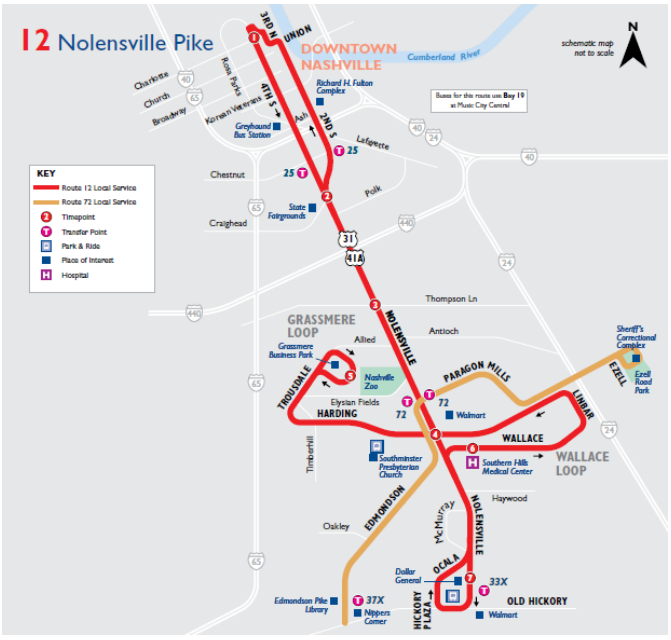
TRANSIT STRATEGIES

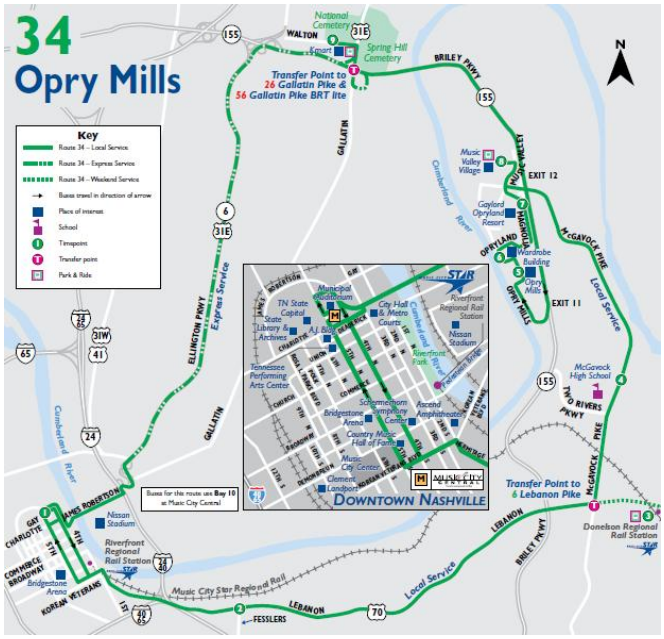
SERVICE SIMPLIFICATION

Because Nashville MTA operates a relatively small number of routes for a city the size of Nashville, it attempts to do many things with many of its routes. As a result, some of the service is very complicated, with many route variants and indirect service. Evidence from other systems indicates that a simpler route structure will attract more riders than a complex route structure. Therefore, the complexity of many of Nashville MTA's services likely deters some residents from using transit.

ROUTE 12 NOLENSVILLE PIKE: MANY SPUR SERVICES



ROUTE 34 OPRY MILLS: CONFUSING AND CIRCUITOUS



BENEFITS OF SIMPLER SERVICE

For people to use transit, they must be able to understand it, and simple route structures are easier to understand than complex route structures. As stated in the Transit Cooperative Research Program's (TCRP) "Traveler Response to Transportation System Changes" report,[1] "The degree of routing and scheduling simplicity offered to the transit user will affect the ease of which the rider becomes informed." The result is that "a readily transparent service design can to some extent market itself insofar as user information needs are concerned," while "a highly complex operation places heavy demand on the provision of information and the rider's ability to interpret and absorb it."

The importance of an easily understandable system is heightened by the fact that most transit systems experience very high levels of turnover (due to changes in residence and employment, family circumstances, driving and parking conditions, etc.). The TCRP report cited above reported that surveys of nine cities indicated that 24% to 50% of all bus riders had been using transit for less than one year. Furthermore, on any given day, one to eight percent of a system's riders may be using transit for the first time.

