

Lawrence Route and Schedule Design for Coordinated Transportation



Olsson Associates and Bourne Transit were tasked to create a coordinate transit implementation plan for the *Lawrence Route and Schedule Design for Coordinated Transportation plan*. The implementation plan is to be broken into 2 parts. Phase III part 1 will be implemented in August 2009, Phase III part 2 will be implemented in August 2010. Olsson Associates and Bourne Transit are making six initial recommendations for August 2009 implementation. These recommendations are:

- Produce one coordinated map and timetable brochure, with increased timepoints.
- Use one Information Hotline call number
- Create a new, coordinated route #11, replacing City Route #8 KU / South Iowa / Downtown, KUOW Route #24 31st & Iowa, and KUOW Route #25 Downtown
- Modify the alignment of KUOW Route #26 25th & Melrose
- Interline City Route #4 North Lawrence / Downtown and City Route #3 Iowa & Lakeview / Downtown, and assign smaller vehicles
- Interline City Route #1 Prairie Park Nature Center / Downtown and City Route #2 HINU / Downtown, and explore assigning smaller vehicles

While these recommendations may appear minor in nature, they were in fact created with an eye towards an August 2010 system plan, and as such significant route changes that might be changed again after only a year were avoided. The one major route alignment change is a new coordinated route that combines two university routes and one city route, and is envisioned to be a major spine for an August 2010 transit system. Implementation of these recommendations will increase coordination between the two transit entities, and enable further coordination to be successfully implemented in August 2010. The recommendations are described below.

Recommendation Overview

Produce a coordinated map and timetable brochure

The first recommendation is already being implemented. It was felt necessary to include this as a formal recommendation. The overall purpose of the study is to increase coordination and create a seamless user experience when moving between the two transit entities. Currently valid city bus passes or current KU Cards are accepted on both systems, and the two entities serve many of the same locations. Additionally both entities currently place map and timetable brochures at the same locations throughout the KU campus and Lawrence locations (see Figure 1). However, the current lack of a joint map and timetable brochure presents difficulties to users wanting to access both systems, and increases the perception of two separate entities and services. A coordinated map and timetable brochure will ease customer's ability to transfer between the two systems by allowing them to see KU on Wheels routes and City of Lawrence routes on the same map, as well as the corresponding timetables. A coordinated map and timetable brochure will increase the public perception that the two agencies are increasing their coordination. In addition, it is recommended to include the K10 route and schedule on the coordinated map and timetable.

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The coordinated map and timetable brochure should be the main reference for customers of both entities. It is not recommended that either entity produce separate maps and timetables, except for unique services such as KU On Wheel's late night "SafeBus" service, as separate maps will increase customer confusion and degrade the perception of a coordinated service. KU On Wheels typically updates its schedule and map brochures one to three times per year to reflect operational changes, and differences in summer service. Additionally, the heavy passenger loads experienced by implementation of universal access on KU On Wheel's routes in August 2008 necessitated schedule changes. Passenger loads typically increase in the 2nd year following a universal access policy, meaning that KU on Wheels might have to modify schedules again next year to reflect operational challenges. Lawrence Transit has typically experienced longer timeframes between schedule and map brochure changes. When not experiencing significant operational changes, it is recommended to limit printing maps two times a year, with a KU On Wheels supplement inserted during summer service periods.



