

Final BRT Case Studies Report

June 2024

1. Purpose and Findings

Purpose

A key component of the 2023 Portland Metro Regional Transportation Plan (RTP) is the Regional High Capacity Transit (HCT) Strategy. HCT provides substantial benefits to riders in the form of higher capacity vehicles, enhanced amenities, specific branding, and other features. The HCT Strategy provides a vision and plan for developing new HCT corridors throughout the region that accounts for growth, travel patterns, and how community needs have changed. While Portland has invested heavily in the MAX light-rail system to serve the region's HCT needs, investing in bus rapid transit (BRT) to serve new corridors is an emphasis of the HCT Strategy. BRT can provide greater flexibility and cost-effectiveness compared to light-rail, while maintaining many of the benefits.

Portland's first BRT line, the FX2-Division route, opened for service in 2022. Traditionally, many HCT investments have included substantial corridor-wide investments in cycling and walking facilities, lighting and safety enhancements, and overall infrastructure upgrades (pavement, sidewalk replacement, stormwater, signals, etc.). While these provide a substantially improved corridor when complete, these projects are very costly and some corridor upgrades can be tangential to the purpose and need of the core HCT investments. They can also lead to a longer and more complicated process and prolong construction. As Metro and TriMet plan for future BRT corridors throughout the region, cost is a critical consideration. Building a BRT corridor can vary considerably in cost and depends on factors such as whether a BRT vehicle operates on an exclusive guideway, whether there is a need to acquire land, and the level of investment in streetscape and corridor improvements.

Metro and TriMet undertook a review of peer regions that are also building out low-cost BRT corridors to help inform future BRT corridors in the Portland region are developed with cost-effectiveness in mind. Each of the case studies included in this report were delivered at a lower cost compared to the FX2-Division. Case studies include the following:

- D Line – Metro Transit. Minneapolis, Minnesota.
- RapidBus R6 Line – TransLink. Vancouver, British Columbia.
- Utah Valley Express (UVX) Line – Utah Transit Authority (UTA). Provo, Utah.
- RapidRide H Line – King County Metro. Seattle, Washington.

This review helped the project team gain a better understanding of the factors that were used to develop cost-effective solutions and how the responsible parties worked through challenges in the planning, design, and construction phases.

Findings

Through interviews with transit agency staff and additional research, a number of lessons were learned that can be applied to the development of Portland's regional BRT network. These lessons are summarized below:

- **Using existing right-of-way (ROW) for BRT is an important consideration in keeping capital costs down and delivering a project quickly.** Metro Transit and TransLink developed the

D Line and R6, respectively, at relatively low costs because the projects were not scoped to expand the ROW. ROW expansions are very costly in terms of construction and land acquisition, and by eliminating these, the biggest capital costs were avoided. This also impacted each project's timeline and enabled a much faster delivery compared to projects with extensive ROW expansions.

- **Narrowly tailored scopes and charters established at the beginning of the planning process are essential in reducing scope creep and coordination issues.** Large capital transit projects often face challenges keeping projects in line with the original scope. Lessons learned from these cases show that these challenges can be limited by carefully developing the scope with the involvement of all project partners and keeping the project focused on the goal of increased transit access and capacity while not considering more robust roadway or multimodal improvements.
- **It is important to weigh community priorities against value for BRT projects.** Each project's context is unique and greatly shapes the community's priorities for proposed BRT projects. Some of the lines, including the Metro Transit D Line and RapidBus R6, were developed under tight budgets and funding constraints. For these, it was clear that cost-effectiveness was a more critical factor than secondary amenities. For the King County Metro RapidRide H Line and the UTA UVX Line, the respective communities largely prioritized more amenities such as bicycle and pedestrian improvements, landscaping, and exclusive lanes for BRT. For these lines, it was more important to respond to the communities' preferences and deliver high-quality corridors. Through this, public support for transit has increased as the communities see the benefits of improved transit that has attractive design features.

2. Metro Transit D Line | Minneapolis, MN

2.1 Overview

The D Line is an 18.5-mile-long route running from the Mall of America in Bloomington north through downtown Minneapolis and terminating at the Brooklyn Center Transit Center. Figure 1 shows the D Line route map. Outside downtown Minneapolis, the route predominantly serves low- and medium-density residential neighborhoods along major arterials. Most of the route follows existing ROW and is considered arterial BRT, with little exclusive ROW. The D Line largely replaced Route 5 when it opened for service in 2022. Route 5 is a local bus route that had the highest ridership in the entire system, serving an average of 15,000 people per weekday in 2019. Route 5 continues to run, but with less frequent service (60-minute headways). Route 5 uses the same stops as the D Line, but provides local service with stops every block, compared to the D Line which has stops every one-third to one-half mile.

More than 120,000 people live within a 10-minute walk or bicycle/micromobility ride of the D Line. The corridor serves neighborhoods with lower access to opportunity compared to the region as whole. On average, households in these neighborhoods have lower incomes, education, access to healthcare, access to housing, and access to transportation.¹ Many people rely exclusively on public transportation, with one in four households not having access to a vehicle.

The D Line is operated by Metro Transit. It is the primary transit agency serving 1.7 million people in the Minneapolis–St. Paul region. The agency operates more than 150 bus routes, five BRT lines, two light-rail transit lines, and a commuter rail line.

