

Main Street Extension

KC Streetcar Main Street Extension Park and Ride (PnR) Assessment

The downtown streetcar has significant park and ride (PnR) usage, particularly at the terminus stops at Union Station and the River Market. PnR trips can either be long-term (typically for commute purposes) or short-term (typically for non-work purposes). PnR usage emerged as an issue in the River Market and several regulatory steps were taken as a result. Several stakeholders have expressed concern that streetcar-related parking will impact neighborhoods and businesses along the proposed Main Street extension.

To assess the issue, a detailed study of PnR potential along the streetcar extension was completed. The Federal Transit Administration (FTA) Simplified Trips-on-Project Software (STOPS) was modified and run to estimate PnR access at all proposed stops on the Main Street extension. In addition to the STOPS estimates, current usage on the downtown line, and parking supply were used to develop conclusions.

Summary of Existing Streetcar PnR

The downtown Streetcar has significant PnR usage on weekdays and weekends; approximately 10 percent on weekdays, with 15 to 20 percent of riders boarding at Union Station and the River Market parking and riding. On weekends, the total increases to 25 percent PnR overall and 30 to 40 percent PnR access at Union Station and the River Market.

Exhibit 1: Existing Streetcar PnR

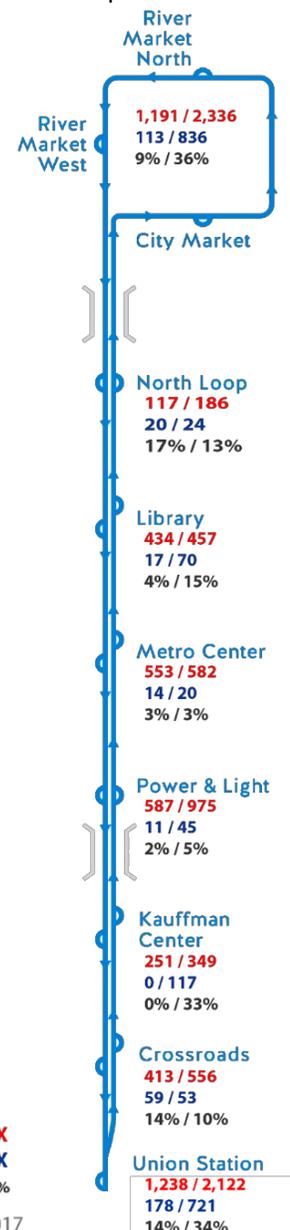
Stops	Weekday Boardings	Weekday PnR	Weekend Boardings	Weekend PnR
River Market	1,191	113 (9%)	2,336	836 (36%)
North Loop	117	20 (17%)	186	24 (13%)
Library	434	17 (4%)	457	70 (15%)
Metro Center	553	14 (3%)	582	20 (3%)
Power & Light	587	11 (2%)	975	45 (5%)
Kauffman Center	251	0 (0%)	349	117 (33%)
Crossroads	413	59 (14%)	556	53 (10%)
Union Station	1,238	178 (14%)	2,122	721 (34%)
Total	4,784	412 (9%)	7,564	1,912 (25%)

Source: 2017 On-Board ETC Survey

Most weekday PnR users (74 percent) make non-work trips (shopping, dining and entertainment). On weekends, almost all PnR riders make non-work trips. This is key as existing and future non-work PnR users are more likely to visit retail and entertainment destinations (for example, Plaza shops or dining) on their way to/from the Streetcar.

Average Ridership (Wkdy / Wknd) **XX**
 Average PnR (Wkdy / Wknd) **XX**
 PnR Percent (Wkdy / Wknd) **X%**

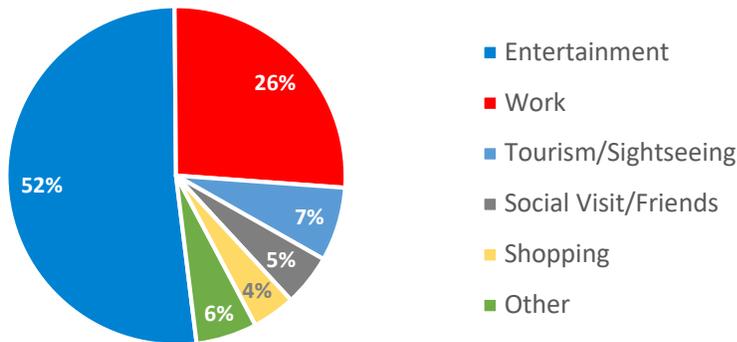
Source: On-Board Rider Survey, Fall 2017



