



Technical Memorandum #4:

DEFINITION OF ALTERNATIVES

May 2006

Submitted to



Submitted by

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Submitted to
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I. INTRODUCTION

The purpose of this report is to define the transit options to be studied in this alternatives analysis. Technical Memorandum #3: Purpose and Need has defined the need for transit improvements in the Iowa Quad Cities. These needs are based on an analysis of current and future demographic and transportation information, and supplemented with feedback from various project stakeholders and the public. Along with these needs, the Study has identified goals and objectives under three general categories: Transportation and Mobility; Economic Opportunity and Investment; and Communities and Environment. The Purpose and Need for transit improvements in the Iowa Quad Cities and Study goals and objectives are summarized as follows:

A. Purpose and Need

Transportation and Mobility

Goal: Create transportation improvements that add people-carrying capacity as necessary, minimize operating costs and improve operating efficiency.

- 1. Provide an expanded range of transportation choices.*
- 2. Proposed improvements should augment the Quad Cities' transportation system and make public transit a more attractive option.*
- 3. Expand opportunities for all transit users to move freely to, through and within the Quad Cities.*
- 4. Proposed improvements should be fundable and affordable.*

This goal and its associated objectives will address the following transportation problems in the Quad Cities:

- Long transit travel times
With three transit providers serving the Quad Cities, traveling across the Mississippi River and across municipal lines always entails a transfer to another system. Transfers increase travel time and long travel times are a deterrent to increasing ridership. For example, based on current route schedules, while the travel time from Duck Creek Mall to the Belmont Campus of Scott Community College is only 10 to 15 minutes, traveling from Davenport to Scott Community College would easily double this trip time. In addition, some routes serve areas where there are no boardings or alightings, further increasing travel times and ultimately decreasing route efficiency. For example, survey data as well as interviews with staff and drivers indicated little to no activity along the downtown loop for CitiBus.
- Projected increase in roadway congestion
According to the *QC 2025 Long-Range Transportation Plan for the Quad City Area*, the mileage of roadway segments operating at or above their traffic capacities is expected to increase in 2025. For example, State Street/U.S. Highway 67 between Bettendorf and LeClaire will be congested in 2025. Similarly, I-80 and 53rd Street in Davenport will be

congested, along with East River Drive between the Arsenal Bridge and Jersey Ridge; West Locus between I-280 and Wisconsin Avenue; and most of Middle Road in Bettendorf between I-74 and I-80. Congestion also typically occurs at the Mississippi River crossings during peak travel periods. Increasing transit usage could reduce traffic volumes and congestion at some of these locations.

▪ Complex fare structure

While all three transit providers generally offer half-fare to senior, disabled and youth patrons, they charge three different prices for their services. The adult fare for fixed route service is \$0.60 for Bettendorf Transit, \$0.75 for CitiBus and \$0.80 for MetroLINK. The monthly QC PassPORT addresses this issue; however, although over 70 percent of survey respondents using Bettendorf Transit and CitiBus indicated their awareness of the monthly pass, only approximately 20 percent of the same respondents used it to pay for their bus fare. One reason for this may be that some patrons fear that they could not use the entire cash value of the pass within a month.

▪ Insufficient evening and weekend service

According to the transit user survey, over 80 percent of Bettendorf Transit respondents took the bus to work, school or other reasons that included work, and 66 percent of CitiBus respondents took the bus for the same reasons. Some transit patrons work non-traditional hours – they work shifts that begin or end after 5:30 PM or 6:00 PM, when Bettendorf Transit and CitiBus end their service. Other patrons would like to use the bus for social and recreational purposes after these hours. Under both circumstances, limited choices exist for these patrons – coordinate a ride with friends or family or take a taxi, which is expensive and scarce in the Quad Cities.

▪ Lack of bus stop amenities

The user survey also asked Bettendorf Transit and CitiBus patrons to rank various aspects of each system. In both surveys, the lowest rated category was the availability of benches, shelters and signage at bus stops. This issue detracts from patron comfort and security when using the system. For example, the transit hub at Duck Creek mall is in the middle of a parking lot. There is no apparent waiting area for patrons, little additional lighting or signs that indicate that this area of the mall is a significant transit facility, given connections between Bettendorf Transit and CitiBus.

▪ Patrons do not know where to get information

Riding the bus is daunting enough in an environment that is dominated by single-occupant vehicles. Not knowing where to get transit information, whether related to schedules, routes or fares would make riding the bus even a greater challenge. Having three transit providers in the Quad Cities can also contribute to the confusion. For example, if a trip requires a transfer to another transit system, does the patron call both transit providers for information? Another example is the low use of the QC PassPORT indicated in the December 2004 transit user survey. The monthly pass has a high potential for simplifying fare payment between different transit systems; however, some

survey respondents indicated that they did not know where to purchase one or for how long the pass is valid.

▪ Potential growth in transit patronage

The Bi-State Regional Commission's 2025 travel demand model indicate that access to transit would decrease in year 2025. The model (currently being updated to include a forecast year of 2035) estimates that in 1998, 38 percent of all trips had access to transit assuming a one-quarter mile walking distance. In 2025, this figure is expected to decrease to 31 percent of all trips. This decrease is attributed to declining household size and significant growth in areas that currently do not have access to transit service.

Economic Opportunity and Investment

Goal: Support investments in infrastructure, business and community that sustain the heart of the Quad Cities.