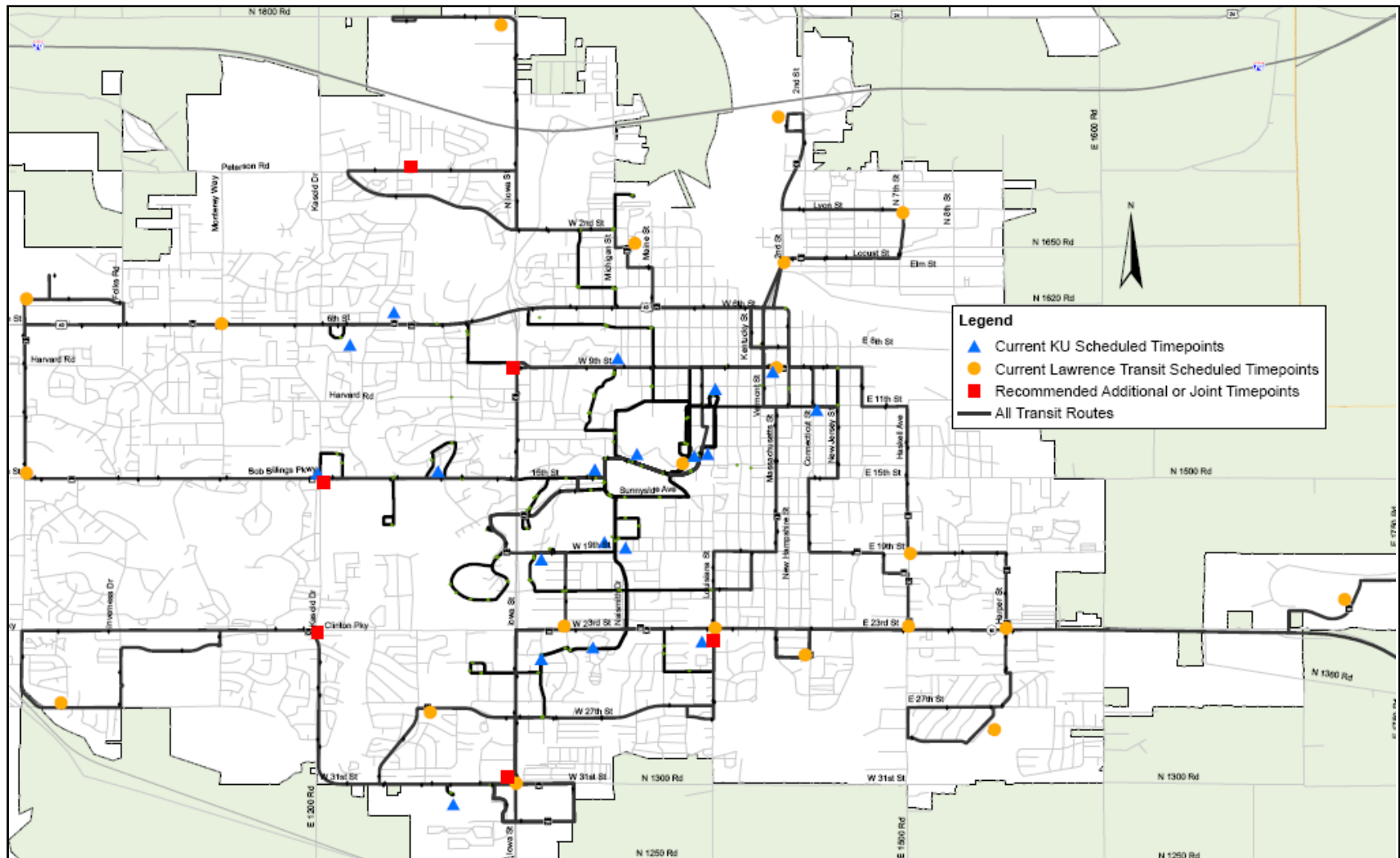
Figure 1: KU On Wheels brochures and Lawrence Transit brochures distributed side-by-side

It is recommended to place additional timepoints on the coordinated map and timetable brochure than what is on each agency's current timetables. KU On Wheels current schedule generally only references inbound timepoints making it difficult for off-campus passengers to catch out-bound buses or make connections with Lawrence Transit routes. A comment in the winter 2008 survey recommended the route #5 schedules have a timetable reference for Clinton Parkway and Kasold Dr. In addition, there are several areas that would be better served by placing timepoints including Peterson Rd and Arrowhead Dr. Besides these opportunities for additional passenger information, an effort should be made to coordinate joint timepoint locations on the recommended joint schedule. The initial recommended joint timetable locations are 9th St. and Iowa St. for #6 and #28; Bob Billings Parkway and Kasold Dr. for #6 and #27; Checkers (replacing "The Malls" in the current #23 schedule) for #5, #7, and #23; and 31st St. and Iowa St. for #5, #7, and #5. It is realized that there are specific constraints for putting additional timepoints on a coordinated map and schedule brochure, however, the common vocabulary referencing the coordinated timetable locations will make it easier for passengers to transfer from one system to another, even if many of the route transfer opportunities between the two systems remain untimed. Figure 2 displays the current timepoint locations listed in the Lawrence Transit and KU On Wheels schedules. The red squares denote recommended additional / coordinated timepoint locations to be listed in the recommended coordinated map and schedule. These are recommended joint timepoint locations that are not listed on the current schedules.