¹ Source: [EPA Environmental Justice Screening and Mapping Tool](#)

2.2 Project Development

Scoping Considerations

BRT is central to Metro Transit's HCT investment strategy, which is planning for a total of 12 lines and 165 miles in operation by 2030. The agency is developing three types of BRT: (1) highway, (2) guideway, and (3) arterial BRT. Highway and guideway BRT are more analogous to light-rail, as they operate primarily on exclusive guideways. These types of BRT can produce the largest time savings, but they typically require the highest levels of capital investment in the form of construction of new guideways and land acquisitions.

The D Line was developed as part of the agency's arterial BRT program and is predominantly corridor-based BRT per Federal Transit Administration (FTA) definitions, traveling on existing arterials instead of exclusive guideways. By running on existing corridors in mixed traffic, corridor-based BRT can be more cost-effective compared to highway and guideway BRT, while generating a more modest time saving.

The scope for the D Line was narrowly tailored to consider just station areas as opposed to the entire corridor for infrastructure redevelopment and upgrades. This both kept costs low and enabled faster development of the line. Station improvements include building stations, integrating existing bikeways, Americans with Disabilities Act (ADA) upgrades, and signal upgrades, but do not include upgrades between stations. The project team noted that the scope for the D Line was largely maintained, but there have been different experiences for other Metro Transit BRT lines. The B Line saw considerable scope growth in response to the priorities of the City of Minneapolis and Hennepin County to undertake more significant roadway redevelopment work and remove a vehicle travel lane along the corridor. While this scope growth increased costs, it provided Metro Transit with additional funding and support to build 6 miles of exclusive bus lanes that were not originally part of the scope.

Cost Considerations and Adjustments

The total D Line project budget was \$75 million. At 18.5 miles, the per-mile cost was \$4.05 million in 2022. Precise national data on BRT capital costs are difficult to obtain, but this is notably low compared to other BRT lines developed in peer regions and to Metro Transit's other BRT routes developed in the past decade.

A key factor that led to a cost-effective delivery of the D Line is Metro Transit's strategy of using a kit of parts for station designs. This means using pre-fabricated components and assembling them for each station as opposed to designing unique stations for each stop location. This reduces complexity and cost for station design and enables development to occur faster as a result. In tight spaces, they were able to modify the design to fit without needing to acquire additional property.

Metro Transit also prioritizes as few ROW expansions as possible for corridor-based BRT to lower costs. Minimizing expansions reduces the amount of roadway construction and private property acquisitions, which can drive capital costs up considerably. However, the agency was faced with decisions that required careful consideration of trade-offs between cost increases or quality of service reductions during the planning and design of the D Line. Certain spots along the corridor were difficult for bus turns or did not comply with ADA regulations as existing, and those spots needed to be expanded. These ROW acquisitions added cost to the budget, but they were necessary; rerouting around these tight spots was not feasible due to increased travel times and operating costs.

Metro Transit faced additional unanticipated cost increases when it found a significant amount of old streetcar tracks and contaminated soil along the route. With no way to mitigate this and alternate routing not feasible, the agency was compelled to use its contingency allowance to remediate the

soil and remove the streetcar tracks. The contingency allowance was not enough for this effort, and the agency had to acquire additional funds.

One situation required a modification to the planned route. Originally intended to run the entire span of Chicago Avenue from downtown to 60th Street with a station at 38th Street, the plans were adjusted following the murder of George Floyd by Minneapolis police, which occurred near the intersection of Chicago Avenue and 38th Street. The route now deviates to Portland Avenue and Park Avenue at 38th around George Floyd Square. Metro Transit intends to work with the City of Minneapolis and other public partners to determine the long-term future status of transit through George Floyd Square.

Coordination and Partnerships

Coordination with local governments was an important consideration in the development of the D Line and contributed to the project being completed on time and under budget. One highlight of these coordination efforts is how the project team combined efforts with Hennepin County, which was carrying out a roadway redevelopment on 44th Avenue N. Metro Transit coordinated with Hennepin County to ensure the roadway redevelopment incorporated the necessary BRT infrastructure in the project scope, which produced \$3 million in savings for the D Line. Other partnerships with the City of Minneapolis and the City of Bloomington to construct complementary street improvements and fiber optic network infrastructure produced nearly an additional \$4 million in savings.

Another factor in the successful development of the D Line—and BRT in the Minneapolis-St. Paul region generally—is that Metro Transit has statutory authority to build bus stations in the ROW. This reduces requirements to coordinate with local jurisdictions on streetscape policies and regulations and streamlines planning, design, and construction.

2.3 Outcomes

Ridership Impacts

Following the opening of the D Line in December 2022, ridership compared to the previous bus service on Route 5 more than doubled, going from nearly 7,000 average weekday passengers in October 2022 to more than 13,000 in October 2023. While ridership is still below pre-COVID levels systemwide, this growth in ridership is encouraging. The D Line remains the busiest transit corridor in the region and accounts for more riders than any other single line.