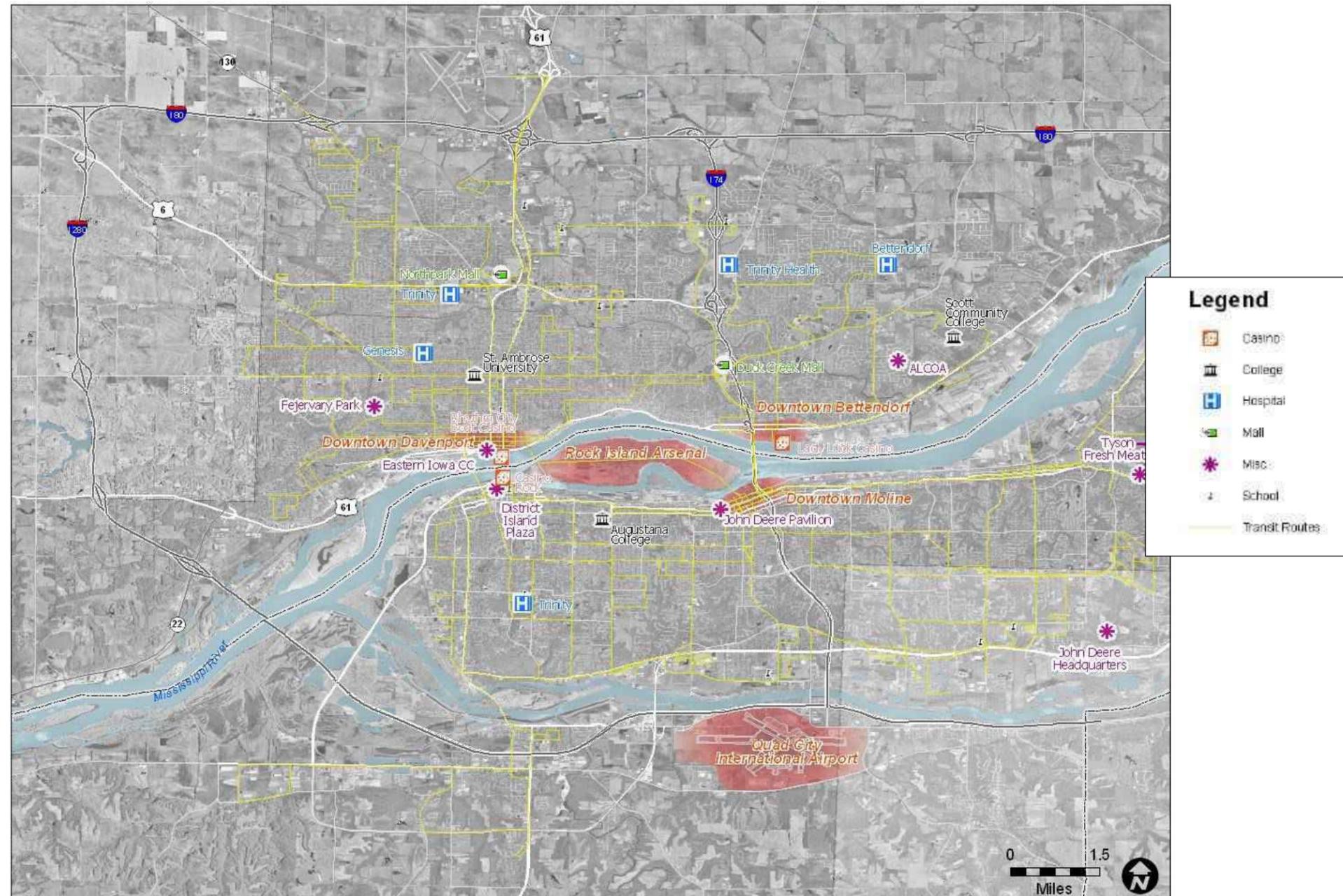
- 1. Promote a reliable transit system that supports an efficient, effective land use development pattern in major activity centers, minimizes parking demand and facilitates the highest and best use of adjacent properties.*
- 2. Provide employers with the confidence that their employees have reliable options to travel to and from work.*

This goal will address the following economic needs in the Iowa Quad Cities:

▪ Strong employment base

The Quad Cities are home to major employers, many of whom are national firms. They include Deere and Company, the Rock Island Arsenal, Genesis Health System, Trinity Regional Health System, Tyson Fresh Meats and Alcoa. (See Figure 1 and Table 1.) According to the Quad City Development Group, these six companies currently have over 26,000 employees. The current trend shows an aging population in the area. To sustain the area's economy, it is important to provide alternative means of transportation to and from work to attract and sustain employees. Presently, there are limitations to the current transit service that should be addressed to ensure businesses that their employees have reliable options to travel to and from work.

Figure 1
Select Activity Centers and Major Employers in the Quad Cities¹



¹ Source: Quad City Development Group.

Table 1
Selected Major Quad City Employers²

Company	Number of Employees (2004-2005)	Type of Business
Deere & Company	8,250	Manufacturing
Rock Island Arsenal ³	6,400	Defense manufacturing
Genesis Health System	4,730	Health care system
Trinity Regional Health System	2,650	Health care system
Tyson Fresh Meats	2,400	Food processing
Alcoa, Inc.	2,200	Manufacturing – aluminum sheet and plate
Kraft Foods/Oscar Meyer	1,500	Meat products
MidAmerican Energy Co.	1,230	Utility/energy delivery
APAC Customer Services, Inc.	950	Customer services
Exelon	700	Utility/energy delivery
Sears Manufacturing	600	Manufacturing – elevators, escalators, moving sidewalks
KONE, Inc.	600	Manufacturing – automobile seating
United Parcel Service	590	International and domestic package shipping
Von Maur	570	Retail headquarters and distribution center
Swiss Valley Farms	550	Dairy products
Thoms Proestler Co.	525	Food distribution
Bituminous Casualty Corp.	520	Insurance
Lee Enterprises	490	Publishing
Norcross Safety Products LLC	470	Manufacturing
Great Dane Trailers	450	Semi-trailers
Export Packaging	450	Packaging
Von Hoffman Inc.	445	Book manufacturing
Modern Woodmen of America	430	Fraternal insurance company
3M	420	Adhesives and specialty chemicals
Royal Neighbors of America	400	Insurance company

The Quad Cities also have a significant student population that educates and trains current and future workers. St. Ambrose University, a coeducational, liberal arts school located in Davenport, currently enrolls 3,500 students. St. Ambrose’s projected student enrollment will increase to 4,000 within the next decade. The Belmont Campus of the Scott Community College in Bettendorf enrolls 4,000 students. Students may take classes at the main campus in Bettendorf, at two locations in downtown Davenport, or at the campus located north of Davenport off of I-80.

² Source: Human Resources/Personnel Departments of Individual Companies, 2004, Quad Cities Development Group; Quad Cities Book of Lists, Quad City Times.

³ Rock Island Arsenal employees include military personnel, tenants and contractors.

- Reliable transportation options

A transit trip to the Rock Island Arsenal from downtown Davenport requires two transfers: from CitiBus Route 7 (Bridgeline) to MetroLINK Route 10 (Red Route) to MetroLINK Route 80 (Arsenal Route). Assuming a trip in the morning peak hour that originates from the Downtown GTC in Davenport, the total trip time is approximately one hour and 15 minutes. This travel time assumes that timely connections at the District and Centre Stations in Rock Island and Moline, respectively, are made. Morning service between Centre Station and the Arsenal is only from 5:45 AM to 8:00 AM. Afternoon service is from 2:45 PM to 4:45 PM. The total distance between the Davenport GTC and the Arsenal is approximately three miles from the west end of the island and six miles from the east of the island. Undoubtedly, this would be an easy trip to make by private vehicle, but onerous by bus. Given the number of persons employed by the Rock Island Arsenal, there could be a significant potential in additional transit patrons that are currently untapped because of existing limitations in transit service.