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Figure 2: Current KU and Lawrence Transit Scheduled Time Point locations, and Recommended / Joint Timepoints locations



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Use one informational hotline number

Currently, even though both services are maintained by one service provider, Lawrence Transit and KU On Wheels maintain separate information hotline numbers. The number listed on Lawrence Transit's current map and brochure is directed to the service provider. KU On Wheel's number is directed to the KU on Wheels office. Similar to separate schedules, maintaining separate informational hotline numbers increases the perception of inefficiency and two uncoordinated entities, while producing a varied customer service experience depending on which system is being accessed. The move should be made to begin publicizing only one number, with a future goal of phasing out the alternative number. Until that time, both entities should maintain and readily distribute current information, including route alignments and schedule information, on all transit alternatives in Lawrence allowing riders to easily obtain either system's information, regardless of what agency is called.

Create a new route #11, replacing route City Route #8 KU / South Iowa / Downtown, KUOW Route #24 31st & Iowa, KUOW Route #25 Downtown

Much of the public comment heard during the week of February 9th indicated frustrations in the downtown-KU-south Iowa connection. The *City Route #8 KU / South Iowa / Downtown* currently serves this area six days a week until approximately 8:00 p.m., but at only 80 minute intervals. *KUOW Route #24 31st & Iowa* currently provides a connection between The Reserves apartment on 31st St. to KU every 30 minutes, but doesn't run past 6:00 p.m. and does not run on weekends or KU breaks. Similarly *KUOW Route #25 Downtown*, which is interlined with *KUOW Route #26 25th & Melrose*, connects downtown Lawrence to KU every 30 minutes, but also does not operate past 6:00 p.m. or on weekends and KU breaks. While there are strong connections between downtown and KU, a trip between downtown and retail on south Iowa St. through the KU campus requires either an untimed transfer on campus within the KU service span, or experiencing 80 minute frequencies using the *City Route #8 KU / South Iowa / Downtown*. This arrangement prevented populations living near campus from relying on the transit system during KU break periods, and frustrated City riders in several comments in the winter 2008 survey.

A new route #11 is proposed that replaces the *City Route #8 KU / South Iowa / Downtown*, *KUOW Route #24 31st & Iowa*, and *KUOW Route #25 Downtown*. Route #11 would provide a strong connection between downtown Lawrence, the KU campus, high density apartment areas, and retail locations on south Iowa street. This service would generally follow year-round 30 minute service frequencies through the day, but would be 40 minute frequencies in off-peak hours. Figure 4 displays the alignment.