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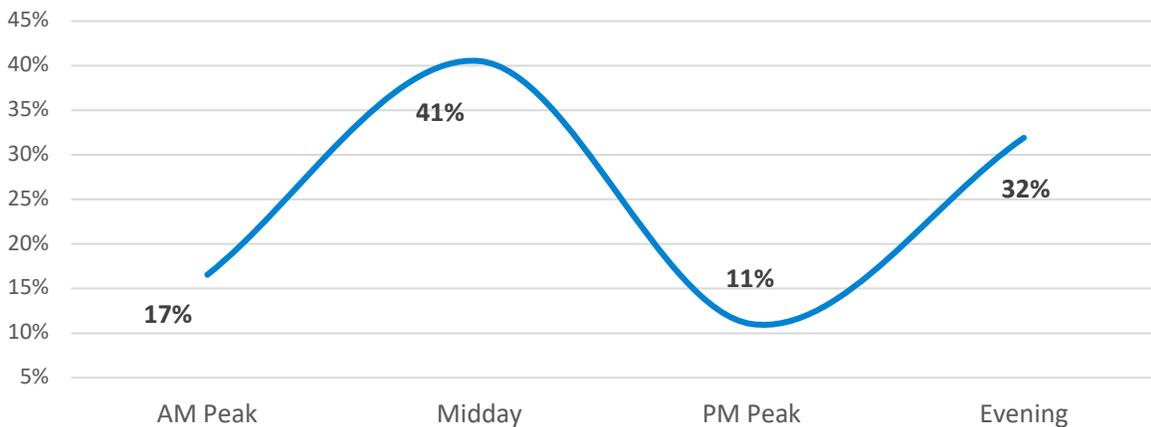
Exhibit 2 shows weekday trip purposes of PnR trips, and Exhibit 3 shows how the times of day during which typical PnR trip times are made underscore the mostly non-work nature of these trips. This distribution of trip purposes is not expected to change substantially with the Main Street Extension. There may be an increase in work-related trips, but these are largely not expected to be of the type that generates PnR demand. They would likely be from workers who live near the corridor, or who access the streetcar via transit routes; they are much less likely to be from long-distance commuters, given the geographical location of the corridor in relation to the region’s highway network.

Exhibit 2: Weekday Trip Purpose



Source: 2017 On-Board ETC Survey

Exhibit 3: Weekday PnR Access by Time of Day



Source: 2017 On-Board ETC Survey

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STOPS Forecast for PnR on Main Street Extension

STOPS is a ridership forecasting tool that also allows a prediction of theoretical demand for PnR at each stop. The results should be used cautiously and interpreted as a propensity indicator for PnR at each stop rather than an exact forecast of PnR users. In practice, PnR usage will be driven by demand and supply and STOPS is likely overpredicting weekday PnR usage at station locations. STOPS PnR results are shown in Exhibit 4 along with a preliminary opinion on the reasonableness of the estimates. For the purpose of this exercise, the five Midtown stops were consolidated. As the Exhibit indicates, these estimates were not constrained by available parking supply, an exercise shown later in this document.

Exhibit 4: Preliminary Weekday Average STOPS PnR Demand Estimates and Opinion of Reasonableness (Assuming no Parking Supply Constraints)

Stop Location	Ridership	PNR	PNR %	Opinion of Reasonableness
River Market	1,490	110	7%	Appears reasonable
Union Station	1,275	150	12%	NB PnR (30) seems reasonable, SB (119) seems high
27th Street	875	100	12%	Appears reasonable
Midtown (31 st – 45 th)	3,098	284	9%	NB PnR seems a little high, but not unreasonable. SB PnR (99) seems high.
Plaza	870	200	23%	Appears reasonable
UMKC	460	50	11%	Appears reasonable

Source: STOPS refined forecast allowing PnR on extension stops other than Plaza and UMKC

Preliminary Assessment of Potential Parking Problems (Unconstrained Supply Analysis)

River Market: Streetcar PnR is currently an issue in the River Market. Several regulatory steps were taken with some success.

Union Station: Most parking is controlled and paid. Current streetcar-related parking is not regarded as a problem. As such, no problems are anticipated.

27th Street: Crown Center operates several parking garages, all controlled and paid. While ungated surface lots are present today along 27th Street, these are likely to be converted to access controlled and paid lots or garages with the implementation of the planned development. No problems are anticipated.

Midtown: A high number of PnR users in Midtown seems unlikely, but even a small number may generate neighborhood or business complaints. Previous neighborhood complaints have been made regarding the on-street parking situation from apartment redevelopments in the area.

31st Street: There is limited on-street parking nearby. The few commercial uses with surface parking could attract PnR users. Large parking lots at the Linwood Shopping Center are probably too far from the stop to attract many PnR users. However, if used for PnR, no problems are anticipated due to the high number of surplus spaces in the Home Depot lot.

Armour Boulevard: Limited on-street parking nearby; commercial uses with surface parking could attract PnR. This may cause problems in surrounding commercial lots.

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39th Street: Limited on-street parking nearby; commercial uses with surface parking could attract PnR. This may cause problems in surrounding commercial lots.