The Belmont Campus of Scott Community College (current enrollment of 4,000 students) in Bettendorf is another popular destination in the Quad Cities. Depending on the trip origin within Davenport, travel time to Scott Community College can take between 30 minutes and one hour. The boarding and alighting counts performed for this study along with focus group and driver and staff interviews identified this long travel time as a characteristic of the existing transit system that should be improved.

- Efficient land use development patterns

Transportation opportunities to cross the Mississippi River continue to be limited, as indicated in the *QC 2025 Long Range Transportation Plan* and *Quad Cities Metropolitan Area Mississippi River Crossing Study*. In the peak hour, traffic volumes on both the Arsenal and I-74 bridges exceeded their capacities. This condition is anticipated to continue in 2025 assuming no additional river crossing is constructed, and would continue to limit movement of employees and products between the two sides of the Quad Cities and beyond.

As the population in the area ages and employers see the need to draw human resources from the outlying areas of the Quad Cities, transit improvements such as park-and-ride lots and expanded bus service may be a way to transport employees from these areas.

Socioeconomic projections currently available from the Bi-State Regional Commission indicate that population and employment will continue to be concentrated in the existing core of Bettendorf and Davenport. While much of the growth is expected to occur in outlying areas of the two cities – generally northwards, including the Kimberly Road and 53rd Street corridors – the downtown cores will continue to have the highest densities of population and employment.

Communities and Environment

Goal: Facilitate the preservation and enhancement of neighborhoods in the Quad Cities.

- 1. Acknowledge the individual character and aspirations of each place served, and of the Quad Cities as a whole.*
- 2. Support regional goals for cleaner air and water, more efficient energy use, and a safer and healthier environment.*

This goal will address the following community and environmental needs in the Iowa Quad Cities:

- Preserve neighborhood character

Neighborhood preservation and continuity are key elements for sustaining community life. Transportation investments need to be planned, designed and ultimately operated to enhance the community they serve. Within the study area and within the corridors themselves, many natural and cultural assets can be found. For example, within the Brady Street and Harrison Street corridor in Davenport, one can find the Davenport City Hall, Palmer College, St. Ambrose University, Vander Veer Park and Junge Park/Duck Creek Park. These neighborhood assets should be protected and preserved from transportation projects and their impacts.

- Provide a healthier environment

A reliable and efficient transit system in the Iowa Quad Cities could stem the ever-increasing demand for additional roadways, parking facilities and fuel. Right-of-way and funds required for roadway construction could be limited to preserve and enhance neighborhoods in the Quad Cities. Demand for fuel could be decreased, reducing emissions and resulting in cleaner air and water and a healthier environment overall. Transit vehicles that use clean fuels such as clean diesel and electricity can further reduce air pollution and noise to enhance livability within the Iowa Quad cities.

Based on these transportation needs, this study has identified a universe of alternative transit improvements described in the following section.

II. DEFINITION OF INITIAL ALTERNATIVES

Analysis of existing and projected socioeconomic and transportation data, supplemented with public feedback, resulted in the definition of the initial set of alternatives for consideration in this transit study. The initial set of alternatives included the following transit options:

1. No Build Alternative
2. Baseline Alternative
3. Build Alternatives (e.g. commuter rail, light rail transit, bus rapid transit and personal rapid transit)

The transit alternatives analysis process, as defined by the Federal Transit Administration, requires that a wide array of transit options be considered in this study. This section of the document defines this range of alternatives as follows:

A. No Build Alternative

The No Build Alternative is defined as the transit system that currently exists in the Iowa Quad Cities. The No Build Alternative assumes that the exact same transit service and accompanying amenities that exist today would also exist in 2035. Figure 2 illustrates the existing fixed routes provided by Bettendorf Transit and Davenport CitiBus. The following is a brief description of Bettendorf Transit and Davenport CitiBus.

Figure 2
Existing Transit Routes in the Iowa Quad Cities



Bettendorf Transit

Bettendorf Transit operates five fixed routes. Service is generally available every one-half hour from Monday through Friday from 6:00 AM to 6:30 PM, and every hour on Saturday from 8:30 AM to 5:30 PM, except on major holidays. River Bend Transit, under contract with the City of Bettendorf, provides Saturday service as well as paratransit service. All routes meet at Duck Creek Mall in a pulse scheduling operation. All routes operate in a loop pattern, with vehicles traversing a route in either a clockwise or counterclockwise direction.

Table 2 presents a summary of Bettendorf Transit’s average daily operating statistics between July 2003 and June 2004.

**Table 2
 Bettendorf Transit Average Daily Operating Statistics – FY 2003-2004**

Route	One-Way Trips	Revenue Hours	Vehicles in Operation	Daily Riders	Riders/Revenue Hour
1 – Bridge	49	12.6	1	101	8.0
2 – North	49	12.6	1	94	7.5
3 – Riverfront	49	12.7	1	111	8.8
4 – Scott Community College	48	12.6	1	127	10.1
5 – 53 rd St/Northeast	48	12.1	1	36	3
System Total	243	62.7	5	470	8.6

Bettendorf Transit currently operates out of the City’s Public Works Facility, which has approximately 67,000 square feet, located at 4403 Devil’s Glen Road. Transit vehicles use one of the 10 maintenance bays at the facility. The facility was built in 1987 and is used to maintain the entire Bettendorf fleet of vehicles.

Bettendorf Transit has no significant passenger facilities except for bus stops and a presence at the Kimberly Road/Middle Road area.

Davenport CitiBus

Fifteen fixed routes operate in Davenport. Service is available from Monday through Friday from 5:30 AM to 6:00 PM, and on Saturday from 9:00 AM to 6:00 PM except on major holidays. On weekdays, three routes operate every one-half hour, two operate every 40 minutes and nine operate every hour. On Saturdays, routes have the same frequency as on weekdays. Routes 5B, 11 and the H.D.C. Tripper do not operate on Saturdays. River Bend Transit is also under contract with the City of Davenport to provide paratransit service to Davenport. Although most CitiBus routes go through the downtown Ground Transportation Center, they do not operate on a pulse system.

Table 3 presents a summary of CitiBus' average daily operating statistics between July 2003 and June 2004.