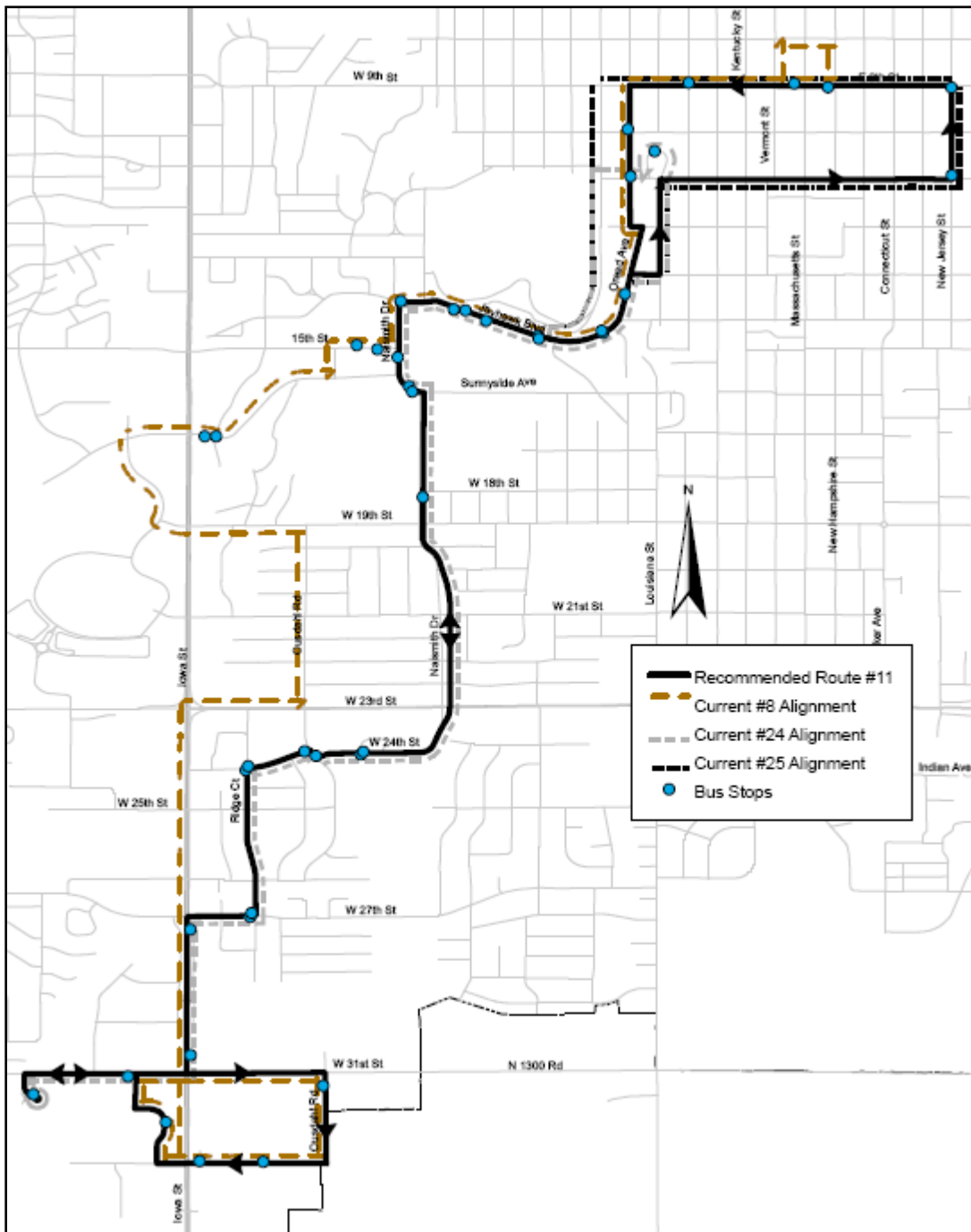


Figure 3. #8 Bus on KU Campus

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Figure 4: Recommended Route #11 replaces City Route #8 KU / South Iowa / Downtown, KUOW Route #24 31st & Iowa, and KUOW Route #25 Downtown



Serving downtown, the route follows the current KUOW *Route #25 Downtown* alignment serving population areas on 11th St, New Jersey St., 9th St., and Indiana St. to the KU campus. On campus the route begins to follow much of the KUOW *Route #24 31st & Iowa* route, provide service along Naismith Dr, 24th St, Ridge Ct, 27th St, and Iowa. At Iowa and 31st St., the route deviates from the current KUOW *Route #24 31st & Iowa*

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alignment and beings a one-way south Iowa St. retail loop, similar to the *City Route #8 KU / South Iowa / Downtown* alignment. The alignment turns left on 31st to Ousdahl where it turns right and proceeds to follow 33rd St. and Nieder providing a direct connection to Wal-Mart, Kohls, JC Penny, and Target. At Nieder and 31st the route proceeds left to serve The Reserves apartment complex, after which, it makes an inbound trip bypassing the retail loop.

The retail loop in the route #11 alignment does serve the new student-orientated apartment complex, The Exchange, currently being built on 31st and Iowa. It is realized that the new student population accessing route #11 from The Exchange would cause capacity issues since the current KUOW *Route #24 31st & Iowa* already serves the dense population centers at The Reserves, Campus Court at Naismith, and Naismith/Oliver Hall. Serving this area was felt necessary though to maintain the connection that the Lawrence Transit currently provides from downtown to the retail surrounding 33rd St. and Iowa St. The alternative, bypass serving Ousdahl St. and running service only on Iowa St. and Nieder St adjacent to the Target store parking lot, creates a barrier by requiring shoppers to cross six-lanes of Iowa St. and navigating landscape berms and large parking lots to access shopping on the west side of Iowa St. The recommended retail loop, which by default serves The Exchange, is necessary for this route to truly serve both KU On Wheel purposes and Lawrence Transit purposes.