43rd Street: Proximity to residential neighborhoods to the east and commercial uses with surface parking could attract PnR users. PnR in the neighborhoods may create problems.

45th Street: There is limited on-street parking nearby. The nearby American Century and hotel parking garages are controlled. No problems are anticipated.

Plaza: While STOPS predicts a significant theoretical demand for PnR at the Plaza, this is unlikely during typical weekday time periods. The distance between Plaza parking garages and the streetcar station (1/4 mile) is anticipated to reduce potential PnR usage during these times.¹ It is more likely that higher parking demand could become an issue at the Plaza during evenings and weekends, particularly when there are events downtown. However, the usage of the Plaza as a PnR location for streetcar users during these time periods will likely be by those making entertainment and social trips, rather than work trips. In other words, the uses of the streetcar are complementary to the attractions the Plaza offers.

UMKC: Most parking on campus is controlled using gates and permits. Additionally, high-demand time periods for PnR at UMKC would be opposite those of existing demand from staff, faculty, and students. No major problems are anticipated at UMKC. In fact, there may be opportunity in partnering with UMKC as part of the parking strategy for the Streetcar Main Street extension. Nearby UMKC neighborhoods could attract on-street parking and may create problems. Some concerns have been expressed about potential PNR use at the Plaza Library Branch's free parking garage; the distance between the garage and the proposed station at 51st Street/Brookside Boulevard, coupled with the need to cross Brookside Boulevard to access the garage, reduces the potential for a problem.

STOPS Forecast Constrained for Supply & Walk Distance

While STOPS forecasts a theoretical demand for PnR, the model does not account for supply. To incorporate supply-related effects, the STOPS forecasts were constrained based on parking availability and walk distance between available parking and the proposed streetcar stop locations.

The standard for transit walk access is ¼ miles, about 1,300 feet. However, research shows that about 15% to 25% of transit users are willing to walk this distance. After about 300 feet the percentage of transit users willing to walk begins to decline significantly². Other research concluded that PnR users are not willing to walk more than 1,000 feet.³

Applying this experience to the forecasted streetcar extension PnR, along with the availability of suitable parking near the stops, a constrained estimate of PnR was prepared. The table below shows the STOPS forecast of PnR and the constrained estimates.

¹ The 2017 On-Board Rider Survey showed that current streetcar users walk an average of 1/10 of a mile (just over 500 feet) to access the streetcar. There are few, if any, parking garages on the Plaza within this distance to the proposed Plaza streetcar station.

² Transit Quality of Service Manual, TCRP

³ Exploring the Walking Tolerance of Transitway Users, Jason Cao Humphrey School of Public Affairs University of Minnesota September 2017

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Exhibit 5: Weekday Average STOPS PnR Forecasts and Constrained Estimates

Stop Location	Stop Ridership	STOPS PnR Forecast	Constrained Estimate	Notes
River Market	1,490	110	110	No constraints applied; supply is adequate, distance is short, and this forecast is in-line with current PnR in the River Market.
Union Station	1,275	150	150	No constraints applied; supply is adequate, distance is perceived to be convenient, and this forecast is in-line with current PnR.
27th Street	875	100	25	Available parking will be west of Main Street; research suggests 25% of riders will be willing to PnR from that distance.
31 st Street	635	35	10	Linwood shopping center parking is approximately 1/3 of a mile distance; research suggests 25% of riders will be willing to PnR from that distance.
Armour Blvd	870	95	55	Parking inventory showed limited parking to the east and closer parking to the west; research suggests 55% of riders will be willing to PnR from that distance.
39 th Street	705	50	25	Limited availability of nearby and on-street parking; constraint applied to allow 55% of PnR demand.
43 rd Street	370	85	45	Limited availability of nearby and on-street parking; constraint applied to allow 55% of PnR demand.
45 th Street	520	15	0	Almost no available nearby parking; constrained to not allow PnR at 45 th Street.
Plaza	870	200	30	Large supply of free parking, but relatively long walk distance to station; constrained to 15% of demand based on empirical research.
UMKC	460	50	50	No constraints applied; supply is adequate, and distance is short.

Source: STOPS forecasts constrained by parking availability and walk distance to stop

Based on the constrained estimate, the forecasted PnR usage would be reduced substantially at the Midtown stops. The greatest potential for parking impacts is at the Armour Boulevard and 43rd Street stops. The PnR estimate for the Plaza stop would also be reduced substantially because the nearest Plaza parking structure is about ¼-mile walk from the Plaza streetcar stop.

Summary of Potential Parking Issues

The results presented in this memo indicate that parking is not anticipated to be a major issue along most of the Extension, particularly during weekdays. The areas where concerns are most likely to evolve include:

- Nearby residential neighborhoods (Armour Boulevard, 43rd Street),
- Small commercial uncontrolled lots (31st Street, Armour Boulevard, 39th Street, and 43rd Street), and
- All stations during large events.