[1]Transit Cooperative Research Program, Transportation Research Board, Chapter 11, 2003.

Because of these factors, a simple route structure will attract more riders than a complex system. Potential new riders will be more willing to try the system, and once they do, the simpler route structure will help to ensure that they get to where they want to go when they want to go there without experiencing problems. In short, a simpler route structure can:

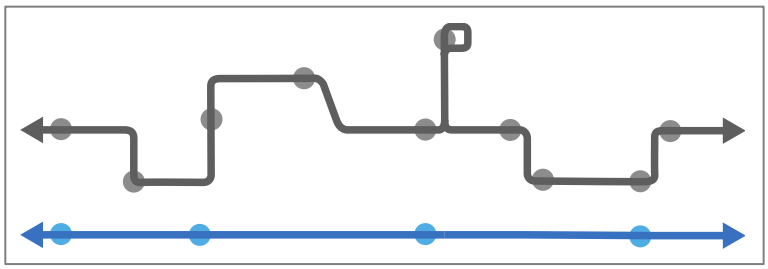
- ➔ **Increase the number of regular riders.**
- ➔ **Increase use of the system by "casual" or infrequent riders.**
- ➔ **Minimize the number of problems that all riders have using the system.**

DESIGN PRINCIPLES FOR SIMPLER SERVICE

Updating service based on service design principles that emphasize simplicity and clarity would attract more riders, especially occasional riders who have other travel options.

- **Routes Should Serve Well-Defined Markets:** To make service easy to understand and to eliminate service duplication, service should be developed to serve clearly defined markets. Ideally, major corridors should be served by only one route, with more service provided by increasing frequency rather than adding routes.
- **Transit Routes Should Operate Along Arterials or Collector Streets:** Potential transit users generally have at least a basic knowledge of an area's arterial road system and use that knowledge as a point of reference. The operation of bus service along arterials or neighborhood collector streets, whenever possible, makes transit service easier to figure out and to use.
- **Transit Service Should Be Focused Around Landmarks:** Most potential transit users have a basic knowledge of major landmarks (and are often traveling to them). When transit service is focused around landmarks, these locations can also become transit hubs. People traveling in an unfamiliar area can more easily find their way to a landmark to make a transfer than to a lesser-known area.
- **Routes Should Operate Along a Direct Path:** The fewer directional changes a route makes, the easier it is to understand. Conversely, circuitous alignments are disorienting and difficult to remember. Routes should not deviate from the most direct alignment unless there is a compelling reason.

DIRECT AND INDIRECT SERVICE



Faster, more direct service will attract more riders than slower, indirect service. It is also less expensive to operate.

- **Routes Should Be Symmetrical:** Routes should operate along the same alignment in both directions to make it easy for riders to know how to get back to where they came from.
- **Route Deviations Should Be Minimized:** As described above, service should be relatively direct, and to make service direct, the use of route deviations—the deviation of service off the most direct route—should be minimized. There are instances when the deviation of service is appropriate, for example to provide service to major ridership generators like shopping centers, employment sites, schools, etc.
- **Route Variants Should Be Minimized:** Transit systems frequently receive requests for individual trips to serve off-route locations (schools are a common example), but having different trips on the same route operate differently at different times makes service confusing, especially for occasional riders. As with route deviations, individual trips should not vary from the regular pattern unless there is a very compelling reason.

EXAMPLES OF ROUTE SIMPLIFICATION

PITTSBURGH, PA

Through the late 2000s, Pittsburgh's Port Authority operated one of the most complicated bus route networks in the United States. In 2009, it simplified its entire system to improve service for existing riders and attract new riders.

In some corridors, up to five routes provided service that duplicated each other more than they complemented each other. Overall, the system had evolved over time into one that provided many mediocre choices but few very good ones and a system that was overly complicated.