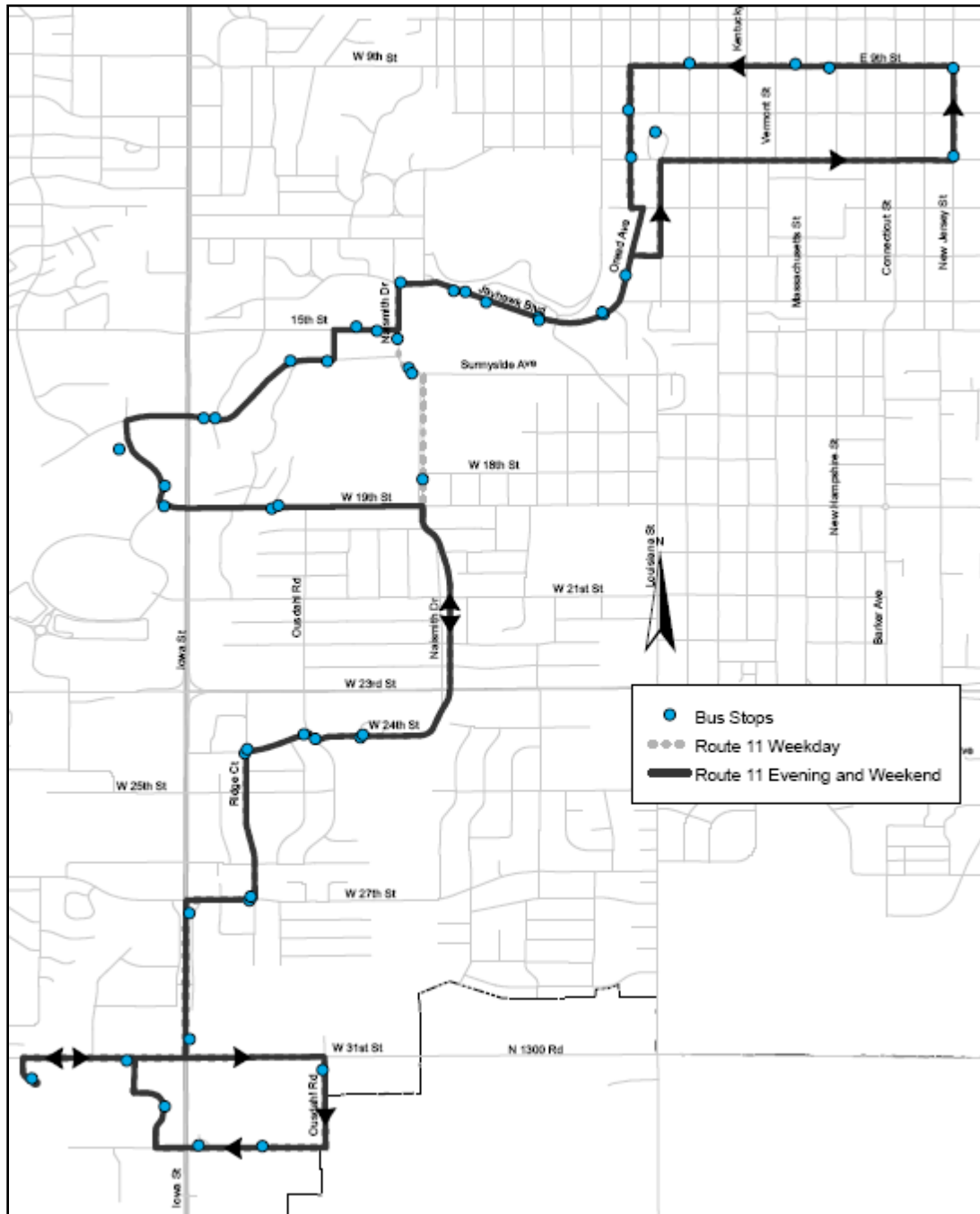
Route #11 would provide an opportunity for the Lawrence Transit and KU On Wheels to operate a single route for a year with truly coordinated service that successfully serves both entities missions while eliminating duplicated service between routes *City Route #8 KU / South Iowa / Downtown*, *KUOW Route #24 31st & Iowa*, and *KUOW Route #25 Downtown*. Successful implementation of this fully coordinated route would be a precursor test for a more fully coordinated transit system in August 2010. Costs would be allocated between KU On Wheels and Lawrence Transit based on each entity's service span. KU On Wheels would pay for the route during the KU On Wheels service hours of approximately 7:00 a.m. to 5:00 p.m. while KU is in session, Lawrence Transit would pay for the route during evening and Saturday service, and on breaks when KU is not in session. This arrangement is the heart of coordinating transit service between the two agencies, as routes lose ownership by only one agency, and instead are "owned" by both agencies.

