



FHWA's Fostering Multimodal Connectivity Newsletter

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Introduction

The Federal Highway Administration's (FHWA's) *Fostering Multimodal Connectivity Newsletter* provides transportation professionals with real-world examples of how multimodal transportation investments use accelerated project delivery, technology and design innovation, and public/private partnerships to promote economic revitalization, provide access to jobs, and achieve safer communities. The newsletter also showcases how FHWA and its partners are supporting the U.S. Department of Transportation Strategic Plan by improving connectivity, accessibility, safety, and convenience for all transportation users.

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Washington, D.C. Launches Shared Moped Pilot Program

Jeff Marootian, Director, District Department of Transportation

Home to the nation's oldest bikeshare system, [Capital Bikeshare](#), Washington, D.C. is no stranger to shared mobility. Over the last three years, the District Department of Transportation (DDOT) has continued to build its reputation as a leader in innovative transportation by introducing community members to shared dockless bicycles and scooters in 2017, and most recently, shared motor-driven cycles, also known as mopeds.

In August 2019, DDOT began a [pilot program](#) to allow residents, visitors, and commuters to use shared mopeds in public spaces. In the District, these vehicles are electric, free-floating, and allowed to travel up to 30 miles per hour (mph), slower than a motorcycle but faster than a motorized bicycle. To start, DDOT permitted 400 vehicles to operate in public spaces, based on lessons learned from the District's dockless vehicle and carsharing programs.



Figure 1: A User Operating a Revel Transit Moped in D.C. (Image courtesy of DDOT)

The shared moped program is part of the District's commitment to improving transportation equity and sustainability through new mobility options. Under Mayor Muriel Bowser's leadership, DDOT is working to reduce the District's collective reliance on single occupancy vehicles by improving the speed and reliability of the District's transit system and offering new, affordable transportation options to Washingtonians across the city.

Prior to launching this program, DDOT spent approximately three months examining, among other information, shared moped programs in American cities including San Francisco, Pittsburgh, and New York, as well as international cities such as Paris and Madrid. From this research, DDOT gained valuable insight related to fleet sizes, safety requirements, and parking behavior. Critical to DDOT's research and pilot design was the Federal Highway Administration (FHWA) publication on [Shared Use Mobility European Experience and Lessons Learned](#), which provided important context about the European shared mobility market. DDOT also incorporated guidance from FHWA's [Shared Mobility: Current Practices and Guiding Principles](#) to better understand the historical significance of shared mobility in the United States.

Collaboration during the pilot development is key to the success of our shared mobility pilots. DDOT worked closely with the District Department of Motor Vehicles (DMV) and the District Department of Public Works, which was crucial to the program's early success. Managing the program also requires ongoing collaboration between various divisions within DDOT, including the policy, outreach, and operations teams. Additionally, DDOT prioritizes strong relationships and coordination with the shared moped operators.

A key component of DDOT's approach to new mobility is our relationship with D.C. residents, our biggest stakeholder. Our programs take a customer-focused approach to engagement, meaning that we create opportunities to receive feedback from moped riders and non-riders alike, and then use that feedback to inform the future of the program. In January 2020, DDOT posted the program's [terms and conditions](#) to solicit public comment from moped riders and non-riders. The project



team also tracks questions submitted to the program's Customer Service Center, and use the feedback to inform project updates and proactive information sharing.

DDOT builds transportation equity into our transit and transportation programs. In the shared moped program's terms and conditions, companies are required to serve the entire District and have two percent of their vehicle fleet deployed in each of the District's eight wards at all times.

Maintaining safety on our streets is a core mission to our daily work. With all of our projects, programs, and initiatives, DDOT is committed to ensuring safety for all users of the roadway, regardless of how they decide to travel. All moped drivers are required to have a valid driver's license and wear a helmet while operating the vehicle. Additionally, companies are required to offer virtual training via mobile applications and in-person trainings for users. Mopeds are prohibited from operating in bike lanes, sidewalks, or trails. DDOT can track improper or illegal behavior because companies must register their vehicles with the D.C. DMV and have valid license plates affixed to each vehicle. Anyone who observes illegal behavior, such as riding without a helmet, is encouraged to report the activity to DDOT and the company for follow-up action.

