Executive Summary: I-35 Fixed Guideway Phased Implementation Plan

Background

The I-35 Corridor has been the historical connection between the downtown Kansas City Central Business District (CBD) and the Johnson County suburbs. The I-35 Corridor has local, regional, and national significance as a primary route for automobile, truck, and rail travel. As the primary connection between the Kansas City CBD and Johnson County, the corridor serves people commuting to and from work, and people traveling to other destinations within and outside of the corridor. This area is home to national corporate offices and industrial areas, along with a variety of retail shops, residential housing, senior citizen housing, schools, and cultural and historic districts.

The I-35 Corridor continues to experience an increase in transportation challenges including increased traffic congestion and growth in vehicle miles traveled (VMT) due to population and employment growth, and rapid new development. Concerns about the corridor are high, as these existing and potential problems could affect the vitality of the local communities and inhibit economic development.

Leadership in Johnson County is committed to improving transit in the I-35 Corridor. This commitment is evident by participation in various studies during the past decade and efforts at the state and federal levels to secure funding for a major transit investment in this corridor. The I-35 Fixed Guideway Alternatives Analysis completed in FY 2007 concluded that Bus Rapid Transit (BRT) was the preferred alternative for transit in the I-35 Corridor. In FY 2008, Johnson County Transit (JCT) staff began a preliminary study of the implementation considerations for an initial phase of the BRT system. Since September 2008, JCT staff has been working with the Kansas Department of Transportation (KDOT), the Mid America Regional Council (MARC), and a consultant team to develop an implementation plan.

Project Purpose and Approach

The purpose of the project is to:

- Prepare a BRT service plan identifying routes, service levels, and stops;
- Further evaluate the Bus on Shoulder (BOS) operating strategy recommended in the Alternatives Analysis;
- Update capital and operating cost estimates; and
- Recommend a phasing plan for implementation.

The primary tasks in the project included the preparation of a service plan for BRT service on I-35 and an evaluation of the Bus on Shoulder operating strategy.

The I-35 BRT service plan was refined and two alternative approaches were developed, Alternative 1 with four BRT routes, and Alternative 2 with five routes. The routes in both alternatives would serve the south Overland Park and Olathe areas. Subsequent BRT phases will include service in other communities such as Lenexa and Shawnee.

The shoulders along the I-35 corridor were evaluated to determine their suitability for Bus on Shoulder operations. The evaluation was performed from two perspectives: 1) the physical characteristics of the shoulder and 2) traffic operations. The evaluation concluded that, in general, the shoulders along I-35 are suitable for BOS use; however, there are a few locations that, for a variety of reasons, do not lend themselves to this type of operation.

KDOT was involved throughout the project. The Project Team met with KDOT officials and managers to explain the BRT/BOS concept, and present preliminary conclusions regarding the BOS evaluation and the traffic analysis. The Project Team also worked with KDOT and the Kansas Highway Patrol on various institutional and legal issues associated with the bus use of shoulders and enforcement and safety concerns.

The project included a preliminary evaluation of new park and ride lot locations. The concepts call for larger lots with passenger amenities such as passenger shelters and electronic information signs.

Analysis and Conclusions Regarding Bus Rapid Transit Implementation

- The service, capital, and operating plans for BRT serving portions of southern Johnson County are consistent with direction provided by the Transportation Council based on the conclusions of the I-35 Fixed Guideway Alternatives Analysis and as reflected in JCT's Five-Year Strategic Plan.
- Figure ES-1 on the following page is a summary of the service enhancements that are included in the BRT service and capital plan, for both Phase I and a later enhanced phase.
- Figures ES-2 and ES-3 show the BRT routing plan for Alternatives 1 and 2.
- The number of bus trips in the study area would increase from the current 22 daily bus trips to 56 with Alternative 1 and 58 with Alternative 2. Table ES-1 shows the service plan assumptions.

Table ES-1. BRT Service Plan

Route	Alternative 1		Alternative 2	
	Daily Bus Trips	Headway	Daily Bus Trips	Headway
Olathe West	10	30	10	30
Olathe East	18	15	18	15
South OP	18	15	10	30
Route L	10	30	10	30
119th Street	N/A	N/A	10	30
Total	56		58	

The service period would be two to 2 ½ hours in both the morning and evening peak period. Midday service at a minimal level should be considered during the next phase.

- Ridership is estimated to increase by approximately 1,100 to 1,200 daily passenger trips, about three times the current ridership in the study area. Current ridership on the three routes serving the study area is 600 per day.