Table 3
Davenport CitiBus Average Daily Operating Statistics – FY 2003-2004

Route	One-Way Trips	Revenue Hours	Vehicles in Operation	Daily Riders	Riders/Revenue Hour
1 – Rockingham	36	11.8	1	157	13.3
2 – Marquette	39	19.1	2	139	7.3
3 – Fairgrounds	26	12.5	1	115	9.2
4 – Brady/Harrison	52	25.4	2	530	20.9
5		18.8	2	213	11.3
5A – Northpark	25				
5B – Kimberly Downs	12				
6 – Ridgeview	24	12.3	1	106	8.7
7 – Bridgeline	54	13.4	1	281	21.0
8 – Telegraph	36	11.9	1	168	14.1
9 – Hickory Grove	24	11.7	1	137	11.7
10		24.7	2	396	16.1
10 – Central Park	25				
10 – Locust	25				
11 – Route 61	22	6	1	78	12.9
12 – East Davenport	25	12.1	1	156	12.9
53 – East 53 rd Street ⁴	25	12.2	1	75	6.1
System Total	450	191.9	17	2,550	15.0

CitiBus currently maintains its fleet in a shared facility located at 2929 Fifth Avenue in Rock Island, Illinois, called the Rock Island Center. The operation of that building is under a joint agreement with MetroLINK called the Quad City Garage Policy Group (QCGPG). The City of Davenport and MetroLINK have joint ownership and operation of the Rock Island Center through the QCGPG. The facility has 75,000 square feet and includes six maintenance bays and stores 66 vehicles. Approximately 19 of these vehicles are from Davenport. Based on a 2001 study⁵, the current facility, which has been occupied since 1983, would not be able to accommodate the 80 vehicles that are projected to be housed at the site.

The City of Davenport is in the planning stages of developing a new operations/maintenance center. The center would be built on the Iowa side of the Quad Cities metropolitan area. Funding for this new facility would likely come from Section 5309 grants and is anticipated to be built in the next five years. This new facility would withdraw CitiBus from the QCGPG and the Rock Island maintenance center.

In addition to the Rock Island maintenance facility, the City of Davenport also owns a downtown transit center call the Ground Transportation Center (GTC) at 300 West River

⁴ Data for Route 53 are from July 2003 to September 2004.

⁵ Quad City Transit Facility Infrastructure Systems & Site Analysis: Executive Summary, Wendel Duscherer Architects and Engineers PC, et al, February 2001, page 1.

Drive in Davenport. The Center opened in 1986 and accommodates CitiBus operations as well as Burlington Trailways', an intercity bus carrier. Burlington Trailways also sells tickets for Greyhound, another intercity carrier. Finally, Eastern Iowa Community College District leases space at the GTC.

Transit Connections

Transit connections between the Iowa and Illinois Quad Cities are provided by each of the three providers, i.e. Bettendorf Transit, Davenport CitiBus and MetroLINK for the Illinois Quad Cities. Bettendorf Transit Route 1 provides service at Center Station in Moline, Illinois. At Center Station, Bettendorf Transit passengers can transfer to the following MetroLINK routes: 10, 20, 30, 57 and 80. Davenport CitiBus Route 7 connects to MetroLINK service at The District station in Rock Island. At The District, CitiBus passengers can transfer to MetroLINK routes 10, 30, 40, 53 and 60. Finally, MetroLINK serves the Iowa Quad Cities on Sundays only via its Bridge Line route. Bettendorf Transit and CitiBus do not operate on Sundays.

Technical Memorandum #2: Existing Transit Conditions describes in detail the transit service provided by Bettendorf Transit and Davenport CitiBus.

B. Baseline Alternatives

The Baseline Alternative contemplates the continuation of the current level of services provided in the Iowa Quad Cities, except some basic structural changes are made. The basic service components include fixed route and paratransit services provided by Bettendorf Transit and Davenport CitiBus. Paratransit service is provided separately under contract with River Bend Transit. Services provided by Rock Island County Metropolitan Mass Transit District (MetroLINK) in Illinois are not included in this analysis, which focuses on the Iowa Quad Cities.

Elements

There are two groups of service changes that can be considered in this alternative. One group is Cost-Neutral options. Another group is Service Expansion options. The tables on the following pages define these groups and illustrate possible actions associated with each option. In many cases, these actions are general. Specific actions are developed based on feedback from Bettendorf Transit, CitiBus and the general public.

Table 4 presents possible actions to save or reduce the cost of service. It also presents possible actions to add service, which would result in an increase in operating cost. Together, they result in a zero sum change in operating cost. They comprise the Cost-Neutral options. In short, a new service (increase in operating cost) would only be implemented with a corresponding, relatively equal reduction in service in the system (decrease in operating cost). These actions can be mixed and matched. For example, creating a “school out” schedule could reduce operating costs and the associated savings could fund a transit center at 18th Street/Spruce Hills Drive in Bettendorf. Additionally, some actions can be classified as both a cost-saving measure and an addition, depending on how they are implemented. For example, improving running times can reduce operating cost if headways are lengthened. The same action can result in an increase in operating cost if headways are shortened by providing additional buses, for example.

Table 5 shows possible actions for service action. Low, medium and high levels of increases in annual operating costs, relative to existing cost, can be considered. Each level of expansion can be cumulative; i.e. the medium level assumes that the low level of has been implemented. The additional service hours presented in Table 5 are estimated based on an hourly rate of \$65, as provided by Bettendorf Transit and CitiBus.

Additionally, at this time, the estimated total annual operating cost for Bettendorf Transit and CitiBus is \$4.04 million, approximately \$644,000 for Bettendorf Transit and \$3.4 million for CitiBus. The City of Davenport has approximately an additional \$140,000 available in transit funding per year, based on its local source, i.e. real estate taxes.

Table 4
Baseline: Elements of Cost-Neutral Options⁶

Cost-Saving Actions

1. Reconfigure low-productivity routes
 - Davenport – Weekdays
 - Route 6 (Ridgeview)
 - Route 11 (Route 61)
 - Route 53 (53rd Street) – cannot eliminate due to funding agreement with Iowa
 - Davenport – Saturday
 - Route 3 (Fairgrounds)
 - Route 6 (Ridgeview)
 - Route 9 (Hickory Grove)
 - Bettendorf
 - Route 53 (53rd Street) – cannot eliminate due to funding agreement with Iowa
2. Davenport “school-out” schedule
3. Davenport – Reduce level of downtown service; make more efficient use of GTC
GTC is Davenport’s downtown transit center, and it may not serve a significant need. Investigate possibility of selling. What would happen to intercity bus operation? Consider downtown trolley for circulation. GTC is a transfer hub – can this be replaced in downtown?
4. Bettendorf – Reduce service on Kimberly Road/Middle Road (near Duck Creek Mall); not all bus routes need to go there.
5. Make minor service modifications to reflect demographic and service demand
 - Bettendorf North route
 - Davenport – Configure services along Kimberly Road
 - Davenport - Move Saturday bus on Route 2 to Route 11
6. Improve running times on the following routes:
 - Bettendorf – Scott Community College
 - Davenport – Routes 2 and 10
7. Improve transfers and connections
8. Consider demand-response service in Bettendorf and Davenport on Saturdays.

