

Multi-Modal Mobility: **Getting Anyone Anywhere Anytime, Safely and Cheaply.**

Citywide Mobility.

City streets host a wide variety of uses and activities throughout town; especially downtown where they are totally dependent on accessibility. Main street civic and private businesses live or die based on the ease of access to their front door. Having a library or museum on main street that is not easily accessible defeats the purpose of its presence.

Access is all about personal mobility and parking. Mobility thrives on multiple travel modes; multiple modes of travel prosper with advanced technology systems for hardware and communications. Parking works when it is easily accessible, safe and closely-connected to desirable destinations. The goal of the system is to enable anyone to safely and cheaply get anywhere on main street at any time.

The rapid multiplication of travel options is hard to fathom. Autonomous vehicles are the biggest potential disrupters, but there are electric vehicles, delivery bikes, power skate boards, rideshare services, transit for the impaired, exclusive lanes for transit vehicles, cycle tracks and multi-modal mobility corridors in the middle of town.

- Autonomous vehicles will invade small cities and towns; get policies ready now.
- Ridesharing with Uber and Lyft along with home-deliveries from restaurants and shops are finding their way onto main street.
- Electric vehicle charging stations may become a main street amenity that reduces air and noise pollution.

- Bike-share racks and car-share spaces are already in the streetscape.
- Tech-driven pedestrian crosswalks with lights and activated signs will increase the comfort and safety of walking and running.
- “Last mile” warehouses will accelerate deliveries and change main street truck traffic.

The larger towns, such as Kansas City, are necessarily leading the way due to the cost of research. Small cities can benefit by studying the systems, policies and procedures of these cities. See what works, and what doesn't.

Linking small city transportation systems to regional systems benefits residents, commuters and business owners competing in regional or global markets. Internet, highway and transit connections enable small city residents and businesses to reap many big city benefits.

Multi-Modal Systems Planning.

Multi-modal planning for urban mobility demands thinking in terms of systems; taking advantage of new modes, new technologies and new combinations of the old and new.



KCMO

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Kansas City Downtown Streetcar Project

For all things streetcar, including FAQ, route map, news and more, check out the dedicated KCStreetcar.org site! To read the history of the KC streetcar, visit

KC Streetcar is open and free to ride!

Together with Mayor Sly James and the City of Kansas City, Missouri, the KC Streetcar Authority announced Friday, May 6, 2016, as the first day of public ridership on the KC Streetcar. Mayor Sly James said the grand opening of the KC Streetcar is more than a celebration of the end of construction. "This is the first step of what I believe will be a truly historic transformation of the entire city," James said. "Building owners and developers have completed, started or announced more than \$1.6 billion in construction in the KC Streetcar district since the route was announced three years ago. I'm confident the entire city will find new momentum as the KC Streetcar energizes the heart of our community."

The KC Streetcar runs through the heart of downtown, connecting neighborhoods along the [route](#): the River Market; the Central Business District; the Crossroads Arts District; and the Union Station and Crown Center area. There is no fee to ride the streetcar. The streetcar line features free Wi-Fi coverage from River Market to Union Station. Over 300 Wi-Fi transmitters provide [coverage beyond the streetcar line](#).

Kansas City has more than [two billion dollars](#) in economic development underway within the boundaries of the KC Streetcar TDD, or Transportation Development District. As of May, 2017, this includes more than \$2.1 billion in development projects completed, in progress or publicly announced since voters approved the streetcar in December 2012. This economic activity is the result of a combination of initiatives, demonstrating real growth in downtown Kansas City.

The [chart](#) also shows the subtotal of projects where the developer directly attributed the project and its location to the KC Streetcar. That amount is currently \$381 million and focuses on projects right along the streetcar line, or within a block or two. View [updated parking maps](#) with parking lots and garages close to the streetcar line.

KC Streetcar Receives National Sustainability Award

Kansas City Public Works and the Streetcar Authority [have been recognized](#) by a national institute for their trailblazing sustainability practices. The Institute for Sustainable Infrastructure awarded the Kansas City Streetcar Project the Envision Platinum award for sustainable infrastructure, which is the highest level of the Envision rating system.

Dashboard.

The city's mobility system is a major contributor to the City's Dashboard. Real-time data on roadway and transit operations and usage enables city management to respond to congestion due to street closures for maintenance or accidents and to re-route emergency vehicles quickly and efficiently.



West Orange Trail on main street, Winter Garden FL.

Autonomous and Electric Vehicles.

Self-driving vehicles are being tested around America in the form of personal vehicles, delivery vehicles, over-the-road trucks and ride-sharing services like Uber and Lyft. Robots are delivering foods and goods using the sidewalks. The public infrastructure response to AVs will be needed sooner rather than later.

Electric vehicles may have a bigger impact on cities than AVs. The change from internal combustion engines to electric ends a hundred year run of a "fixed" technology. Charging stations may become a downtown amenity while they are a novelty. They will help reduce air pollution, noise pollution and the presence of convenience store gas stations.

