

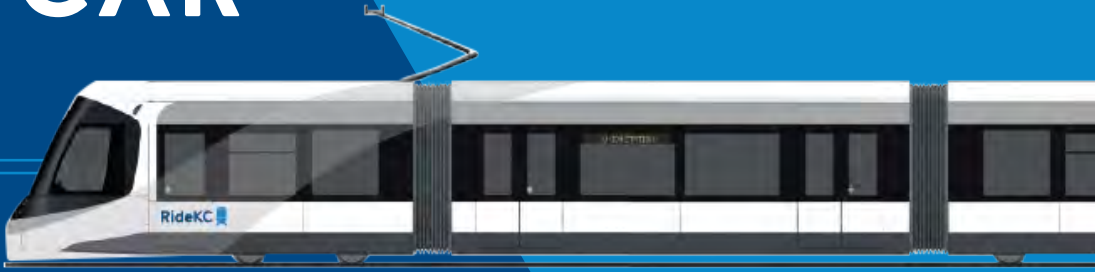


NOVEMBER 2022

RideKC  **STREETCAR**
NorthRail Streetcar Extension Refresh Study

NorthRail STREETCAR

Extension Refresh Study



Prepared By:



INTRODUCTION

The NorthRail Streetcar Study was completed in 2014 to assess feasibility and identify a preferred alternative for a northern extension from the existing terminus in River Market, across the Missouri River, into North Kansas City (NKC). The study included recommendations to facilitate pedestrian-oriented development and to support future transit expansion. This project serves as a “refresh” of the 2014 study to confirm alignments and options taking into account a myriad of changes in the past eight years, including:

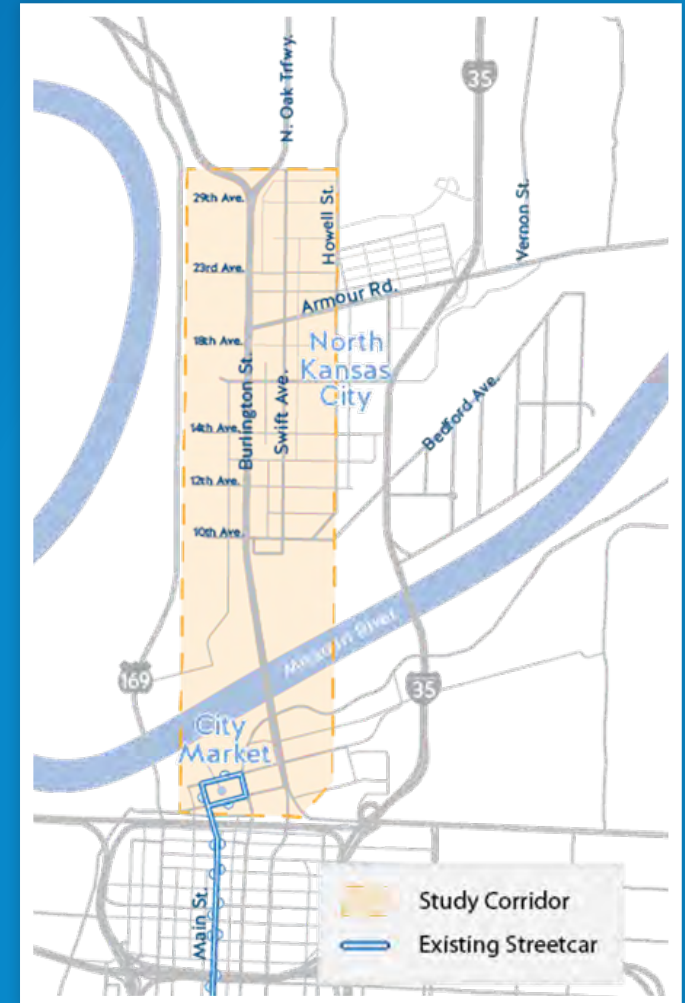
- » The opening of the Kansas City Streetcar Authority’s Main Street starter line, running from River Market to Union Station.
- » The planned (and currently under construction) extension of the streetcar south on Main Street to the University of Missouri – Kansas City (UMKC) (the Main Street Extension).
- » The planned extension of the streetcar north from the River Market to Berkley Riverfront Park (the Riverfront Extension).
- » The significant growth, from commercial space to residential, that has occurred and is planned for NKC.

An extension of the streetcar system into NKC would support major themes in the city’s 2016 Master Plan, be a strategic investment in the future of NKC, and provide multimodal connectivity across the Missouri River. This study, funded jointly by NKC, the Kansas City Streetcar Authority (KCSA), and the Kansas City Area Transportation Authority (KCATA), revisited the technical and financial feasibility of a NorthRail extension while also determining the next steps of a streetcar extension into NKC.

This study built on the findings of the 2014 study, including the following assumptions:

- » The Heart of America (HOA) bridge provides the most cost-effective means to cross the Missouri River.
- » The NorthRail Extension will extend north, following either Burlington Street or Swift Street.
- » East/west alignments were not evaluated as part of this effort, including extensions along Armour Road.

Additional focus was placed on how a new NKC extension would connect to the existing and planned streetcar system in Kansas City, Missouri (KCMO), and how those systems would operate.





PREVIOUS STUDIES

Through this study, a number of previously completed studies and current plans for projects were reviewed to understand the potential impacts they may have to the NorthRail Extension Refresh study.

3rd and Grand Development Plans

The redevelopment of this property located in the northeast corner of 3rd Street and Grand Boulevard which is currently owned by KCATA. The redevelopment includes a mixed-use development along with additional right-of-way to be provided along Grand Boulevard to accommodate new sidewalks, streetcar facilities, and bicycle accommodations.

Riverfront Extension of the KC Streetcar (30% design plans)

Notably the design plan includes equilateral turnouts that restrict—in current design—an addition of a westbound through movement approaching for the NorthRail Extension. Additional modifications to accommodate service from the east on 3rd Street would be required. One significant operational impact with the Riverfront Extension is the service commitment to extend the existing Main Street line to the Riverfront, meaning any service to North Kansas City would be a separate service plan from Main Street.

Burlington Street, 10th Avenue to 32nd Avenue Complete Streets Plan (30% design plans)

This plan currently impacts modifications to the northbound travel lanes on Burlington Street (Route 9) only. The on-street parking on the east side of the roadway would be eliminated and a new cycle track (north of 12th Avenue) or shared-use path (between 10th Avenue and 12th Avenue) would be constructed. Of note, the traffic study conducted for this project identified congestion at the Burlington Avenue intersection with Armour Road, which is projected to operate over capacity during the PM peak hours.

This project also assumes the traffic signals would be modified to allow a Leading Pedestrian Interval (LPI), where the “walk” indication begins prior to the green traffic signal, to improve the pedestrian and bicycle environment. The introduction of an LPI, however, reduces the available time for vehicles at the traffic signals which results in additional delays.

NorthRail Streetcar Study (2014)

This study was originally completed prior to the opening of the Main Street Streetcar route in Kansas City. Some key outcomes of this study included:

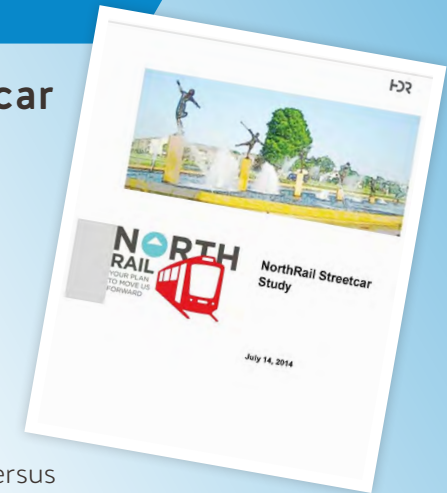
Determining that utilizing the HOA bridge to cross the river was the most viable option, versus attempting to utilize the Armour-Swift-Burlington (ASB) Bridge (a railroad bridge not under local government control) or an expensive new river crossing.

The study assumed the NorthRail extension would serve as an extension of the Main Street route with connections at 3rd and Grand. No accommodations were identified at that time for the Riverfront Extension, which was not contemplated at the time.

The study evaluated Burlington Avenue and Swift Avenue as potential alignment for a streetcar line.

Through many evaluation criteria, as well as public engagement, there was not a strong differentiator between either Burlington and Swift. Burlington was ultimately selected as the preferred route for five reasons:

1. It was consistent with past regional rail plans
2. It was thought to provide more direct, higher speed service for future rail expansion



3. It was consistent with the existing NKC development efforts associated with the Burlington Corridor Plan and Burlington Overlay District
4. It was thought to offer more long-term development opportunities
5. It was thought to permit the development of a single-track alternative, which was not thought possible on Swift

Other factors from the study identified include:

- » Stations for the streetcar extension were evaluated in the vicinity of 10th Avenue, 14th Avenue, 18th Avenue, 23rd Avenue, and 29th Avenue
- » The streetcar entry into the Burlington right-of-way from the east side became a key consideration in selecting the HOA bridge option with the streetcar in the easternmost lane
- » A shared lane (streetcar and general traffic) was evaluated, but stated that the speed limit on Burlington would have to be lowered to 35 mph
- » Median-running semi-exclusive lanes were considered. The medians would be closed along Burlington except at signalized intersections, where left-turn traffic would mingle with streetcars
- » Three southbound lanes were identified as being needed at 10th Street in the morning, merging two lanes prior to the bridges
- » Pedestrian timings were assumed to only allow crossings to the median of Burlington, and it was acknowledged that increased pedestrian activity may impact “through” traffic in the future
- » A Transportation Development District (TDD) was assumed with a 1% sales tax, 0.13% of market value for residential property, and 0.15% of market value for commercial property
- » The TDD would fund the operations as well as provide the local match
- » At the time, forecasts indicated this would only cover a single-track for streetcar, extending to 18th Avenue, assuming a federal match of 50%
- » It was assumed the HOA bridge modifications would be funded outside this project
- » Cost estimates did not include any additional rail work south of the HOA bridge in KCMO to connect to the rest of the streetcar network

North/South Corridor Alternatives Analysis (2009)

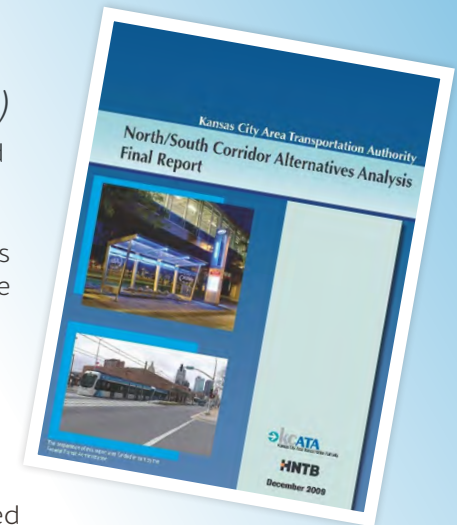
Conducted by KCATA, this study evaluated options to improve transit service along north/south corridors in the metropolitan area, specifically on the Missouri side. This study focused on potential light-rail service along Burlington Avenue as the preferred route over Swift Avenue.

NextRail Streetcar Expansion Study (2013)

Completed for KCMO, this project reviewed eight corridors for potential expansion of the Streetcar facility, ultimately with an endorsement for Independence Avenue, Linwood/31st Street, and Main Street as the preferred alignments for Streetcar. Southwest Trafficway and 18th Street were also recommended for enhanced non-rail service. Of note, the Independence Avenue route would likely use the same alignments for the NorthRail extension between the Riverfront and Route 9 (the HOA Bridge).

North Kansas City Master Plan (2016)

Adopted after the 2014 NorthRail Study, the master plan for NKC included a Vision to build a safe multimodal network that would enhance the pedestrian-scaled environment. Burlington Avenue was identified as a “Gateway Commercial” zone, which included vehicle-oriented developments. Swift Avenue was identified as a combination of Traditional Neighborhoods on the north end, a Downtown zone through most of the corridor, and a segment of Industrial near the south end.



Smart Moves 3.0 (2017)

Developed through KCATA, Smart Moves 3.0 identified a series of improvements throughout the metropolitan area to enhance transit service. Applicable to this project is a “Fast and Frequent” service identified for the North Oak Trafficway, which would include Burlington Avenue, as well as a potential Mobility Hub in the vicinity of Burlington Avenue/Armour Avenue intersection.

North Oak Corridor Transit Improvement Study (2019)

Building off of the Smart Moves 3.0 study, this study recommended “Fast and Frequent” service along Burlington with 15-minute headways on weekdays and 30-minute headways on weekends. Enhanced stops, or stations, similar to KCATA’s existing MAX stops were also recommended on Burlington Avenue at 10th Avenue, 14th Avenue, Armour, 26th Avenue, and 32nd Avenue.

North Kansas City Bicycle Master Plan (2020)

The city developed a comprehensive bicycle master plan for the city, which included recommendations for both Burlington Avenue and Swift Avenue to have protected bicycle facilities.

Bridging Park & Market Hwy 9 Study (2021)

Led by the Downtown Council of Kansas City, this project studied the potential impact of eliminating the elevated section of Route 9 between the Missouri River and I-70. Should this unfunded project be implemented, the project would not preclude the ability to provide a streetcar to NKC, but the project could impact traffic operations and require additional modifications of the bridge structures connecting the HOA bridge over the Missouri River to 3rd Street in KCMO.



BACKGROUND

In May of 2016, the Kansas City Streetcar (KC Streetcar) commenced operation in downtown KCMO. The existing KC Streetcar System is a 2.2 mile (4.4 track mile) modern streetcar system that runs through Kansas City's central business district along Main Street between the River Market and Union Station.

The street-running service connects major employment, residential, and entertainment destinations including Union Station/Crown Center, Crossroads, Power & Light Entertainment District, T-Mobile Arena, Financial District, and the River Market.

Since opening in 2016, several expansion planning efforts began including a 3.5-mile southern Main Street Extension connecting the streetcar to the UMKC Volker Campus at 51st and Brookside Boulevard. A second expansion includes a 0.7-mile northern Riverfront Extension connecting the streetcar to the Berkley Riverfront Park area via the Grand Avenue Viaduct. Both extensions are funded and progressing towards implementation and construction.

In 2014, the NorthRail Streetcar Study was completed to assess technical feasibility and identify a preferred alternative for a northern extension from the existing terminus in River Market, across the Missouri River, into NKC. The study included recommendations to facilitate pedestrian-oriented development and to support future transit expansion.

An extension of the streetcar system into NKC would support major themes in the city's 2016 Master Plan, be a strategic investment in the future of NKC, and provide multimodal connectivity across the Missouri River. This study is required to revisit the technical and financial feasibility, as well as determine the next steps of a streetcar extension into NKC.

Study Area

The study area for this effort extends from downtown KCMO, and the River Market north across the Missouri River, to approximately 32nd Avenue in NKC. The study area is bounded on the west by the ASB Railroad Bridge and the BNSF right-of-way and on the east by Charlotte and Swift Avenue. The study area is shown on the map below.



PURPOSE AND NEED

Purpose

Building on the Kansas City Downtown Line and funded extension projects, the Purpose of the NorthRail Streetcar Extension is to:

✓ CONNECT

- » NKC and the Northland to Downtown KCMO
- » “Fast and Frequent” service over the Missouri River

✓ ENHANCE

- » Accessibility for all users over the Missouri River
- » Mobility choices for the metropolitan region
- » Options for future connections to regional transit
- » Climate protection and resilience through more efficient and environmentally friendly travel

✓ DEVELOP

- » Proven catalyst for economic development
- » Support goals of the NKC Comprehensive Plan



Need

The NorthRail Streetcar Extension project will continue the efforts and themes of the existing Streetcar system—to provide mobility and connectivity economic development and growth, community amenities and improved livability, and sustainability. The Missouri River serves as a significant barrier between NKC and downtown KCMO.

The NorthRail Streetcar Extension seeks to build upon the success of the KC Streetcar and continue connecting neighborhoods. The KC Streetcar system is extending to UMKC and the Berkley Riverfront area. These extensions will link together with the NorthRail extension to create stronger connections for residents, employees, and visitors; connecting NKC to the Riverfront, downtown Kansas City, midtown, and activity centers further south such as Country Club Plaza and UMKC.



Currently, there is a lack of transit accessibility in NKC. With an expansion of the streetcar across the Missouri River to NKC, it would also expand mobility choices and increase accessibility for the metropolitan area and provide greater options for future connections to regional transit. A fixed rail transit system would:

- » Continue to connect transit-dependent populations with the city's highest density employers
- » Continue to connect neighborhoods to major activity centers
- » Reduce vehicle miles traveled in automobiles thus improving air quality and environmental sustainability, reducing congestion, and minimizing the number of traffic collisions
- » Expand mobility choices and help to improve the pedestrian and bicycle environment

The investment in the existing KC Streetcar system has clearly resulted in attracting new development that furthers regional growth and environmental stewardship. Initial investment in the streetcar system has been leveraged to create an urban and vibrant experience for residents and visitors, a result of significant economic expansion and redevelopment. A NorthRail extension would increase demand for a broader mix of uses, infill development, and improved streetscaping. It would promote a more walkable and active environment in NKC. New development and/or redevelopment along the streetcar corridor would encourage economic expansion in adjacent blocks as access and connectedness would be improved. An infrastructure investment that improves this connection and improves mobility would solidify current development's success and enhance future development potential.