Since launching the program in August 2019, the DDOT team has reviewed program data, such as the number of incorrect parking events, to evaluate the impact of these mopeds on the District's transportation network. We use the data we collect from companies, including vehicle, user, trip, complaint, and safety data, to identify user behavior patterns that will help inform the future of the program. DDOT recently launched the second phase of the shared moped pilot on March 1, 2020 allowing participants to operate in the District through September 30, 2020, at which point DDOT will reassess the program and its next steps.

Salt Lake City, Utah Prioritizes Plowing Snow from Bicycle Lanes with Downsized Street Maintenance Vehicles

H. Cabot Jennings, Streets Division Director, Salt Lake City Department of Public Services



Figure 2: Kubota RTVX1100 vehicle plowing unprotected bicycle lane. (Image courtesy of Salt Lake City Department of Public Services)

When Salt Lake City, Utah constructed its first downtown protected bicycle lane in 2014, this new infrastructure posed a unique maintenance challenge for the Salt Lake City Streets Division, which is responsible for the upkeep, repair, and striping of all city roadways and most bicycle lanes along city-owned streets. The city's Transportation Division considered the Street Division's ongoing maintenance when designing these first protected bike lanes and originally tried to design them wide enough to accommodate a full size, two-ton truck with an attached plow blade and sander. However, due to limited roadway space, the final design was too narrow for these trucks in a majority of the segments.



During the first winter with protected bicycle lanes, small utility Jeeps from the Golf Division were equipped with cut-down plow blades. The Jeeps proved to be too large and left behind snow in many areas. The blades damaged uneven sections of the bicycle lane, and they could not be modified to attach sanders used for ice control. For sweeping operations, city staff used blowers and roll brushes to move debris into the vehicle travel lane for the street sweeper to pick up, as well as artillery target location vehicle ride-on vacuum sweepers. Unfortunately, both sweeping methods were also inefficient, as the blowers caused debris to scatter and required a full-sized sweeper to follow.

As the city became interested in adding more protected bicycle lanes downtown, staff understood that a new design and special maintenance vehicles would be necessary. Federal Highway Administration (FHWA) funding and resources played a significant role in the development of the city's second downtown protected bike lane on 200 West. The 200 West protected bike lane and protected intersection project was designed and constructed using approximately \$85,000 of Federal Transportation Alternatives Program funding, administered by the Utah Department of Transportation (UDOT). Final approval for this 200 West project from UDOT and the FHWA Utah Division office, which allowed this project to begin construction in the summer of 2015, came just as FHWA published its [Separated Bike Lane Planning and Design Guide](#). The addition of the 200 West protected bike lane, along with the lessons learned through maintaining the first protected bike lane, encouraged staff to propose a budget amendment for specialized equipment and additional staff dedicated to bicycle lane maintenance.



Figure 3: Aerial view of the current 200 West protected bike lane and protected intersection. (Image courtesy Google Earth)



Figure 4: Tennant 636 "Green Machine" sweeper. (Image courtesy of Salt Lake City Department of Public Services)

The budget amendment was approved in time for the winter of 2015, which became the first winter that the Streets Division used two Kubota RTVX1100 units with a six-way "V" plow blade and built-in sanders. The city continues to use these vehicles on the majority of the its narrower protected lanes. These vehicles can clear all of the city's protected bike lanes within two to four hours of a winter storm. The upgraded equipment has also provided improved working conditions for staff because the vehicles feature heating cabs with windshield wipers, allowing the operators to be more comfortable as they work. City staff conduct weekly sweeping with a Tennant 636 "Green Machine" or "stadium-style" sweeper, which had also been purchased after the budget amendment. The Tennant 636 sweeper can sweep three miles of downtown



protected bike lanes in two to four hours. This vehicle also has a climate-controlled cab and is street legal for driving to work sites. For the wider, seven-foot protected bike lanes, staff use existing equipment such as a plow-equipped Ford F550, which gives the city additional operational flexibility.

During a snowstorm, the city prioritizes snow and ice removal from the bike lanes equally with vehicle lanes. This prioritization is a key aspect of the [Salt Lake City Complete Streets Ordinance](#), which seeks to balance the competing needs of each transportation mode. By investing in and prioritizing the maintenance of active transportation infrastructure, Salt Lake City is striving to make bicycling a convenient, affordable, and realistic transportation mode year-round. Since the Streets Division has streamlined their bike lane maintenance operations over the last few years, the city is in a good position to continue managing and expanding its five-mile, two-way protected bike lane network. The city has measured before and after data to gauge the impacts of specific protected bike lanes and [found measurable improvements](#) in bike ridership and economic development metrics, along with positive responses from local businesses and residents. The expansion of protected bike lanes has not only increased bike ridership and mobility, but has also fostered recreational and economic development opportunities, and elevated the quality of life in Salt Lake City.