⁶ Net overall change in operating and capital costs is approximately zero. Service costs are added only with corresponding cost reductions elsewhere in the system. Service additions and savings can be mixed and matched.

Table 4 (continued)
Baseline: Elements of Cost-Neutral Options⁷

Cost-Adding Actions

1. Reconfigure low-productivity routes
 - Combine with other services
 - Convert to demand-response/flex service. Also look at Saturday morning for Davenport
 - Truncate
 - Other changes
 2. Davenport – Add service to Jersey Ridge area (see Figure 3)
 3. Davenport – Add midtown transit store (existing structure). Consider 16th Street/Harrison Street area, near St. Ambrose University
 4. Bettendorf – Add transit center at 18th Street/Spruce Hill Drive
 5. Make minor service modifications to reflect demographic and service demand
 - Bettendorf North route
 - Davenport – Configure services along Kimberly Road
 - Davenport – Move Saturday bus on Route 2 to Route 11
 6. Improve running times on:
 - Bettendorf – Scott Community College
 - Davenport – Routes 2 and 10
 7. Improve transfers and connections
 8. Add passenger amenities such as shelters and benches
 9. Expand marketing/dissemination of transit information to the public
 10. Examine different types of service (e.g. flex or demand-response on weekends or evenings)
 11. Provide driver amenities, such as restrooms at end-of-line. Consider budget to allow leasing of such facilities
-

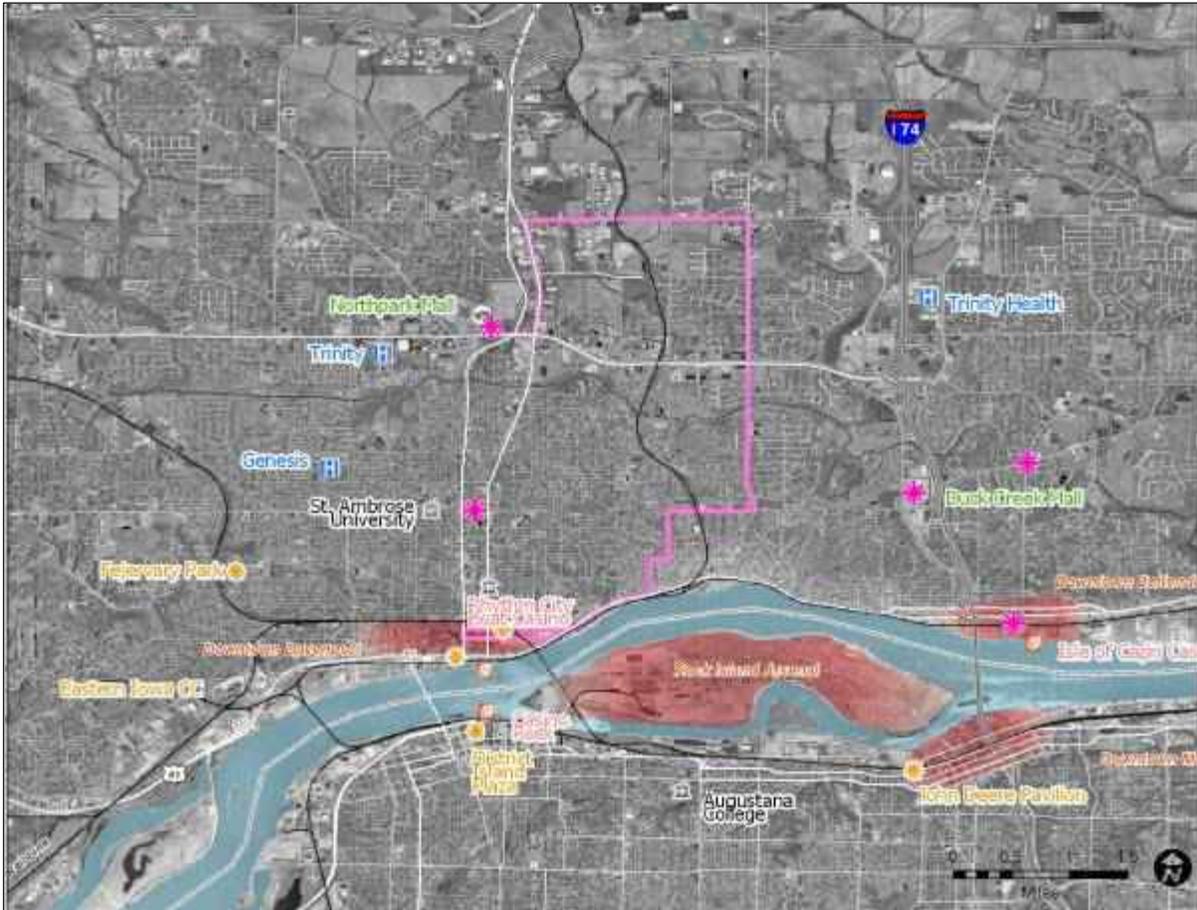
⁷ Net overall change in operating and capital costs is approximately zero. Service costs are added only with corresponding cost reductions elsewhere in the system. Service additions and savings can be mixed and matched.

Table 5
Baseline: Elements of Expansion Options⁸

Option	Possible Actions
<p><u>Low Operations/Capital</u> Limited to a 5 percent increase in current budget.</p> <ul style="list-style-type: none"> ▪ Approximately \$200,000 in gross operating costs, or about 3,000 additional annual revenue hours at \$65 per hour. 	<ul style="list-style-type: none"> ▪ Cost-neutral actions ▪ Add Sunday and holiday service (mix of fixed route and demand-response) ▪ Minor service extensions (time or route length) ▪ Improve signage at bus stops ▪ Add benches and shelters ▪ Implement special fares (e.g. discounted fare to college students) ▪ Install minor transit center
<p><u>Medium Operations/Capital</u> Limited to a 10 percent increase in current budget.</p> <ul style="list-style-type: none"> ▪ Approximately \$400,000 in gross operating costs, or about 6,000 additional annual revenue hours at \$65 per hour. 	<ul style="list-style-type: none"> ▪ Implement Low Operations/Capital Options ▪ Extend existing routes ▪ Extend hours of operation (evenings and/or weekends) ▪ Implement selective frequency improvements
<p><u>High Operations/Capital</u> Limited to a 15 percent increase in current budget.</p> <ul style="list-style-type: none"> ▪ Approximately \$600,000 in gross operating costs, or about 9,000 additional annual revenue hours at \$65 per hour. 	<ul style="list-style-type: none"> ▪ Implement Medium Operations/Capital Options ▪ Implement higher frequencies on selected routes ▪ Add new routes

⁸ At this time, the estimated total annual operating cost for Bettendorf Transit and CitiBus is \$4.04 million, approximately \$644,000 for Bettendorf Transit and \$3.4 million for CitiBus. The City of Davenport has approximately an additional \$140,000 available in transit funding per year, based on its local source, i.e. real estate taxes.