Lessons Learned

- **Using existing ROW lowers capital expenditures.** The D Line, considered corridor-based BRT, was built primarily on existing ROW, with limited property acquisitions and easements where necessary, particularly to meet ADA requirements for station access. The corridor was selected in part due to the fact that the existing width—66 feet in most sections—could accommodate the route without extensive property acquisitions. Each of the acquisitions was analyzed on a case-by-case basis to determine the need and evaluate potential alternative solutions. Limiting these ROW acquisitions kept capital costs considerably lower than fixed-guideway and highway BRT projects, while providing many of the same benefits of faster and more frequent travel. As a trade-off, the D Line operates in existing travel lanes, and does not have any significant stretch of exclusive right-of-way, and used existing street parking for stations.
- **Using a kit of parts for stations reduces design and construction complexity.** Keeping stations to a set design through a kit of parts helped reduce complexity in planning, design, and

construction, increased speed of implementation, and reduced capital and ongoing maintenance costs compared to similar BRT projects with unique station designs for each stop location. Minor issues with this strategy include varying compatibility with surrounding infrastructure, particularly bicycle and pedestrian facilities.

- **Limiting improvements to station areas keeps the scope simple.** Setting the expectation that the scope considered just the station areas and not the entirety of the linear corridor was a key factor in reducing costs. The D Line project scope did not include signal upgrades at all intersections nor significant roadway improvements. Focusing the work on smaller, defined areas simplified the planning, design, and construction,

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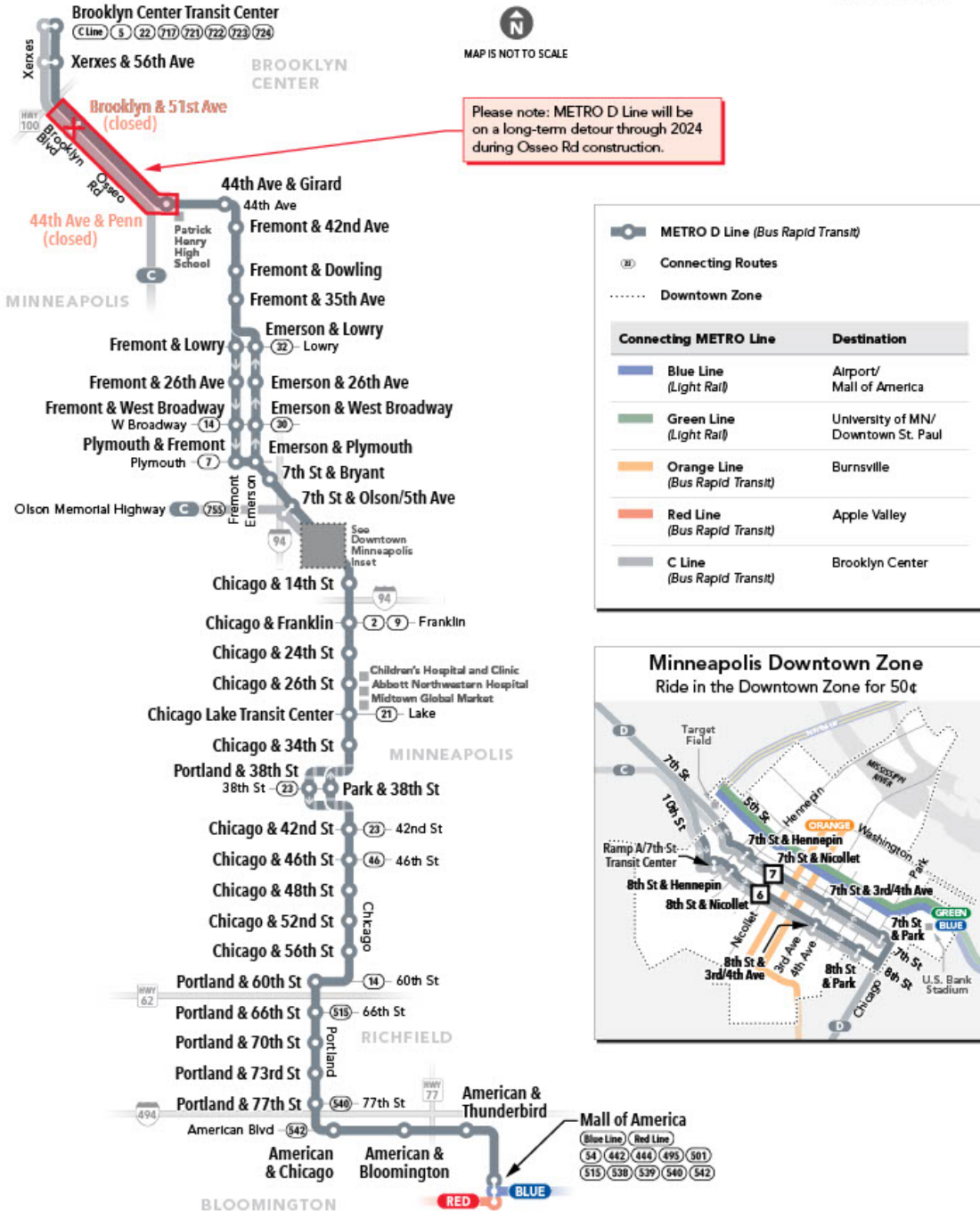


Figure 1. Metro D Line Route Map

3. TransLink R6 RapidBus | Surrey and Delta, BC

3.1 Overview

The R6 RapidBus is a 14.3-mile route launched in early 2024 serving the cities of Surrey and Delta, British Columbia. The line runs from Newton Exchange to the Scott Road SkyTrain Station, linking the route with the rest of the region's frequent transit network. Figure 2 shows the R6 RapidBus route map. The corridor environment is inherently suburban, serving low- and medium-density neighborhoods and commercial areas, while the northern section of the route provides access to industrial areas. The route uses existing ROW, with 38% of the travel way consisting of business access and transit (BAT) lanes.

