

Niagara Frontier Transportation Authority (NFTA) Buffalo, New York

ITS4US Deployment Program – Phase 2



Photo source: U.S. DOT

ITS4US DEPLOYMENT PROGRAM OVERVIEW

ITS4US Deployment Program is a \$40 million multimodal effort, led by the Intelligent Transportation Systems (ITS) Joint Program Office (JPO) and supported by the Office of the Secretary, the Federal Highway Administration, and the Federal Transit Administration, to identify ways to provide more efficient, affordable, and accessible transportation options for underserved communities that often face greater challenges in accessing essential services.

The program aims to solve mobility challenges for all travelers with a specific focus on underserved communities, including people with disabilities, older adults, low-income individuals, rural residents, veterans, and travelers with limited English proficiency.

This program enables communities to build local partnerships and develop and deploy integrated and replicable mobility solutions to achieve complete trips for all travelers.

The U.S. Department of Transportation (U.S. DOT) launched Phase 1 of the program in January 2021 and, across 18 months, supported the concept development efforts of select sites. In June 2022, four projects were selected for Phases 2 and 3 deployment, which includes the design, testing, operation, and evaluation of their deployments.

Vision

Innovative and integrated complete trip deployments support seamless travel for all users across all modes, regardless of location, income, or disability.

Goals

- Spur high-impact integrated complete trip deployments nationwide
- Identify needs and challenges by population
- Develop and deploy mobility solutions that meet user needs
- Measure impact of integrated deployments
- Identify replicable solutions and disseminate lessons learned

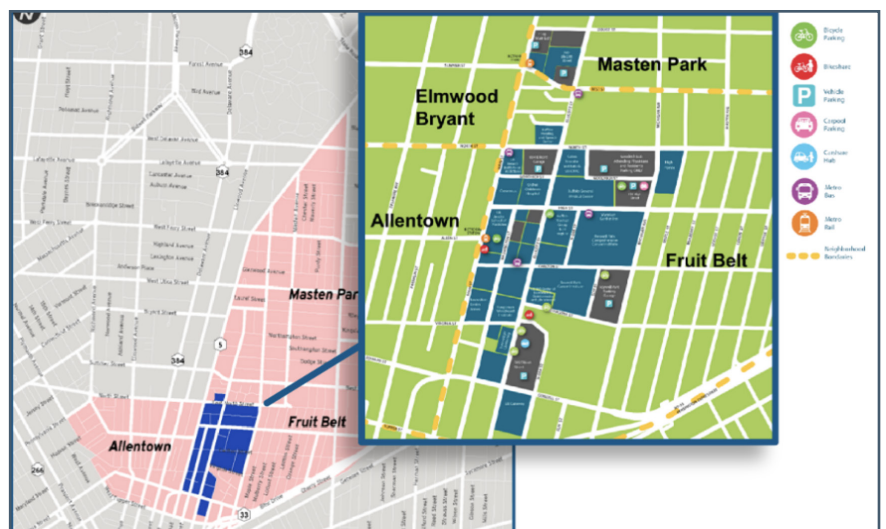
SITE DEPLOYMENT SUMMARY

The Buffalo, NY ITS4US project aims to solve mobility challenges for all travelers with a specific focus on underserved communities, including people with disabilities, older adults, low-income individuals, rural residents, veterans, and limited English proficiency travelers by deploying an integrated set of travel support services and systems within neighborhoods surrounding the Buffalo Niagara Medical Campus (BNMC). The Medical Campus is located on 120 acres adjacent to downtown Buffalo and includes nearly 9 million square feet of clinical, research, office, and development space. More than 16,000 people work or study at the BNMC and more than 1.5 million people visit each year for healthcare and other services.

This project aims to improve mobility for 60 percent of the 1.1 million residents in the Buffalo Niagara Region that fall into at least one category of people with special transportation needs.

Through the deployment, the Buffalo, NY ITS4US project seeks to address the challenges facing underserved communities in the area by:

1. Providing transit access to healthcare and jobs to underserved residents including persons with disabilities and allowing them to share in the economic development in downtown Buffalo.
2. Leveraging technology to work in support for accessible transportation, integrating accessible transportation technology, transit, and connected automation to solve a transportation need.
3. Developing a scalable model for considering accessibility and universal design in transportation technology projects.