Figure 3
Proposed Jersey Ridge Service



C. Build Alternatives

In addition to low-cost improvements to the existing transit service in the Iowa Quad Cities, transit enhancements with relatively higher capacities and capital and operating and maintenance costs are considered in this Alternatives Analysis. These Build Alternatives include: Bus Rapid Transit, Light Rail Transit, Commuter Rail, Trolley/Streetcar, Personal Rapid Transit, Automated Guideway Transit, and Monorail. Transportation corridors within the Iowa Quad Cities that could accommodate these modes are also identified. The following is a description of each transit technology and an assessment of its applicability in the Iowa Quad Cities.

Bus Rapid Transit

Bus Rapid Transit (BRT) is designed to operate in environments with heavy to very heavy passenger volumes, on medium-distance trips. These vehicles have three to four doors along their length and utilize a barrier-free fare collection system, which increases the efficiency of passenger boarding and alighting. The propulsion system may be conventional diesel engines or overhead electric catenary. BRT was originally designed as a low-cost alternative to light rail. It is currently in use in several North American cities including Pittsburgh, Boston, Las Vegas, Sacramento, Los Angeles, Orlando, Ottawa and York Region in Ontario, Canada, and San Juan, Puerto Rico. Vehicles typically require 11- to 12-foot travel lanes and priority treatment in mixed traffic. Complete separation from other vehicular traffic is preferred. Table 6 presents general characteristics of conventional BRT.

**Table 6
 General Characteristics of BRT⁹**

System Type	Capital Cost Per Mile (\$ millions)	Running Surface	Speed (max./avg.)	Stop/Station Spacing
Conventional	10 to 40	Separate ROW preferred	50mph/25mph	½ to 1 mi.

Busways that provide a high level of service and high passenger capacities are typically grade-separated from cross streets (Pittsburgh). Low-volume busways are characterized by at-grade intersections with cross streets (Seattle, University of Minnesota Busway). Stops along the busway are made only at stations, typically spaced every one-half to one mile. Buses may operate non-stop along the busway or make selected stops based on passenger demand. Buses may also exit the busway and operate along streets to provide local area service. Additionally, BRT vehicles can be used on high-occupancy vehicle facilities (Phoenix Rapid).

⁹ Source: BRW, Inc.

Table 7 presents a summary of the features of each of these BRT systems currently in operation. BRT is a relatively new and rapidly expanding transit technology and as such, may be difficult to define at times. For example, there are many systems currently in operation that have characteristics of express bus and BRT, such as the University of Minnesota Transitway. For the purpose of Table 7, which is an excerpt of an article in Metro Magazine in April 2005, high-profile BRT systems are included, although there are low- to mid-level bus systems that could have been included. In this regard, Table 7 is helpful in illustrating BRT characteristics that are similar between various systems (e.g. distinctive station architecture, branding, use of special vehicles, use of ITS, AVL, real-time information), as well as a relatively wide range of cost, fleet size and route length.

Figure 4
MBTA Silver Line – Melnea Cass Boulevard Station



Figure 5
Kansas City Area Transportation Authority MAX¹⁰



¹⁰ Source: www.kcata.org.

Table 7
North American BRT Systems in Operation¹¹

Agency	City	Capital Cost	Number of BRT Vehicles	Total Route Miles	Bus Features	Route Characteristics	Technologies Used	Station Qualities	Propulsion
City of Phoenix - Rapid	Phoenix	N/A	56	75	Low floors, multiple doors, quieter vehicles, composite structure	Fewer stops, straighter routes, HOV lanes	Real-time arrival information, AVL	Coordinated logos, real-time passenger information, sophisticated architecture, pedestrian-friendly areas, enhanced shading	LNG
Kansas City Area Transportation Authority – Metro Area Express (MAX)	Kansas City	\$21 million	12	9	Low floors, wider doors, quieter vehicles, unique styling and paint scheme, high-back seats	Signal priority, fewer stops, dedicated transit lanes in peak hours	Signal sensors, real-time arrival information, ITS, AVL, electronic stop announcements	Coordinated logos, real-time passenger information, specially designed stop markers and shelters	Clean diesel
Los Angeles County Metropolitan Transportation Authority – Metro Orange Line	Los Angeles	\$329.5 million	22	14	Low floors, multiple doors, off-board fare collection, quieter vehicles	Signal priority, fewer stops, straighter routes, exclusive rights-of-way	Signal sensors, ITS, real-time arrival information	Coordinated logos, real-time passenger information, voice announcement, sophisticated architecture, land use policies, pedestrian-friendly areas	CNG
LYNX - LYMMO	Orlando	\$21 million	10	2.5	Raised platforms, low floors, multiple doors	Signal priority, straighter routes, exclusive rights-of-way, contraflow lane, specialty paving	Signal sensors, ITS, transit television	Coordinated logos, real-time passenger information, voice announcement, sophisticated architecture, landscaping	CNG
Massachusetts Bay Transportation Authority – Silver Line Phase 1	Boston	\$52 million	17	2	Low floors, multiple doors, articulated buses, distinctive design	Signal priority, fewer stops, straighter routes, exclusive rights-of-way	Signal sensors, real-time arrival information, ITS, AVL, PA/VMS	Coordinated logos, real-time passenger information, sophisticated architecture, pedestrian-friendly areas	CNG
Massachusetts Bay Transportation Authority – Silver Line Phase 2	Boston	\$601 million	32	7	Low floors, multiple doors, off-board fare collection, articulated buses	Fewer stops, straighter routes, exclusive rights-of-way	ITS, AVL, PA/VMS	Coordinated logos, sophisticated architecture, voice announcement, land use policies, pedestrian-friendly areas, underground	Dual mode electric, clean diesel
Metropolitan Bus Authority – Rio Hondo Connector	San Juan, Puerto Rico	\$62.5 million	N/A	2.5	Off-board fare collection	Signal priority, HOV lanes, exclusive rights-of-way	Real-time arrival information, ITS, AVL, computer-aided dispatch	Pedestrian-friendly areas, transit security, ticket vending machines	Clean diesel
OC Transpo – The Transitway	Ottawa, Ontario, Canada	\$500 million	500	20.2	Low floors, multiple doors, honor fare	Signal priority, fewer stops, straighter routes, exclusive rights-of-way	Signal sensors, ITS, AVL	Coordinated logos, sophisticated architecture, land use policies, pedestrian-friendly areas	Clean diesel
Port Authority of Allegheny County – West Busway	Pittsburgh	\$275 million	N/A	6	Low floor buses, standard coaches, over-the-road coaches, small transit vehicles	Exclusive rights-of-way, HOV lanes	N/A	Coordinated logos, sophisticated architecture, land use policies, pedestrian-friendly areas, landscaping	Clean diesel
Port Authority of Allegheny County – MLK East Busway Extension	Pittsburgh	\$68.8 million	N/A	2.3	Low floor buses, standard coaches, over-the-road coaches, small transit vehicles	Exclusive rights-of-way, fewer stops, HOV lanes	N/A	Coordinated logos, sophisticated architecture, land use policies, pedestrian-friendly areas, landscaping	Clean diesel
Regional Transportation Commission of Southern Nevada – Metropolitan Area Express (MAX)	Las Vegas	\$19 million	10	7.5	Raised platforms, low floors, multiple doors, wider doors, off-board fare collection, guidance systems	Signal priority, fewer stops, exclusive rights-of-way, precision docking	AVL	Coordinated logos, sophisticated architecture, pedestrian-friendly areas	Hybrid-electric
Sacramento Regional Transit District – Stockton Boulevard 50E Bus	Sacramento	\$7.2 million	8	8	Low floors, color-branded buses	Signal priority, fewer stops, straighter routes, queue jumping	Signal sensors, real-time arrival information, ITS, automatic passenger counting	Coordinated logos, color-branded stations	LNG
York Region Rapid Transit - Viva	York Region, Ontario, Canada	\$150 million	85	56	Low floors, multiple doors, wider doors, off-board fare collection, quieter vehicles	Signal priority, fewer stops	Signal sensors, real-time arrival information, ITS, AVL, automatic passenger counting	Coordinated logos, real-time passenger information, sophisticated architecture	Clean diesel