Prior to the R6, the corridor was served by Route 319, a frequent local service route. Route 319 continues to operate all-day local service and uses transit improvements constructed for the R6, but it runs at less frequent headways, uses smaller buses compared to the R6. Route 319 makes more frequent stops than the R6 and travels on a slightly different route alignment. In 2023, Route 319 was TransLink's fourth-busiest bus route with 20,400 average weekday boardings.² Prior to the R6, Route 319 used travel lanes with no transit priority, no queue jumps, and no in-lane bus stops. Scott Road and 72nd Avenue were generally five or six lanes: two or three travel lanes in each direction and a center turn lane. With the R6, it was redesigned to accommodate the BAT lanes without expanding ROW by reducing lanes in certain areas and staggering turn lanes.

TransLink's regional transit system covers 21 municipalities and areas of the regional district and serves 2.6 million people. TransLink currently operates six RapidBus lines and plans to implement up to nine BRT lines in the next 10 years as outlined in the TransLink 10-Year Priorities.³

3.2 Project Development

Scoping and Cost Considerations

Scott Road is one of the busiest, most congested, and fastest growing corridors in the region. RapidBus for the corridor was identified in the 10-Year Priority Document as a need to provide faster and more reliable transit and a better connection to the SkyTrain network. Scott Road had the highest transit person-delay per kilometer in the South of Fraser subregion.⁴ With other RapidBus improvements on routes in the network, TransLink and community partners determined that similar enhancements were needed on Scott Road.

The key distinction between RapidBus and BRT is the amount of bus priority lanes. TransLink's threshold for BRT is to have near-continuous dedicated bus lanes, while RapidBus has a minimum of 30% or one-third of the corridor lane-miles. The R6 exceeds this requirement with 38% of the route using bus priority lanes; it is currently the highest-quality bus priority route in TransLink's RapidBus network. The 10-Year Priority Document calls for eventually upgrading the R6 to be a fully separated BRT line with dedicated bus lanes and transit signal priority across the length of the corridor. The R6 was built at a relatively low cost: \$24.5 million in total and \$1.7 million per mile.⁵

² [2023 TSPR - Bus/SeaBus Summaries | Tableau Public](#)

³ [RapidBus Projects | TransLink](#)

⁴ [TransLink - Bus Speed and Reliability Report 2023 - Page 1 \(publitas.com\)](#)

⁵ Amounts adjusted from CAD to USD.

At the beginning of the R6 project, TransLink established a charter to document project vision goals and objectives, as well as guiding principles. The charter later helped the project team determine what was and was not part of the project scope. For example, TransLink considered acquiring property frontage and expanding the ROW in certain areas to implement queue jumps for the R6. The cost-benefit analysis showed that some of the queue jumps were not cost-effective and produced insignificant time savings. Therefore, some were descope from the project. In discussions with municipalities, there was a desire to include additional road work in the corridor that went beyond the objectives of the project. TransLink worked with these municipalities to identify alternative funding sources and protected the scope of the R6 RapidBus project which enabled on-time and on-budget delivery.

Coordination and Partnerships

TransLink works closely with local jurisdictions during the design and review phases for RapidBus projects. The success of existing RapidBus routes and the established bus priority program at TransLink helped the R6 project receive buy-in from the region.

TransLink carried out engagement for the project to understand needs and priorities of the general public along with the municipalities receiving the RapidBus line, Surrey and Delta. As R6 was an upgrade of existing local service (Route 319) and infrastructure, no property was acquired for the R6; public engagement for each station was also not required.

3.3 Outcomes

Ridership Impacts

At the time of this writing, there are no ridership figures for the R6.

Lessons Learned

- **Establishing a charter at the beginning of the planning process reduced scope creep.** At the start of major projects, TransLink and project partners establish a charter with clear goals and objectives. It identifies the problems to be solved, guiding principles, and roles and responsibilities for everyone involved. For the R6, the charter focused on the critical features for the RapidBus service: bus priority features and road safety for all users. Bus priority treatments and cost-benefit analyses were carried out on different scenarios to determine what was feasible and cost-effective. Local jurisdiction partners sought to expand the R6 scope to include different design features and roadway work outside of the R6 project, but the narrowly defined scope that articulated what was relevant and not relevant to the project eliminated major conflicts and scope creep.
- **Prioritizing no ROW expansions enabled faster project delivery and provided downstream benefits.** The R6 was open for service after just 4 years of planning and development in large part due to the emphasis on no ROW expansions, compared to 10 or more years for the agency's SkyTrain light-rail projects. Minimizing ROW expansions and property acquisitions has enabled quick implementation of the R6 and for TransLink's other RapidBus corridors. A record of this kind of relatively quick and low-cost project delivery through the R6 and other lines has increased trust with the community and project partners on bus priority and in turn has increased support for future transit expansion.