Streetcar expansion can help to create a more effective transit system by providing higher levels of service, increased accessibility, elevated transit visibility, and improved connectivity in the corridor. Beyond the improved level of transit service, strategic integration of streetcar service with other transit bus resources will help to maximize the benefit of the streetcar investment and enhance the overall transit system by progressing a central spine around which to organize service. Strategically and well-integrated transit services will provide convenience and simplicity for users, and ultimately enhance the ability of the local and regional transit system to improve mobility and connect people and places.

Long-term sustainable development patterns that connect population centers, business areas, and living areas are needed for the city's residents, employees, and visitors to attain a more sustainable community. Achieving a more transit-oriented corridor and central spine will contribute greatly to that long-term goal. In addition, transit contributes to a decrease in greenhouse gas emissions and other transportation-related pollutants. Improved transit and mobility services helps reduce fuel use by attracting new transit riders, thereby reducing the number of vehicles on the road, resulting in lower emissions and fewer vehicle miles traveled.





SCREENING OF OPTIONS

A two-tiered screening process was used to evaluate multiple options and refine them to two alternatives for three different geographic segments:

- » South of the Missouri River (in KCMO)
- » HOA Bridge (3rd Street in KCMO to 10th Avenue in NKC)
- » North Kansas City (10th Ave to 32nd Ave)

Once the two alternatives for each geographic area were identified, a more detailed screening, including significant public input, was conducted to identify the locally preferred alternatives.





INITIAL SCREENING OF OPTIONS

A variety of initial options were identified for the NorthRail Extension, divided into three geographic segments:

- » South of the Missouri River (in KCMO)
- » HOA Bridge (3rd Street in KCMO to 10th Avenue in NKC)
- » North Kansas City (10th Avenue to 32nd Avenue)

Initial alternatives, shown in Appendix A, were evaluated and screened, in a two-tier process, based criteria that tied back to the Purpose and Need categories, specifically their ability to Connect, Enhance, and Develop the study area. These alternatives were used to identify two options for each of the geographic segments for the final evaluation. Some of the scoring criteria were not applicable in different geographic locations. For the segments in NKC, the screening criteria included:

| PURPOSE AND NEED | SCREENING CRITERIA | NOTES |
|------------------|---|---|
| Connect | Major Activity Centers Served | Schools, grocery stores, parks, etc. within ¼-mile of corridor |
| Connect | Density Measures | |
| | Employment | # within ¼-mile |
| | Population | # within ¼-mile |
| | Vulnerable Population Index (Score of 0-14) | Score of population that exceeds regional average for poverty, minority non-Hispanic, Hispanic, low English proficiency (LEP), disabled, elderly, and carless |
| Connect | Technical Feasibility | Focus on constructibility |
| Connect | Transit Running Time | From 10th Avenue to 32nd Avenue – illustrated for PM peak hour |
| Enhance | Operational Flexibility | Ability to support multiple operational scenarios |
| Enhance | Multimodal Integration | |
| | Transit Routes | Alignment with existing transit routes |
| | Bicycle Facilities | Compatible with bicycle facilities |
| | Pedestrian Facilities | Impact to pedestrians for access |
| | Auto/Truck Facilities | Impact to auto and truck movements |
| Develop | Economic Development Opportunities | Create options for economic development |
| Develop | Compatibility with Surrounding Land Uses | Compatibility with existing uses |
| Develop | Parking/Loading Impacts | Impact to on-street parking and truck loading activities |
| Develop | Right-of-Way Impacts | Square-feet and/or building impacts |



For the HOA Bridge, the screening criteria included:

| PURPOSE & NEED | SCREENING CRITERIA | NOTES |
|----------------|---|---|
| Connect | Vehicular Impacts | Level of service for vehicles on bridge |
| Connect | Feasibility and Constructibility | Integration with Missouri Department of Transportation (MODOT) facilities |
| Enhance | Operational Flexibility | Potential headways for streetcar line |
| Enhance | Multimodal Integration | |
| | Transit Routes | Alignment with existing transit routes |
| | Bicycle Facilities | Compatible with bicycle facilities |
| | Pedestrian Facilities | Impact to pedestrians for access |

For south of the Missouri River, the scoring criteria included:

| PURPOSE & NEED | SCREENING CRITERIA | NOTES |
|----------------|---|--|
| Connect | Technical Feasibility | Focus on constructibility |
| Enhance | Operational Flexibility | Ability to support multiple operational scenarios |
| Enhance | Multimodal Integration | |
| | Transit Routes | Alignment with existing transit routes |
| | Bicycle Facilities | Compatible with bicycle facilities |
| | Pedestrian Facilities | Impact to pedestrians for access |
| | Auto/Truck Facilities | Impact to auto and truck movements |
| Develop | Economic Development Opportunities | Create options for economic development |
| Develop | Compatibility with Surrounding Land Uses | Compatibility with existing uses |
| Develop | Parking/Loading Impacts | Impact to on-street parking and truck loading activities |
| Develop | Right-of-Way Impacts | Square-feet and/or building impacts |

The initial concepts, and how they scored in each area, are summarized in Appendix A.





REFINED ALIGNMENTS

Following the identification and evaluation of the initial options, two alternatives were identified for each geographic region of the study area for consideration. South of the River, those options included a 3rd and 5th Couplet as well as a two-way 3rd Street.

South of the Missouri River (in KCMO) Alternatives



- Potential Stations
- Potential NorthRail Alignment
- Study Corridor
- Existing Streetcar

SUMMARY OF EVALUATION CONDUCTED FOR THE 3RD/5TH COUPLET:

| SCREENING CRITERIA | SCORE | NOTES |
|-------------------------|-------|---|
| Technical Feasibility | — | <ul style="list-style-type: none"> » 5th and Delaware curve has complex curves » Flexible Option with River Market Loop |
| Operational Flexibility | + | <ul style="list-style-type: none"> » Allows Main Street service to split to River Front and NKC » Allows NKC to function independently » Provides flexibility for special events |
| Multimodal Integration | | |
| Transit Routes | + | <ul style="list-style-type: none"> » Potential conflicts with bus stops at 3rd and Grand » Accommodate Streetcar Extension East on Independence |



| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|---|
| Bicycle Facilities | − | <ul style="list-style-type: none"> » Bicycle lanes parallel to tracks with no buffer » Protected cycle track could be an option |
| Pedestrian Facilities | − | <ul style="list-style-type: none"> » Narrow sidewalks on north side of 5th near Grand |
| Auto/Truck Facilities | + | <ul style="list-style-type: none"> » Mixed traffic, but not a high-volume roadway |
| Economic Development Opportunities | + | <ul style="list-style-type: none"> » Redevelop potential for properties along 3rd » Supports a stop near Columbus Park |
| Compatibility with Surrounding Land Uses | + | <ul style="list-style-type: none"> » Compatible mixed-use environment |
| Parking/Loading Impacts | + | <ul style="list-style-type: none"> » No significant impact |
| Right-of-Way Impacts | + | <ul style="list-style-type: none"> » No significant impact |

2-WAY 3RD STREET OPTION

A similar evaluation for the 2-way 3rd Street option was also conducted:

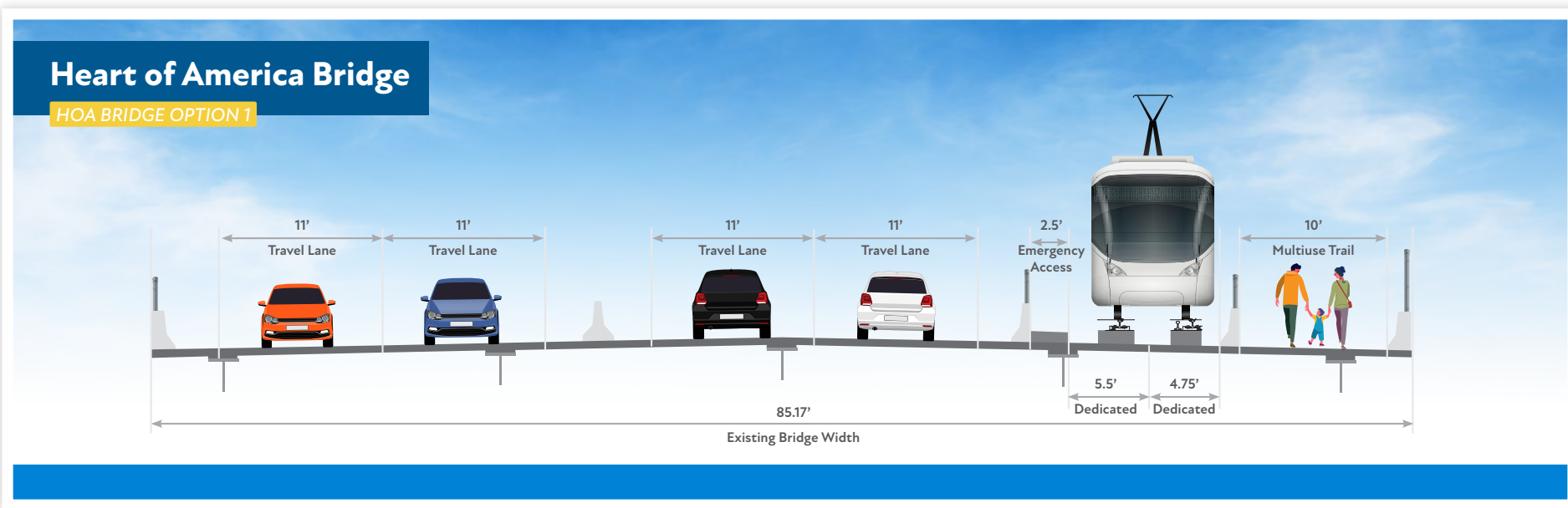
| SCREENING CRITERIA | SCORE | NOTES |
|--------------------------------|-------|--|
| Technical Feasibility | − | <ul style="list-style-type: none"> » 5th and Delaware curve has complex curves |
| Operational Flexibility | + | <ul style="list-style-type: none"> » Flexible option with River Market Loop » Allows Main Street service to split to Riverfront and NKC » Allows NKC to function independently » Provides flexibility for special events |
| Multimodal Integration | | |
| Transit Routes | − | <ul style="list-style-type: none"> » Potential conflicts with bus stops at 3rd and Grand |
| Bicycle Facilities | − | <ul style="list-style-type: none"> » Bicycle lanes parallel to tracks with no buffer |
| Pedestrian Facilities | − | <ul style="list-style-type: none"> » No sidewalks on south side of 3rd, Locust to Cherry |
| Auto/Truck Facilities | + | <ul style="list-style-type: none"> » Mixed traffic, but not a high-volume roadway |



| SCREENING CRITERIA | SCORE | NOTES |
|--|-------|--|
| Economic Development Opportunities | − | <ul style="list-style-type: none"> » Redevelop potential for properties along 3rd » Does not support a stop near Columbus Park |
| Compatibility with Surrounding Land Uses | + | <ul style="list-style-type: none"> » Compatible mixed-use environment |
| Parking/Loading Impacts | + | <ul style="list-style-type: none"> » No significant impact |
| Right-of-Way Impacts | + | <ul style="list-style-type: none"> » No significant impact |

HOA Bridge (3rd Street in KCMO to 10th Avenue in NKC) Alternatives

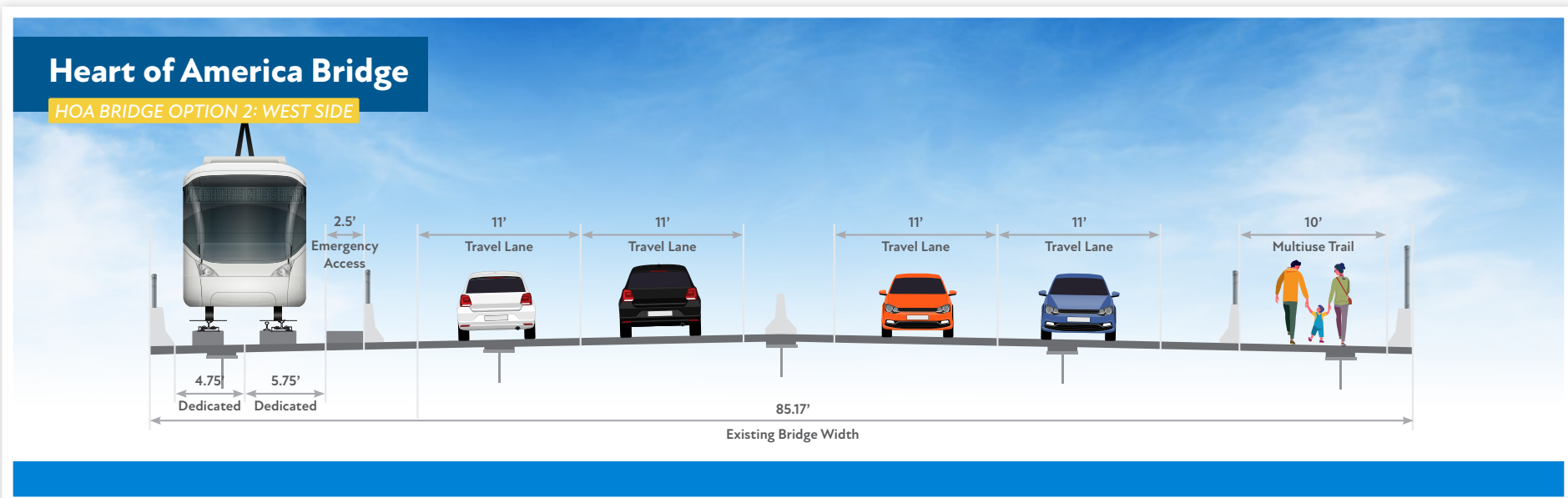
Crossing the Missouri River, the refined options both included keeping the multiuse path on the east side of the bridge, where it exists today, but with separate options for the streetcar to be on the east or west side of the bridge. For the option on the east side, the streetcar line would be located between the travel lanes and the multiuse path.



EAST SIDE CROSSING

The evaluation of the east side crossing showed:

| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|--|
| Vehicular Impacts | + | <ul style="list-style-type: none"> » Bridge would function at LOS D, under capacity » Can avoid impacted traffic signal at 10th Avenue |
| Feasibility and Constructibility | - | <ul style="list-style-type: none"> » Clearance under Route 9 at 3rd and 5th, may restrict truck traffic |
| Operational Flexibility | + | <ul style="list-style-type: none"> » <2 minutes to cross the bridge, allowing for 10 minute headways » Allows MoDOT Bridge Inspection from both sides |
| Multimodal Integration | | |
| Transit Routes | + | <ul style="list-style-type: none"> » No impact to existing routes |
| Bicycle Facilities | + | <ul style="list-style-type: none"> » No impact to existing routes |
| Pedestrian Facilities | + | <ul style="list-style-type: none"> » No impact to existing routes |



WEST SIDE CROSSING

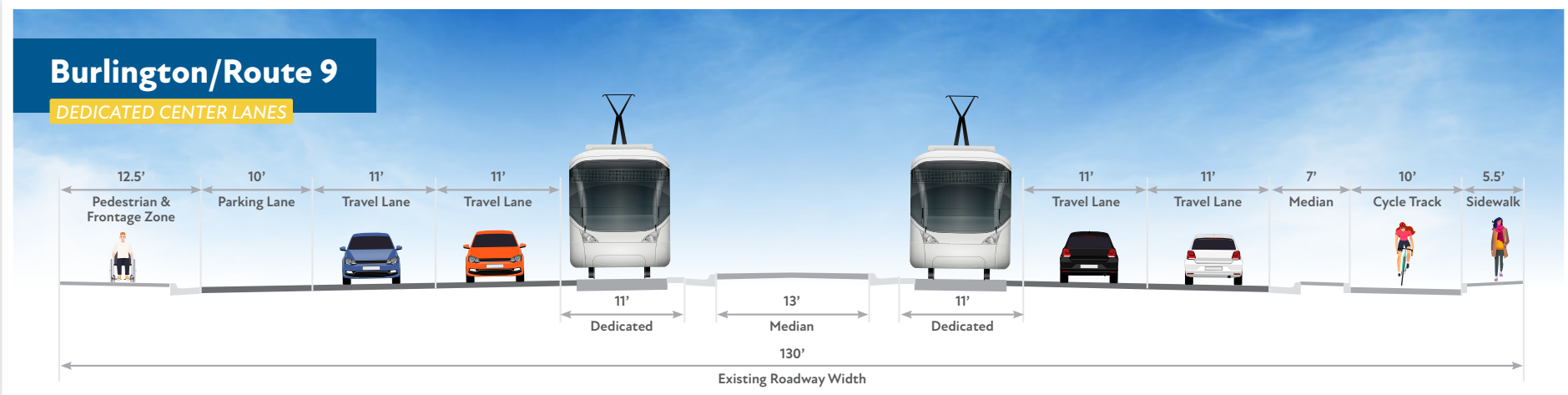
The evaluation of the west side crossing showed:

| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|--|
| Vehicular Impacts | − | <ul style="list-style-type: none"> » Bridge would function at LOS D, under capacity » May require new signalized crossing south of 10th Avenue |
| Feasibility and Constructibility | + | <ul style="list-style-type: none"> » No significant issues |
| Operational Flexibility | − | <ul style="list-style-type: none"> » <2 minutes to cross the bridge, allowing for 10 minute headways » Restricts Bridge Inspection by MoDOT |
| Multimodal Integration | | |
| Transit Routes | + | <ul style="list-style-type: none"> » No impact to existing routes |
| Bicycle Facilities | + | <ul style="list-style-type: none"> » No impact to existing routes |
| Pedestrian Facilities | + | <ul style="list-style-type: none"> » No impact to existing routes |

North Kansas City (10th Avenue to 32nd Avenue) Alternatives

In NKC, options were carried forward with both a Burlington alignment and Swift alignment. To maintain transit reliability, the Burlington Alignment included dedicated streetcar lanes, resulting in a reduction of through lanes for traffic.