Tulsa, Oklahoma Implements Bus Rapid Transit Service

Viplava Putta, Director of Transportation Planning and Programs; Chase Philips, Transportation Planner/Safety Coordinator, both of the Indian Nations Council of Governments

In November 2019, the city of Tulsa, Oklahoma implemented the first of two planned bus rapid transit (BRT) lines with free service for a month. This is an important step toward improving mobility and mass transport in Oklahoma, a Midwestern State with minimal overall presence of transit. The Federal Transit Administration (FTA) defines BRT as high-quality bus-based transit that delivers fast and efficient service. The story of the Peoria Avenue BRT, branded as the AERO, began with a vision to create transformative public transportation in a car-dependent city such as Tulsa. Tasked with the challenge of changing public perception on the role transit plays in the Tulsa metropolitan region, the goal of AERO is not merely to capture the allusive “choice rider.” It is also about introducing community members to a high-quality transit service that provides a higher return on investment in terms of social and economic value.



Figure 5: The AERO at 81st Street South. (Image courtesy of Matt Trotter, KWGS Radio Station)

The development of the AERO BRT is the culmination of years of visioning, planning, and collaboration. The collaborative approach involved nearly \$700,000 from the Urbanized Area Surface Transportation Program to begin evaluation of a long-term transit planning, with Federal Highway Administration involvement in the form of Systems Engineering for effective planning. In 2011, the Tulsa region metropolitan planning organization, Indian Nations Council of Governments (INCOG), developed a Regional Transit System Plan, [FAST Forward Plan](#), utilizing Surface Transportation Program funding. This effort



involved leadership from the city of Tulsa, the Metropolitan Tulsa Transit Authority, and regional transportation planners from INCOG. The plan identified the Tulsa Transit Route 105 corridor as the best candidate for the first BRT line in the city, which was also the highest performing traditional bus route at the time. The Route 105 corridor functioned as an 18 mile, north-south spine to the entire 245 square mile transit system coverage area, providing connections to regional destinations and other key routes within the system. This work led to an Alternatives Analysis study in 2013, which was funded with \$400,000 from the FTA. This study involved an in depth analysis of the corridor to make informed choices related to coverage, frequency, and costs. The study evaluated the costs and benefits of various levels of transit service, as well as concurrent efforts to restructure the system and better utilize the AERO. The corridor became the focus for investment, as it is the economic driver in the region, with 20 percent of city residents and 20 percent of city jobs within a 10-minute walk of the corridor. The corridor also serves as an essential ladder of opportunity for residents, as it connects low-income census tracts with high-income census tracts, providing access to jobs, education, and quality of life amenities, including the new park called the [Gathering Place](#). These planning efforts provided the foundational understanding that investments on this corridor would improve mobility by connecting a large portion of the region's residents to jobs, and potentially redefining expectations for what public transit could become in Tulsa.



Figure 6: The AERO at the Metropolitan Tulsa Transit Authority. (Image courtesy of INCOG)

With the vision and direction in place, the next and greater task was to seek local, public investment. Like many other communities in the Midwest, the city bus in Tulsa has been seen as a mode of last resort and many residents have little experience using the city buses. Prior to the AERO, the local bus service had 30-minute headways, the frequencies at each stop. The city of Tulsa and INCOG were also unsure if the public would want to support the BRT line financially. As a result, the city launched a robust, six-month outreach process to build public awareness and support. Planners transformed a 40-foot standard

city bus and created a mobile transit lab, outfitted with interactive exhibits and educational tools. The bus traveled to 117 public locations in the Tulsa metropolitan region over a four-month period, stopping at schools, libraries, and local events to foster community engagement. Upon entering the bus, community members were invited to discuss their transit needs face-to-face with planners, take a short survey, and watch an informational video about the project. Through public input, the BRT was branded the AERO as a nod to Tulsa's rich aeronautical and art deco history. As a result of these outreach efforts, the project team received the FTA's Transportation Planning Excellence Award and the [American Planning Association's National Planning Award in 2012](#). After years of planning and coordination, Tulsa residents supported the transformation financially and voted for BRT capital improvements and operations in 2016. The AERO was successfully