Figure 2. TransLink R6 Route Map

4. Utah Transit Authority UVX | Provo and Orem, UT

4.1 Overview

The Utah Valley Express (UVX) is a 10.5-mile route running from Orem to Provo in Utah County, that opened in August 2018 (see Figure 3). The route links with other UTA services, including the two FrontRunner commuter rail lines, and serves two universities—Brigham Young University (BYU) and Utah Valley University (UVU)—as well as a shopping mall, business park, and residential

neighborhoods. About half of the UVX runs in dedicated ROW and operates on 6-minute headways during peak service. Prior to the UVX, the corridor was served largely by Route 830.

UTA serves 2.2 million people across six counties, comprising 77 municipalities along the Wasatch Front. The UTA fleet includes streetcar, light-rail, commuter rail, BRT, fixed-route bus, on-demand services, and more. UTA is planning more than 200 miles of BRT projects to expand its network.

4.2 Project Development

Scoping and Cost Considerations

An essential priority for the UVX was to provide fast and frequent transit service to BYU and UVU from downtown Provo. The UVX also serves Orem Central and Provo Central stations, which provide connections to the FrontRunner commuter rail service, Amtrak, and local buses. Both universities contributed significantly toward the planning and prioritization of the UVX, and they provide annual funding.

Priorities from the public and Cities of Provo and Orem were also significant factors in the scoping and final design of the UVX. UTA found that there was widespread support for including dedicated bus lanes with center-running stations and corridor improvements such as bike lanes, trees and landscaping, and wide sidewalks, but without eliminating existing travel lanes. Roughly 3 miles of University Parkway and 1.5 miles of University Avenue, two major arterials, were rebuilt to accommodate these priorities.

As a result of these community and local jurisdiction priorities, the UVX was developed at a significantly higher cost per mile compared to other BRT lines included in this case study report, coming in at more than \$19 million per mile, and \$201 million in total. This is eight times the per-mile cost of TransLink's R6 and four times more than Metro Transit's D Line. More than half of the capital budget was funded through local sales taxes, with the rest coming from federal sources.

The UVX's high relative cost is due in part to the desire from policymakers and the general public for high-quality transit priority infrastructure and providing fare-free travel for all riders. For the other case studies, staff articulated that the cost increases of building transit-priority infrastructure were not worth the time savings. However, UTA staff encountered the opposite; support for the UVX was dependent on the line being built to a high standard and having a different look, feel, and character than a standard bus, more akin to "light-rail on wheels."

With the need to include high-cost features and amenities, the project was subject to considerable budget challenges. The project took 10 years to complete from the time initial funding was secured. Originally, \$150 million was allocated for the project, but this amount proved insufficient as costs for property acquisition and landscaping increased considerably. Furthermore, the large amount of landscaping presents challenges for ongoing maintenance

While the UVX is the costliest of the case studies, it is important to note that the total and per-mile project cost were both lower than for FX2-Division. This underscores the fact that there are other critical factors to achieving cost-effectiveness beyond physical infrastructure amenities.

Staff also discussed a challenge related to requirements for 30% of the project budget to be held in contingency. Facing the prospect of scaling the project down, UTA found a creative solution; it removed enough stations from the base scope to cut the project budget by 30%. As the corridor was developed, UTA sought approval from FTA to draw down the contingency and add the stations back into the scope. In the end, no stations were cut from the original proposal.

Making the UVX entirely fare-free was another priority from the public and policymakers. While this has been a major key to the success of the line and growth in ridership, the future of this practice is in doubt due to lack of further funding. The agency used Congestion Management and Air Quality grant funding to cover the first 3 years of fare-free ridership, but this funding stream ended in 2021. Fare-free ridership has been extended and funded through UTA directly, but the agency is considering moving to paid fares. Doing so, however, would precipitate a need to build infrastructure, such as transit pass readers and scanners. This infrastructure is costly, and there are considerable logistical and financial hurdles to this transition.

Coordination and Partnerships

Partnerships with the two universities were critical to the development of the UVX line. Each university contributes \$1 million annually toward transit operations and for all students, staff, and their families to have transit passes on the UTA network. UTA conducts an annual in-person survey to understand more about ridership demographics and data related to the universities.

4.3 Outcomes

Ridership Impacts

Following the opening of the UVX, ridership doubled compared to previous service on Route 830. In September 2019—a year into service—nearly 8% of total ridership in the UTA system was from the UVX.⁶ In large part due to the partnerships with BYU and UVU, 80% to 90% of ridership is from university-affiliated students and staff. The success of the UVX line and the growth in ridership has driven significant public support for additional HCT in the region, and it has helped pave the way for UTA to build its second BRT route: the Ogden Express that opened in August 2023.

Lessons Learned

- **Developing BRT in partnership with universities and other major trip generators increased transit mode share considerably.** The UVX line was developed in close partnership with and provides direct access to BYU and UVU, two large universities in Utah County that are major trip generators through daily activities and special events. University contributions toward operations and all-access transit passes for all students and staff were substantial contributors to ridership growth on the UVX, and ridership on the line doubled nearly instantaneously compared to prior bus service.
- **Successful implementation necessitated high-quality amenities and service over cost-effectiveness.** As the first BRT line in the region, there were strong political considerations that required UTA to develop higher-quality features and infrastructure compared to equivalent BRT projects, including priority bus lanes, art, and landscaping. In addition, UTA provides entirely fare-free ridership on its two BRT lines as a result of public interest. These were priorities in order for the project to receive buy-in from policymakers and the general public.