BURLINGTON ALIGNMENT



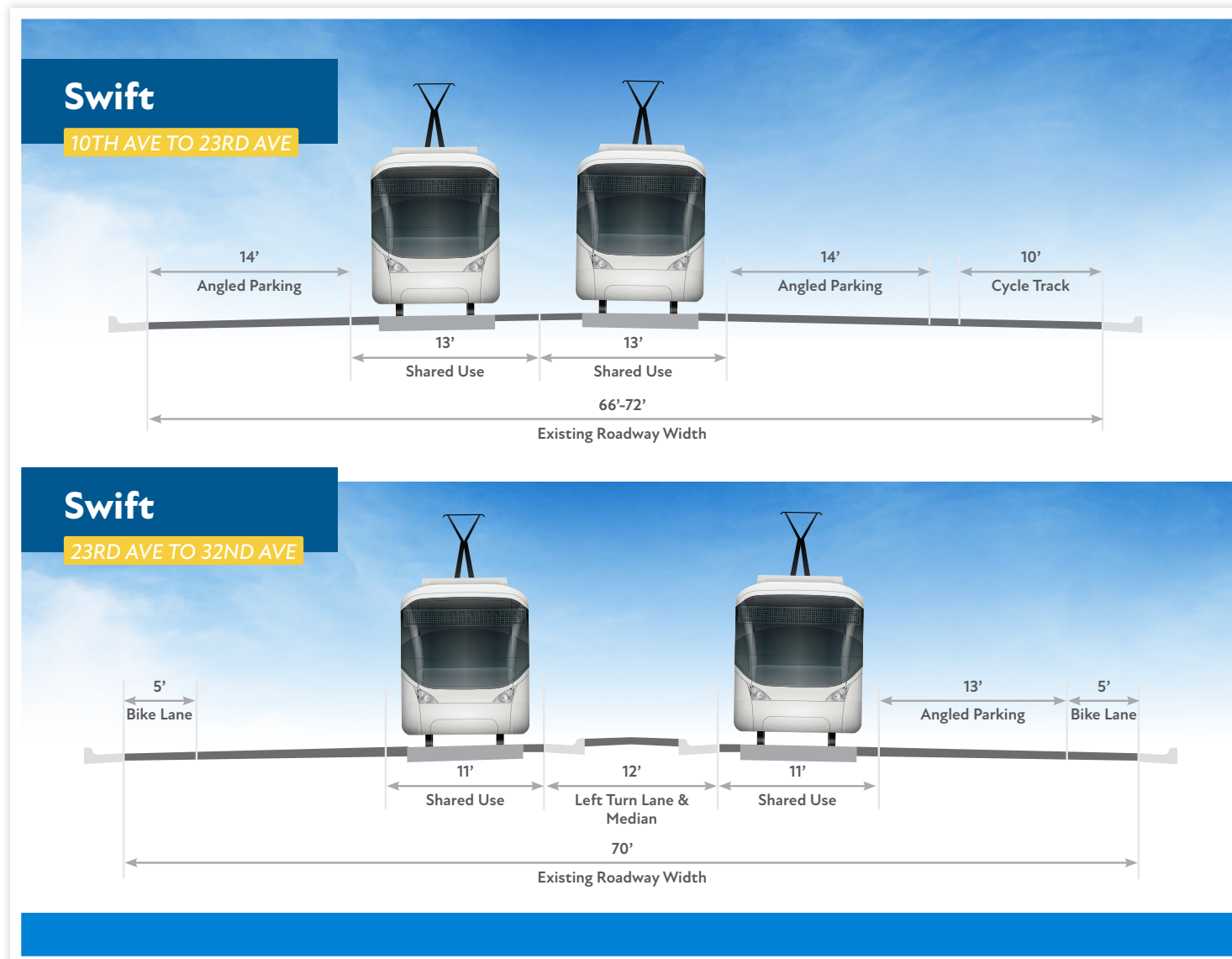
A further evaluation of this option was conducted a summarized below:

| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|--|
| Major Activity Centers Served | 9 | |
| Density Measures | | |
| Employment | 3620 | Estimated within ¼-mile |
| Population | 1475 | Estimated within ¼-mile |
| Vulnerable Population Index | 4 | |
| Technical Feasibility | – | Permitting and maintenance agreements with MoDOT required |
| Transit Running Time | 12:55 | Minutes : Seconds |
| Operational Flexibility | + | Dual track provides flexibility |
| Multimodal Integration | | |
| Transit Routes | – | Increase in congestion could impact bus reliability |
| Bicycle Facilities | + | Protected cycle tracks provided |
| Pedestrian Facilities | + | Pedestrian crossings significantly reduced |
| Auto/Truck Facilities | ✗ | Significant reduction in capacity – significant traffic volumes would divert to other paths |
| Economic Development Opportunities | + | The re-imagined streetscape would create significant opportunities to re-purpose existing buildings to more transit and pedestrian-oriented purposes |
| Compatibility with Surrounding Land Uses | ✗ | Existing land uses focus on industrial, office space, car sales and maintenance, and utilities |
| Parking/Loading Impacts | + | Limited docks that utilize Burlington for truck maneuvers |
| Right-of-Way Impacts | + | Likely eliminate the need for right-of-way acquisition |



SWIFT ALIGNMENT

Along Swift, the option included utilizing shared lanes with the traffic, which provides a number of options on how the roadway could be configured, including parking, pedestrian, and bicycle accommodations.



A further evaluation of this option was conducted a summarized below:

| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|---|
| Major Activity Centers Served | 15 | |
| Density Measures | | |
| Employment | 4020 | Estimated within ¼-mile |
| Population | 1950 | Estimated within ¼-mile |
| Vulnerable Population Index | 4 | |
| Technical Feasibility | + | Relatively straight-forward project with predominately one permitting entity (NKC) |
| Transit Running Time | 12:30 | Minutes : Seconds |
| Operational Flexibility | + | Dual track provides flexibility |
| Multimodal Integration | | |
| Transit Routes | + | Connects with existing bus service |
| Bicycle Facilities | + | Provides buffered lanes |
| Pedestrian Facilities | + | Pedestrian crossing distances minimized |
| Auto/Truck Facilities | + | Sufficient capacity to support |
| Economic Development Opportunities | + | Area master planned as Downtown District north of 12th, with pedestrian and transit-oriented businesses existing and encouraged |
| Compatibility with Surrounding Land Uses | + | Medium and high density Residential along corridor, as well as pedestrian scale businesses |
| Parking/Loading Impacts | - | By moving tracks to median, reduces risk of truck loading that blocks streetcar line Reduction in some on-street parking |
| Right-of-Way Impacts | + | No significant impact anticipated |





PUBLIC ENGAGEMENT

A public engagement plan was implemented to build stakeholder and community consensus on the preferred river crossing, alignment options, and stop locations and to guide decision making. The focus was to gather refreshed information from the public and processing the public input and trends into alternative study options that helped shape the community vision and the Locally Preferred Alternative (LPA).

The engagement plan tasks that were implemented are outlined below, with a predicted purpose and target audience identified for each step.

Advisory Committee

An Advisory Committee met three times during the process that consisted of staff and board members of KCSA, planning and project management staff from the KCATA, NKC, KCMO, business and property owners, elected and appointed officials, and business and civic leaders. The Advisory Committee worked helped decide how best to inform the general public about the project and to work through alternatives and final recommendations.

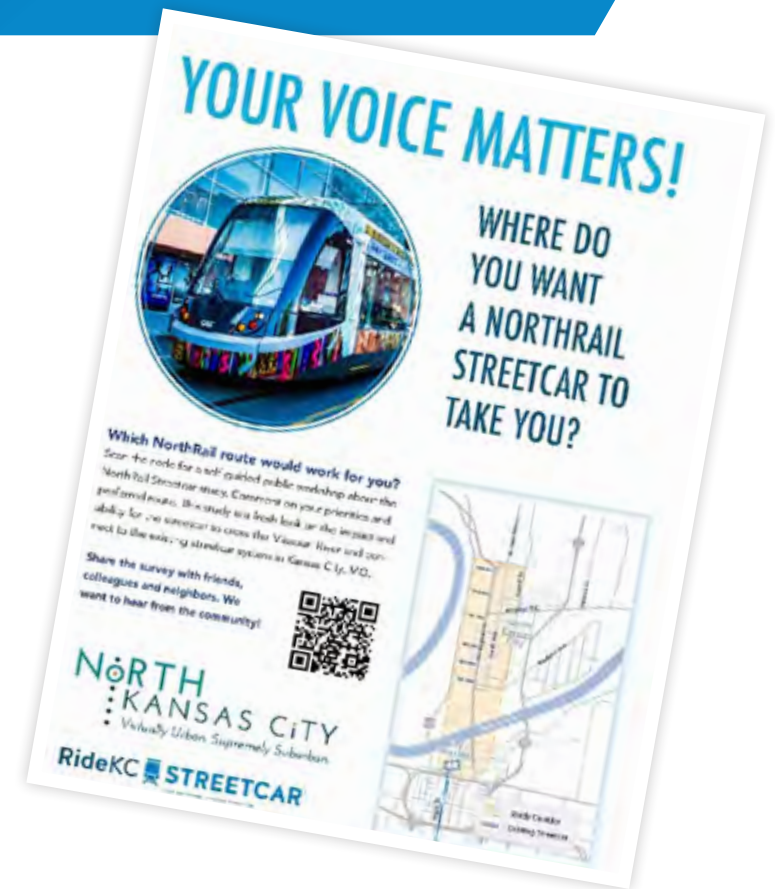
Project Content/Website And Graphics

The Project Team developed content for the project page on KCSA's website and made updates throughout the project. Study background, the identified purpose and need, interim evaluation information, and public meeting materials were posted online to keep the public informed on study progress. Materials continue to live on KCSA's website at kcstreetcar.org.

Online PublicCoordinate Survey

Utilizing the Kimley-Horn proprietary engagement software, PublicCoordinate, the project team facilitated a virtual public online mapping tool and survey that utilized an interactive web map where users could post comments and reply to each other. The survey shared specific recommended alternatives for south of the Missouri River, the river crossing and the NKC alignments. The online tool allowed the project to gather a wide range of input, preferences, and concerns held by public. More than 300 comments and nearly 400 survey responses were gathered to assist with the technical screening of alignment options. The majority of responses preferred the 3rd and 5th Street Couplet, east side river crossing and the Swift alignment in NKC.

Online Survey Promotion included disseminating postcards throughout NKC community centers, at bus and bicycle and pedestrian hubs, through social media and extensive media coverage.

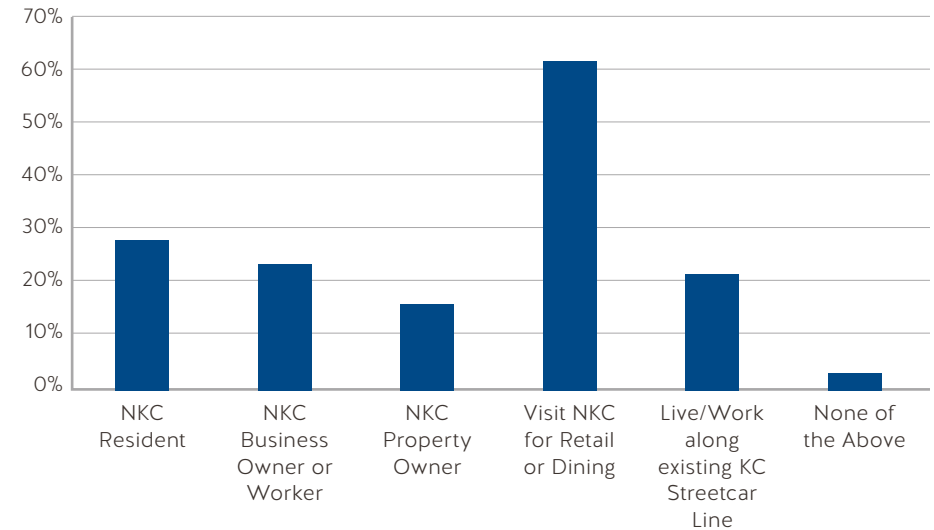




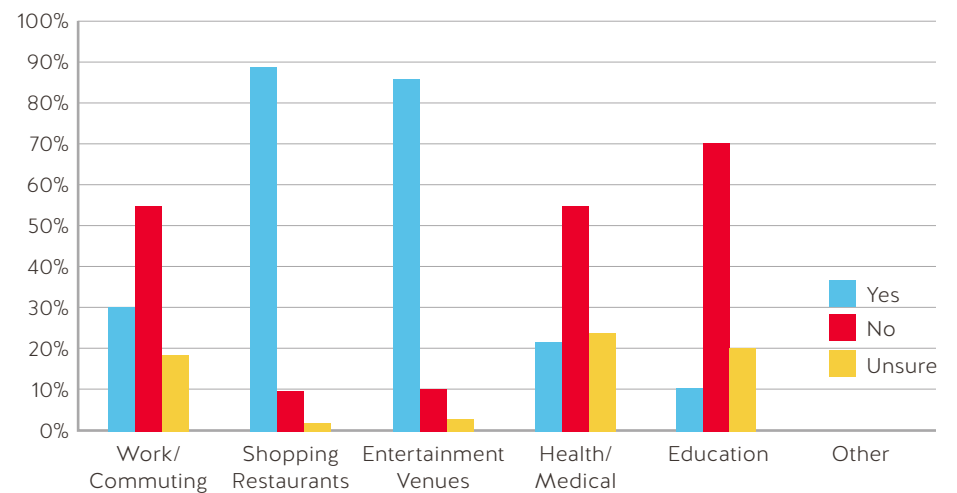
ONLINE SURVEY OUTCOMES FROM PUBLICCOORDINATE INCLUDED:

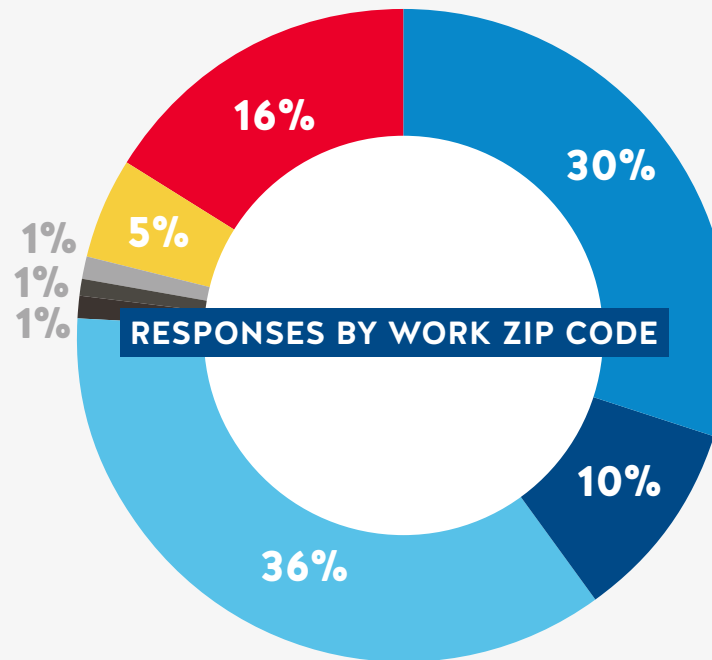
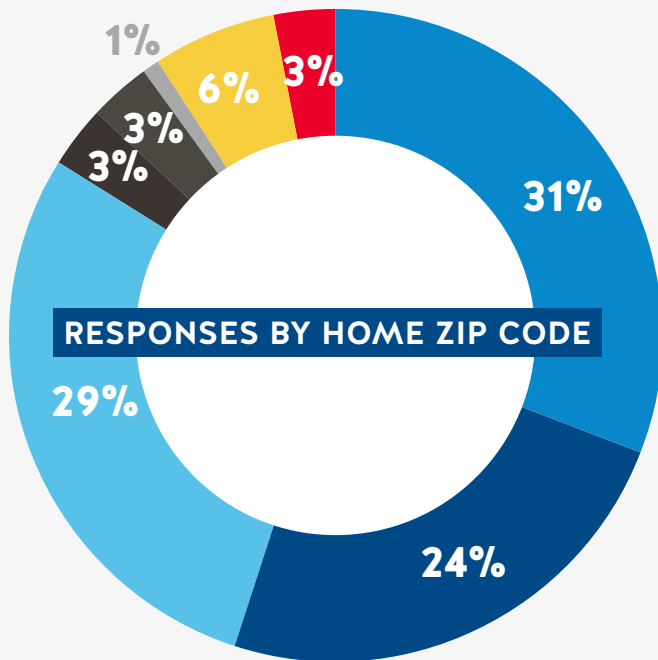
- » **300+ comments/replies** on PublicCoordinate; **~400 survey responses**
- » Respondents **overwhelmingly in favor of Swift** over Burlington (especially NKC residents/workers)
- » Approximately **30% of respondents were NKC residents/workers** (many from KCMO/Clay County)
- » Survey respondents suggest that streetcar in NKC would be **popular for transportation to and from entertainment/shopping/restaurants**, similar to the existing KC Streetcar usage
- » Post-public open house survey results included an additional **116 responses and 46 opened ended responses.**

Which of these best describe you?
(please check all that apply)



How would you use a NorthRail streetcar extension?
To get to: (please check all that apply)





At the public open house, conducted for the project in late June 2022, the public indicated preferences on the different alignments:



30-6 in favor of the 3rd and 5th Couplet over the two-way 3rd Street option



39-3 in favor of the East Side crossing of the HOA Bridge



46-12 in favor of Swift alignment over the Burlington alignment

Following the public meeting, an online poll was conducted by KCSA.