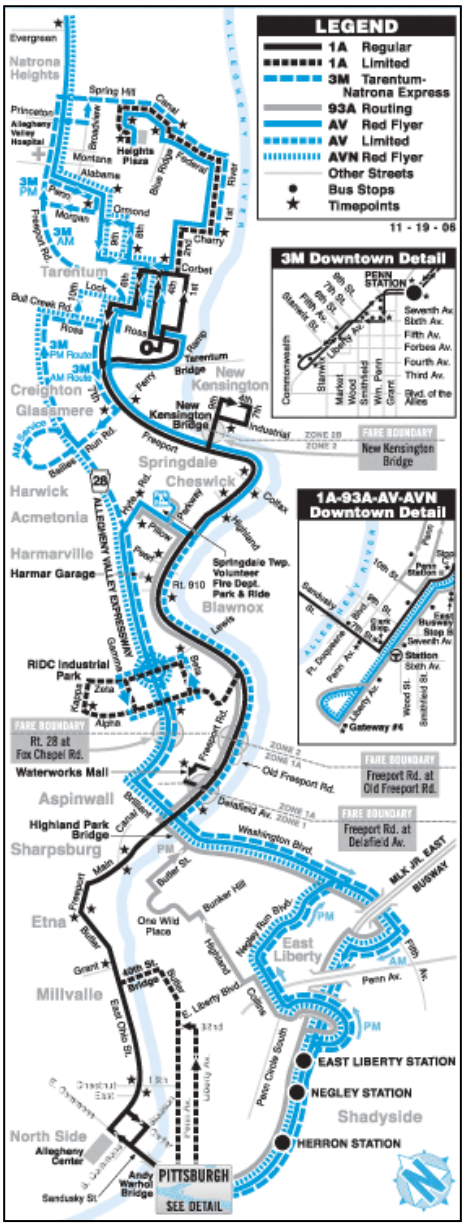
For example, in the Allegheny Valley (see inset to the right), five routes provided 80 trips per weekday. Three were local routes, one of which provided only two trips per day and another only four. Two were express routes, one of which provided 14 trips and the other only four. The five routes were consolidated into a single local and a single express route. The two new routes provide a total of 82 trips per day—64 on the new local route and 18 on the new express route—in a much clearer and more compelling manner.

In total, the Port Authority reduced the number of bus routes it operated from 186 to 125, but it provided more service on the 125 routes than it did on the old 186 routes. Other changes were also implemented to simplify service:

- A new **family of services** provided the most appropriate type of service to different markets, including new rapid bus service.
- A **Rapid Service Network** of services made it easier to identify services that are fast and frequent.
- A new **route numbering system** made service easier to learn and easier to understand.

The changes provided much better service for most existing riders, attracted new riders, and made Port Authority services much more relevant and meaningful. In adopting the recommended plan, the Port Authority's Board called the changes "historic" and "sweeping." Editorials in both major newspapers endorsed the plan.