The Kissimmee Downtown Multi-Modal Transportation Center

Travel Modes at Kissimmee's Multi-Modal Station

- Amtrak Regional Service
- Greyhound Bus Station
- SunRail Commuter Service
- Lynx Local Bus Service
- Kissimmee Connector, Downtown Shuttle
- Parking Deck
- Pick-up/Drop-off for taxis, rental cars, rideshare
- Bike Trail access



Main Street Bus Service and Stations.

The important point is to not give up on regular bus service. While main street employees, shoppers and visitors currently travel to main street destinations using their cars [SOVs], improved ridership and bus service can happen with better coaches, routes and headways. By attracting more commuters, shoppers and visitors this will reduce greenhouse gases and the need for downtown parking spaces.

Many small cities have bus systems or have routes connected to metro or regional bus systems. The challenge is to attract commuters by providing routes, headways and modern coaches. Bus service can appeal to commuters:

- **Improving intra-city routes** to expand the ability for anyone to get anywhere anytime in the city cheaply, safely, comfortably and without a car. Commuters are the prize, but such a system also helps the elderly, the young, the impoverished and the impaired.
- **Improving bus coaches to simulate rail car qualities.**
- **Providing a Main Street Multi-Modal Transportation “Central Station”**, as described below, to connect local service to metro or regional transportation systems.
- **Working with transit agencies to improve facilities at the other end of the trip.**

Small cities are in the transportation business. Beyond the local street and bus system access, many small city residents and businesses rely on access to regional destinations. A central transportation hub connected to regional systems with physical mobility and information systems can serve the city as a transport hub, or “central station” located on or near main street.

A Main Street “Central Station”.

The opportunity is to develop a central transit/bus station on main street, as the “hub” for local and regional transport service. It does not need to be elaborate; it still can provide:

1. **Food and beverage service** with restaurants, cafes and bars to serve travelers with lease revenues supporting the system. Express service may offer food and beverages on the bus.
2. **Pre-boarding pay stations** for those without smart phones and pre-paid passes.
3. **Digital and traditional advertising** to provide revenue to support the station operations.
4. **Communication technology** at stations and on the buses to take advantage of high-technology tools to provide public service announcements, information, education, communication and entertainment to travelers.
5. **Facilities and information systems** for rental cars, rideshare services, taxis, inter-city bus service, express bus service, bikes from a bike-share provider, car pooling and any other modes of travel.
6. **The central station can be central architectural feature on main street;** the hub of travel in and around the city. A modest, well-located building connected to the city’s bike/ped trail system will serve the purpose.

There are many fine books on new urban transportation; two good ones are:

- ***Transportation for Livable Cities*** by Vukan R. Vuchic, Center for Urban Policy Research, 1999.
- ***Streetfight, Handbook for an Urban Revolution*** by Janette Sadik-Khan and Seth Solomonow, Penguin Random House, 2016.

The Silly Argument Over BRT and Rail

Yonah Freemark  May 25th, 2011



As if operating in parallel, Toronto's *Globe and Mail* and *The Wall Street Journal* each published articles last week describing the merits of bus rapid transit, which each newspaper described as the future of urban transportation.

Both noted that BRT was cheaper to construct than rail lines. Each suggested that in an age of government pull backs and general skepticism over the value of public investment, BRT could offer substantial benefits to a transit system at a reasonable price. And each article concluded with a warning by rail proponents that buses wouldn't be able to attract people out of their cars. This is a sensationalized opposition between two modes of transportation that should be thought of as complementary. There are advantages to improved bus service in some corridors, reasons to support rail in others.

What is clear is that for the majority of American cities — excluding only a few in the Northeast — buses will remain the predominant mode of public transit for most riders, even after major expansions in train networks planned for cities from Charlotte to Phoenix. So even cities that choose to invest in rail projects **must also spend on the improvement of their bus lines.**

Image above: BusWay in Nantes, France, from [City of Nantes](#)

READ MORE AT... <https://www.thetransportpolitic.com/2011/05/25/the-silly-argument-over-brt-and-rail/>

Quora

What are the advantages of light rail systems over bus-type mass transport (riding in dedicated lanes)?

Ian Straus, Marketing researcher for VIA Metropolitan Transit.

7 Questions [Answered Dec 12, 2016](#)

One [1] advantage seems to be that people like light rail more. It [2] gives a better ride, and it has [3] higher-status associations than buses do. So, it is better at attracting people who have a choice of transportation: That means it attracts the whole population. So, it contributes more to making the city an efficient place to live.

Light rail [4] also involves bigger vehicles and so moves more people with one operator. That matters a lot because the biggest part of the cost of running public transportation is the operators, not fuel. Yes, BRT is often run with articulated buses but artics [articulated buses] are still shorter and narrower than a LRV [light rail vehicles]. Naturally this only matters when you run it in a corridor with enough demand to fill more seats than a BRT vehicle has. But all else equal the light rail will get more ridership in the same corridor.