Figure ES-1. I-35 Bus Rapid Transit Service Concept

System Element	Initial Phase	Second Phase
Running Ways		
Guideway and Priority Measures	Operation in mixed traffic on arterial streets with some transit priority such as signal priority. Use of bus on shoulder operations on freeway segments.	Operation in mixed traffic on arterial streets with additional transit priority measures such as queue jumpers. Use of bus on shoulder operations or HOV lanes or separate roadways where available.
Service Plan		
Service Span	Peak period service with limited midday and evening service.	Peak period service with limited midday and evening service.
Service Frequency	15 - 30 minute peak period service frequency, limited off peak service.	10 - 15 minute peak period service frequency, 30 - 60 minute off peak.
Stop Spacing	One or two stops at park & ride lots.	One or two stops at park & ride lots.
Operations	Operated as premium service with technology support; higher performance standards.	Operated as premium service with technology support; higher performance standards.
Facilities and Equipment		
Stations	Higher level amenities at all stops; distinctive shelters and markers. Fully developed park & ride lots and transit centers. Upgraded user information, including electronic message signs	Higher level amenities at all stops; distinctive shelters and markers. Fully developed park & ride lots and transit centers. Upgraded user information, including electronic message signs.
Vehicles	Distinctive vehicles with higher level passenger amenities and greater capacity.	Distinctive vehicles with higher level passenger amenities and greater capacity.
Technology		
Control	Use of AVL/CAD and electronic user information systems.	Use of AVL/CAD and electronic user information systems.
Fare Collection	Standard fare collection, moving towards off board fare collection.	Off board fare collection with TVMs.
Branding/Marketing		
Branding	Branding to create identity.	Branding to create identity.
Marketing	Use of advanced techniques, including electronic user information.	Use of advanced techniques, including electronic user information.

