize and retool SDOT to manage innovation and data
▷ Play 4: Build new information and data infrastructure so new services can “plug-and-play”
▷ Play 5: Anticipate, adapt to, and leverage innovative and disruptive transportation technologies
Want to Partner with a TNC?  
Examples from Two Transit Providers

By Rich Sampson

Nearly every day seems to bring a fresh news article about a transit provider or community partnering with a Transportation Network Company (TNC) such as Uber, Lyft or CTAA member Liberty Mobility Now (the latter of which is adapting the TNC model in rural communities). At the same time, local leaders and elected officials often ask mobility professionals to consider these kinds of arrangements based on the perceived effectiveness of the TNC model – often ignoring the heavy subsidization of their full cost per trip via venture capitalists or annual operating losses measured in billions of dollars.

Mindful of these trends, CTAA seeks to help its members understand the elements at play when partnering with TNCs – nuances ranging from liability coverage to dispatching trips. We spoke with representatives with first-hand experience in developing and launching such arrangements: Richard Farr, Executive Director of rabbittransit, a regional public transit provider operating in ten counties in central Pennsylvania; and Carly Sieff, Senior Transportation Planner with Fehr & Peers Transportation Consultants, who worked with the city of Centennial, Colo., on its Go Centennial effort.

About Their TNC Partnerships

rabbittransit began partnering with both Uber and Lyft in 2017 to provide limited trips to individuals under the agency’s Shared Ride demand-response service. Under the agreements, rabbittransit assigns trips to TNCs only when demand for Shared Ride service reaches peak capacity. In recent months, rabbittransit has shifted many such trips to Lyft over Uber due to operational and financial details in the agency’s favor.
Centennial – about 15 miles southeast of Denver – launched the Go Centennial effort in August 2016 as a six-month pilot public-private partnership (PPP) to test connections to the city’s Dry Creek light-rail station, part of the Regional Transit District (RTD) network serving the Denver region. Under Go Centennial, the city partnered not only with Lyft but also CTAA member Via Mobility Services (read more about Via in our recent profile of its former Executive Director, Lenna Kottke – ed). An extensive final report on Go Centennial prepared by Carly Sieff/Fehr & Peers and the Centennial Innovation Team is available.

Both Uber and Lyft have established local or regional offices with in-person staff to oversee their operations in areas they serve. Identifying a local contact with Uber is often a complex process. Its local offices are known as Greenlight Hubs. Contact information at each hub is not provided, so an in-person visit is needed unless you’re able to reach out to a partner in your community that’s already made inroads with Uber (many hospitals and healthcare management organizations have done so). Rideshare Report has compiled a list of all Uber’s Greenlight Hubs in the U.S.

As Lyft operates only a few staffed offices in major U.S. cities, it’s Partnerships page is the best place to start. Others recommend reaching out to Lyft via a direct message on Twitter, using the handle @AskLyft. Messages to @AskLyft are often returned within minutes and referred to a responsive local contact.

As a much smaller and more recent arrival to the TNC scene, Liberty Mobility Now offers much easier interaction. Visit their contact page for full details.

If you’d like assistance, CTAA staff maintain current contacts with Uber, Lyft and Liberty Mobility Now. Contact CTAA’s Sheryl GrossGlaser (grossglaser@ctaa.org) for assistance.

Once communications are established with one or more TNCs, the next step is considering an agreement for service. Predictably, these are as varied as the types of service they outline. Absolutely seek input from legal counsel as well as your insurance provider before entering into any real agreement with any TNC (more on that below). In some instances, a formal agreement is not required if individual trips are purchased from the TNC in real-time.

Things to keep in mind for such an agreement is the level of service (number of trips per day/week/month), specified price per trip, payment structure, agreement period, a method to resolve problems and terms of compliance. We’ll provide more detail on many of these aspects below.

A chief drawback to utilizing TNCs to provide service is the limited availability of accessible vehicles and drivers trained in passenger service and sensitivity (learn more about CTAA’s training programs for TNC drivers on page 17 – ed). None of the providers offer widespread accessible options and where
Partnering with TNCs

they exist are usually limited to the largest metropolitan areas (learn more about CTAA’s partnership with Uber to improve driver training on page __ – ed).