2005 ALLEGHENY VALLEY SERVICE

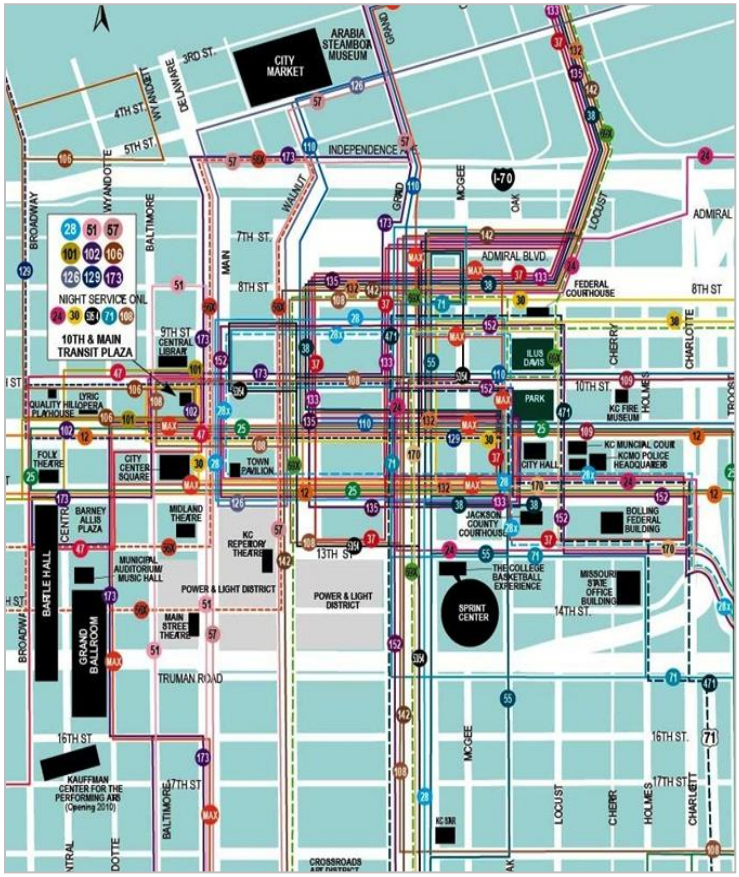


KANSAS CITY, MO

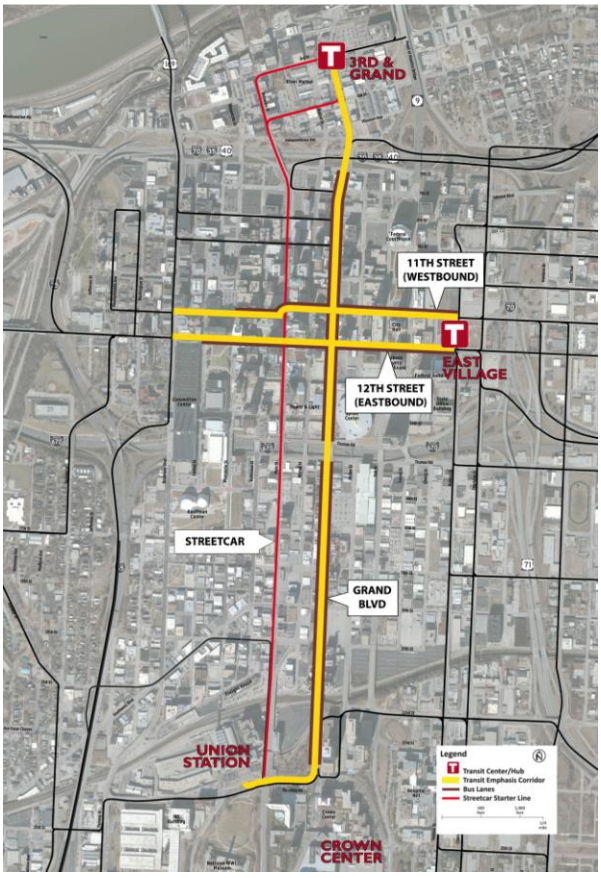
In 2013 and 2014, Kansas City's KCATA conducted a systemwide redesign of its services, in part to simplify them. Once changes outside of downtown had been determined, and once streetcar development plans had been finalized, KCATA undertook a redesign of its services within downtown Kansas City. These changes will maximize coordination with streetcar service and simplify service.

At present, 52 bus routes serve downtown Kansas City. The major focal point of service is KCATA's 10th & Main Transit Center, but this facility is too small to handle all or even most service. Because of this, many routes operate to other locations in downtown and there is little consistency in how bus service operates in downtown. It is very complicated and too few people understand it.

PRE-STREETCAR DOWNTOWN SERVICE



POST-STREETCAR DOWNTOWN SERVICE REDESIGN



Following the completion of streetcar construction in 2016, KCATA will begin to significantly improve and simplify its downtown service through a combination of actions:

- Service improvements based on an **intersecting trunk route service design,** which reorganizes routes into intersecting patterns using a few major corridors.
- The development of **Transit Emphasis Corridors** north-south on Grand Boulevard and east-west using 11th and 12th Streets as a one-way pair.
- **Bus lanes** within Transit Emphasis Corridors.
- The consolidation of regular bus stops into **enhanced stops** along Transit Emphasis Corridors.
- The use of the 3rd and Main MetroStation as the northern anchor of service, the development of a new **transit center** in the East Village, and the use of enhanced stops in the Crown Center/Union Station area and at Barney Allis Plaza as the southern and western anchors of service.

Overall, downtown service will be greatly simplified using an intersecting trunk route design that will provide faster and more understandable service and much more convenient connections to transferring passengers. Most north-south service will be realigned to Grand Boulevard, and most east-west service will be realigned to 11th and 12th Streets.