Buffalo, NY ITS4US Deployment Location



U.S. Department of Transportation

APPROACH – PROJECT CHALLENGES AND SOLUTIONS

Within and around the BNMC, there are accessibility- and pedestrian-related transportation and mobility challenges that hinder residents' and visitors' ability to access safe and reliable transportation from BNMC and local or regional transportation agencies. Street crossings are challenging to people with disabilities and older adults. Common problems include the collection of water, ice, and snow at the bottom of curb ramps due to poor drainage; counter slopes at the bottom of curb ramps that make walking difficult and cause wheelchair users to bottom out; broken and irregular pavement in the crossing area; the use of brick and cobbles that makes wheelchair use very uncomfortable; deterioration of tactile warning signals; and poor contrast of crosswalks with the street surface. These issues and problems have a direct impact on people's ability to reach BNMC's facilities and get to their appointments on time, or even make the trip/appointment at all. This solution is envisioned to address the following key issues:

- **Traffic safety issues at street crossings and lack of accessible infrastructure in street rights of way:** A door-to-door travel planning app or complete trip platform (CTP) that includes a comprehensive array of online and offline ways for travelers to receive real-time information on services, infrastructure usability, and accessibility to understand the current conditions of their trip and how best to react to necessary but spontaneous deviations from their original route.
- **Lack of efficient and reliable circulation paths between facilities on the campus and in surrounding neighborhoods:** Increased safety and improved capability for travelers to cross specific intersections and use specific prioritized pathways that are slip resistant; offer smooth paths of travel for accessing BNMC campus entities; and are safe, accessible, and compatible with user-defined preferences and capabilities.

MEASURING DEPLOYMENT IMPACT

Some of the key performance goals and targets include:

- **Improved ability of the CTP users to make satisfactory complete trips in the study area.** To achieve this metric, system user ratings will be used to access: (1) how accessible door-to-door travel is for trips to, from, and within the BNMC; (2) how safe door-to-door travel paths are for trips to, from, and within the BNMC, including prevalence of level, slip-resistant paths; (3) the adequacy and usefulness of information for making trips to, from, and within the BNMC; and (4) the ability to make trips using integrated transit services to, from, and within the BNMC.
- **Improved ability to find destinations efficiently using the CTP wayfinding functionality.** To meet this goal, the project will track the fraction of CTP users that elect to receive outdoor and indoor wayfinding notifications as well as the system user self-reported frequency of using these notifications. The project will monitor the utility of the outdoor and indoor wayfinding functionality in assisting users in reaching their destination on time. The team will also employ user ratings of various dimensions of using the CTP indoor and outdoor wayfinding functionality using the Rapid Assessment of Product Usability and Universal Design (RAPUUD) method.
- **Improved ability to cross specific intersections safely using CTP smart signal functionality.** To achieve this goal, the team will measure the percentage of CTP trips crossing at the relevant intersections that use the smart signal remote activation function. The self-reported fraction of people who cross at the relevant intersections who use the CTP smart signal activation functionality will also be tracked. Further, the project will also measure the perceived ease of use and assess the ratings of other aspects regarding the responsiveness of the smart signals using the RAPUUD method, as the perceived safety of crossing the intersections with smart signals.
- **Provision of an efficient, reliable, and safe new on-demand transit shuttle system.** To achieve this target, the team will track the percentage of on-demand, community shuttle (CS) trips that arrive at the boarding and alighting stops within the targeted time allowance of the scheduled arrival time. System user ratings of how reliable the transit system is in reaching their BNMC trip destination on time will also be used, as well as the self-reported frequency of use of all transit services, including the CS, paratransit access line (PAL) services, and NFTA bus and rail lines. Additionally, the project will track the user ratings of CS service in terms of key service aspects—convenience, affordability, and safety—and the cost-efficiency of the HDS and SDS shuttle services in terms of operating cost per passenger trip. The percentage of CS bookings for which the earliest available pick-up time is within 45 minutes of the request time will be monitored to ensure this target is met.