Neither of the TNC partnerships we discussed with their key players utilized TNCs to provide accessible service. For rabbittransit, their dispatchers only assigned ambulatory trips to TNC service. As part of Go Centennial, the program’s partnership with Via Mobility Services directed all accessible service requests to that system.

In the two TNC partnership examples we profile here, the method for arranging service via TNCs differed substantially.

Go Centennial utilized the existing Go Denver app for mobile phones (available for download at no cost), where riders scheduled trips directly using the app’s features.

As an internal service provision mechanism, rabbittransit’s dispatchers directly booked trips via Uber and Lyft on behalf of its Shared Ride passengers using the TNCs’ web-based platforms. Riders selected to be transported by TNCs receive direct notifications from dispatchers they would be traveling in an Uber or Lyft vehicle, which details such as license plate number and color/make/model of the vehicle.

Both rabbittransit and Go Centennial were charged the real-time market rate for each trip, including surge pricing, if applicable (see our glossary on page 10 for more – ed).

rabbittransit assumes the difference of the cost of the trip versus the established fare for passengers on its Shared Ride service. rabbittransit seeks to only utilize TNCs when the difference between the market rate cost and its fare work out positively in the agency’s favor, otherwise rabbittransit provides the trip itself (see more under Effectiveness below – ed).

Go Centennial provided all trips free of charge to anyone traveling to or from the Dry Creek RTD station during the length of the project. The project would pay the cost of the trip either to Lyft or Via Mobility Services (see more under Payment below – ed).

TNCs operate by supplementing an individual driver’s personal auto insurance with additional coverage while they’re signed onto their app as a driver. This includes passengers riding in their vehicles. Liability descriptions are provided by Uber, Lyft and Liberty Mobility Now.

In both TNC partnerships we explored, any liability concerns in transporting people with disabilities were avoided by proving service to those people by trained community transportation professionals.

Always consult with your insurance representative before entering into any formal agreements with outside service providers.

Uber and Lyft structure their payment procedures differently for business-sector clients. Uber requires individual credit card payments for each trip that are authorized when a trip is requested, much like any individual user of their service. A valid credit card is required to be on file before any trips can be scheduled.

Lyft offers monthly payment options, where trips provided over a given month are totaled. Payment may be made either via a corporate credit card, or via processed check upon receipt of the monthly invoice. Both rabbittransit’s Farr and Sieff of Fehr & Partners noted the relative simplicity of Lyft’s payment process.

Additionally, TNCs generally do not collect co-payments. There is no mechanism for shared cost between the client and agency for the cost of the trip.

As independent contractors, drivers for both Uber and Lyft retain the right to deny a trip based on the length (distance or duration) of a given trip. As currently structured, drivers for both companies do not know their passenger’s destination until the...
trip has begun.

In fairness, one of the motivations for not providing destinations to drivers was to avoid refusals to perceived undesirable destinations, often based on racial or socio-economic prejudices. At the same time, while Lyft and Uber assign trips to drivers that correspond how long they have indicated they will be available, those calculations do not factor-in whether returning from the trip will be beyond their on-duty service period.

Rich Farr noted they received reports that some TNC drivers refused trips, perhaps believing they would not be tipped by passengers. rabbittransit does not allow for tips of TNC drivers, in accordance with guidelines from the Pennsylvania Department of Transportation.

Effectiveness

Generally, service provided by TNCs is a valuable option for ambulatory passengers taking trips in urbanized areas of relatively short distances, about five miles or less. Nearly all Go Centennial trips provided by Lyft fit these parameters in the city of Centennial. For rabbittransit, it directs trips to TNCs within the urban area of York, Pa. According to Farr, trips over five miles – whether within York or not – are more effectively operated by its Shared Ride drivers and vehicles.