Figure ES-1. I-35 BRT Routing Plan – Alternative 1

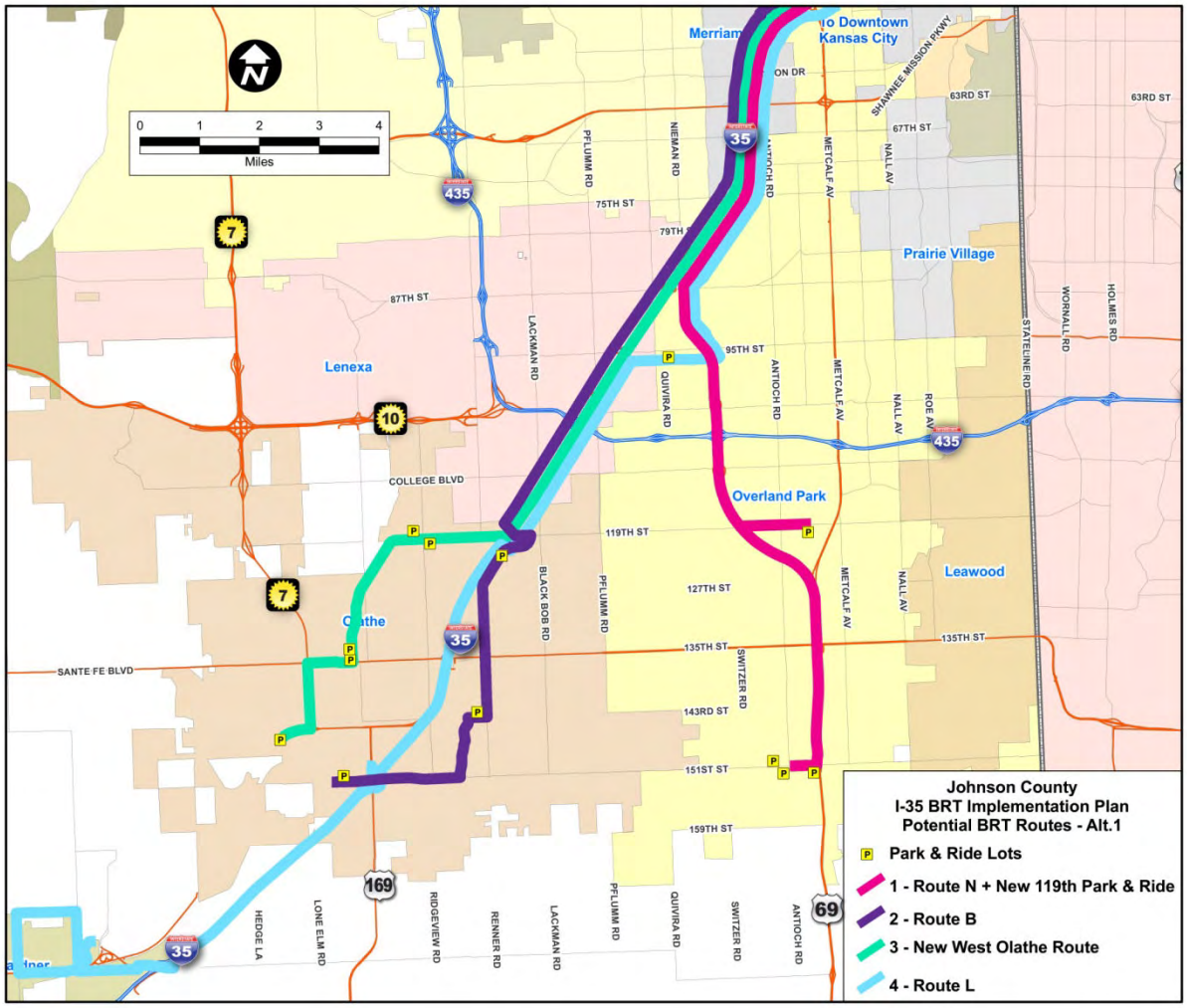
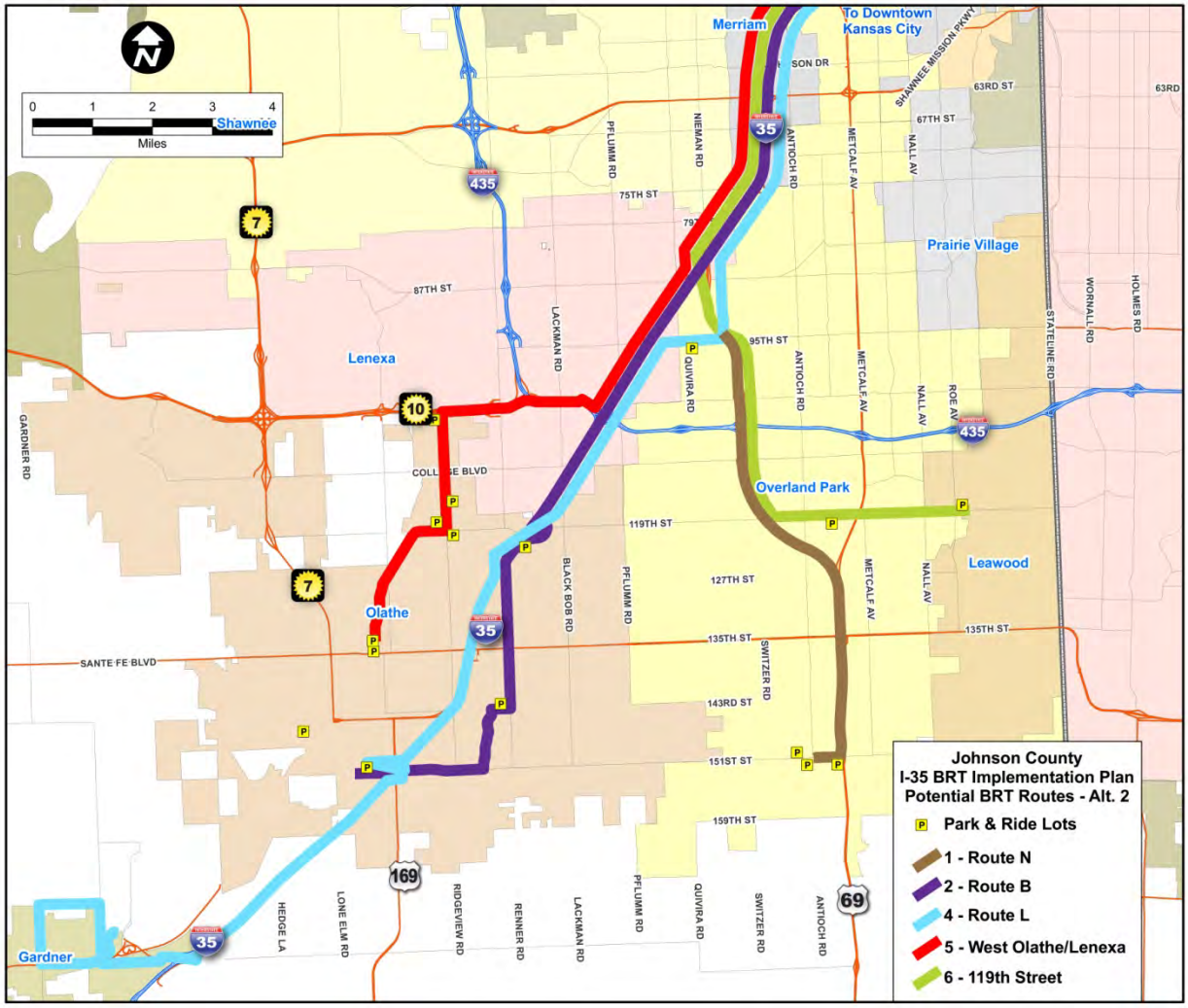


Figure ES-2. I-35 BRT Routing Plan – Alternative 2



- The implementation of BRT services can be phased in terms of geographic coverage and the level of BRT attributes. The Phase I BRT service and capital plan represents a significant enhancement in transit service in a key market area at a relatively low cost.
- Subsequent phases will include additional routes and further service enhancements will be implemented as funding allows.