PROJECT PARTNERS

- City of Buffalo
- Buffalo Niagara Medical Campus
- VIA - Visually Impaired Advancement
- Kaleida Health
- University at Buffalo
- Greater Buffalo Niagara Regional Transportation Council

Site Points of Contact

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Social Media and Website Links

<https://bnmc.org/its4us-buffalo/>
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Instagram: [@bnmcinnovates](https://www.instagram.com/bnmcinnovates)



ITS JPO High-Priority Research Areas

- Automation
- Data Access and Exchanges
- Emerging and Enabling Technologies
- ITS Cybersecurity Research
- ITS4US Deployment
- Accelerating ITS Deployment

Alignment with U.S. DOT Strategic Goals

Safety
Economic Strength and Global Competitiveness
Equity
Climate and Sustainability
Transformation
Organizational Excellence

PHASE 2 | ITS4US DEPLOYMENT PROGRAM

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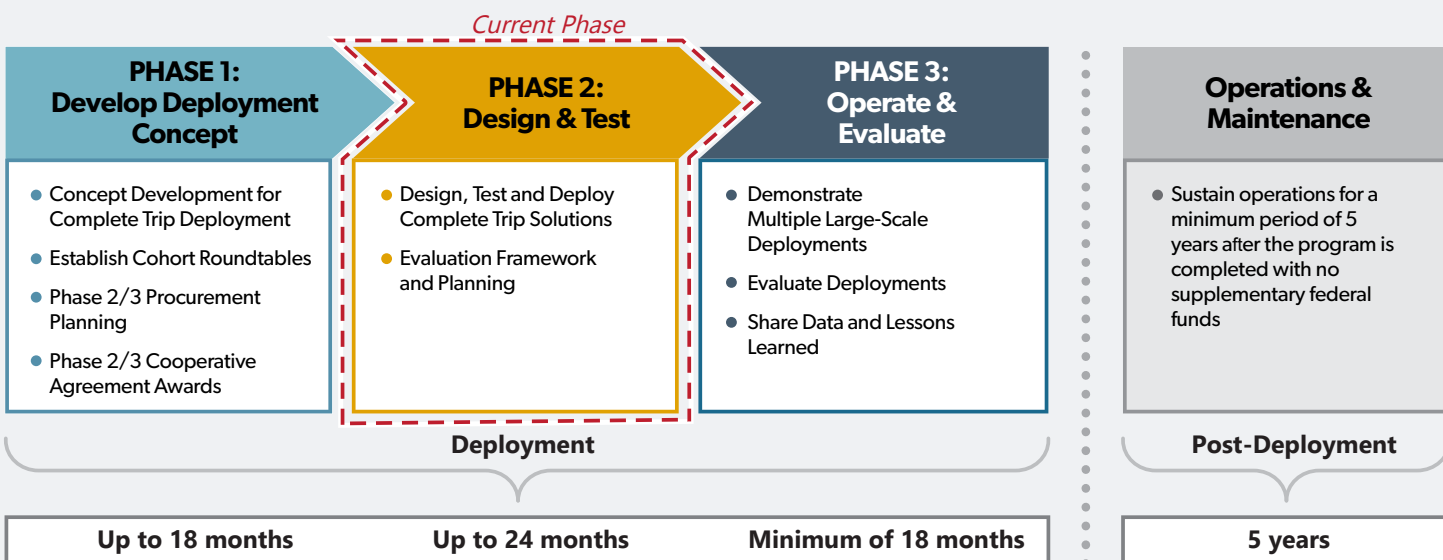
The ITS4US program will enable communities to build local partnerships and develop and deploy integrated, replicable mobility solutions to achieve complete trips for all travelers.

ITS4US DEPLOYMENT PROGRAM PHASES

ITS4US Deployment Program was designed to fund multiple, large-scale, replicable deployments in three phases:

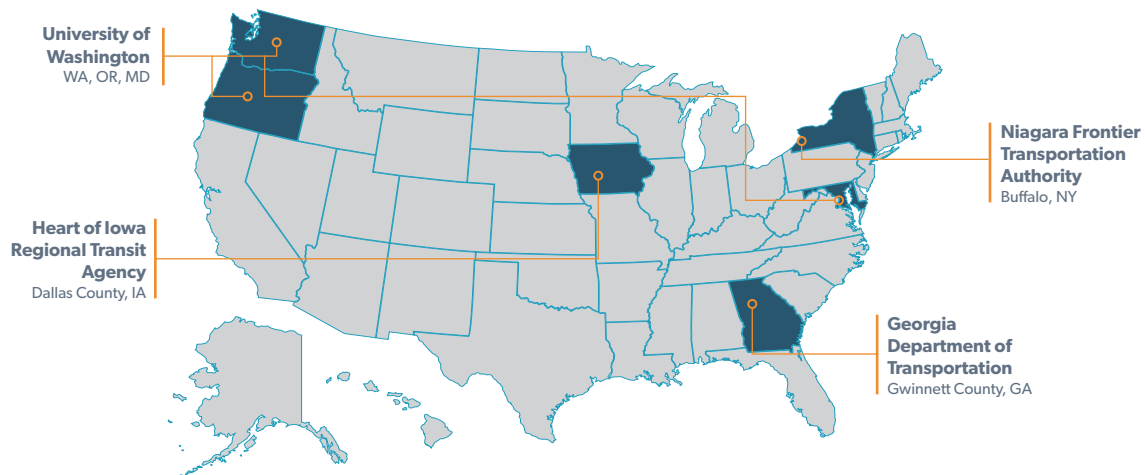
- Phase 1: Develop Deployment Concept
- Phase 2: Design & Test (Current Phase)
- Phase 3: Operate & Evaluate.