The price algorithms utilized by Uber and Lyft are closely-guarded, proprietary trade secrets, as are the levels to which investment from venture capitalists allows them to subsidize the fully-allocated cost of each trip in order to attract more riders. A CTAA member recently shared a quoted cost of $1.40 per mile as the rate a new TNC would charge for trips in rural areas. That member noted that nearly all of their trips are delivered at a lower per-mile cost than that estimate.

Summary: Partnering with TNCs for all or portions of service provision in a community presents both opportunities and challenges. In some cases, utilizing TNC providers can present positive efficiencies a mobility provider should consider. In others, the combination of the cost-effectiveness of long-distance trips plus important factors such as accessibility, dispatching or trip refusals could make such an agreement not worth the trouble.

Regardless of the long-term viability of any individual transportation network company, the reality of – and demand for – on-demand mobility is one that is not soon to diminish.

CTAA will continue to provide resources and context such as this to help our members and all mobility providers understand and adapt to these dynamic trends and technologies. Please share with us other elements of TNC partnerships you’ve encountered, or questions you’d like to see us cover in the future on this crucial topic. CT

And it’s free to sign-up! Simply send an email to fastmail@ctaa.org and you’ll be connected with the next issue of CT Fast Mail. In the meantime, view the latest edition at www.ctaa.org. NOTE: CTAA Members receive CT Fast Mail a week before non-member subscribers. To become a member, visit www.ctaa.org today!
freedom thru Autonomous Transportation

About CTAA

The Community Transportation Association of America (CTAA) and its members believe that mobility is a basic human right. From work and education to life-sustaining health care and human service programs to shopping and visiting with family and friends, mobility impacts quality of life. Our members are in the business of moving people—efficiently and cost-effectively. CTAA staff, board and state/tribal delegates are dedicated to ensuring that all Americans, regardless of age, ability, geography or income, have access to safe, affordable and reliable transportation. Our priority is our members and the communities and passengers they serve.

Why CTAA Is Interested

CTAA members serve all different types of communities and provide transportation for all types of trip purposes. We support the development of autonomous vehicle technology and programs that will offer accessibility, convenience, and affordability wherever people live and whatever their financial positions, and their physical, sensory or mental conditions.

Learn More

CTAA has developed a wealth of resources to help mobility providers and advocates engage a future that is increasingly on-demand and automated.

The best place to start is www.ctaa.org

For real-time news and analysis, visit our Twitter handles: @OfficialCTAA, @nc4mm and @TransitPlanning

- low-income
Henry Ford’s promise of an affordable car for every household has gone unfulfilled in recent decades with our low-wage, gig economy. For people to reach jobs without personally-owned vehicles, autonomous transportation must offer affordable options in all types of communities.

- seniors
Over the next decade, approximately 10,000 people each day will be turning 65. Autonomous vehicles have the potential to save these individuals from the debilitating effects of missed medical appointments and living in isolation.

- non-emergency medical
Lack of transportation represents a significant barrier to medical care for many people, representing in excess of three million missed appointments every year. If autonomous vehicles improve access to care, the U.S. may save millions of dollars from better care for chronic conditions and decreased hospitalizations.

- people with disabilities
Many people who are unable to drive live with a broad range of physical, sensory, mental, and cognitive disabilities. For autonomous vehicles to offer independence, they must be accessible for wheelchairs and other mobility devices as well as with accessible interfaces to accommodate other types of disabilities.

- rural
Rural and exurban areas experience a disproportionately high share of the over 35,000 deaths and injuries each year on US roads. Autonomous vehicles will make transportation much safer in these communities.
Getting a Handle on Autonomous Vehicles: Background, Policy and Trends

By Sheryl Gross-Glaser and Andrew Carpenter

As the drumbeat of news and information about autonomous vehicles (AVs) becomes even stronger and louder, it only makes sense that many community and public transit leaders and advocates wonder: what’s in it for me?

Consider:

• 35,000 deaths on our roads and highways every year, with some estimates pegging the number caused by human error at up to 94 percent.

• At the same time, as AVs are tested at both simulated facilities and in real-world conditions, their safety record is inching closer to perfect. For instance, while news headlines pounced on an AV shuttle in Las Vegas that was involved in an incident on its first day of service, a nearby truck driver was found to be at fault for backing into the AV.