PUBLIC OPEN HOUSE

The Project Team held a public open house to share preferred alternatives and study findings to gather feedback to inform the final preferred alternative. This included an interactive dot exercise that participants could place next to the alternatives they preferred as well as space to share specific comments. To promote the open house a postcard was disseminated by NKC and the KCATA. The KCSA also promoted via social media channels and through extensive media coverage.

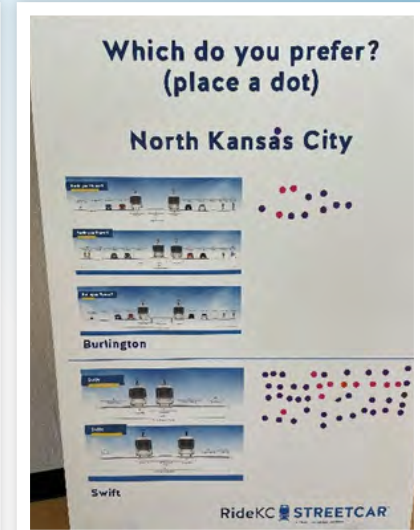
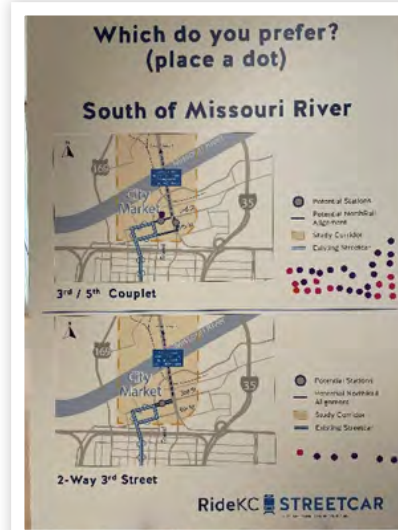
👤 TARGET AUDIENCE: General public, existing transit users, residents, NKC customers, and engaged community members

🎯 GENERAL PURPOSE (MTG #1): Provide study background and gather input on narrowed alternatives

🎯 GENERAL PURPOSE (MTG #2): Present study conclusions and preferred alternative

👍 PREFERENCES:

- » South of the Missouri River
 - » 30 to 6 vote in favor of 3rd and 5th Couplet
- » Missouri River crossing
 - » 39 to 3 vote in favor of East side crossing
- » NKC Alignment
 - » 46 to 12 vote in favor of Swift





POP-UP PUBLIC OUTREACH EVENTS

The Project Team facilitated on-site public pop-up engagement opportunities. These pop-up events coordinated around existing meetings/ events, or at locations that already tailor to key stakeholders including existing transit users, residents, and NKC customers.

- » KCSA presented project information and shared alternatives at a NKC Business Council 1st Friday Coffee Presentation.
- » Posters with a QR code to access the online survey were placed at key transit and Bike Walk KC locations in NKC to gather input from existing transit users and cyclists/pedestrians.
- » Flyers to promote the study process and online survey with QR code were placed in the Boneanza “dog bag” giveaway, the Velo Bike Garage bulletin board, and other business/community center public information boards.



STAKEHOLDER DISCUSSIONS

The Project Team conducted four stakeholder focus group discussions with businesses, industrial stakeholders, residents, and constituents south of the Missouri River as well as one-on-one stakeholder discussions and field walks to share the purpose of the project, to identify any consensus of direction, to gather concerns/interests, and work through opportunities for valuable feedback that includes a summary of the input.

 **TARGET AUDIENCE:** Businesses, industrial stakeholders, residents and constituents


 **PREFERENCES:** An overwhelming majority from the focus group input preferred:

- » 3rd and 5th Couplet south of the Missouri River
- » East side river crossing
- » Swift alignment

CITY COUNCIL/BOARD MEETINGS

The Project Team held two meetings with elected officials of the NKC City Council to share the alignment alternatives and the final preferred alternatives. KCSA also led discussions with KCSA's Board and KCSA's Operations Policy Committee for feedback on refined alternatives

 **TARGET AUDIENCE:** Governing Body

 **GENERAL PURPOSE (MTG #1):** Review study purpose, river crossing determination, narrowed alternatives, and engagement process

 **GENERAL PURPOSE (MTG #2):** Present preferred alternative and final recommendations



CONCLUSION

After compiling data from all public, the LPAs highlight:

Strong consensus for the Swift versus Burlington alignment

- » Traffic impact on Burlington is a major concern
- » Adjacent developments on Swift more aligned with Streetcar
- » Industrial developers, while not necessarily for a streetcar, preferred Swift over Burlington

Preference for east side of Missouri River

- » Protecting cyclists/pedestrians from traffic
- » Minimal interaction with MoDOT

3rd and 5th Couplet preferred south of Missouri River

- » Better visibility/access for Columbus Park
- » Concerned on bicycle impact on 3rd Street
- » The connection to the existing system requires further technical
- » Feasibility to be completed in the next phase





FINANCIAL ANALYSIS

The financial analysis for the NorthRail project includes estimates of cost (both capital costs and annual operating and maintenance costs) as well as potential revenue generation from NKC should it implement a TDD similar to what has been used in KCMO to finance portions of the current and planned system.

Capital Costs

Capital cost estimates for each of the options were developed in today's dollars (year 2022). These costs include the both the physical improvements to the infrastructure, as well as the costs for new streetcar vehicles (accounted for in Burlington and Swift options). Also included is an estimate for a Vehicle Maintenance Facility (VMF) as the current VMF, which is undergoing expansion currently, will be approaching capacity and is not anticipated to be able to store the additional vehicles needed for NorthRail. This VMF is envisioned as a "light maintenance" facility, focused on cleaning, crew changes, and minor maintenance.

| ALTERNATIVE | 2022 COSTS (MILLIONS) | ROUTE MILES | COST PER ROUTE MILE |
|---------------------------------|-----------------------|----------------------------------|---------------------|
| 3rd and 5th Couplet | \$28.6 | 0.74 | \$38.80 |
| 3rd Street Two-way | \$25.7 | 0.29 | \$88.60 |
| HOA East | \$32.9 | 1.08 | \$30.50 |
| HOA West | \$22 | 1.08 | \$20.40 |
| Burlington ¹ | \$129.7 | 1.63 | \$55.10 |
| Swift ² | \$142.7 | 1.92 | \$50.30 |
| VMF | \$18 | N/A | N/A |
| Total Capital Cost Range | | \$195.5 - \$221.1 million | |

Of note, approximately 40% of the capital costs, not including the vehicles or maintenance facilities, are on MoDOT and/or KCMO right-of-way and not under the direct control of NKC.

Operations and Maintenance Costs

The Operations and Maintenance (O&M) costs for the NorthRail project was calculated based on a range of service with 10- to 20-minute headways. The 10-minute headways aligns with the approximate headways of the current KCSA system and would generally be considered a premium-level of service which can also be supported with the two-way tracks over the HOA bridge.

| ROUTE ALIGNMENT | ANNUAL O&M COST |
|----------------------|-----------------|
| Swift Alignment | \$4.7 - \$7.9M |
| Burlington Alignment | \$3.2 - \$6.3M |

O&M costs shown in the table are based on service between NKC and the River Market. Should service be extended to Union Station, the costs could increase by approximately \$4.7 million annually. As before, these costs are in today's (year 2022) dollars.

1. The Burlington alignment assumes 6 new streetcar vehicles at \$6 million each (costs not included in "per mile" category)
2. The Swift alignment assumes 7 new streetcar vehicles at \$6 million each (costs not included in "per mile" category)



Revenue Projections

Revenue projections for the NorthRail project were developed based on the demographic and commercial trends of NKC over the past decade, new development anticipated in the vicinity, and potential redevelopment of vacant or under utilized properties with an identified improvement (building) level that is less than 50% of the land value. Details of these projections can be found in Appendix B.

Forecasts were made based on property tax increases within approximately 1/3 of a mile of each corridor alignment, with additional assessments similar to what is used in KCMO. For each corridor, a comparison was also made with or without the industrial/warehousing businesses having an additional property tax—a consideration as a new streetcar line would have less economic benefit on those current businesses as they operate today.

The sales tax revenue is assumed to be applied city-wide, which would put NKC’s sales tax at the same level as the lowest neighboring community. NKC today has one of the lowest sales taxes in the region.

With these assumptions, the bonds estimates that could be produced with a 30-year bond for both the property tax and sales tax options are shown below.

| CURRENT REVENUE | SWIFT CORRIDOR | BURLINGTON CORRIDOR |
|----------------------|---|---|
| Property Tax Bond | \$5.2 - \$7.3 million (with or without industrial) | \$4.7 - \$7.0 million (with or without industrial) |
| 1% Sales Tax Bond | \$60 million | \$60 million |
| Total Revenue | \$65.2 - \$67.3 million | \$64.72 - \$67.0 million |

Grant Exploration

It is a rare that a community funds the capital investments for major transit projects—most rely on federal funding, through either competitive grants or flow-through funding to the Mid-America Regional Council (MARC) or MoDOT, to provide a significant share of the capital expenses. While most of these opportunities require a minimum local match of 20%, to be competitive many successful grant applications have a local match closer to 50%. Based on the revenue projections from just NKC, it appears additional sources of local or state income would be necessary to make a grant application competitive.

The potential funding sources include:

| SOURCE | MECHANISM | NOTES |
|---------|---|------------------------------------|
| Federal | National (Capital Investment Grants) | Competitive Grants |
| | Regional Sub-Allocated | Through MARC |
| State | Dedicated Transit Funds | Through MoDOT |
| | Bridge/Highway Funds | Through MoDOT |
| Local | Transportation Development District (Local) | Project Specific |
| | Transportation Development District (Multi-Project) | Packaged Projects (e.g. east/west) |
| | City or County Dedicated Transit Tax | New Tax |
| | Regional Dedicated Transit Tax | New Tax |

A regional approach, through either a larger, multi-project TDD, such as by expanding the current KCSA TDD to include additional projects, may be necessary to generate the local match required.



LOCALLY PREFERRED ALTERNATIVE AND NEXT STEPS

When comparing the differences between the alternatives, the technical feasibilities generally indicate more favorable results for the 3rd and 5th Couplet alternative south of the Missouri River, the East alignment on the HOA bridge, and the Swift alignment in NKC. This also aligns with the strong preferences by stakeholders, the public through a variety of online and in-person meetings, and the City Council of NKC.

| SOUTH OF THE RIVER | 3RD/5TH COUPLER | 3RD TWO-WAY | COMMENTS |
|--------------------------|-----------------|-------------|---|
| Bicycle Facilities | ✓ | | 3rd Street is a designated bikeway; two-way operations may further restrict the ability to provide a buffered/separated bicycle path |
| Economic Development | ✓ | | 3rd and 5th Couplet provide greater visibility to Columbus Park with a closer northbound station |
| Capital Cost (\$Million) | \$28.6M | \$25.7M ✓ | |
| HOA BRIDGE | EAST | WEST | COMMENTS |
| Feasibility | | ✓ | Minor vehicle clearance issues under Route 9 |
| Vehicular Impacts | ✓ | | Streetcar operations on the west side of the bridge would require streetcar to cross Route 9 traffic, increasing delays |
| Operating Flexibility | | ✓ | By placing the streetcar line on the interior alignment, MoDOT can continue to provide bridge inspection from the edge of the bridge without impacting streetcar operations |
| Capital Cost (\$Million) | \$32.9M | \$22.0M ✓ | |
| Bicycle Facilities | ✓ | | The new streetcar line would provide an additional buffer between bicycle and pedestrians from the higher speed traffic on Route 9 |
| NORTH KANSAS CITY | BURLINGTON | SWIFT | COMMENTS |
| Employment | | ✓ | Swift has 11% more employees within ¼-mile |
| Population | | ✓ | Swift has 32% more population within ¼-mile |
| Technical Feasibility | | ✓ | Burlington will require additional permitting and agreements with MoDOT |
| Transit Running Time | ✓ | | Burlington is a shorter route with higher speeds leading to a faster transit travel time |
| Auto/Bus/Truck Impacts | | ✓ | With dedicated lanes for Streetcar, congestion on Burlington will significantly increase and have additional truck turning restrictions at several intersections |
| Land Use Compatibility | | ✓ | Swift currently has adjacent residential and pedestrian-oriented businesses |
| Parking/Loading Impacts | ✓ | | Swift has loading docks that will need to be reconfigured |
| Capital Costs | \$129.70M ✓ | \$142.70M | Swift is a longer alignment leading to higher capital costs for infrastructure and streetcar procurement |
| O&M Costs | \$6.3M ✓ | \$7.9M | Swift is a longer alignment requiring an additional streetcar to operate the service |



South of the Missouri River (3rd/5th Couplet)

- » Retained operational flexibility for “Downtown Loop”
- » Strong community preference for a station in close proximity to the Columbus Park neighborhood

(Challenges acknowledged: higher cost alternative)

HOA Bridge (East Option)

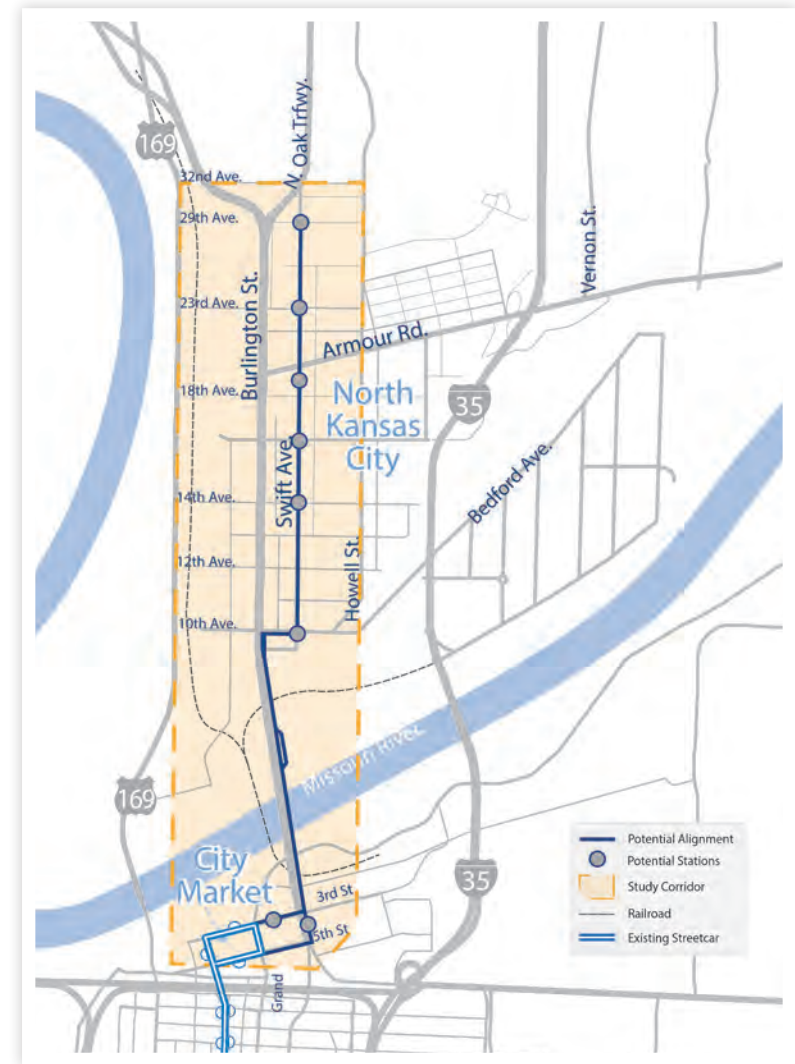
- » Crosses Highway 9 south of the Missouri River rather than at 10th Street (better alignment with the “Swift” alternative)
- » Better accommodates bridge maintenance needs and aligns with MoDOT stated preference
- » Strong community preference for the streetcar to provide separation of the bike/ped connection in the outside lane

(Challenges acknowledged: higher cost alternative, clearance under Highway 9 at 3rd Street)

North Kansas City (Swift)

- » Community, City, and Stakeholder vision for the future of NKC and the “Main Street” of NKC (land use compatibility/employment and population existing and future density)
- » Fewer implementation hurdles regarding regulatory bodies and permitting requirements
- » Freight and vehicle impacts are less significant on Swift (as compared to Burlington)

(Challenges acknowledged: longer route/running time/vehicle requirements, parking and loading zones, higher capital and O&M costs)



Next Steps

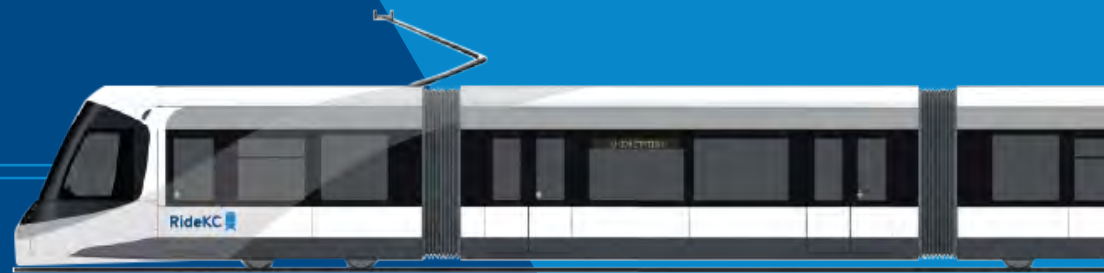
This study has shown there is support in the community for the NorthRail expansion, and there continues to be significant economic development that is occurring in NKC that will bring added businesses and residents in close proximity. Several critical steps will need to be taken to advance the project, including:

- » **Form a task force focused on advancing a financial strategy north of the river**
 - » Assess federal funding feasibility and potential Capital Investment Grant ratings
 - » Evaluate TDD state statute language and consider clarifying ability for boundaries to cross county lines
- » **Incorporate the LPA into MARCs Metropolitan Transportation Plan**
- » **Secure funding to advance environmental study and conceptual engineering (phase 1 – approximately \$750,000)**
 - » Advance station locations and detailed operations plan
 - » Advance design south of river in key locations
 - » Advance structural engineering on bridge widening, particularly near KCSA Maintenance Facility
- » Conduct National Environmental Policy Act Environmental Studies
- » **Build support and advance regional funding/TDD expansion to support implementation**



APPENDIX A

Initial Concept Options



INITIAL SCREENING OF OPTIONS

A variety of initial options were identified for the NorthRail Extension, divided into three geographic segments:

- » South of the Missouri River
(in Kansas City, Missouri)
- » HOA Bridge (3rd Street in Kansas City to
10th Avenue in North Kansas City)
- » North Kansas City
(10th Avenue to 32nd Avenue)

These initial alternatives, shown in Appendix A, were evaluated and screened on a number of criteria that tied back to the Purpose and Need categories, specifically their ability to Connect, Enhance, and Develop the study. These alternatives were used to identify two options for each of the geographic segments for the final evaluation.