⁶ [Utah Transit Authority Ridership Dashboard](#)

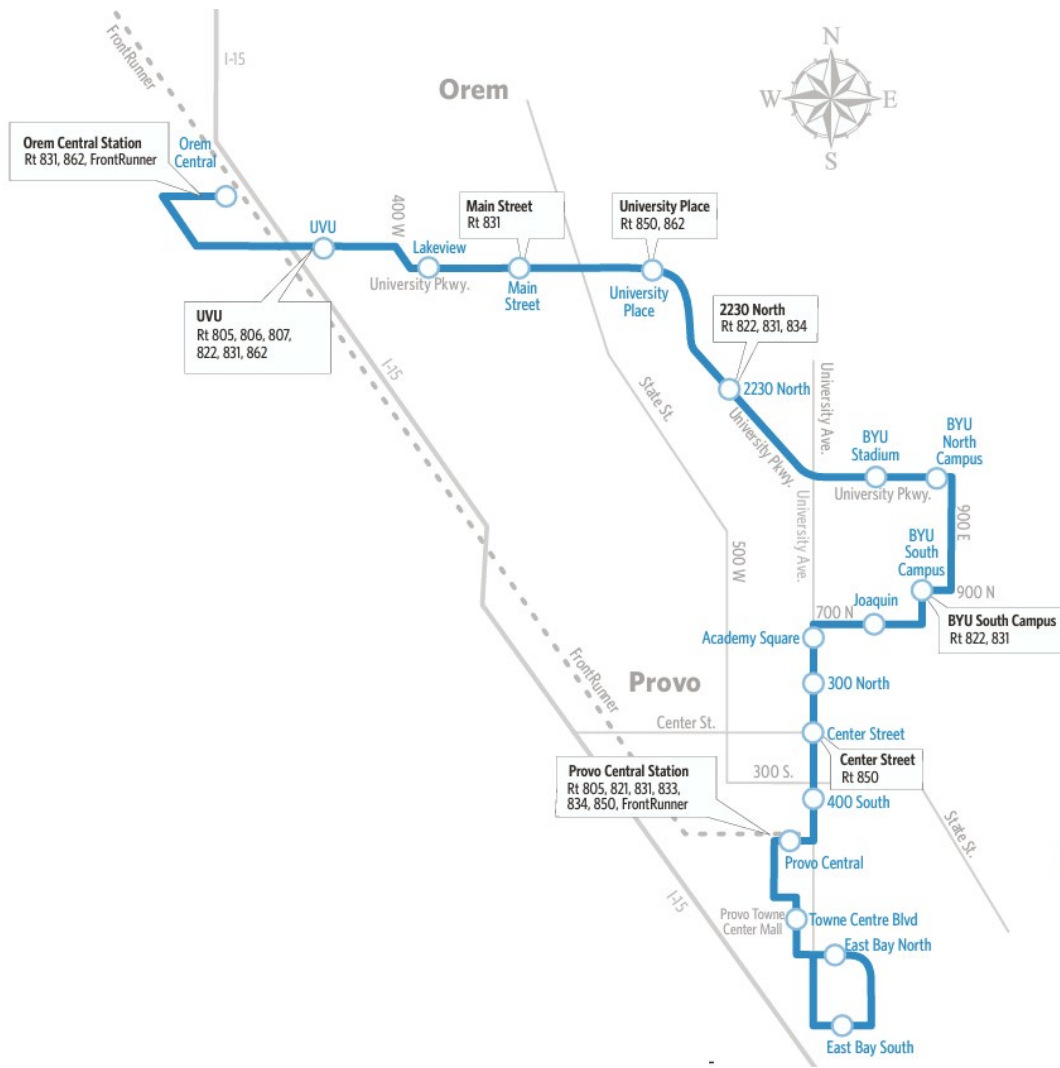


Figure 3. UTA UVX Route Map

5. King County Metro H Line | Seattle, Burien, and King County, WA

5.1 Overview

The H Line is a 13-mile route running from the Burien Transit Center in Burien to Belltown in downtown Seattle (see Figure 4). The route passes north through low-density commercial and residential neighborhoods in Burien, unincorporated King County, and West Seattle before crossing the West Seattle Bridge into downtown Seattle and terminating at the 3rd Avenue/Virginia Street intersection. Priority bus lanes comprise 58% of the route, while 23% uses BAT lanes, with the remaining using mixed-traffic lanes and peak-only bus lanes. The H Line is on the same alignment as the former Route 120, which was replaced.