• Operations account for the majority of annual budgets for transportation providers, with APTA’s 2016 Fact Book (page 26) noting that vehicle operations comprised 47 percent of annual operating expenses for fixed-route bus and demand-response services.

• Both American and foreign automobile manufacturers have recognized AVs are the future of their industry. For instance, General Motors will roll out a fleet of autonomous taxis by 2019, while Ford is partnering with Lyft on a TNC service using AVs by 2021.

CTAA is keeping up to date with the research, business development, testing, and pilot programs taking place in the United States and around the world. Vehicle manufacturers are pouring billions of dollars into research to create and refine sensors, cameras, software, artificial intelligence, vehicle design, entertainment systems, and interfaces between human passengers and the vehicle.

The infographic on the previous page illustrates the reasons why CTAA is interested in this dynamic technology.

What Does AV Mean?

We are using the term AV to mean fully automated vehicles that do not require a human to drive, monitor, or take over driving tasks from a partially automated driving system.

It is important to point out that the term AV is
often used to refer to very different types of technologies. We caution you to read, watch and listen carefully about AVs to be clear about what level of automation is being discussed. The media, legislation, government documents, and different agencies use various terms and acronyms that can be confusing and misleading.

For example, AV is used sometimes to describe the technology currently available on some Tesla and other automobiles where a vehicle essentially drives itself under certain conditions on a highway. In that situation, the driver is still very much needed to monitor the vehicle's operation and to take over, sometimes in an instant, when road conditions change or when the vehicle will be exiting a highway. Despite being only partially self-driving, the term AV or even "auto pilot" are used.

On the other hand, AVs – or totally self-driving vehicles – are sometimes called highly automated vehicles (HAVs) or described as having automated driving systems (ADS).

Levels of Automation

The infographic (above, at right) explains the accepted levels of automation and what they mean. When speaking of AVs without human drivers, we are referring to levels 4 and 5. There are level 2 vehicles being sold now, including a Tesla model, and there have been announcements that level 3 vehicles will be sold soon. Audi made such an announcement over the summer, but every major vehicle manufacturer, many established technology companies, and lots of startup companies are hard at work.

Related Terms

There are a few terms that are often used in relation to AVs. It is important to understand why the terms are related and to know the differences among them.

Electric Vehicles (EVs) – AVs can be powered with any kind of energy source that is available to power a conventional car, bus, or other type of vehicle. Likewise, an EV does not have to be autonomous. However, most of the research and development of AVs is being done alongside the development of electric-powered vehicles. The two main challenges to the adoption of EVs are (1) quick charging time that is as fast or faster than filling a vehicle with gas, and (2) a “range” that mirrors the number of miles that a vehicle can travel with a full tank of gas. There is a lot of ongoing research in industry and at universities to provide batteries that provide both of those solutions.

Connected Vehicles (CVs) – This term does not refer to a physical connection. It means that vehicles are either able to communicate among each other or with infrastructure via software to optimize movement, performance, and stopping. An AV does not have to be a CV, but both types of
research are actively underway and are, in some research projects, being developed in conjunction with each other.

**V2I** – Vehicle-to-Infrastructure is equipment embedded in some way in actual infrastructure, such as along in a roadway or on signs along the road. Software processes the information and communicates to vehicles so that the vehicle is “aware,” for example, that road work a mile ahead is causing a significant decrease in speed within the next 400 feet. This information can be communicated to a human driver or to AV software.

**V2V** – Vehicle-to-Vehicle equipment uses software to communicate between and among vehicles – without a human necessarily aware of the communication. An example of this would be an alert about a sudden stop of traffic and the capability to slow down before the stopped traffic is visible to the human eye.

**Platooning** – This is a type of V2V technology that allows a set of any type of vehicle to operate in tandem, where a lead vehicle “drives” for one or more follower vehicles. The followers operate close behind the lead vehicle. Currently, truck platoons are being testing that include a human-operated (driven) lead vehicle with no human drivers operating the follower vehicles (though human drivers are on board testing vehicles and ready to take over.) The advantage of platooning is that it allows for vehicles to safely operate with very little space in between. Such close operations would be unsafe with human drivers.