¹¹ Source: Metro Magazine, April 2005.

Potential BRT corridors in the Iowa Quad Cities include the Brady/Harrison one-way pair (Highway 61) in Davenport and Locust Street/Middle Road in Bettendorf.

Applicability to the Iowa Quad Cities

BRT is a proven technology, currently operating in numerous U.S. cities including Sacramento and Pittsburgh. Busways are also currently in various cities including the University of Minnesota’s Transitway. BRT operating on an exclusive travel lane is capable of providing moderate to high capacity for less cost than LRT. BRT can utilize standard buses or it can be equipped with larger vehicles because the operation is largely confined to the exclusive travel lane where they do not interact with mixed traffic. Disadvantages of BRT may include costs associated with right-of-way procurement and operating costs. Although the vehicles can be larger than standard buses and thereby offer more capacity, the coupling of vehicles to achieve higher efficiency is more limited than rail technologies. BRT vehicles can use one of several propulsion systems, each with its own distinctive environmental effects. Because of the relative flexibility in defining BRT, it is **recommended for further study** in the Iowa Quad Cities.

Light Rail Transit

Light rail transit (LRT) operates in more than 20 urban areas in the U.S. and Canada, including Portland, Baltimore, St. Louis, Buffalo, Dallas, San Diego, Los Angeles, and San Jose. LRT features electrically-propelled rail cars, operated singly or in short trains of up to four cars, using an overhead electric wire (catenary) as the power source. LRT train length must not exceed the minimum length of a city block so that stopped vehicles do not block intersections or crosswalks. LRT operates primarily in a semi-exclusive right-of-way with total corridor lengths generally not exceeding 15 to 20 miles. In addition to operating at-grade, an LRT system may be grade-separated by operating in a tunnel or on an elevated structure. A potential LRT corridor in the Iowa Quad Cities is the Brady/Harrison couplet from downtown Davenport, extending northwards.

A key characteristic of LRT is its flexibility. For LRT applications, the range of selected characteristics includes a highly pedestrian environment to a semi-exclusive to exclusive right-of-way and fully grade-separated right-of-way.

Table 8
General Characteristics of LRT¹²

Capital Cost Per Mile (\$ millions)	Running Surface	Speed (max./avg.)	Stop/Station Spacing
20 to 40	Mixed Traffic or Separate ROW	55mph/22mph	¼ to 1mi.

¹² Source: BRW, Inc.

Figure 6
Hiawatha Light Rail – Minneapolis, Minnesota



Applicability to the Iowa Quad Cities

Light rail transit is a proven technology currently operating in numerous mid-size and large U.S. cities. The primary advantage of LRT is its adaptability and flexibility. It can range from a high-speed, high-capacity system comparable to heavy rail, to low-speed, medium-capacity streetcar or shuttle service. Other advantages include the relatively easy incorporation of LRT into a downtown area with station spacing close enough to provide convenient walk access. Other advantages of LRT include lower air and noise pollution than other technologies such as buses. Disadvantages of LRT include relatively high capital and implementation costs and less route flexibility than buses.

In summary, although LRT is a proven technology with service currently provided in numerous U.S. cities, its associated passenger capacity, capital and operating costs, and right-of-way requirements far exceed the transit demand that exists in the Iowa Quad Cities now and that could occur in the future. Therefore, it is **not recommended for further study**.

Commuter Rail

Commuter rail operates throughout the U.S. A typical commuter rail train consists of one or more unpowered passenger cars pushed or pulled by a locomotive. The propulsion system is typically a diesel-mechanical motor or diesel-electric motor, although overhead electrification can be used as well. Commuter rail systems generally have stations spaced five or more miles apart, with corridor lengths of 20 to 100 miles. Commuter rail equipment is compatible with (may share track with) active freight railroad operations. Cities where commuter rail is currently operating include Dallas, Washington, D.C., Chicago, Los Angeles, and San Diego. Potential commuter rail corridors in the Iowa Quad Cities include the I&M Rail Link, Iowa Interstate Railroad, and I&M Railroad.

Table 9
General Characteristics of Commuter Rail¹³

System Type	Capital Cost Per Mile (\$ millions)	Running Surface	Speed (max./avg.)	Stop/Station Spacing
Conventional	3 to 15	Exclusive fixed guideway	79mph/50mph	2 to 5 mi.