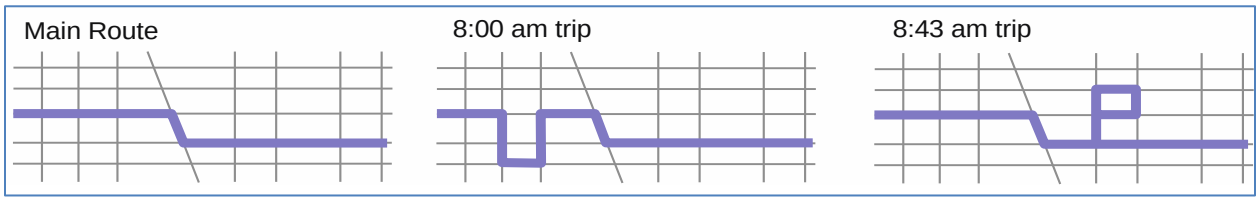
PROVIDENCE, RI

Providence's Rhode Island Public Transit Authority (RIPTA) is another example of a system whose service was very complex with too many routes trying to do too many things, and too many routes operating in similar corridors in an uncoordinated manner. In 2014, RIPTA redesigned its services, with a major emphasis on making service simpler.

For RIPTA, the elimination of variants was particularly important. These had been added to the system one-by-one over many years. Most carried very few riders, and oftentimes no riders, and were the primary cause of RIPTA's often irregular

schedules. As shown in the figure below, variant services detoured off of the main route to provide front door service to locations that requested special service. All required additional time, which resulted in gaps in service on the rest of the route after the detour. It also meant that the next trip departed later, which created breaks in the regular schedule.

VARIANT EXAMPLE



In most cases, RIPTA provided the variant services to be responsive to community desires and not based on actual demand. The variations also made service difficult to understand, and the "specialized" services drove away more potential riders than they served.

The general approach used in the redesign was that if there was significant demand at variant locations, then all service would operate there; otherwise, service would operate along the main route. In all cases, the discontinuation of the variant services provided better service to nearly all riders on the affected routes and trips and attracted new riders.

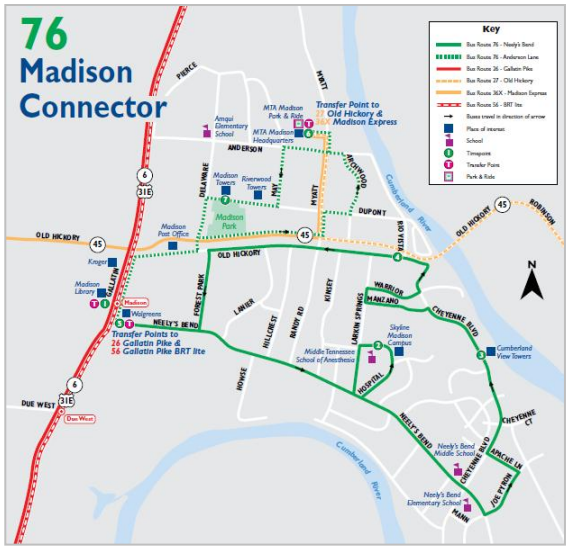
SERVICE SIMPLIFICATION OPPORTUNITIES FOR NASHVILLE MTA

In terms of complexity, there are two main issues with Nashville MTA's existing services:

1. A large amount of service is very circuitous and complex.
2. Downtown service is too complicated (as addressed in the Downtown Service strategy paper).

CURRENT DOWNTOWN NASHVILLE SERVICE

CIRCUITOUS SERVICE IN MADISON



Generally, the best approach to simplifying service is to conduct a Comprehensive Operations Analysis (COA). These projects entail an in-depth analysis of existing services to determine short-term changes that can be made within existing budget levels.

In many respects, a COA follows a similar process as this Strategic Plan but with an exclusive and more in-depth focus on improving existing services in the very short-term. COAs generally entail:

1. Extensive public participation (as in nMotion 2015).
2. A market analysis to determine underlying market demands (which was conducted as part of nMotion 2015).
3. A comprehensive evaluation of each individual route to determine strengths, weaknesses, and potential improvement opportunities.
4. The development of potential short-term service changes and the development of multiple service scenarios. (However, unlike the nMotion 2015 Strategic Plan scenarios, all scenarios would represent changes that could be made within existing budget levels or with only minor increases in resources.)
5. The evaluation and vetting of the scenarios with stakeholders.
6. The development of recommendations.