implemented in November 2019 and received the attention of riders in its first two months of operation. Ridership has increased nearly 50 percent since this corridor switched from being a traditional bus line to BRT and is better integrated into other modes of transportation. Transit service is more widely available with its 15-minute peak headways, and the new stations are more accommodating to persons with disabilities. The station design utilizes weather protection, ample lighting, bike storage, and real-time information displays for safety and convenience. To best facilitate first-last mile connections to the AERO, the project team identified station locations consistent with the pedestrian and bicycle priorities identified in the region's [Bicycle and Pedestrian Master Plan](#).

The public's response to the new AERO has been very positive and local planning has already begun for Tulsa's second BRT line. What was once a narrative of skepticism surrounding public transit has become a demand for more and better service that models the AERO. Scheduled for 2023, the second BRT line will serve as an east-west corridor along portions of historic Route 66, complementing the north-south aligned AERO. The AERO process has helped local professionals to better understand operational costs and service flexibility for coverage and scheduling for BRT projects. It also allowed planners and community members to collaborate on innovative technology design options and challenges. These experiences are vital to the region in order to adapt to the changing technologies and trends in the transportation sector.

The development of the BRT began with Federal investment for planning. Coupled with local matching funds, it has led to the locally-sponsored capital investments needed to implement the new service, attract "choice riders," and reimagine the entire system of transit in the Tulsa metropolitan area. This partnership is a replicable example in communities with modest densities and limited transit service. It is great example of Federal partners acting as the necessary spark for local investment.



Announcements/New Resources

- On May 6, 2020, Federal Highway Administration (FHWA) staff will participate in the [National Bike to School Day](#) celebration. The ninth annual event will bring together families, school officials, public health and law enforcement representatives, and community leaders to celebrate the benefits of biking and walking to school. **(Event canceled)**
- FHWA has developed the [Congestion Mitigation and Air Quality Improvement \(CMAQ\) Emissions Calculator Toolkit](#), which is a spreadsheet tool for transportation agencies to use in determining the emissions benefits of their projects. CMAQ project justification and annual reporting require the development of reliable air quality benefit estimates. To assist with this process, FHWA developed a series of spreadsheet-based tools to facilitate the calculation of representative air quality benefit data. There are 10 tools currently available, covering a wide range of CMAQ-eligible project types, including Bicycle-Pedestrian Improvements, Transit Service and Fleet Expansion, Alternative Fuels and Vehicles, Diesel Retrofit/Repower, and Traffic Flow Improvements.
- The United States Department of Transportation (U.S. DOT) recently launched the [Complete Trip - ITS4US Deployment Program](#) that aims to solve mobility challenges of all travelers, regardless of location, income, or disability, in accessing jobs, education, healthcare, and other activities. The program will make up to \$40 million available to enable communities to showcase innovative business partnerships, technologies, and practices that promote independent mobility for all transportation users. The program expects to procure and award multiple large scale, replicable, real world deployments of integrated innovative technologies to address the challenges of planning and executing complete trips.
- With support from the Office of the Secretary of Transportation, Federal Transit Administration, and FHWA, the [USDOT Complete Trip – ITS4US Deployment Program Webinar Series](#) is made available to enable communities to showcase innovative business partnerships, technologies, and practices that promote independent mobility for all. The webinars will provide prospective deployers and partners with more information about the program. Individuals are encouraged to [register here](#) for the sixth webinar on Privacy Security, and Open Data scheduled for April 9, 2020 at 1:00 PM ET. The webinar website includes past webinar materials and recordings as well as a [program overview fact sheet](#).
- The National Highway Institute (NHI) is now offering a free [Bicycle Facility Design](#) web-based training course. This course helps practitioners deliver high-quality, safe, multimodal projects efficiently and effectively by delivering critical planning and design information. It covers principles of bicyclist safety, comfort, and connectivity, selection of bikeway type and associated design considerations, and national planning and design resources. The course length is estimated at 8 hours. If you have questions about this NHI training, please contact NHI at nhicustomerservice@dot.gov or 877-558-6873.