ITS4US Deployment sites that successfully completed Phase 1 were awarded Cooperative Agreements to conduct Phases 2 and 3 activities.



ITS4US DEPLOYMENT PROGRAM PHASE 2 PROJECTS

Deployment Site	Project Description
 <p>Heart of Iowa Regional Transit Agency</p>	<p>The Health Connector for the Most Vulnerable: An Inclusive Mobility Experience from Beginning to End (Health Connector) Complete Trip deployment project in Dallas County, Iowa is led by the Heart of Iowa Regional Transit Agency (HIRTA). This project will implement a scalable and replicable solution that enables inclusive transportation access to healthcare for all underserved populations and their caregivers by resolving access to barriers with the use of advanced technologies. Further, this solution will include information and wayfinding services to guide users for every step of their trip. This deployment will provide enhanced access to healthcare options for “all travelers” in Dallas County.</p>
 <p>Georgia Department of Transportation</p>	<p>The Safe Trips in a Connected Transportation Network (ST-CTN) project is led by the Georgia Department of Transportation with support from the Atlanta Regional Commission in Gwinnett County, Georgia. The ST-CTN system will provide Gwinnett County residents with detailed information and step-by-step navigation tailored for users’ specific needs along with a range of other features geared to improve trip efficiency and safety. This concept is comprised of an integrated set of advanced transportation technology solutions including connected vehicles, transit signal priority, machine learning, and predictive analytics to support safe and complete trips, with a focus on accessibility for those with disabilities, aging adults, and those with limited English proficiency. The ST-CTN system includes a mobile application that will provide users with the ability to create a personalized trip plan with information on the navigation of physical infrastructure, provide users with safe alternative trip routes when encountering unexpected obstacles, and ensure user safety throughout the trip.</p>
 <p>University of Washington</p>	<p>The Transportation Data Equity Initiative, a Complete Trip deployment project led by the University of Washington, will span three states—Washington, Oregon, and Maryland. The project aims to create the foundational data tools necessary for both public and private entities to collect, share, manage, and use transportation data that provide equitable outcomes to all travelers regardless of location, income, or disability. This effort includes: 1) working with existing standards committees to extend and update three existing, early-stage international data standards—OpenSidewalks, GTFS-Flex, and GTFS-Pathways; 2) developing a series of tools that help agencies, jurisdictions, and other stakeholders collect the data that can be stored with these refined data standards; and 3) using three unique accessible mobility applications to demonstrate the different uses of the data.</p>
 <p>Niagara Frontier Transportation Authority</p>	<p>The Complete Trip Deployment in Buffalo, New York, led by the Niagara Frontier Transportation Authority, will improve mobility to, from, and within the Buffalo Niagara Medical Campus (BNMC) by deploying new and advanced technologies focused on addressing existing mobility and accessibility challenges. The project integrates an accessible trip planning tool with current transit services, indoor/outdoor wayfinding, community-based on-demand shuttle services that include a fleet of fully autonomous shuttles, and intersection pedestrian safety technologies aimed at providing complete trip support to travelers with disabilities in BNMC and neighboring communities. Central to the project is a complete trip platform that can factor in travelers’ preferences and accessibility-related needs in providing comprehensive trip planning and execution support to registered users. The platform, accessed both offline and online via multiple interfaces including an app, will integrate with multiple enabling technologies and services including fixed-route transit, community shuttles, smart intersections that use tactile and mobile technologies to assist travelers with disabilities in navigating intersections safely, and wayfinding infrastructure such as smart signs and information hubs to support outdoor and indoor navigation.</p>



To learn more about this program, visit:
<https://its.dot.gov/its4us>

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