Now note that both these modes perform better when they have dedicated rights of way. Whether it's a regular bus, a BRT bus, a streetcar, or light rail, if it's in traffic with a thousand cars it will be subject to traffic delays. But if it has its own right of way it can go at its own speed. True, intelligent control of traffic lights can speed things up a bit but no matter how intelligent there still have to be red lights and fools will still cause wrecks. Dedicated right of way gets you past that. One drawback of BRT, in my opinion, is that it's easier for planners to rationalize running it in mixed traffic to bring the cost down.

Of course, LRT has a higher capital cost than BRT. The vehicles cost more and require laying rails.

Usually utilities are moved when rails are laid so they are not under the tracks, which is expensive. But some of that extra expense is illusion because sooner or later water and sewer lines need to be repaired and replaced anyway, so the water utility gets a windfall, a free renovation, while all the cost goes onto the books of the transportation authority. If your water and sewer lines leak as much as in most old cities, that is really a wash from the citizens' point of view, because we bear the cost of digging up the old sewer lines when they leak, and then re-paving.

But light rail has a lower [5] lifetime operating cost per passenger mile, because of a better seat to operator ratio, because electric motors are more efficient and need repair less than diesel engines, because LRT vehicles are designed for a much longer lifetime than buses (50 years instead of 12 or 8 years), and because LRT generally uses regenerative braking.

Source: <https://www.quora.com/What-are-the-advantages-of-light-rail-systems-over-bus-type-mass-transport-riding-in-dedicated-lanes>

[Portland Transport](#)

Five reasons why BRT may have advantages over rail

by [EngineerScotty](#) on August 22, 2012 in [Bus Rapid Transit](#)

Once more into the bus/rail breach, my friends.

In various comments and articles, I've enumerated various advantages that bus rapid transit has over equivalent-service rail in some circumstances; this post is simply a collection of these. It doesn't constitute an endorsement of bus over rail for any specific project or system, hence the word "may" in the title—that analysis needs to be done on a case-by-case basis. And this is a one-sided post; the corresponding advantages that rail has over bus are not listed. Not because they don't exist or are not important, but simply because I wanted to collect many of the good technical pro-bus arguments in one place. (I'm limiting myself to technical arguments for the most part; sociological or political arguments such as "trains cause gentrification" or "rail is just pork for developers" are not included).

A bit of terminology: This article refers to "Class A", "Class B", and "Class C" transitways, which refer to the isolation of the transitway from other traffic. Very roughly:

- Class A is a grade-separated transitway (or one with absolute crossing priority), such as the various freeway-adjacent sections of MAX, and much of the Blue Line between Beaverton and Hillsboro. There are no examples of class A bus in the Pacific Northwest; North American examples can be found in Ottawa and Pittsburgh.
- Class B is surface operation in an exclusive right of way where the transit vehicle may need to stop at crossings, such as MAX through downtown, along Interstate and Burnside, and in downtown Hillsboro. Much of the EmX line in Eugene is an example of Class B BRT.
- Class C is ordinary mixed traffic operation—such as the bulk of TriMet's bus operations as well as the Portland Streetcar. Generally, plain class C bus is not considered BRT, but a type of bus service that is commonly referred to as class C+ bus (or by other names such as "rapid bus")—this refers to mixed traffic bus that enjoys enough enhancements (off-board fare collection, all-door boarding, signal priority, limited stop spacing, prominent stops) that it is a materially better product than local bus. Mixed-traffic streetcar systems can also have signal priority (and be class C+); the Portland Streetcar does not do this however.

A claim was made in a [thread at Human Transit](#) that for class A and B operation, rail is almost always preferable; this is a partial rebuttal to that, but the content is important enough to emphasize that it deserves a post of its own. **The reasons** BRT enjoys these advantages over rail: **Topology advantages; Partial operation; Costs; Less prone to catastrophic failure; The ability to pass.**

Conclusions.

Main street employees, visitors and residents depend heavily on their ability to move around the city and to connect to other parts of the region. The objectives are to:

1. Provide as many modes of travel to residents, visitors and businesses as feasible.
2. Match modes of travel with trip purposes to maximize the system's performance.
3. Upgrade regular bus service, don't give up on it as a travel mode for commuters; employ urban bus services and BRT to serve the city's residents, visitors and businesses.
4. Use transit service, usually bus service, to connect the main street to destinations in the city and to larger cities and metropolitan employment centers.
5. Build a "central station", however "humble" at first, to serve as:
 - the "hub" for all transportation modes focused on main street including private vehicles, bus and transit service, rideshare services, rental cars and taxis,
 - the trail head for the regional bike/ped system and
 - an iconic architectural feature of main street, and
 - a mixed-use place co-located with the central park, farmers' market or main plaza providing access to many modes of travel along with restaurants and shops patronized by residents, employees and visitors even when not using the transportation system.
6. Research activities of larger cities; they offer examples and demonstrations of new transit and transportation technologies and information/communication systems useable by small cities.



Bike parking at the commuter rail station.



Soon...?



Rental by the hour.



Something for everybody.

