

## Toolbox of Public Transportation Services

Public transportation in its broadest conception includes a wide array of services from a taxi ride or carpool with two passengers, up to a high-volume, high-performance transit such as bus rapid transit or rail that can carry hundreds of passengers in the peak hour.<sup>1</sup> The following list describes the various levels in this array in ascending order of passenger volume and provides some indication of the type of market and the level of demand for which the levels are appropriate. In many cases, a service offered in one level of the array can be seen as building a market for higher level services that follow it.

1. **Volunteer Driver** – Many areas in Vermont, Maine, and other states have established volunteer driver programs, by which individuals use their own cars to transport other people who have requested a ride. Often, these trips are for medical appointments, such as kidney dialysis. Some drivers request reimbursement for mileage at the standard federal rate (currently 50 cents per mile). These trips are usually arranged through a non-profit or government brokerage, and are the most cost-effective means of providing these essential transportation services.
2. **Taxicab** – Available to all at a fee, typically used infrequently for a given trip because of the high cost per mile. GMTA could be involved with taxi transportation as a broker of trips, as has occurred in the past with some rides for people with disabilities.
3. **Carpools/Vanpools** – Carpools are the simplest form of shared-ride transportation. Often occurs within a household or between acquaintances, but can be organized through a ridematching pool or website. Typically includes up to three passengers all headed to a single destination (such as a workplace) from a common area. When larger groups of people (up to 15) are headed to a single destination, they can meet up in a neighborhood or at a park-and-ride lot to form a vanpool. Vanpools are currently facilitated by the State of Vermont through the GoVermont program. Vanpools are almost exclusively associated with commuting trips.
4. **Demand response service** – Low-volume general purpose transportation is best served by “demand response” service, which, as the name implies, responds to a particular demand for a trip. Most of the current demand response transportation in Washington County is oriented toward seniors and people with disabilities, but general public “dial-a-ride” service is available in Washington County, elsewhere in Vermont and in many locations around the country. This type of service is appropriate for lower-density areas where there is not enough passenger demand to warrant a regularly scheduled service. Service can be provided by a non-profit agency using vans or sedans or a taxi company, working through a dispatch/brokerage office that takes in requests for trips from the

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<sup>1</sup> For the purposes of this discussion, water transportation and intercity modes of travel—such as air, intercity rail, and intercity bus—are not included.

public and assigns them to particular drivers and vehicles. The drivers could also be volunteers who use their own vehicles (see number 1 above). The broker attempts to use the lowest cost option to meet the need of the rider.

5. **Demand response/shopping shuttles** – Specific destinations, such as grocery stores or community health centers, can organize and/or sponsor shuttle services so that clients and customers can accomplish shopping and medical trips. These may be offered one or two days per week and pick up people from various locations arranged in advance.
6. **Tourism-oriented service** – Tourism services tend to be seasonal in nature and have highly variable service levels depending on the target market. These tend to have peak service on weekends and holidays rather than normal commuting times.
7. **Commuter bus peak only** – The minimal level of bus service that would typically be provided is two trips inbound in the morning and two trips outbound in the afternoon, possibly with a small bus (30 feet or less). Such a route could serve a town center or two and park-and-ride lots along the way. Total ridership would need to number at least 80 daily to make the service viable (roughly 20 passengers per bus trip). With a typical market penetration of about 5%, there would need to be at least 800 commuters who be in the service area of the route (accessible to the origin end and having a destination within walking distance of places served by the route in the urban core).
8. **Commuter bus expanded service** – Additional trips for a commuter service would be warranted to the extent that demand exceeds the market of 800 commuters, or if there is demand in both directions (so that buses would be carrying passengers outbound in the morning as well as inbound). A third and fourth peak period round-trip would be added first, followed by midday service.
9. **Full day service** – Regular full day service (6:00 a.m. to 7:00 p.m.) on weekdays is warranted when there are enough generators along the route to create demand for non-work trips as well as commuting trips. The minimum level of service would be 30 minutes during the peak periods and 60 minutes in the midday. Total corridor ridership would need to exceed 250 on a weekday to make this service viable.
10. **Extended weekday service** – Extension of service into the evening hours (until 9:00 or 10:00 p.m.) is warranted depending on the type of generators along the route and the level of demand. Daily ridership of at least 400 would be needed to make extended service viable. This would typically be coupled with a higher level of service during the midday period (every 30 minutes instead of every 60).
11. **Saturday service** – If a route serves retail generators or employers that are open on Saturdays, then Saturday service on the route would be justified. Saturday ridership is typically about 50% of weekday ridership, thus a demand of at least 200 passengers would be needed to make the service viable.
12. **Frequent peak service** – Major commuting corridors can support service at a higher level during peak periods. Service every 15 minutes is considered to be the minimum

needed to draw people out of cars and onto public transportation. Corridor ridership would exceed 1,000 per weekday for such a route.

13. **Sunday service** – Once Saturday service has been established and is successful, Sunday service can be considered. Sunday ridership is typically half of Saturday ridership, or only about 25% of weekday ridership. Thus, weekday demand of 1,000 would translate into enough Sunday demand to make the service viable.
14. **Upgraded corridor service** – After improvements in peak and midday frequency have been implemented, elements of bus rapid transit can be applied to a corridor. These can include further improvements in frequency (to 10-minute headways), improved passenger facilities (enhanced shelters), technology applications (such as real-time passenger information), and roadway priority treatments such as transit signal priority and queue jump lanes (to allow buses to bypass congestion at intersections). Corridor ridership approaching 2,000 passengers on a weekday would justify these investments.
15. **Bus rapid transit** – A full application of bus rapid transit, including those elements listed above plus branding, articulated vehicles, further upgrades in the service level, some exclusive right of way, and enhanced passenger stations, would be warranted as ridership in a corridor approaches 5,000 passengers on a typical weekday. This could also involve a limited-stop overlay on regular local service to allow passengers a faster trip.
16. **Rail** – Rail transit can take several forms, including commuter rail with traditional locomotive-drawn trains, commuter rail with self-propelled cars (known as diesel multiple units, or DMUs), streetcars or light rail powered by overhead catenary, and heavy rail rapid transit. Each of these forms of rail requires a substantial investment in right of way, track, facilities and equipment, and they have much higher operating costs than bus transportation. Full day ridership in a corridor needed to justify this investment ranges from 7,000 and higher, depending on the form of rail service. Commuter rail, which is typically operated only during peak periods, is appropriate for corridors with very large worktrip demand and a high degree of road congestion so that the travel time advantage of rail is maximized. It also works best when the worktrip destinations are concentrated at the end of the rail corridor within easy walking distance of the terminal. Peak hour, peak direction trips would need to exceed 1,000 to make the service viable, though even at this level it would not be as cost effective on a per passenger basis as bus transportation. Light rail typically operates more like a bus, with lower speeds and more frequent stops, and is appropriate for a corridor with a high level of demand all day and with multiple generators along the corridor. Most light rail systems in the US have weekday ridership of at least 7,000 passengers, with the exception of some very short trolley and streetcar routes which tend to be oriented toward tourists. Heavy rail rapid transit is only seen in major metropolitan areas, usually operating in a subway or on elevated tracks.