Route 11's alignment is recommended to change slightly on the weekend and evenings. Instead of following Naismith Dr. through the KU campus, the route will proceed on 15th, Burdick Dr., and Irving Hill Rd. to access the student dormitory on Daisy Hill. It follows 19th St. to Naismith Dr. and proceeds south matching the weekday alignment. This removes weekend service along Naismith Dr. from 15th St. to 19th St. The rest of the alignment is not changed. This slight alignment shift will provide an evening and weekend downtown – south Iowa connection for students living in the dormitories. Figure 5 displays the weekend and evening alignment.

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Figure 5: Route #11 Evening and Weekend Alignment



A detailed comparison of revenue hours required for the current route #8 and the proposed route #11 is shown in Table 1.



Table 1 – Revenue Hour Comparison

| Route 8 | Rev-hrs | Days | Year Rev Hrs | | | |
|------------------------------------|---------|---------|--------------|------------|------|----------------|
| 6:13 am to 8:00 pm | 13.8 | 308 | 4250.4 | | | |
| Total | | | | | | |
| Proposed Route 11 | hdwy | Start | End | Rev-Hr/Day | Days | Rev-hr |
| Service when KUOW does not operate | | | | | | |
| Summer | 40 | 7:00 am | 5:40 pm | 21.33 | 67 | 1429.11 |
| Winter Break | 40 | 7:00 am | 5:40 pm | 21.33 | 13 | 277.29 |
| Spring Break | 40 | 7:00 am | 5:40 pm | 21.33 | 5 | 106.65 |
| Saturdays | 40 | 8:00 am | 7:40 pm | 22.33 | 57 | 1272.8 |
| Service at all times | | | | | | |
| All wkdy early eve | 80 | 5:40 pm | 8:20 pm | 2.67 | 255 | 680.85 |
| All wkdy early AM | 80 | 5:40 am | 7:00 am | 1.33 | 255 | 339.15 |
| Total | | | | | | 4105.85 |

As shown in the Table, the proposed route #11 would require 144.55 fewer revenue hours than the current route *City Route #8 KU / South Iowa / Downtown*. This would equate to an annual savings of approximately \$4,600.

Finally, it should be acknowledged that capacity issues could arise at certain peak periods when University classes are in session. These could be addressed by adding 3 morning trippers and 3 afternoon trippers. This would require approximately 500 revenue hours annually.

