



EXPERTS TALK

How Bus Rapid Transit Is Reshaping Urban Mobility & Safety with **Gina Thomas**



Exploring the Flexibility of Implementation and Delivery to Help Communities Expand Public Transit

For more than four-plus decades, bus rapid transit has been a public transportation solution to the growing mobility challenges caused by population increases and roadway congestion. There are many approaches to implementing a successful BRT project. The challenge is deciding how to tailor the option to fit each community's needs, priorities and constraints.

Global BRT lead, **Gina Thomas**, works jointly with HDR's industry-leading transit and highways practices to plan and implement BRT systems. She leads the delivery of quality transit projects, from initial alternatives analysis, conceptual engineering and planning-level cost estimating to final design and construction. She is focused on helping clients in large metro areas as well as smaller communities understand how BRT projects can improve mobility while advancing transportation goals. Since HDR's first BRT project in 2008, the company's BRT portfolio has grown to more than 100 BRT projects in 80 communities.

In this interview, she discusses why BRT has become a popular public transportation option around the world, explains the funding opportunities available to support BRT planning and implementation in the U.S., addresses the challenges and opportunities associated with electric buses, and reflects on how community input can help shape projects.

Q. Based on the number of bus rapid transit projects in development today, BRT is one of the more popular options among public transit alternatives. Why?

A. Cities and transit agencies are working with limited budgets to grow ridership and quickly deliver tangible transportation benefits to their communities. Some don't have the time, funds, ridership justification or community support to invest in a light rail project but still want to offer faster and more reliable transit service. BRT provides a less expensive, faster-to-implement and more flexible transportation solution, with rubber-tire technology that is more familiar to municipalities, transit agencies, and the public.

A BRT project can typically be delivered for a fraction of the cost of a light rail transit system and about half the cost of a streetcar project. A BRT system can be strategically designed to align with a budget, ranging from a few million dollars per mile to upward of \$80 million, depending on preferences such as guideway separation, lane exclusivity, vehicle and station type, and transit signal priority. Additionally, our transit and roadway professionals have been successful at coordinating BRT development with other mobility projects in the corridor, such as bicycle, pedestrian and signal improvements.



The Vine on Mill Plain is a 10 mile long BRT line constructed in a year and a half.

Whether upgrading an existing bus line or building an entirely new route, BRT can also be more quickly delivered than LRT or streetcar — depending on length and complexity. The Mill Plain BRT Project (The Red Vine) in Vancouver, Washington, and METRO D Line in Minneapolis, 10 and 18 miles in length respectively, were each constructed in just a year and a half.

Furthermore, the flexibility of BRT is highlighted during service disruptions, such as construction from induced economic development or community events like parades or street fairs. The ability of BRT to reroute the line with a one-seat ride around these disruptions maintains reliability and public trust in this transportation option. These advantages together make it a popular transit option.

Q. How does a BRT corridor fit into and maximize the benefits of a broader mobility network?

A. BRT improvements are often part of a holistic effort to improve mobility within a corridor for transit users, pedestrians and bicyclists, and vehicle drivers. A BRT route, dependent on scope and existing infrastructure, may be seamlessly integrated into existing roadways.

It can also be included in a project to enhance the capacity to move people during peak periods and reduce congestion points.

BRT is usually operated in traditional traffic, with or without dedicated bus lanes, and this flexibility provides opportunities to tailor the design with sensitivity to the context of each segment or corridor while reducing property acquisition requirements. Bus right of way can be shared with vehicles and cyclists during specific permitted days or hours, for instance. Or bus-only lanes can be separated from traffic to reduce transit delays from traffic congestion. The integration of ITS elements into a BRT design, such as adjustable signal timing or transit signal priority systems, can improve bus reliability while maintaining mixed vehicle traffic patterns, ultimately mitigating or eliminating congestion points.

The design flexibility of BRT also can accommodate many elements that improve safety for all road users, including dedicated or protected crosswalks and bike lanes and improved lighting and sidewalks. The addition of BRT to a growing transportation system complements other transit services and opens the door for broader regional connectivity.



Metro D Line BRT provides riders with a connection to access areas throughout the Minneapolis region.

A BRT route can serve as an affordable extension of other existing transit options like light rail, providing riders with wider access and improved operational efficiency throughout the full transportation system.

In Minneapolis, METRO’s D Line BRT provides riders with a connection to the Mall of America Transit center, which is also a connecting stop for the Blue Line LRT. This type of collaboration between multiple mobility options and connection to wider transit services provides users with increased connectivity and access to community amenities, improved reliability, and provides more opportunities for economic development.