The H Line travels along Delridge Way SW for a significant portion of its route. The Seattle Department of Transportation (SDOT) designated Delridge Way SW as one of the seven Transit-Plus Multimodal corridors in Seattle, which makes it a critical link in the transit system.⁷ Delridge Way SW also functions as an important circulator for residents, allowing the H Line to serve both local residents and commuters traveling into downtown Seattle. The corridor contains communities with higher racial diversity and lower incomes than the King County average.⁸

King County Metro (Metro) is the largest transit agency in Washington, and it is a subsidiary of the county government, serving more than 2,100 square miles and 2.3 million people. The agency operates more than 200 bus routes and seven BRT lines while owning over 1,400 buses and 10 streetcars. Metro is planning to implement five more BRT lines within the next 10 years, bringing the total to 12.⁹

5.2 Project Development

Scoping and Cost Considerations

The H Line replaced the Metro Route 120, which covered the same service area on a less frequent schedule. The H Line has more stops but fewer rider amenities such as bus shelters. Route 120 was the sixth-busiest route in King County and carried 1.7 million riders in 2022. This high ridership on Route 120 was the primary factor in developing the H Line, which often saw delays and skipped stops when buses reached capacity.

The project was completed at a total of \$154 million, roughly \$12.8 million per mile. This corridor included extensive redevelopment of Delridge Way SW. Metro used local funding to construct H Line improvements. The agency did not use federal funding, which created more flexibility and meant the project did not have to meet NEPA requirements. Burien secured a regional mobility grant with Metro's assistance, and SDOT awarded a safety grant to improve features such as crosswalks and refuge islands. Sound Transit, which operates the central Puget Sound region's LINK light-rail and commuter buses, reimbursed Metro for a repaved pathway on 26th Avenue SW due to Sound Transit's presence on that street.

⁷ [Seattle Transit-Plus Multimodal Corridor Program](#)

⁸ [King County Metro celebrates launch of RapidRide H Line - King County, Washington](#)

⁹ [RapidRide Growth Plan - King County, Washington](#)

The project experienced delays due to situations outside the control of Metro and the City of Seattle. A widespread strike by concrete driver unions stopped construction on the H Line, as well as many other capital projects in the region, and caused the project to be delayed by 6 months. However, there was interest and pressure to open the H Line as soon as it was possible. This resulted in Metro opening the line without fully complete stations and shelters in some locations. While this allowed the service to begin operation and increased transit capacity on the corridor, there was sentiment among some operators and the public that the project did not meet quality of RapidRide service at first.

Coordination

Coordination between the Cities of Seattle and Burien and King County was essential to keeping the project on track. With the H Line traveling through these jurisdictions, the project area was split into two segments; SW Henderson Street near the border between Seattle and unincorporated King County divided the two. The SDOT contractor constructed civil work north of SW Henderson Street, and Metro's contractor constructed civil work south of the street. For both segments, Metro built aboveground amenities such as bus shelters, tech pylons, and bicycle racks. Metro coordinated with Seattle City Light to handle lighting duties. Coordinating with simultaneous projects on the same stretch of road was also important; Metro scheduled work with Seattle Public Utilities to replace a water mainline at the same time as ongoing construction to avoid redoing prior construction. Metro also joined with a contractor to replace a sidewalk for a private owner in another stretch of the project area.

Metro put processes in place to enhance communication and minimize conflicts. Metro led the entire project through 10% design and transferred responsibility to SDOT afterward. Metro provided comments on the SDOT plans at 30%, 60%, 90%, and final design. Biweekly check-ins between Metro and SDOT helped decision-makers understand timing, upcoming issues, and additional communication needs.

Dividing construction zones between Metro and Seattle brought efficiencies to some aspects of the construction process. For one, Seattle has extensive project delivery experience and more extensive plans for redeveloping the Delridge Way Corridor. Seattle managing the planning of the H Line inside the city enabled a more streamlined integration of the BRT features.

However, discrepancies still resulted from the separate construction processes. For instance, rebar placement did not line up at some bus stations, causing confusion and slowdowns in the bus station implementation. Delayed utility inspections also threatened Metro's ability to open bus zones before the project launch. To mitigate this, Metro recommended enacting formal agreements with as many entities as possible to ensure adherence to the schedule for future projects.

Metro conducted ongoing public engagement throughout the project to ensure it met as many residents' needs as possible. Public reception was largely favorable, with minimal pushback on bus stop consolidation and the use of BAT lanes. Opening press coverage was largely favorable as well. However, a group of residents from Burien spoke out against the BAT lanes despite the lanes' prior approval by Burien as part of the project, illustrating the need for clear and robust public communication regarding project impacts.

5.3 Outcomes

Ridership Impacts

Upon opening, H Line ridership increased nearly 10% compared to equivalent service on Route 120, from 5,900 average weekday boardings in March 2023 to 6,500 on the H Line in April, a month

later.¹⁰ Ridership across the Metro system remains below pre-COVID levels, but the strong jump over just 1 month from Route 120 to the H Line indicates that the new service is attracting more riders.

Lessons Learned

- **Strong coordination is necessary for BRT when multiple municipalities or local jurisdictions are involved.** The H Line travels through the cities of Seattle and Burien, as well as unincorporated King County. Seattle managed the implementation of the segment through the city, while Metro managed the segment in unincorporated King County. Splitting up the implementation enabled the line to be better tailored to each jurisdiction's priorities, but created issues of coordinating and lining up schedules. For future projects, Metro recommended creating stronger agreements between jurisdictions and with key partners.

