



U.S. Department of Transportation  
Federal Transit Administration



# Mobility on Demand (MOD) Sandbox Demonstration: Vermont Agency of Transportation (VTrans) OpenTripPlanner Evaluation Report

## Background

VTrans (Vermont Agency of Transportation) is one of 11 Mobility on Demand (MOD) Sandbox Demonstrations funded by the Federal Transit Administration (FTA). VTrans partnered with Cambridge Systematics and Trillium Solutions to design and deploy a trip planner for Vermont to advance the state of practice for flexible transit systems.

As Vermont is the nation's second least populated state and is predominantly rural, its public transit systems must service many origins and destinations spread out across regions with very low population density. The state offers flexible public transit, where fixed bus routes can deviate to pick up or drop off riders at locations closer to their desired origins or destinations; however, this unconventional transit operation is not handled by traditional trip planners.

The standard data format for trip planners is the General Transit Feed Specification (GTFS), used by public transit agencies to specify their schedules. GTFS-Flex specifies flexible schedules of public transit systems, but due to the rarity of such systems, many online trip planners do not use this specification. The Go! Vermont trip planner was developed to demonstrate a GTFS-Flex trip planner that could project information from this specification using OpenTripPlanner (OTP), an open source software application, implemented exclusively as a website that could adapt to mobile platforms. Go! Vermont's target user audience was all Vermont public transit users, including travelers, human services case workers, and transit agency call centers, particularly residents who live in rural areas, residents with disabilities, and older adults.

## Objectives

The VTrans project aimed to be an example to other states and local municipalities of the benefits of integrating flexible transit data into publicly-available trip planners. The project's eight core goals were to 1) develop an online trip planner for both "fixed" and "flexible" services, 2) improve data presentation for Vermont transit agencies, 3) improve information for Vermont transit riders, 4) improve mobility for Vermont transit riders, 5) increase public transit use in Vermont, 6) be used by Vermont transit riders, 7) cut call/response time on relevant inquiries about route information and travel options, and 8) obtain lessons learned about project implementation. An independent evaluation was conducted on the demonstration's impacts and outcomes based on the project goals and objectives.

## Findings and Conclusions

*The Go! Vermont demonstration provided options for flexible public transit travel and was considered to be an improvement over current trip planners.*

This report presents the results of an independent evaluation of the VTrans MOD Sandbox Demonstration, with lessons learned that potentially can help advance similar initiatives within other transit systems. The evaluation was guided by eight hypotheses analyzed using survey data, activity data, and expert (stakeholder/project partner) interview data. Key findings include the following:

- **Go! Vermont effectively provided options for flexible public transit travel.** The trip planner was tested using a sample of origins and destinations in Vermont to evaluate performance in delivering viable public transit options to complete a trip. Results found that, on average, it could provide more viable travel options than a leading conventional trip planner.
- **Transit operators surveyed generally considered Go! Vermont to be an improvement.** A small survey sample of transit operators explored their opinions and perceptions of the trip planner; responses were not universally positive, but in general found that transit operators considered several key performance functions to be improvements, such as format and display of information.
- **Lessons learned from deployment of Go! Vermont will inform future efforts to develop GTFS-Flex compatible trip planners.** The experience of constructing and deploying a trip planner produced several recommendations, such as increasing investment in transit technology in rural communities to bridge the technological gap with urban centers, establishing/supporting leadership roles for integrated trip planning across public transit agencies, and developing strategic methodologies that focus on the long-term performance and success of projects.

## Benefits

The Go! Vermont trip planner provided a live demonstration of a GTFS-Flex OTP in a public transit environment and produced an ongoing application that is still being improved. Lessons learned are being applied to expanding capabilities and options such as carpools and vanpools, and future development may incorporate scheduling, booking, and paying for rides through modes such as paratransit and TNC vehicles. Further improvements may also extend to the GTFS-Flex data structure and content.

## Project Information

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This research project was conducted by Elliot Martin, Aqshems Nichols, Adam Cohen, and Susan Shaheen of UC Berkeley and Les Brown of ICF. For more information, contact FTA Project Manager Steve Mortensen at (202) 493-0459 or [Steven.Mortensen@dot.gov](mailto:Steven.Mortensen@dot.gov). All research reports can be found at <https://www.transit.dot.gov/research-innovation>.