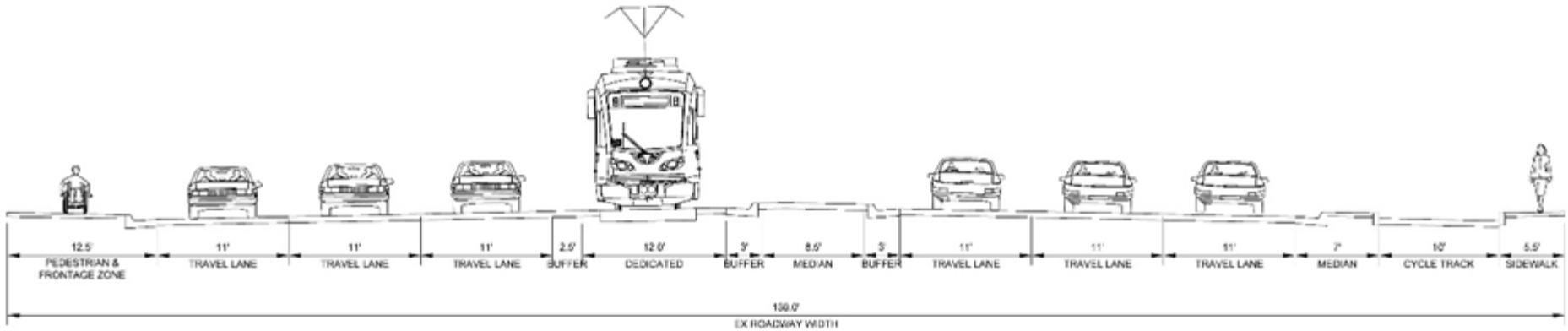
North Kansas City SCREENING CRITERIA

| PURPOSE AND NEED | SCREENING CRITERIA | NOTES |
|------------------|--|---|
| Connect | Major Activity Centers Served | Schools, grocery stores, parks, etc. within ¼-mile of corridor |
| Connect | Density Measures | |
| | Employment | # within ¼-mile |
| | Population | # within ¼-mile |
| | Vulnerable Population Index (Score of 0-14) | Score of population that exceeds regional average for poverty, minority non-Hispanic, Hispanic, low English proficiency (LEP), disabled, elderly, and carless |
| Connect | Technical Feasibility | Focus on constructibility |
| Connect | Transit Running Time | From 10th Avenue to 32nd Avenue – illustrated for PM peak hour |
| Enhance | Operational Flexibility | Ability to support multiple operational scenarios |
| Enhance | Multimodal Integration | |
| | Transit Routes | Alignment with existing transit routes |
| | Bicycle Facilities | Compatible with bicycle facilities |
| | Pedestrian Facilities | Impact to pedestrians for access |
| | Auto/Truck Facilities | Impact to auto and truck movements |
| Develop | Economic Development Opportunities | Create options for economic development |
| Develop | Compatibility with Surrounding Land Uses | Compatibility with existing uses |
| Develop | Parking/Loading Impacts | Impact to on-street parking and truck loading activities |
| Develop | Right-of-Way Impacts | Square-feet and/or building impacts |



OPTION B-1 (BURLINGTON)

This option consists of operating a two-way track in the median of Burlington.

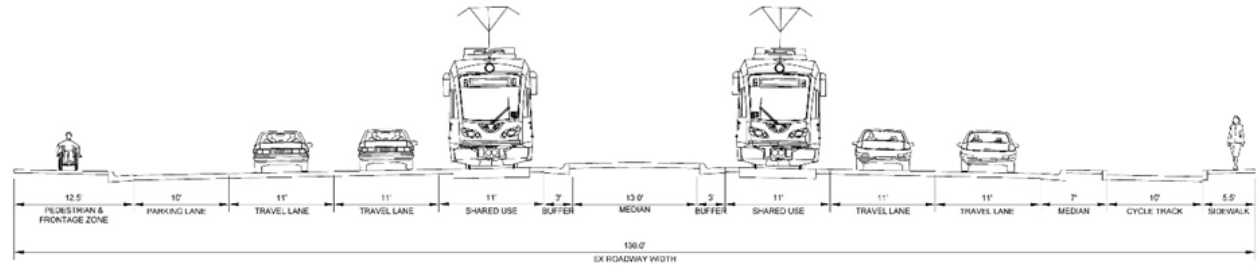


| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|--|
| Major Activity Centers Served | 9 | |
| Density Measures | | |
| Employment | 3620 | Estimated within ¼-mile |
| Population | 1475 | Estimated within ¼-mile |
| Vulnerable Population Index | 4 | |
| Technical Feasibility | — | Permitting and Maintenance Agreements with MoDOT Required |
| Transit Running Time | 18:23 | Minutes : Seconds During PM Peak Hour (Unstable) |
| Operational Flexibility | — | Single track would limit some capacity, but could be widened in future |
| Multimodal Integration | | |
| Transit Routes | — | Increase in congestion could impact bus reliability |
| Bicycle Facilities | + | Cycle Track planned for Burlington would provide protected route |
| Pedestrian Facilities | — | Pedestrians would have to cross one direction of Burlington |
| Auto / Truck Facilities | × | Reductions in capacity due to restricted left-turns and additional pedestrian time |
| Economic Development Opportunities | — | Zoned predominately for general business and industrial, Master Planned for Gateway Commercial that could support transit-oriented development |
| Compatibility with Surrounding Land Uses | × | Existing land uses focus on industrial, office space, car sales and maintenance, and utilities |
| Parking / Loading Impacts | — | Limited docks that utilize Burlington for truck maneuvers |
| Right-of-Way Impacts | × | Potential of acquiring approx. 15,000 sf or ROW and 2 Buildings between 10th and 12th |



OPTION B-2 (BURLINGTON)

This option consists of median-running streetcar tracks operating in shared lanes on Burlington / Route 9.

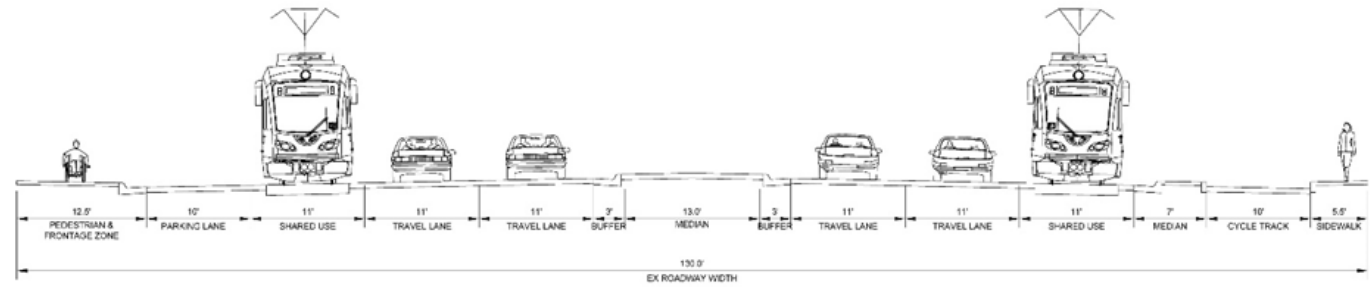


| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|--|
| Major Activity Centers Served | 9 | |
| Density Measures | | |
| Employment | 3620 | Estimated within ¼-mile |
| Population | 1475 | Estimated within ¼-mile |
| Vulnerable Population Index | 4 | |
| Technical Feasibility | — | Permitting and Maintenance Agreements with MoDOT Required |
| Transit Running Time | 18:23 | Minutes : Seconds During PM Peak Hour (Unstable) |
| Operational Flexibility | + | Dual track provides flexibility |
| Multimodal Integration | | |
| Transit Routes | — | Increase in congestion could impact bus reliability |
| Bicycle Facilities | + | Cycle Track planned for Burlington would provide protected route |
| Pedestrian Facilities | — | Pedestrians would have to cross one direction of Burlington |
| Auto / Truck Facilities | ✗ | Reductions in capacity due to restricted left-turns and additional pedestrian time |
| Economic Development Opportunities | — | Zoned predominately for general business and industrial, Master Planned for Gateway Commercial that could support transit-oriented development |
| Compatibility with Surrounding Land Uses | ✗ | Existing land uses focus on industrial, office space, car sales and maintenance, and utilities |
| Parking / Loading Impacts | — | Limited docks that utilize Burlington for truck maneuvers |
| Right-of-Way Impacts | ✗ | Potential of acquiring approx. 15,000 sf or ROW and 2 Buildings between 10th and 12th |



OPTION B-3 (BURLINGTON)

This option operates with mixed traffic on the curb (outside) lanes.

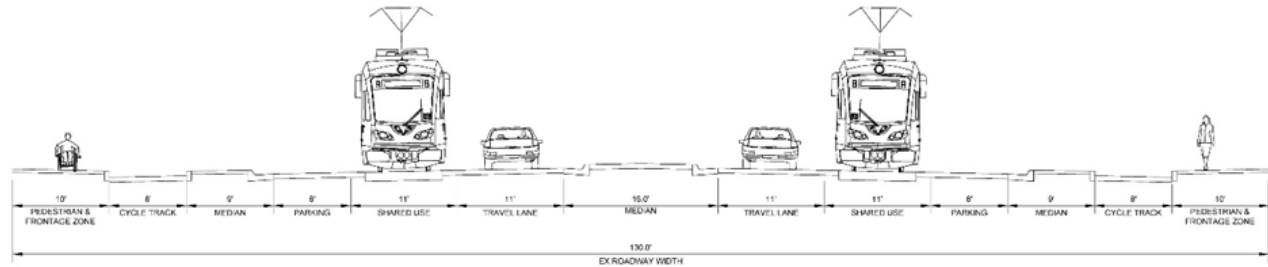


| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|--|
| Major Activity Centers Served | 9 | |
| Density Measures | | |
| Employment | 3620 | Estimated within ¼-mile |
| Population | 1475 | Estimated within ¼-mile |
| Vulnerable Population Index | 4 | |
| Technical Feasibility | — | Permitting and Maintenance Agreements with MoDOT Required |
| Transit Running Time | 18:23 | Minutes : Seconds During PM Peak Hour (Unstable) |
| Operational Flexibility | + | Dual track provides flexibility |
| Multimodal Integration | | |
| Transit Routes | — | Increase in congestion could impact bus reliability |
| Bicycle Facilities | + | Cycle Track planned for Burlington would provide protected route |
| Pedestrian Facilities | × | Pedestrians would have to cross two directions (6 lanes) of Burlington |
| Auto / Truck Facilities | × | Reductions in capacity due to restricted left-turns and additional pedestrian time |
| Economic Development Opportunities | — | Zoned predominately for general business and industrial, Master Planned for Gateway Commercial that could support transit-oriented development |
| Compatibility with Surrounding Land Uses | × | Existing land uses focus on industrial, office space, car sales and maintenance, and utilities |
| Parking / Loading Impacts | — | Limited docks that utilize Burlington for truck maneuvers |
| Right-of-Way Impacts | × | Potential of acquiring approx. 15,000 sf or ROW and 2 Buildings between 10th and 12th |



OPTION B-4 (BURLINGTON)

This option included maintaining on-street parking, adding a cycle track to the west side of Burlington, and operating the streetcar in mixed-traffic on Burlington. Burlington would be reduced to two lanes in each direction.

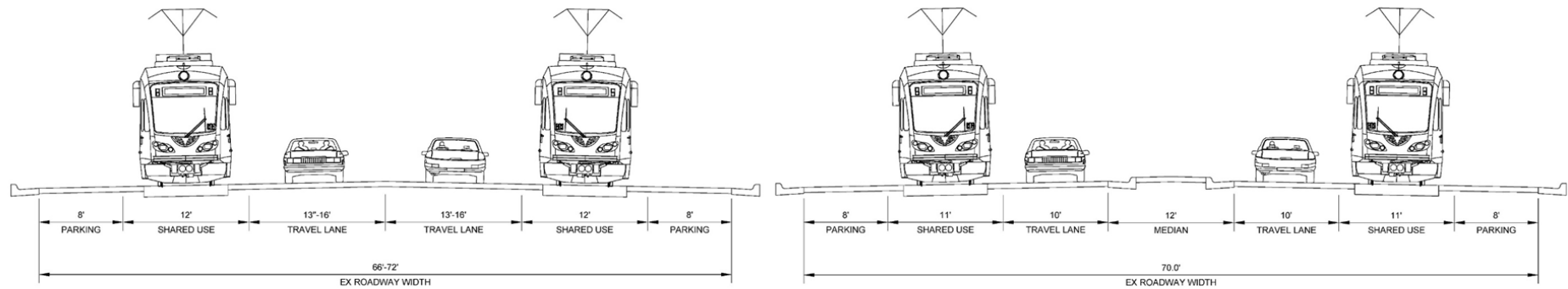


| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|--|
| Major Activity Centers Served | 9 | |
| Density Measures | | |
| Employment | 3620 | Estimated within ¼-mile |
| Population | 1475 | Estimated within ¼-mile |
| Vulnerable Population Index | 4 | |
| Technical Feasibility | – | Permitting and Maintenance Agreements with MoDOT Required |
| Transit Running Time | 18:23 | Minutes : Seconds During PM Peak Hour (Unstable) |
| Operational Flexibility | + | Dual track provides flexibility |
| Multimodal Integration | | |
| Transit Routes | – | Increase in congestion could impact bus reliability |
| Bicycle Facilities | + | Protected cycle tracks provided |
| Pedestrian Facilities | + | Pedestrian crossings significantly reduced |
| Auto / Truck Facilities | ✗ | Significant reduction in capacity – significant traffic volumes would divert to other paths |
| Economic Development Opportunities | + | The re-imagined streetscape would create significant opportunities to re-purpose existing buildings to more transit and pedestrian-oriented purposes |
| Compatibility with Surrounding Land Uses | ✗ | Existing land uses focus on industrial, office space, car sales and maintenance, and utilities |
| Parking / Loading Impacts | + | Limited docks that utilize Burlington for truck maneuvers |
| Right-of-Way Impacts | + | Likely eliminate the need for ROW Acquisition |



OPTION S1 (SWIFT)

This option included converting parking on Swift to parallel and adding a shared streetcar / travel lane in each direction. Worth noting – the cross-section on Swift changes from an undivided roadway to a divided boulevard section at 23rd Avenue. As such, you will see two typical sections for each alternative for the Swift Options.

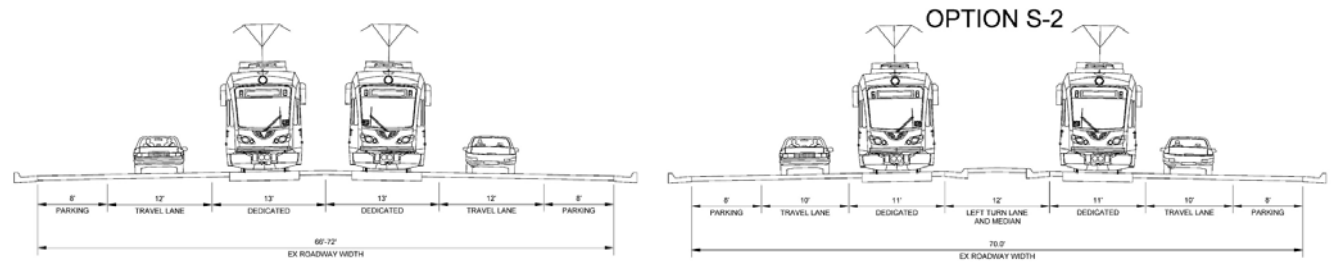


| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|---|
| Major Activity Centers Served | 15 | |
| Density Measures | | |
| Employment | 4020 | Estimated within ¼-mile |
| Population | 1950 | Estimated within ¼-mile |
| Vulnerable Population Index | 4 | |
| Technical Feasibility | + | Relatively straight-forward project with predominately one permitting entity (NKC) |
| Transit Running Time | 13:03 | Minutes : Seconds During PM Peak Hour |
| Operational Flexibility | + | Dual track provides flexibility |
| Multimodal Integration | | |
| Transit Routes | + | Connects with existing bus service |
| Bicycle Facilities | × | Swift is a designated bicycle route - this does not provide buffered or protected lanes |
| Pedestrian Facilities | - | Pedestrians would have to cross four-lanes of traffic, albeit with low volumes |
| Auto / Truck Facilities | + | Sufficient capacity to support |
| Economic Development Opportunities | + | Area master planned as Downtown District north of 12th, with pedestrian and transit-oriented businesses existing and encouraged |
| Compatibility with Surrounding Land Uses | + | Medium and High Density Residential along corridor, as well as pedestrian scale businesses |
| Parking / Loading Impacts | × | Swift is used for docking maneuvers by trucks, which occasionally block portions of Swift and could block Streetcar operations |
| Right-of-Way Impacts | + | No significant impact anticipated |



OPTION S2 (SWIFT)

This option included center-running, dedicated streetcar lanes on Swift.