¹⁰ [Rider Dashboard - King County, Washington](#)



Figure 4. King County Metro RapidRide H Line Route Map

Appendix A: Transit Agency and Route Data

Table A-1. Case Studies Data

	D Line Metro Transit – Twin Cities, MN	RapidRide H Line King County Metro - Puget Sound, WA	UVX Line UTA – Salt Lake City, UT	RapidBus R6 Line TransLink – Vancouver, BC
Transit agency info				
Service area size	900 square miles	2,134 square miles	1,400 square miles	700 square miles
Service area population	1.7 million	2.2 million	2.2 million	2.6 million
Average weekday ridership	119,000 (2022)	257,863 (2023)	136,608 (2024)	1,130,000 (2022)
In-service miles	22.9 million	33.6 million (vehicle miles)	33.9 million	65.8 million (Coast Mountain Bus Company)
Operating expenses	\$568 million (2022)	\$755.8 million (2022)	\$401 million	\$1.8 million (2021)
BRT Line info				
Beginning operation	2022	2023	2018	2024
Length	18.5 miles	12 miles	10.52 miles	14.3 miles
Number of stops	42	51	17	13
Distance between stops	1/3 to 1/2 mile	1/3 mile	1/3 mile	1 km
Number of traffic signals	not available	36	47	31
Number of transit priority signals	64	19	44	1
Type of guideway	Corridor-based	Corridor-based	Corridor-based	Corridor-based
ROW %	?	Bus lanes: 63% BAT lanes: 25% Mixed-traffic lanes: 12%	Dedicated center running lanes: 53% Mixed-traffic lanes: 47%	Bus priority lanes: 58% BAT lanes: 23% Mixed-traffic lanes: 19%
Operating hours	4 a.m. to 1 a.m.	4:22 a.m. to 2:49 a.m.	4 a.m. to 1 a.m.	Weekdays: 5 a.m. to 1 a.m. Weekends: 6 a.m. to 1 a.m.
Headways	Weekday peak – 10 minutes Weekday off-peak – 15 minutes Weekend – 10 to 15 minutes	Weekday peak – 7 minutes Weekday off-peak – 10 to 15 minutes Weekend peak – 15 minutes Weekend off-peak – 20 to 30 minutes	Weekday peak – 6 minutes Weekday off-peak – 10 to 30 minutes Weekend peak – 15 minutes Weekend off-peak – 30 minutes	Weekday peak – 7 to 8 minutes Weekday off-peak – 10 to 15 minutes Weekend peak – 10 to 14 minutes Weekend off-peak – 15 minutes
ROW width	66 feet (most sections)	Varies	Varies	Generally 64 to 84 feet

	D Line Metro Transit – Twin Cities, MN		RapidRide H Line King County Metro - Puget Sound, WA		UVX Line UTA – Salt Lake City, UT		RapidBus R6 Line TransLink – Vancouver, BC	
Ridership								
Replaced service	Route 5		Route 120		N/A		Augmented Route 319	
BRT ridership vs. prior service	<ul style="list-style-type: none"> ▪ October 2022 (Route 5): 6950 avg/weekday ▪ October 2023 (D Line): 13,100 avg/weekday 		<ul style="list-style-type: none"> ▪ 2022 (Route 120): 6,000 avg/weekday ▪ 2023 (H Line): 7,000+ daily riders 		<ul style="list-style-type: none"> ▪ 2019: (UVX): 6,643 avg/weekday 		<ul style="list-style-type: none"> ▪ 2023: (Route 319): 20,400 avg/weekday 	
Funding and costs								
Total Project cost	\$75 million (2022)		\$154.1 million (2023)		\$201 million (2024)		\$24.5 million (2022) ¹¹	
Cost per mile	\$4.05 million		\$12.8 million		\$19.2 million		\$1.7 million	
Breakdown of funding sources	Federal (Regional Solicitation)	\$35.6 million	WSDOT Regional Mobility Grant	\$15 million	Federal (Section 5309 Small Starts)	47.1%	Provincial	40%
	Federal (Other)	\$8.3 million	Burien Pass-Through (WSDOT Regional Mobility Grant)	\$10 million	Local option sales tax	53.1%	Regional (TransLink)	60%
	Regional (Met Council)	\$5.6 million	King County Metro	\$76.3 million	n/a	n/a	n/a	n/a
	State MVST	\$400,000	Seattle Department of Transportation	\$77.8 million	n/a	n/a	n/a	n/a
	State Appropriation	\$5.1 million	n/a	n/a	n/a	n/a	n/a	n/a
	State Bonds	\$20 million	n/a	n/a	n/a	n/a	n/a	n/a
Capital costs and expenses	Buses	\$11.8 million	n/a	n/a	n/a	n/a	n/a	n/a
	Construction	\$38.4 million	n/a	n/a	n/a	n/a	n/a	n/a
	Fare Collection Equipment	\$2.8 million	n/a	n/a	n/a	n/a	n/a	n/a
	Professional/ Technical Services, Project Administration	\$11.3 million	n/a	n/a	n/a	n/a	n/a	n/a
	Unallocated Contingency/ Other Costs	\$4.8 million	n/a	n/a	n/a	n/a	n/a	n/a
			n/a	n/a	n/a	n/a	n/a	n/a

¹¹ Amounts adjusted from CAD to USD.