Q. How can communities pay for BRT projects? What funding opportunities are available for consideration? ?

A. It’s worth considering historically roadway-focused funds like city or regional transportation sales tax or state funds to deliver these projects when coupled with roadway improvements. In Seattle, our final design of RapidRide J BRT Line includes enhanced sidewalks, bike lanes and improved signal timing at intersections, all with the intent to provide better connectivity for people to move throughout a corridor more efficiently. This was also the case when HDR supported WeGo and the city of Nashville, Tennessee, with the development of a “Choose How You Move” Transportation Improvement Plan that includes a new BRT system to enhance public transportation options and reliability.

The TIP implementation will be funded by a voter-approved bond referendum which was positioned primarily as a community-wide transportation improvement program that included other infrastructure improvements like sidewalks, signals, service and safety.

Federal grants in the U.S. are also a major funding source to help cover the cost of transit related improvements, as well as complete early planning studies. The U.S. Federal Transit Administration’s discretionary Capital Investments Grants Program is the largest funding source for eligible BRT projects. As of January 1, 2025, nearly two-thirds of all CIG funding was dedicated to BRT projects, mainly under the Small Starts category. This funding avenue aligns with BRT’s relatively lower cost and ability to be delivered much quicker when compared with alternative transit options.

Additional federal funding sources are also available for BRT development, congestion management and corridor safety improvement elements, including grants through the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) and Safe Streets and Roads for All (SS4A) federal programs, as well as formula programs such as Congestion Mitigation and Air Quality (CMAQ).

It’s important to understand that though federal funds can provide a huge boost, local funds are still necessary and must be committed to unlock federal dollars. It’s also vital to understand and account for O&M costs to cover future service expansion in your overall funding strategy, and that those operating funds have long-term viability.

Q. How can proactive stakeholder and community engagement support a successful planning and design process and build project understanding and acceptance?

A. Because BRT projects can include a spectrum of design treatments, it’s important for decision-makers, stakeholders and the public to have a clear understanding of how the new line will operate, what it will look like and the changes it will bring when implemented. Proactive conversations with clear graphics and videos about proposed operations can help shape project direction, increase community buy-in, and avoid project delays.

Early discussions about the potential operational impacts that a completed BRT line could have on overall road capacity, congestion mitigation, street parking, and loading and unloading zones can spark collaboration between the project team, community and business owners to relocate these areas without expensive redesigns or compromising the efficiency of the corridor.

Q. With the increasing integration of electric vehicles in transit systems, what challenges and opportunities should agencies and owners understand about electric buses in a BRT line?

A. Electric bus operations are often a consideration for new BRT systems, but their adoption can pose challenges. The U.S. bus manufacturing industry has been shrinking over the last few years, and combined with the FTA's Buy America requirements, there is a supply and demand concern that can impact schedules and budgets. As a result, agencies should plan ahead to avoid delays that could be caused by the higher cost of electric buses or challenges with their delivery.

Further consideration should also be given to the risk of implementing an electric bus sub-fleet within an agency's larger fleet. This can create operating and maintenance challenges that adversely affect other routes, particularly if a bus is out of service. Ensuring an adequate number of spare buses will help maintain service schedules. Prior to purchasing electric buses, agencies should also discuss any impacts this may have with their insurance provider.

Understanding the range of electric buses is key for BRT planners as they determine route development and charging method and placement.

There are tools available to help with this process. HDR's [zero emissions mobility professionals](#) have helped agencies make those planning decisions with our **Zero+ Fleet Optimization** advanced forecasting tool. It incorporates operational fleet data, route lengths and profiles, GIS coordinates and even weather to assist with making data-driven decisions about which routes work best for electric buses.

Another option is to begin service with hybrid electric buses but incorporate a plan for an eventual transition to electric. This could include adapting current plans to include the additional space that will eventually be needed to accommodate electric buses, such as their larger vehicle size and required charging infrastructure and maintenance facility requirements.

The city of Albuquerque used CMAQ funding to help deliver the Albuquerque Rapid Transit project (nicknamed ART).





Q. How did you get into the BRT field?

A. I began my career working on land development projects and quickly became interested in the multimodal transportation interactions that occur around dense urban development. It was at that time that I realized transit is the thread that builds these urban communities and keeps them connected, so I actively sought out a transit engineering position at HDR. I have had wonderful experiences on streetcar and light rail projects, while really embracing BRT as a form of transit that is within reach for more communities and can deliver more miles of transit service while providing additional benefits to all road users.

Q. Do you have any advice for people just starting out in BRT?

A. For those just getting involved in BRT, try to get a diversity of experience in fields related to BRT, because it's not just about the bus itself. You will benefit from understanding the intricacies of many different disciplines, including roadway, drainage, traffic signals, pedestrian/bike treatments, urban design, funding, systems and outreach; all of which are necessary to deliver a successful BRT project.

Experts Talk is an interview series with technical leaders from across our Transportation program. Each interview illuminates a different aspect of transportation infrastructure planning, design and delivery. Contact HDRTransportation@hdrinc.com for more information. Visit www.hdrinc.com/insights regularly to gain insights from specialized experts and thought leaders behind our award-winning, full service consulting practice.