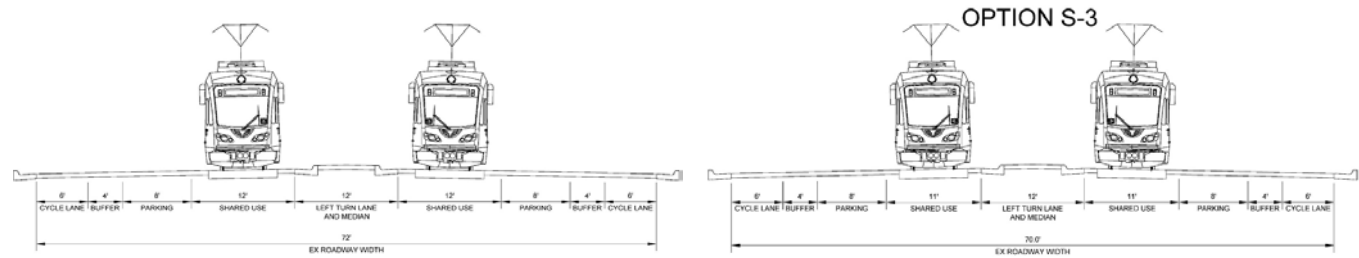


| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|---|
| Major Activity Centers Served | 15 | |
| Density Measures | | |
| Employment | 4020 | Estimated within ¼-mile |
| Population | 1950 | Estimated within ¼-mile |
| Vulnerable Population Index | 4 | |
| Technical Feasibility | + | Relatively straight-forward project with predominately one permitting entity (NKC) |
| Transit Running Time | 13:03 | Minutes : Seconds During PM Peak Hour |
| Operational Flexibility | + | Dual track provides flexibility |
| Multimodal Integration | | |
| Transit Routes | + | Connects with existing bus service |
| Bicycle Facilities | ✗ | Swift is a designated bicycle route - this does not provide buffered or protected lanes |
| Pedestrian Facilities | - | Pedestrians would have to cross four-lanes of traffic, albeit with low volumes |
| Auto / Truck Facilities | + | Sufficient capacity to support |
| Economic Development Opportunities | + | Area master planned as Downtown District north of 12th, with pedestrian and transit-oriented businesses existing and encouraged |
| Compatibility with Surrounding Land Uses | + | Medium and High Density Residential along corridor, as well as pedestrian scale businesses |
| Parking / Loading Impacts | - | By moving tracks to median, reduces risk of truck loading that blocks streetcar line Reduction in some on-street parking |
| Right-of-Way Impacts | + | No significant impact anticipated |



OPTION S3 (SWIFT)

This option envisions a shared-use lane for streetcars and vehicle traffic with median stations, along with parallel parking and cycle tracks on each side of the roadway.



| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|---|
| Major Activity Centers Served | 15 | |
| Density Measures | | |
| Employment | 4020 | Estimated within ¼-mile |
| Population | 1950 | Estimated within ¼-mile |
| Vulnerable Population Index | 4 | |
| Technical Feasibility | + | Relatively straight-forward project with predominately one permitting entity (NKC) |
| Transit Running Time | 13:03 | Minutes : Seconds During PM Peak Hour |
| Operational Flexibility | + | Dual track provides flexibility |
| Multimodal Integration | | |
| Transit Routes | + | Connects with existing bus service |
| Bicycle Facilities | + | Provides buffered lanes |
| Pedestrian Facilities | + | Pedestrian crossing distances minimized |
| Auto / Truck Facilities | + | Sufficient capacity to support |
| Economic Development Opportunities | + | Area master planned as Downtown District north of 12th, with pedestrian and transit-oriented businesses existing and encouraged |
| Compatibility with Surrounding Land Uses | + | Medium and High Density Residential along corridor, as well as pedestrian scale businesses |
| Parking / Loading Impacts | - | By moving tracks to median, reduces risk of truck loading that blocks streetcar line Reduction in some on-street parking |
| Right-of-Way Impacts | + | No significant impact anticipated |

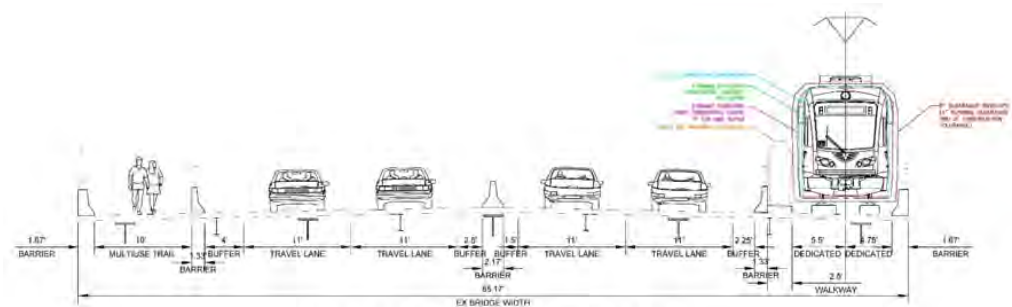


Heart of America Bridge SCREENING CRITERIA

| PURPOSE & NEED | SCREENING CRITERIA | NOTES |
|----------------|----------------------------------|---|
| Connect | Vehicular Impacts | Level of service for vehicles on bridge |
| Connect | Feasibility and Constructibility | Integration with MoDOT facilities |
| Enhance | Operational Flexibility | Potential headways for streetcar line |
| Enhance | Multimodal Integration | |
| | Transit Routes | Alignment with existing transit routes |
| | Bicycle Facilities | Compatible with bicycle facilities |
| | Pedestrian Facilities | Impact to pedestrians for access |

HOA OPTION 1

This option would relocate the existing multiuse trail from the east side of the HOA bridge to the west side and add a two-way streetcar track on the east side. There would be space between the bridge over the Missouri River and the bridge over the railroad tracks just to the north that would allow the construction of a passing siding or turnout.



HEART OF AMERICA BRIDGE
OPTION 1
2-WAY SINGLE TRACK ON EAST SIDE,
RELOCATE TRAIL TO WEST SIDE



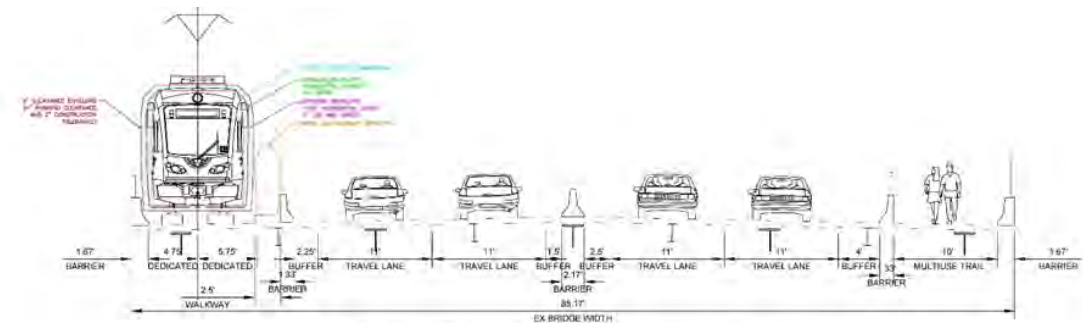
HEART OF AMERICA BRIDGE
OPTION 1
SAME AS ABOVE BUT WITH ADDING A TURNOUT AT GRADE



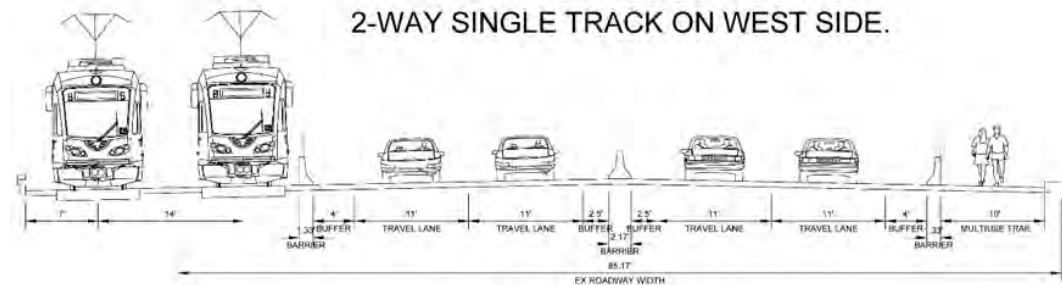
| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|---|
| Vehicular Impacts | + | Bridge would function at LOS D, under capacity Can avoid impacted traffic signal at 10th Avenue |
| Feasibility and Constructability | - | Clearance under Route 9 at 3rd and 5th, may restrict truck traffic |
| Operational Flexibility | + | <2 minutes to cross the bridge, allowing for 10 minute headways |
| Multimodal Integration | | |
| Transit Routes | + | No impact to existing routes |
| Bicycle Facilities | - | Bicycle facilities north and south of bridge are on east side, providing a less direct route for traffic continuing south on Cherry, but no impact to 3rd Street connection |
| Pedestrian Facilities | - | Minor lengthening of crossing |

HOA OPTION 2

This option would maintain the existing multiuse trail on the east side of the HOA bridge and add a two-way streetcar track on the west side. There would be space between the bridge over the Missouri River and the bridge over the railroad tracks just to the north that would allow the construction of a passing siding or turnout.



HEART OF AMERICA BRIDGE
OPTION 2
2-WAY SINGLE TRACK ON WEST SIDE.



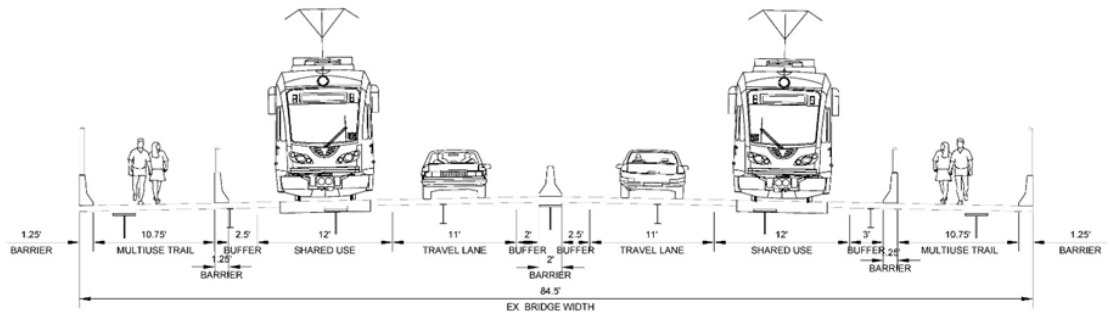
HEART OF AMERICA BRIDGE
OPTION 2
SAME AS ABOVE BUT WITH ADDING A TURNOUT AT GRADE



| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|--|
| Vehicular Impacts | – | Bridge would function at LOS D, under capacity May require new signalized crossing south of 10th Avenue |
| Feasibility and Constructability | + | No significant issues |
| Operational Flexibility | + | <2 minutes to cross the bridge, allowing for 10 minute headways |
| Multimodal Integration | | |
| Transit Routes | + | No impact to existing routes |
| Bicycle Facilities | + | No impact to existing route |
| Pedestrian Facilities | + | No impact to existing routes |

HOA OPTION 3

This option would add a multiuse trail on the west side of the HOA Bridge and provide shared-use lanes on the bridge mixing vehicular traffic and directional streetcar traffic. Of note, this option would only be feasible if Route 9 was converted from a high-speed freeway to an arterial street, including eliminating the at-grade sections of Route 9 between the HOA bridge and I-70.

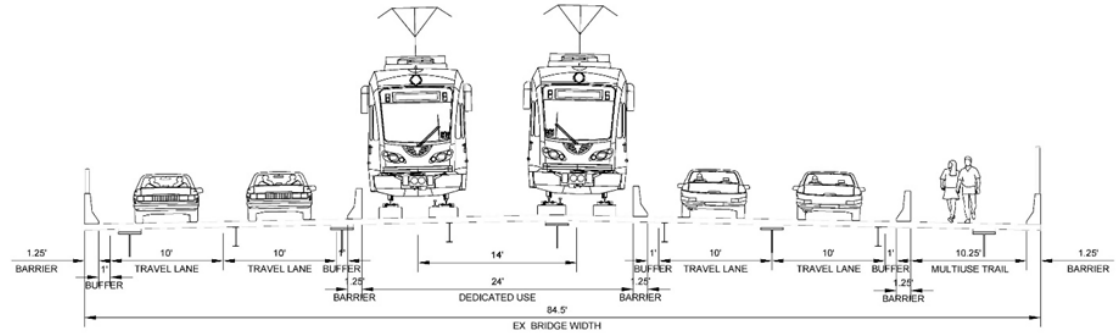


| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|--|
| Vehicular Impacts | ✗ | Current traffic would function at LOS F, over capacity |
| Feasibility and Constructability | ✗ | Would require lowering of Route 9 south of HOA Bridge |
| Operational Flexibility | – | Congested traffic may restrict operations |
| Multimodal Integration | | |
| Transit Routes | – | Congestion would impact bus reliability |
| Bicycle Facilities | + | More options provided |
| Pedestrian Facilities | + | More options provided |



HOA OPTION 4

This option would eliminate a lane of travel on the HPA bridge, reduce travel lane widths for automobiles, and convert the two center lanes into dedicated two-way streetcar tracks. Of note, this option would only be feasible if Route 9 was converted from a high-speed freeway to an arterial street, including eliminating the at-grade sections of Route 9 between the HOA bridge and I-70.



| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|--|
| Vehicular Impacts | ✘ | Current traffic would function at LOS F, over capacity |
| Feasibility and Constructability | ✘ | Would require lowering of Route 9 south of HOA Bridge |
| Operational Flexibility | + | Dedicated high-capacity service on bridge provided |
| Multimodal Integration | | |
| Transit Routes | - | Congestion would impact bus reliability |
| Bicycle Facilities | + | No impact to existing route |
| Pedestrian Facilities | + | No impact to existing route |



South of the Missouri River **SCREENING CRITERIA**

The areas South of the Missouri River were evaluated based on multiple criteria, including:

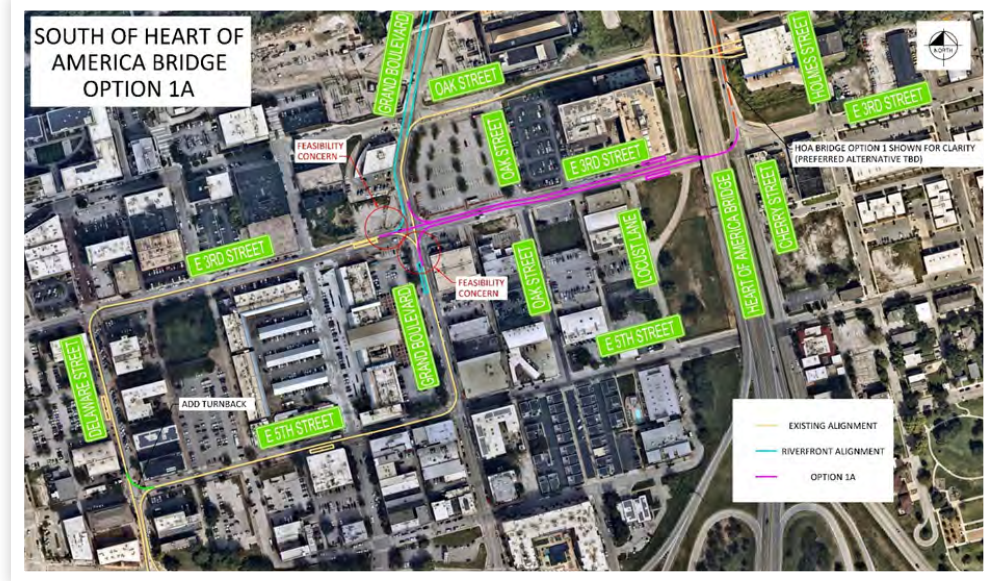
| PURPOSE & NEED | SCREENING CRITERIA | NOTES |
|---------------------------|---|--|
| Connect | Technical Feasibility | Focus on constructibility |
| Enhance | Operational Flexibility | Ability to support multiple operational scenarios |
| Enhance | Multimodal Integration | |
| | Transit Routes | Alignment with existing transit routes |
| | Bicycle Facilities | Compatible with bicycle facilities |
| | Pedestrian Facilities | Impact to pedestrians for access |
| | Auto/Truck Facilities | Impact to auto and truck movements |
| Develop | Economic Development Opportunities | Create options for economic development |
| Develop | Compatibility with Surrounding Land Uses | Compatibility with existing uses |
| Develop | Parking/Loading Impacts | Impact to on-street parking and truck loading activities |
| Develop | Right-of-Way Impacts | Square-feet and/or building impacts |

Based on these criteria, the following options were advanced to a more detailed evaluation:



SOUTH OPTION 1A

This option would provide two-way service on 3rd Street from the RiverMarket to the HOA Bridge. This option would require adjustments to the current planned design for improvements at 3rd Street and Grand and necessitate the addition of a southbound left-turn movement on Delaware to 5th Street (or comparable movement at another location).