Other terms concern hardware and software connected to artificial intelligence – or machine learning, automotive engineering, cameras, sensors, charging, communications, cybersecurity and privacy, and, as just mentioned, batteries.

**Whose Laws and Regulations Apply?**

**Federal Update**

As of the date of the publication of this primer, Congress is considering legislation to govern the testing and deployment of AVs – but only regular vehicles and NOT commercial vehicles, such as trucks and buses. The House of Representatives has unanimously passed legislation and the Senate is poised to vote likewise – possibly unanimously as well. The Senate’s bill has not seen movement forward in weeks; however both Democratic and Republican leaders are pushing for unanimous consent before lawmakers go home for the holidays.

There is broad bipartisan agreement in Congress to encourage innovation and to preempt – meaning ban – the state laws that have created barriers to testing or that conflict with each other and, therefore, impede travel across state lines. The goal is to pass legislation that will mean one set of rules across the country. Congress is focusing on the international race to develop and deploy AVs and not to fall behind due to uncertain or conflicting legal rules.


This policy does not govern commercial vehicles; those vehicles are regulated by the Federal Motor Carrier Safety Administration (FMCSA), which confronted stiff opposition when it broached the topic of AV trucking a few months ago. That opposition is evident in the Senate back-down from its original plan to include commercial vehicles in its initial version of AV legislation.

The trucking industry is facing a wall of resistance from commercial drivers and the unions that represent them. Both Congress and the industry as a whole are unwilling to state that jobs will be lost or to express objections to driver arguments that huge, heavy, commercial vehicles cannot be safely operated without active human involvement. Though we have lost elevator operator jobs in the past and we are experiencing an ongoing loss of cashier, warehouse, and factory jobs due to different types of automation, truck jobs especially represent a large constituency of one of the last few middle class occupations for people without college degrees.

Despite the avoidance of these issues, truck and bus manufacturers are investing in AV technology. Keep in mind that a common challenge for private trucking and bus companies, non-profits, and public transportation providers that operate commercial vehicles is the growing problem of driver shortages.

**State Regulation**

There are many states that now have laws, executive orders, and/or regulations relating to either testing of AVs, regular operation of AVs on public
Understanding AVs

These vary from a virtual welcome mat to operate AVs without any special licensing or approval to strict guidelines, layers of approval, and coordination with local jurisdictions where testing or pilot programs are proposed.

Where Are AVs Actually on the Road? What kinds of Vehicles are Being Tested?

Testing and pilot programs of AVs have occurred or are currently taking place in several states, including, but not limited to, Arizona, California, Florida, Georgia, Massachusetts, Michigan, Nevada, Pennsylvania, and Texas. Colorado’s public relations coup of a one-time automated truck delivery of Budweiser beer after a 120-mile trip captured the public’s imagination despite being a highly controlled experiment.

In terms of types of vehicles, we are mostly seeing two types being tested and piloted. First, much testing involves everyday sedans and minivans, just automated versions of the kind of vehicles that most of us own or ride in on a regular basis. Virtually every car company is involved to some extent in this type of testing. Uber and Waymo (the Google driverless spinoff company) have been testing for a long time on public roads. Second, there are many pilots and demonstrations of transit-like shuttle vehicles that carry 6 to 15 passengers. These AVs are programmed for particular routes and are being operated, currently as pilots, but with plans for regular operations, in California, Georgia, Michigan, and Texas, with many more being considered. Two French companies are the lead manufacturers at this time.

What’s Coming and When? Lots of Educated Guessing

Experts in automated vehicle technology vary widely in their estimates of when we will see completely autonomous vehicles, without human drivers at the ready, deployed on our roads – not in tests, but in actual operations. Estimates are as far apart as three to thirty years for cars, commercial vehicles, and shared-use fleets of different types.