Analysis and Conclusions Regarding Bus on Shoulder Implementation

Use of the Bus on Shoulder (BOS) operating strategy would significantly enhance the BRT service operating on I-35. The benefits include an improvement in schedule reliability, a significant travel time savings on "normal" days, and a greater opportunity for travel time savings when I-35 traffic is slowed due to incidents or weather.

- I-35 shoulders can support BOS along most of the length of the corridor in terms of physical characteristics, such as width, depth of construction, and absence of barriers.
- BOS can be used safely and effectively on I-35 based on traffic engineering simulation studies and the experience of other cities with BOS. The benefit to JCT transit operations is travel time savings of 15 to 20 percent and a significant improvement in reliability.
- Preparing the shoulders for BOS would be relatively inexpensive.
- The implementation period would be relatively short.

Analysis and Conclusions Regarding Costs and Financing

Capital costs were estimated based on the information developed for the project. The capital cost estimates are shown in the Table ES-2.

Table ES-2. BRT Capital Costs Estimates

Item	Alternative 1	Alternative 2
Buses	$10,080,000	$11,340,000
Stations	$1,760,000	$2,200,000
Park and Ride Lots	$1,600,000	$2,000,000
Shoulder Preparation	$2,360,000	$2,360,000
Other	$788,000	$985,000
Sub-total	$16,588,000	$18,885,000
Soft Costs	$1,046,000	$1,189,000
TOTAL	$17,634,000	$20,074,000

Operating costs and revenues were estimated for Alternatives 1 and 2 and compared with JCT's existing cost in the service area as shown in Table ES-3.

Table ES-3. BRT Operating Cost and Revenue Estimates

	Existing Service	BRT Alternative 1	BRT Alternative 2
Total Cost	$759,000	$1,659,000	$1,680,000
Fare Revenue	$165,000	$470,000	$504,000
Operating Deficit	$594,000	$1,189,000	$1,176,000

Thus, the BRT service plan is estimated to increase the operating deficit by $704,000 for Alternative 1 and $764,000 for Alternative 2.

FTA capital funding is available to cover up to 80 percent of the capital cost of the service. The non-FTA share of capital costs and the operating cost would have to be covered by local sources either through the County or the State. Table ES-4 summarizes the financing requirements.

Table ES-4. BRT Financing Requirements

	Alternative 1	Alternative 2
Federal Share of Capital Cost	$14,107,200	$16,059,200
Local Share of Capital Cost	$3,526,800	$4,014,800
Additional Annual Operating Cost	$595,000	$582,000

Next Steps to Implementation

The Johnson County Transportation Council received a project update at the June 9, 2009 meeting and took several actions. The following is a summary of the Transportation Council's actions.

- The Transportation Council approved the BRT service and capital plans for improved transit service in the I-35 Corridor as presented during the meeting. The decision between Alternative 1 and Alternative 2 will be made during the next phase of the implementation plan.
- The Transportation Council directed staff to proceed with next steps which include:
    - Working with FTA and KDOT for required capital funding.
    - Continue to work with KDOT and other agencies to secure the necessary agreements and legislation changes to permit Bus on Shoulder operations.
- The Transportation Council directed staff to prepare for the next phase of the implementation plan to include detailed transit service planning and preliminary engineering.

The Phase I project included the preparation of a detailed implementation plan that listed next steps and tasks required for implementation. A project schedule was prepared to show the timing, duration, and sequencing of tasks required for implementation of the I-35 BRT service.

If work on the next phase starts in August 2009, the new service could start in the first quarter of 2012. Vehicle procurement is the task with the longest lead time and is therefore on the project's critical path.

In general the project implementation will proceed through three distinct phases:

Program Development Phase – August 2009 through June 2010. This phase includes additional advanced service planning, addressing institutional and legal issues, and project financing. During this phase, conceptual planning for BOS and facilities will transition to preliminary design.

Design Phase – December 2009 through January 2011. The Design phase overlaps with the Program Development phase because conceptual design is included in both phases. The Design phase includes the conceptual, preliminary, and final design for the preparation of I-35 shoulders for BOS, stations, and park and ride lots.

Construction Phase – The Construction Phase includes the procurement and construction of the I-35 shoulders for BOS, stations, and park and ride lots. This final phase also includes the delivery and testing of buses and other tasks involved with project implementation.