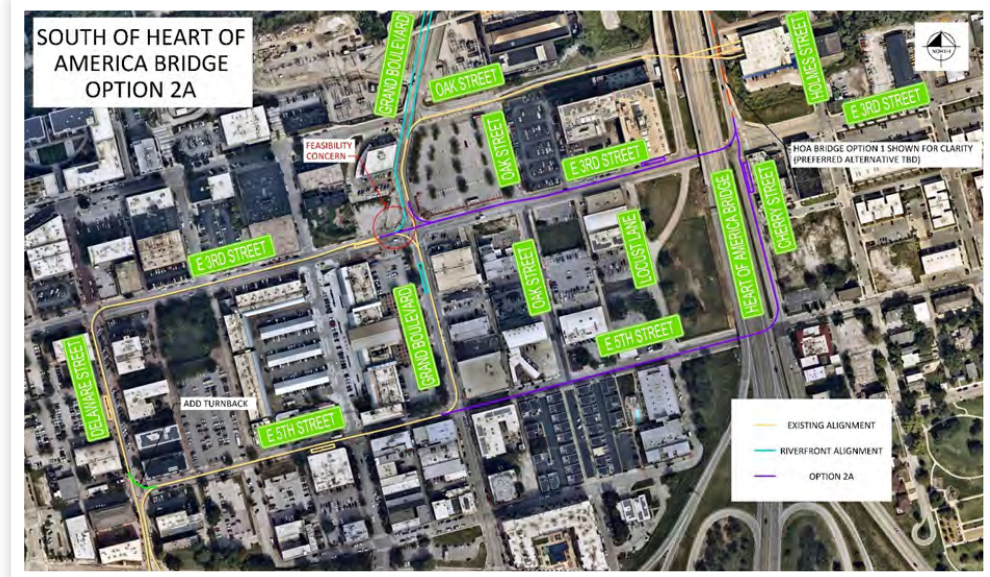


| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|---|
| Technical Feasibility | ✘ | 3-Way Turnout at 3rd and Grand not Feasible |
| Operational Flexibility | + | Flexible Option with River Market Loop Allows Main Street service to split to River Front and NKC Allows NKC to Function Independent Provides Flexibility for Special Events |
| Multimodal Integration | | |
| Transit Routes | - | Potential conflicts with bus stops at 3rd and Grand |
| Bicycle Facilities | - | Bicycle lanes parallel to tracks with no buffer |
| Pedestrian Facilities | - | No sidewalks on south side of 3rd, Locust to Cherry |
| Auto/Truck Facilities | + | Mixed traffic, but not a high-volume roadway |
| Economic Development Opportunities | - | Redevelop potential for properties along 3rd Does not support a stop near Columbus Park |
| Compatibility with Surrounding Land Uses | + | Compatible Mixed-Use Environment |
| Parking / Loading Impacts | + | No significant impact |
| Right-of-Way Impacts | + | No significant impact |



SOUTH OPTION 2A

This option would provide an extended loop, or couplet, between the RiverMarket and Route 9 on 3rd Street and 5th Street. This option would require adjustments to the current planned design for improvements at 3rd Street and Grand and necessitate the addition of a southbound left-turn movement on Delaware to 5th Street (or comparable movement at another location).



| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|---|
| Technical Feasibility | ✘ | 3-Way Turnout at 3rd and Grand not Feasible |
| Operational Flexibility | + | Flexible Option with River Market Loop Allows Main Street service to split to River Front and NKC Allows NKC to Function Independent Provides Flexibility for Special Events |
| Multimodal Integration | | |
| Transit Routes | + | Potential conflicts with bus stops at 3rd and Grand Accommodate Streetcar Extension East on Independence |
| Bicycle Facilities | - | Bicycle lanes parallel to tracks with no buffer |
| Pedestrian Facilities | - | Narrow sidewalks on north side of 5th near Grand |
| Auto/Truck Facilities | + | Mixed traffic, but not a high-volume roadway |
| Economic Development Opportunities | + | Redevelop potential for properties along 3rd Supports a stop near Columbus Park |
| Compatibility with Surrounding Land Uses | + | Compatible Mixed-Use Environment |
| Parking / Loading Impacts | + | No significant impact |
| Right-of-Way Impacts | + | No significant impact |



SOUTH OPTION 2C

This option would provide an extended loop, or couplet, between the RiverMarket and Route 9 on 3rd Street and 5th Street and serves the technical feasibility concerns at 3rd Street and Grand Boulevard by providing a northbound left-turn movement at the HOA Bridge and 3rd Street. This option would necessitate the addition of a southbound left-turn movement on Delaware to 5th Street (or comparable movement at another location).

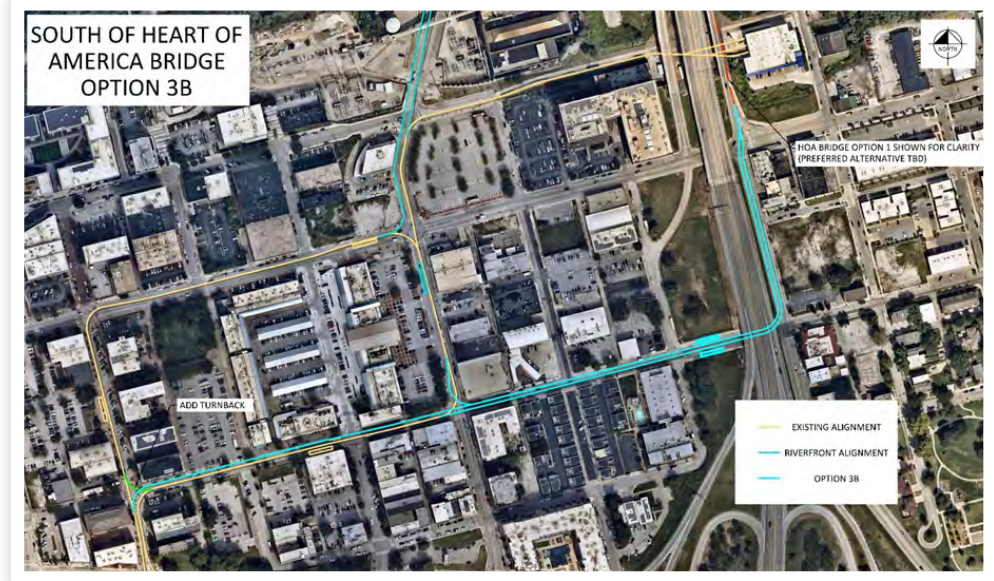


| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|---|
| Technical Feasibility | + | No Issues |
| Operational Flexibility | + | Flexible Option with River Market Loop Allows Main Street service to split to River Front and NKC Allows NKC to Function Independent Provides Flexibility for Special Events |
| Multimodal Integration | | |
| Transit Routes | + | Potential conflicts with bus stops at 3rd and Grand Accommodate Streetcar Extension East on Independence |
| Bicycle Facilities | - | Bicycle lanes parallel to tracks with no buffer Protected cycle track could be an option |
| Pedestrian Facilities | - | Narrow sidewalks on north side of 5th near Grand |
| Auto/Truck Facilities | + | Mixed traffic, but not a high-volume roadway |
| Economic Development Opportunities | + | Redevelop potential for properties along 3rd Supports a stop near Columbus Park |
| Compatibility with Surrounding Land Uses | + | Compatible Mixed-Use Environment |
| Parking / Loading Impacts | + | No significant impact |
| Right-of-Way Impacts | + | No significant impact |



SOUTH OPTION 3B

This option would provide two-way service on 5th Street from the RiverMarket to the HOA Bridge. This option would necessitate the addition of a southbound left-turn movement on Delaware to 5th Street (or comparable movement at another location). However, to avoid impacting a building at 5th and Grand, this option would require significant relocations of a bus stop on Grand at 5th Street and would create an unusual turnout and switching.



| SCREENING CRITERIA | SCORE | NOTES |
|---|-------|---|
| Technical Feasibility | + | No Issues, but additional expense with limited return |
| Operational Flexibility | + | Flexible Option with River Market Loop Allows Main Street service to split to River Front and NKC Allows NKC to Function Independent Provides Flexibility for Special Events |
| Multimodal Integration | | |
| Transit Routes | ✗ | Requires relocation of Grand stop near 5th |
| Bicycle Facilities | - | Bicycle lanes on Cherry would need to be buffered or protected if track on east side |
| Pedestrian Facilities | - | Narrow sidewalks on north side of 5th near Grand |
| Auto/Truck Facilities | + | Mixed traffic, but not a high-volume roadway |
| Economic Development Opportunities | + | Redevelop potential for properties along 3rd Supports a stop near Columbus Park |
| Compatibility with Surrounding Land Uses | + | Compatible Mixed-Use Environment |
| Parking / Loading Impacts | + | No significant impact |
| Right-of-Way Impacts | - | Can be done w/ minimal ROW, but ideal has impact |



APPENDIX B

Revenue Projections



REVENUE PROJECTIONS

North Rail Extension, North
Kansas City, MO

Draft Deliberative Work Product
June 13, 2022



Economic & Planning Systems, Inc.
The Economics of Land Use

730 17th Street, Suite 630 ■ Denver, CO 80202
303.623.3557 ■ www.epsys.com

DEMOGRAPHIC TRENDS

- Modest population and household growth
- Built out community with few vacant sites remaining

| North Kansas City | 2000 | 2010 | 2021 | 2000-2010 | | | 2010-2021 | | |
|-----------------------|-------|-------|-------|-----------|--------|--------|-----------|--------|--------|
| | | | | Total | Ann. # | Ann. % | Total | Ann. # | Ann. % |
| Population | | | | | | | | | |
| North Kansas City | 4,772 | 4,208 | 4,620 | -564 | -56 | -1.2% | 412 | 37 | 0.9% |
| Households | | | | | | | | | |
| North Kansas City | 2,587 | 2,361 | 2,617 | -226 | -23 | -0.9% | 256 | 23 | 0.9% |
| Household Size | | | | | | | | | |
| North Kansas City | 1.84 | 1.78 | 1.77 | -0.06 | -0.01 | -0.3% | -0.02 | 0.00 | -0.1% |

Source: U.S. Census; ESRI Business Analyst; Economic & Planning Systems

COMMERCIAL INVENTORY TRENDS

- Modest inventory growth across product types over the past decade
- More growth over the past five years

| Type | 2010 | 2015 | 2021 | 2010-2021 | | 2016-2021 | |
|----------------------------|------------|------------|------------|-----------|---------|-----------|--------|
| | | | | Total | Ann. # | Total | Ann. # |
| Office (sq. ft) | 831,322 | 831,322 | 864,172 | 32,850 | 2,986 | 42,752 | 8,550 |
| Retail (sq. ft) | 836,058 | 824,751 | 828,351 | -7,707 | -701 | 3,600 | 720 |
| Industrial (sq. ft) | 19,005,329 | 18,795,898 | 18,475,849 | -529,480 | -48,135 | 13,451 | 2,690 |
| Multifamily (units) | 1,658 | 1,658 | 1,898 | 240 | 22 | 240 | 48 |

Source: CoStar; Economic & Planning Systems

NEW DEVELOPMENT



NKC DEVELOPMENT (IN PROGRESS/PROPOSED)

- ① **BLUME NKC**
31 RESIDENTIAL UNITS
24 COMMERCIAL UNITS
\$21,423,000 INVESTMENT
PERMIT PENDING
- ② **NORTHGATE VILLAGE**
ROW HOMES
8 RESIDENTIAL UNITS
\$1,900,000 INVESTMENT
UNDER CONSTRUCTION
- ③ **23RD & SWIFT**
294 RESIDENTIAL UNITS
\$50,000,000 INVESTMENT
UNDER CONSTRUCTION
- ④ **THE OXBOW**
208 RESIDENTIAL UNITS
\$45,000,000 INVESTMENT
UNDER CONSTRUCTION
- ⑤ **GALLERY LOFTS**
49 RESIDENTIAL UNITS
\$7,400,000 INVESTMENT
UNDER CONSTRUCTION
- ⑥ **PROPOSED WAREHOUSE**
VANTRUST/TNEMEC
REQUESTED CHAPTER 100
UNDER REVIEW
- ⑦ **FORMER AMF BOWLING**
PURCHASED, UNKNOWN
FUTURE USE

SWIFT CORRIDOR INFLUENCE AREA



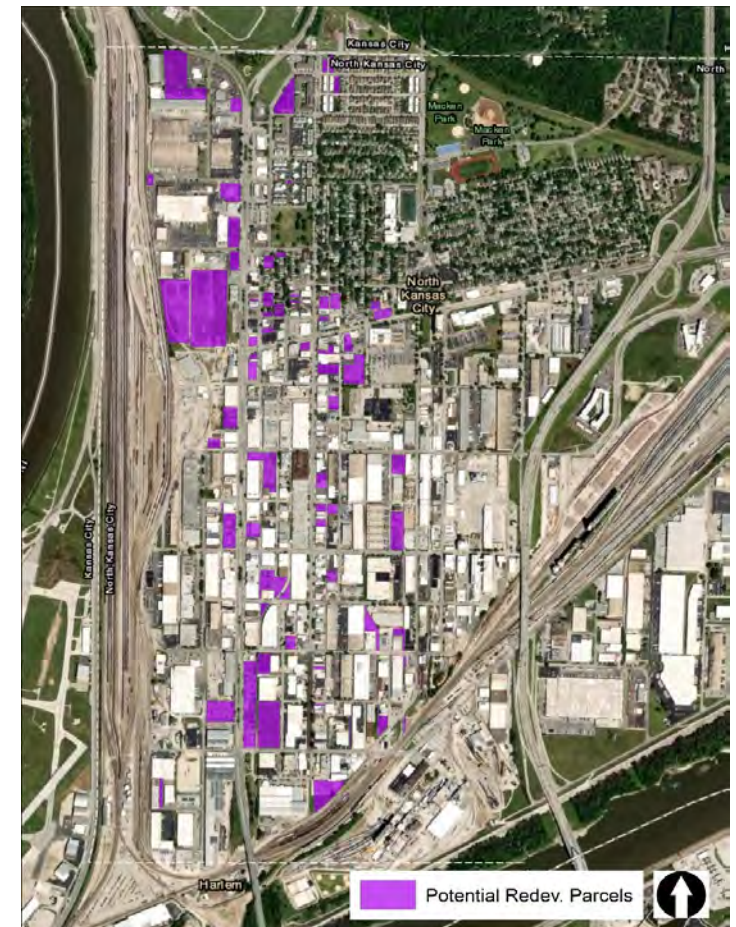
BURLINGTON CORRIDOR INFLUENCE AREA



POTENTIAL REDEVELOPMENT PARCELS

- Parcels with potential to redevelop defined as:
 - Vacant parcels
 - Parcels with an improvement to land value ratio below 0.5

(building value / land value) < 0.5



SALES TAX TRENDS

- Steady growth in sales tax collections over the past decade
- 4.9% annual growth through 2021
- 3.7% annual growth 2012–2019

| Fiscal Year | Sales Tax 1% | % Change annual | Taxable Sales |
|-------------------------|-----------------|--------------------|---------------|
| 2012 | \$2,962,525 | -- | \$296,252,549 |
| 2013 | \$3,063,981 | 3.4% | \$306,398,142 |
| 2014 | \$3,262,109 | 6.5% | \$326,210,882 |
| 2015 | \$3,240,357 | -0.7% | \$324,035,656 |
| 2016 | \$3,432,737 | 5.9% | \$343,273,689 |
| 2017 | \$3,576,279 | 4.2% | \$357,627,944 |
| 2018 | \$4,058,417 | 13.5% | \$405,841,680 |
| 2019 | \$3,824,973 | -5.8% | \$382,497,287 |
| 2020 | \$3,707,798 | -3.1% | \$370,779,791 |
| 2021 | \$4,559,006 | 23.0% | \$455,900,578 |
| Change 2012-2021 | | | |
| <i>Total</i> | \$1,596,480 | 53.9% | \$159,648,029 |
| <i>Annual</i> | \$177,387 | 4.9% CAGR | \$17,738,670 |
| Change 2012-2019 | | | |
| <i>Total</i> | \$862,447 | 29.1% | \$86,244,738 |
| <i>Annual</i> | \$123,207 | 3.7% CAGR | \$12,320,677 |