Modify the alignment of route KUOW Route #26 25th & Melrose

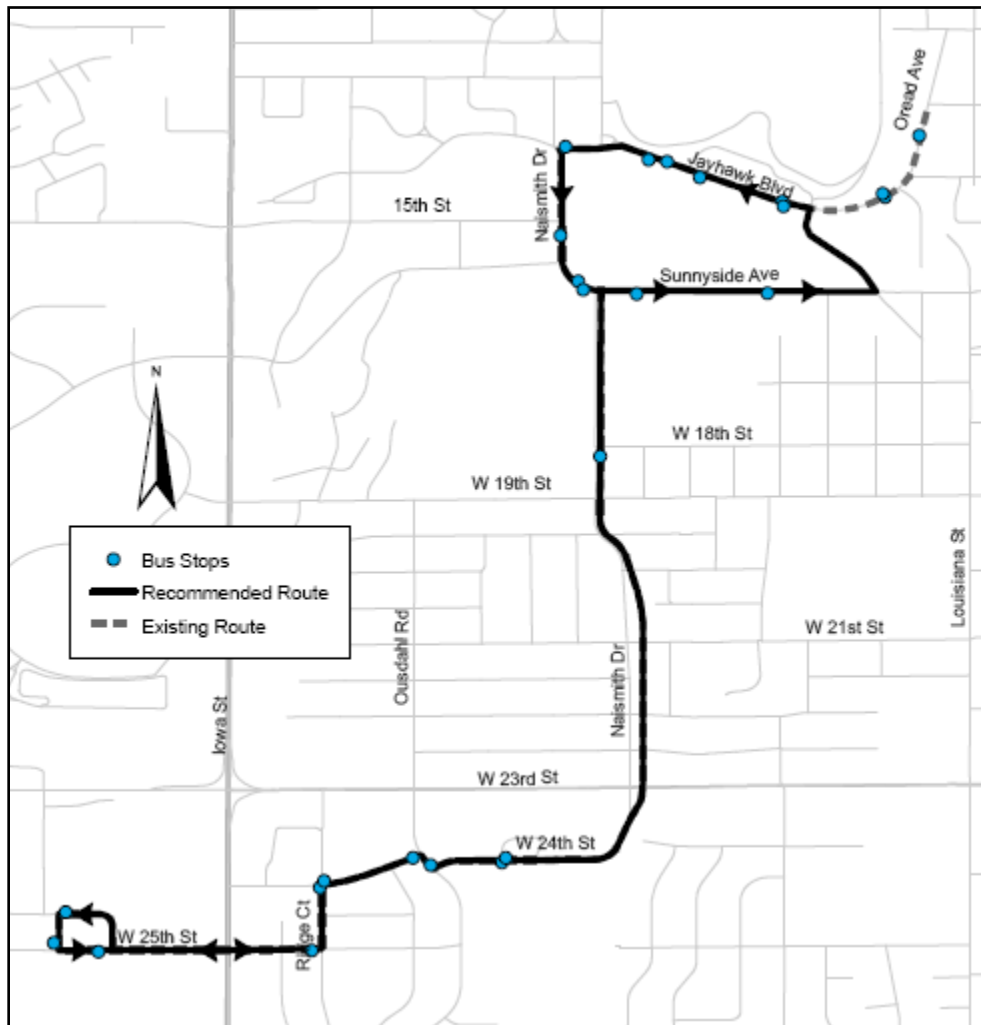
The new route #11 would require alignment changes to KUOW *Route #26 25th & Melrose* for two reasons. First, route #26 is currently interlined with KUOW *Route #25 Downtown*. Route #25 currently serves downtown but is recommended to be replaced with route #11. Secondly, route #11 will require three buses to operate 30 minute frequencies on the route, an increase of one bus from the current route #24 alignment. To accomplish this, a bus will be reassigned from route #26 to route #11. 30 minute frequencies on route #26 will be maintained by shortening the alignment. Currently the route travels the entire length of Jayhawk Blvd and Oread Ave. to interline with KUOW *Route #25 Downtown*. The new alignment will create a one-way, counter-clockwise loop consisting of Sunnyside Ave, Sunflower Rd, Jayhawk Blvd, and Naismith Dr, before continuing the outbound trip along Naismith Dr. The counterclockwise

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movement is important to maintain the north side of Jayhawk Blvd as the passenger waiting location for southbound travel. The southern portion of the current KUOW Route #26 25th & Melrose alignment will remain unchanged. Figure 6 displays the new alignment.

Figure 6: KUOW Route #26 25th & Melrose New and Existing Alignment



Interline Route #3 and Route #4 together, and Interline Route# 1 and Route #2 together

Currently City Route #3 Iowa & Lakeview / Downtown and City Route #2 HINU / Downtown are interlined together, and City Route #1 Prairie Park Nature Center / Downtown and City Route #4 North Lawrence / Downtown are interlined together (interlining occurs when a vehicles finishes the inbound trip of one route, and begins the outbound trip of a separate route). It is recommended to break the current connections and interline route #3 and route #4 instead. Ridership data is combined for each interlined route pair and cannot be assigned to a specific route within a pair, however conversations with Lawrence Transit staff and MV drivers have indicated that Route #3

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Iowa & Lakeview / Downtown and *Route #4 North Lawrence / Downtown* have fewer passengers than *Route #1 Prairie Park Nature Center / Downtown* and *Route #2 HINU / Downtown*, suggesting that route #3 and route #4 are strong candidates for service changes in August 2010 when more specific ridership data has been collected. Interlining route #3 and route #4 will make it easier to make any service changes to these areas in 2010 without affecting the rest of the system. Revenue hours for the two new interlined pairs will remain unchanged in August 2009.

The rearranging of interlined pairs will likely have little impact on ridership numbers for August 2009. Separated ridership numbers for each portion of interlined routes were unable to be collected in the short time of this phase, however current ridership numbers and conversations with bus drivers and Lawrence Transit administrative staff suggests with relative certainty that the new interlined pair of #3 and #4 can be served by cutaway vehicles. Analysis of ridership numbers suggests that #1 and #2 routes would also be suited for the use of cutaway vehicles. More specific ridership data will need to be collected before the tentative recommendation regarding #1 and #2 could be more fully recommended, however several field observations noted that cutaway vehicles are currently being used for many of the trips on #2 and #3, and #1 and #4 interlined routes.