Likewise, experts disagree about the business models that will dominate or coexist. Many companies, including automobile manufacturers, are investing in shared-use technology and companies because they expect that large cities will be filled with people who summon vehicles when needed, but who do not own them. However, these companies are also preparing for a market for people who will pay for their own vehicles. Prices will likely have a big influence, particularly outside of very densely populated areas and where shared-use – otherwise known as ridesourcing – vehicles (such as Uber or Lyft) may not prove convenient and such operations are not profitable without subsidies or continuing venture capital investment.

Also in the mix will be transit or transit-like AVs and the same variables of fare price, reliability, frequency and other factors affecting today’s transit access and safety will influence the willingness and enthusiasm of the public to regularly ride these vehicles.

What we are likely to see in the next few years is the spread of both AV ridesourcing and shuttle vehicle operations in longer-term pilots that are basically regular operations available to the general public.

If you want to ride an autonomous shuttle now, good places to visit are Arlington, Texas, on Dallas Cowboys or Texas Rangers game days, the North Campus at the University of Michigan in Ann Arbor, or Bishop Ranch office park in Contra Costa County, California. Good guess for the next one is Atlanta near the Georgia Tech campus. No matter where you are, AV demonstrations are popping up and will become more and more frequent.

Webinar Recording: Autonomous Shuttles On the Road

In November 2017, CTAA welcomed Lauren Isaac, Director of Business Initiatives at EasyMile, which develops autonomous shuttles. Ms. Isaac explained where shuttles are operating now and how communities, transit systems, business parks, educational institutions and others can plan and put in place an AV shuttle demonstration or pilot.

A recording of the webinar is available.
Ecolane is a software company that provides real-time scheduling and dispatching software for paratransit and other forward-thinking transit agencies. They are a vendor member of CTAA, a sponsor of this publication, our Fast Mail e-newsletter and a frequent exhibitor at CTAA’s annual EXPO. They first joined CTAA in 2014 – ed.

DigitalCT: Tell us some basics about your company.

Ecolane: Ecolane is the most flexible, affordable and reliable choice for transit agency managers, directors and decision-makers with responsibility for implementing easy-to-deploy scheduling and dispatch solutions. Ecolane’s software platform restores community engagement to people who might not otherwise have access and mobility. With US headquarters in Wayne, PA, Ecolane is a technology leader in the demand responsive transportation (DRT) and the paratransit solutions market. For more information, please visit www.ecolane.com. Ecolane is part of the National Express family of companies.

About National Express LLC

Durham School Services, Stock Transportation, Petermann Bus and National Express Transit Corporation, make up National Express LLC, headquartered in Lisle, IL. As a leader in transit and student transportation, National Express is committed to exceptional safety, outstanding customer service and positive employee relations. Our North American companies operate 23,000 buses and serve over 500 clients in 39 states and four provinces.

DigitalCT: What type of agencies and systems are your customers, and how are they using your products?

Ecolane: We partner with agencies providing demand-response transit in a variety of settings: urban, suburban, and rural. We work with agencies of all sizes, whether it is a small rural provider or a statewide coordinator of transportation. Our partners use our products in order to provide more efficient and available service for the growing demand in their communities using their existing resources.

DigitalCT: What’s innovative about your products?

Ecolane: Ecolane’s automated real-time scheduling works like an extra dispatcher, adjusting schedules to what’s happening on
the road. When drivers are running late, it automatically redistributes trips amongst the fleet to preserve service quality and efficiency. All of this happens transparently to the dispatcher, allowing them to focus on the big picture of the day rather than putting out fires. With the introduction of our mobile app, participating partners can also use our automated technology to take pressure off of their call center and empower their passengers to manage their own transportation. For more information about the mobile app, please visit www.ecolane.com/mobile-app-demo.

*DigitalCT:* What challenges do you see our industry facing?

*Ecolane:* The industry is facing challenges on two fronts. The aging population is growing in number and choosing to age in place, which puts high demand on transit services. The other challenge has been the entrance of more private on-demand services, which while not necessarily able to provide the quality of service for passengers with disabilities or special needs, they have changed the overall expectation of how responsive transportation should be. Agencies need tools to allow them to be more nimble and responsive without having to expend large amounts of resources to achieve it. Learn more by visiting www.ecolane.com/blueskies.  CT
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