SALES TAX FORECAST – BASE CASE

- Annual growth based in sales tax on past trends
- 3.7% tapering to 2.5% annual growth

| Base Case Sales and Revenue | | | | | |
|-----------------------------|---------------|------|-------------------|-------------|--------------|
| Fiscal Year | Taxable Sales | AGR | Sales Tax Revenue | | |
| | | | 0.50% | 1.00% | 2.00% |
| 2022 | \$472,848,990 | 3.7% | \$2,364,245 | \$4,728,490 | \$9,456,980 |
| 2023 | \$490,427,472 | 3.7% | \$2,452,137 | \$4,904,275 | \$9,808,549 |
| 2024 | \$508,659,445 | 3.7% | \$2,543,297 | \$5,086,594 | \$10,173,189 |
| 2025 | \$527,569,204 | 3.7% | \$2,637,846 | \$5,275,692 | \$10,551,384 |
| 2026 | \$547,181,946 | 3.7% | \$2,735,910 | \$5,471,819 | \$10,943,639 |
| 2027 | \$560,861,494 | 2.5% | \$2,804,307 | \$5,608,615 | \$11,217,230 |
| 2028 | \$574,883,032 | 2.5% | \$2,874,415 | \$5,748,830 | \$11,497,661 |
| 2029 | \$589,255,108 | 2.5% | \$2,946,276 | \$5,892,551 | \$11,785,102 |
| 2030 | \$603,986,485 | 2.5% | \$3,019,932 | \$6,039,865 | \$12,079,730 |
| 2031 | \$619,086,147 | 2.5% | \$3,095,431 | \$6,190,861 | \$12,381,723 |
| 2032 | \$634,563,301 | 2.5% | \$3,172,817 | \$6,345,633 | \$12,691,266 |
| 2033 | \$650,427,384 | 2.5% | \$3,252,137 | \$6,504,274 | \$13,008,548 |
| 2034 | \$666,688,068 | 2.5% | \$3,333,440 | \$6,666,881 | \$13,333,761 |
| 2035 | \$683,355,270 | 2.5% | \$3,416,776 | \$6,833,553 | \$13,667,105 |
| 2036 | \$700,439,152 | 2.5% | \$3,502,196 | \$7,004,392 | \$14,008,783 |
| 2037 | \$717,950,131 | 2.5% | \$3,589,751 | \$7,179,501 | \$14,359,003 |
| 2038 | \$735,898,884 | 2.5% | \$3,679,494 | \$7,358,989 | \$14,717,978 |
| 2039 | \$754,296,356 | 2.5% | \$3,771,482 | \$7,542,964 | \$15,085,927 |
| 2040 | \$773,153,765 | 2.5% | \$3,865,769 | \$7,731,538 | \$15,463,075 |
| 2041 | \$792,482,609 | 2.5% | \$3,962,413 | \$7,924,826 | \$15,849,652 |
| 2042 | \$812,294,674 | 2.5% | \$4,061,473 | \$8,122,947 | \$16,245,893 |

SALES TAX FORECAST – UPSIDE CASE

- Higher annual growth rate in sales tax collections
- 4.9% tapering to 3.5% annual growth

| Upside Case Sales and Revenue | | | | | |
|-------------------------------|-----------------|------|-------------------|--------------|--------------|
| Fiscal Year | Taxable Sales | AGR | Sales Tax Revenue | | |
| | | | 0.50% | 1.00% | 2.00% |
| 2022 | \$478,267,684 | 4.9% | \$2,391,338 | \$4,782,677 | \$9,565,354 |
| 2023 | \$501,732,150 | 4.9% | \$2,508,661 | \$5,017,322 | \$10,034,643 |
| 2024 | \$526,347,816 | 4.9% | \$2,631,739 | \$5,263,478 | \$10,526,956 |
| 2025 | \$552,171,160 | 4.9% | \$2,760,856 | \$5,521,712 | \$11,043,423 |
| 2026 | \$579,261,432 | 4.9% | \$2,896,307 | \$5,792,614 | \$11,585,229 |
| 2027 | \$599,535,582 | 3.5% | \$2,997,678 | \$5,995,356 | \$11,990,712 |
| 2028 | \$620,519,327 | 3.5% | \$3,102,597 | \$6,205,193 | \$12,410,387 |
| 2029 | \$642,237,504 | 3.5% | \$3,211,188 | \$6,422,375 | \$12,844,750 |
| 2030 | \$664,715,816 | 3.5% | \$3,323,579 | \$6,647,158 | \$13,294,316 |
| 2031 | \$687,980,870 | 3.5% | \$3,439,904 | \$6,879,809 | \$13,759,617 |
| 2032 | \$712,060,200 | 3.5% | \$3,560,301 | \$7,120,602 | \$14,241,204 |
| 2033 | \$736,982,307 | 3.5% | \$3,684,912 | \$7,369,823 | \$14,739,646 |
| 2034 | \$762,776,688 | 3.5% | \$3,813,883 | \$7,627,767 | \$15,255,534 |
| 2035 | \$789,473,872 | 3.5% | \$3,947,369 | \$7,894,739 | \$15,789,477 |
| 2036 | \$817,105,458 | 3.5% | \$4,085,527 | \$8,171,055 | \$16,342,109 |
| 2037 | \$845,704,149 | 3.5% | \$4,228,521 | \$8,457,041 | \$16,914,083 |
| 2038 | \$875,303,794 | 3.5% | \$4,376,519 | \$8,753,038 | \$17,506,076 |
| 2039 | \$905,939,427 | 3.5% | \$4,529,697 | \$9,059,394 | \$18,118,789 |
| 2040 | \$937,647,307 | 3.5% | \$4,688,237 | \$9,376,473 | \$18,752,946 |
| 2041 | \$970,464,962 | 3.5% | \$4,852,325 | \$9,704,650 | \$19,409,299 |
| 2042 | \$1,004,431,236 | 3.5% | \$5,022,156 | \$10,044,312 | \$20,088,625 |

SALES TAX BOND ESTIMATE – CURRENT REVENUE

| North Kansas City Sales Tax Bond <i>Bond on Current Revenue</i> | | Factors | Tax Revenue Rates | |
|--|--|----------|---------------------|---------------------|
| | | | 0.5% | 1.0% |
| Net Revenue Stream to be Bonded | | | \$2,279,503 | \$4,559,006 |
| Term | | 30 years | | |
| Interest Rate | | 4.0% | | |
| <hr/> | | | | |
| Estimated Net Revenue Available for Debt Service | | | | |
| Total Annual Revenue | | | \$2,279,503 | \$4,559,006 |
| Estimated Annual Administrative Costs ¹ | | 1.0% | \$22,795 | \$45,590 |
| Debt Coverage | | 1.20 | \$376,118 | \$752,236 |
| Net Revenue Available for Debt Service | | | \$1,880,590 | \$3,761,180 |
| <hr/> | | | | |
| Estimated Total Bonds² | | | | |
| Bond Reserve Fund | | 1 yr D/S | \$1,880,000 | \$3,760,000 |
| Formation & Issuance Costs | | 2.0% | \$650,000 | \$1,300,000 |
| <hr/> | | | | |
| Estimated Total Bond Proceeds (Net of Issuance Costs)² | | | \$29,990,000 | \$59,980,000 |

Note: Assumes the following bond assumptions:

¹Assumed an administrative fee of 1 percent of the annual revenues available for debt service.

²Rounded to the nearest ten thousand.

Source: Economic & Planning Systems

SALES TAX BOND ESTIMATE – 10-YEAR PROJECTED REVENUE

| North Kansas City Sales Tax Bond <i>Bond on 10-Year Projected Revenue</i> | | Factors | Base Case | | Upside Case | |
|--|----------|---------|---------------------|---------------------|---------------------|---------------------|
| | | | 0.5% | 1.0% | 0.5% | 1.0% |
| Net Revenue Stream to be Bonded | | | \$3,172,817 | \$6,345,633 | \$3,560,301 | \$7,120,602 |
| Term | 30 years | | | | | |
| Interest Rate | 4.0% | | | | | |
| Estimated Net Revenue Available for Debt Service | | | | | | |
| Total Annual Revenue | | | \$3,172,817 | \$6,345,633 | \$3,560,301 | \$7,120,602 |
| Estimated Annual Administrative Costs ¹ | 1.0% | | \$31,728 | \$63,456 | \$35,603 | \$71,206 |
| Debt Coverage | 1.20 | | \$523,515 | \$1,047,029 | \$587,450 | \$1,174,899 |
| Net Revenue Available for Debt Service | | | \$2,617,574 | \$5,235,147 | \$2,937,248 | \$5,874,497 |
| Estimated Total Bonds² | | | | | | |
| Bond Reserve Fund | 1 yr D/S | | \$2,620,000 | \$5,240,000 | \$2,940,000 | \$5,870,000 |
| Formation & Issuance Costs | 2.0% | | \$910,000 | \$1,810,000 | \$1,020,000 | \$2,030,000 |
| Estimated Total Bond Proceeds (Net of Issuance Costs)² | | | \$41,730,000 | \$83,480,000 | \$46,830,000 | \$93,680,000 |

SALES TAX RATES IN THE REGION

| Description | County | State Rate | City Rate | County Rate | Total |
|------------------|----------------|------------|-----------|-------------|---------------|
| Kansas City, MO | <i>Jackson</i> | 4.225% | 3.250% | 1.375% | 8.850% |
| Kansas City, MO | <i>Clay</i> | 4.225% | 3.250% | 1.250% | 8.725% |
| Kansas City, MO | <i>Platte</i> | 4.225% | 3.250% | 1.375% | 8.850% |
| Lee's Summit, MO | <i>Jackson</i> | 4.225% | 2.250% | 1.375% | 7.850% |
| Independence, MO | <i>Jackson</i> | 4.225% | 2.250% | 1.375% | 7.850% |
| Liberty, MO | <i>Clay</i> | 4.225% | 3.375% | 1.250% | 8.850% |
| Gladstone, MO | <i>Clay</i> | 4.225% | 3.000% | 1.250% | 8.475% |

Source: Economic & Planning Systems

PROPERTY TAX ASSUMPTIONS

- TDD Revenue estimates based on current assessment rates for commercial and residential
- Estimates of current revenue do not account for any increases in value driven by the streetcar
- Accounts for value of projects in development pipeline
- An increase in value is estimated after year 5, accounting for the influence of the streetcar. This value is reflected in the 10-year revenue estimate
 - All parcels in the corridor receive a 30% increase in value
 - Parcels considered “likely to redevelop” receive an additional 60% increase in value
- Scenarios tested with revenue from industrial property and without revenue from industrial property

SWIFT CORRIDOR

With Current Revenue

| Swift Corridor Property Tax Bond <i>Current Revenue</i> | Factors | Scenarios | |
|--|----------|---------------------------|------------------------|
| | | <i>Without Industrial</i> | <i>With Industrial</i> |
| Revenue Stream to be Bonded | | \$393,241 | \$554,751 |
| Term | 30 years | | |
| Interest Rate | 4.0% | | |
| Estimated Net Revenue Available for Debt Service | | | |
| Total Annual Revenue | | \$393,241 | \$554,751 |
| Estimated Annual Administrative Costs ¹ | 1.0% | \$3,932 | \$5,548 |
| Debt Coverage | 1.20 | \$64,885 | \$91,534 |
| Net Revenue Available for Debt Service | | \$324,424 | \$457,670 |
| Estimated Total Bonds² | | | |
| Bond Reserve Fund | 1 yr D/S | \$320,000 | \$460,000 |
| Formation & Issuance Costs | 2.0% | \$110,000 | \$160,000 |
| Estimated Total Bond Proceeds (Net of Issuance Costs)² | | \$5,180,000 | \$7,290,000 |

With Revenue in 10 Years

| Swift Corridor Property Tax Bond <i>10-Year Projected Revenue</i> | Factors | Scenarios | |
|--|----------|---------------------------|------------------------|
| | | <i>Without Industrial</i> | <i>With Industrial</i> |
| Revenue Stream to be Bonded | | \$629,981 | \$878,005 |
| Term | 30 years | | |
| Interest Rate | 4.0% | | |
| Estimated Net Revenue Available for Debt Service | | | |
| Total Annual Revenue | | \$629,981 | \$878,005 |
| Estimated Annual Administrative Costs ¹ | 1.0% | \$6,300 | \$8,780 |
| Debt Coverage | 1.20 | \$103,947 | \$144,871 |
| Net Revenue Available for Debt Service | | \$519,734 | \$724,354 |
| Estimated Total Bonds² | | | |
| Bond Reserve Fund | 1 yr D/S | \$520,000 | \$720,000 |
| Formation & Issuance Costs | 2.0% | \$180,000 | \$250,000 |
| Estimated Total Bond Proceeds (Net of Issuance Costs)² | | \$8,290,000 | \$11,560,000 |

Note: Assumes the following bond assumptions:

¹Assumed an administrative fee of 1 percent of the annual revenues available for debt service.

²Rounded to the nearest ten thousand.

Source: Economic & Planning Systems

BURLINGTON CORRIDOR

With Current Revenue

| Burlington Corridor Property Tax Bond <i>Current Revenue</i> | Factors | Scenarios | |
|---|----------|---------------------------|------------------------|
| | | <i>Without Industrial</i> | <i>With Industrial</i> |
| Revenue Stream to be Bonded | | \$358,841 | \$531,745 |
| Term | 30 years | | |
| Interest Rate | 4.0% | | |
| Estimated Net Revenue Available for Debt Service | | | |
| Total Annual Revenue | | \$358,841 | \$531,745 |
| Estimated Annual Administrative Costs ¹ | 1.0% | \$3,588 | \$5,317 |
| Debt Coverage | 1.20 | \$59,209 | \$87,738 |
| Net Revenue Available for Debt Service | | \$296,044 | \$438,689 |
| Estimated Total Bonds² | | | |
| Bond Reserve Fund | 1 yr D/S | \$300,000 | \$440,000 |
| Formation & Issuance Costs | 2.0% | \$100,000 | \$150,000 |
| Estimated Total Bond Proceeds (Net of Issuance Costs) | | \$4,720,000 | \$7,000,000 |

With Revenue in 10 Years

| Burlington Corridor Property Tax Bond <i>10-Year Projected Revenue</i> | Factors | Scenarios | |
|---|----------|---------------------------|------------------------|
| | | <i>Without Industrial</i> | <i>With Industrial</i> |
| Revenue Stream to be Bonded | | \$572,064 | \$835,432 |
| Term | 30 years | | |
| Interest Rate | 4.0% | | |
| Estimated Net Revenue Available for Debt Service | | | |
| Total Annual Revenue | | \$572,064 | \$835,432 |
| Estimated Annual Administrative Costs ¹ | 1.0% | \$5,721 | \$8,354 |
| Debt Coverage | 1.20 | \$94,391 | \$137,846 |
| Net Revenue Available for Debt Service | | \$471,953 | \$689,231 |
| Estimated Total Bonds² | | | |
| Bond Reserve Fund | 1 yr D/S | \$470,000 | \$690,000 |
| Formation & Issuance Costs | 2.0% | \$160,000 | \$240,000 |
| Estimated Total Bond Proceeds (Net of Issuance Costs) | | \$7,530,000 | \$10,990,000 |

Note: Assumes the following bond assumptions:

¹Assumed an administrative fee of 1 percent of the annual revenues available for debt service.

²Rounded to the nearest ten thousand.

Source: Economic & Planning Systems

CITYWIDE

With Current Revenue

| North Kansas City Property Tax Bond <i>Current Revenue</i> | Factors | Scenarios | |
|--|----------|---------------------------|------------------------|
| | | <i>Without Industrial</i> | <i>With Industrial</i> |
| Revenue Stream to be Bonded | | \$1,016,183 | \$1,555,048 |
| Term | 30 years | | |
| Interest Rate | 4.0% | | |
| <hr/> | | | |
| Estimated Net Revenue Available for Debt Service | | | |
| Total Annual Revenue | | \$1,016,183 | \$1,555,048 |
| Estimated Annual Administrative Costs ¹ | 1.0% | \$10,162 | \$15,550 |
| Debt Coverage | 1.20 | \$167,670 | \$256,583 |
| Net Revenue Available for Debt Service | | \$838,351 | \$1,282,915 |
| <hr/> | | | |
| Estimated Total Bonds² | | | |
| Bond Reserve Fund | 1 yr D/S | \$840,000 | \$1,280,000 |
| Formation & Issuance Costs | 2.0% | \$290,000 | \$440,000 |
| <hr/> | | | |
| Estimated Total Bond Proceeds (Net of Issuance Costs)² | | \$13,370,000 | \$20,460,000 |

With Revenue in 10 Years

| North Kansas City Property Tax Bond <i>With Streetcar Impact</i> | Factors | Scenarios | |
|--|----------|---------------------------|------------------------|
| | | <i>Without Industrial</i> | <i>With Industrial</i> |
| Revenue Stream to be Bonded | | \$1,190,615 | \$1,822,697 |
| Term | 30 years | | |
| Interest Rate | 4.0% | | |
| <hr/> | | | |
| Estimated Net Revenue Available for Debt Service | | | |
| Total Annual Revenue | | \$1,190,615 | \$1,822,697 |
| Estimated Annual Administrative Costs ¹ | 1.0% | \$11,906 | \$18,227 |
| Debt Coverage | 1.20 | \$196,452 | \$300,745 |
| Net Revenue Available for Debt Service | | \$982,258 | \$1,503,725 |
| <hr/> | | | |
| Estimated Total Bonds² | | | |
| Bond Reserve Fund | 1 yr D/S | \$980,000 | \$1,500,000 |
| Formation & Issuance Costs | 2.0% | \$340,000 | \$520,000 |
| <hr/> | | | |
| Estimated Total Bond Proceeds (Net of Issuance Costs)² | | \$15,670,000 | \$23,980,000 |

Note: Assumes the following bond assumptions:

¹Assumed an administrative fee of 1 percent of the annual revenues available for debt service.

²Rounded to the nearest ten thousand.

Source: Economic & Planning Systems