Figure 7
Long Island Railroad – New York



¹³ Source: BRW, Inc.

Applicability to the Iowa Quad Cities

Commuter rail is a proven technology operated in numerous North American cities. The advantages of Commuter Rail are that it offers considerable capacity and that it can make use of existing rail infrastructure. However, Commuter Rail is more suited for longer distances of travel than that within the Quad Cities, although it may have application within a larger regional rail network. Therefore, **it is not recommended for further study.**

Trolley/Streetcar

Trolley/streetcar can be characterized as a single-car rail or rubber-tired system with an overhead electrical power source. Streetcars operate primarily in mixed traffic, similar to conventional buses and electric trolley buses, with stations or stops generally spaced one-eighth to one-quarter mile apart. Streetcar systems are often appealing from an aesthetic standpoint; in addition to providing mobility, they can be viewed as enhancements to the character of an area because of their distinctive design. Potential streetcar/trolley corridors in the Iowa Quad Cities include the Brady/Harrison couplet, River Drive, 18th Street in Bettendorf, and Locust Street/Middle Road.

Table 10
General Characteristics of Trolley/Streetcar¹⁴

Capital Cost Per Mile (\$ millions)	Running Surface	Speed (max./avg.)	Stop/Station Spacing
10 to 30	Primarily mixed traffic	30mph/15mph	1/8 to 1/4 mi.

Figure 8
Portland Streetcar - Oregon



¹⁴ Source: BRW, Inc.

Figure 9
Kenosha Streetcar - Wisconsin



One example of a restored streetcar application is in the city of Kenosha, Wisconsin. Kenosha has implemented a new streetcar system in its downtown/lakefront area. It operates on a fixed route that has connection points with the local bus system and with the METRA commuter rail system serving the Chicago area. One of the objectives of the Kenosha streetcar project is to demonstrate the feasibility of electrified transit technologies in midwestern cities, and its effectiveness in short line-haul transit applications.

Applicability to the Iowa Quad Cities

Streetcars offer a similar level of service as conventional buses. Streetcars are well-suited for low to medium ridership applications. Most of the streetcar systems in operation provide circulation service, typically in a downtown area, rather than the line-haul type of service. Streetcars require a fixed rail and an overhead catenary, limiting its flexibility and adding to its cost. However, a rubber-tired trolley could also be used to minimize the cost associated with construction and maintenance of rail and an overhead catenary system.

In summary, streetcars are a proven technology. Its characteristic operating speed and passenger capacity may suit the Iowa Quad Cities, particularly the riverfront corridor. Therefore, **streetcar technology is recommended for further study.**

Personal Rapid Transit

Personal rapid transit (PRT), a technology currently under development, would provide automated, private party point-to-point transportation along a grade-separated guideway. As with AGT, intervals between vehicles would be very short. Service could be operated on demand, with vehicles being summoned to a stop by the passenger. This technology is envisioned to compete with the automobile by providing a direct, non-stop trip between origin and destination in private vehicles for up to three passengers. Stops could be designated at very close intervals since users would not be subject to intermediate stops after boarding. As this technology is still under development, no operating systems are in place.

**Figure 10
 Personal Rapid Transit**



**Table 11
 General Characteristics of Personal Rapid Transit¹⁵**

Capital Cost Per Mile (\$ millions)	Running Surface	Speed (max./avg.)	Stop/Station Spacing
Not Available	Elevated fixed guideway	30mph/18mph	Close (<.5 mi.)

¹⁵ Source: BRW, Inc.

Applicability to the Iowa Quad Cities

Personal Rapid Transit as conceptually envisioned would be well-suited to circulation and distribution within an activity center and could be used as a support network for line haul transit. However, there are many unknowns and challenges associated with its implementation. No PRT systems are currently in operation, making it an unproven technology. If used in the Iowa Quad Cities, it may be the first real-world application of the technology. Other challenges are that a large network of elevated structures would be required to provide the proposed service. The number of stations, and correspondingly, total station cost would likely be very high. For these reasons, and specifically the fact that it is not yet a proven technology, **PRT is not recommended for further study.**

Automated Guideway Transit

Automated guideway transit (AGT) includes steel-wheel, steel-rail, or rubber tired vehicles that operate under automated control on an exclusive guideway, grade-separated from vehicular traffic. AGT may utilize conventional or alternative propulsion types such as magnetic levitation or linear induction. Other transit technologies such as monorails and PRT operating without drivers are classified as AGT.

Vehicles typically accommodate fewer passengers than other rail modes; however characteristic operating headways are very short. This frequent service mitigates the smaller vehicle size, allowing hourly passenger capacity to be comparable to light rail or heavy rail. Station spacing is also comparable to light or heavy rail: One-quarter to one mile in activity centers and one to two miles or more in other areas. Train length can vary from one to six vehicles. AGT systems are currently operating in Detroit, Michigan and Vancouver, British Columbia.

Figure 11
Automated Guideway Transit



Table 12
General Characteristics of Automated Guideway Transit¹⁶

Capital Cost Per Mile (\$ millions)	Running Surface	Speed (max./avg.)	Stop/Station Spacing	Implementation Feasibility
40 to 60	Exclusive fixed guideway	62mph/40mph	1 to 2 mi.	Less Positive

Applicability to the Iowa Quad Cities

Implementation costs for AGT systems are high due to required grade separation and the automated control system. Also, a significant expenditure is required for maintenance of control system elements, including the trackway and the hardware for monitoring and operation. However, operating costs for AGT are relatively low because there is no need for operators on each vehicle. AGT is similar to heavy rail transit and monorail in that it requires a special guideway that cannot be crossed by other vehicles. Therefore, crossings of streets or other rail systems must be grade separated, contributing to the high cost of implementation. For these reasons, **AGT is not recommended for further study.**

Monorail

Monorail is a variation of rapid transit that employs a single, relatively narrow beam that supports the vehicles and contains the power source. Vehicles may either straddle the beam or be suspended from it; vehicles may travel as single units or be linked together in trains of one to six vehicles. The design of monorail allows the guideway to be smaller, lighter, less obtrusive, and potentially less expensive than other fully elevated transit systems.

Figure 12
Monorail



¹⁶ Source: BRW, Inc.

Station spacing is comparable to light rail or heavy rail: One-third to one-half mile in activity centers and one-half to one-mile or more in other areas. Monorail systems must be fully grade separated. In the United States, monorail has been implemented in limited applications, such as recreational areas or amusement parks (Disneyland/Disneyworld) and short distances (approximately one mile), such as systems in downtown Seattle and at the Newark airport.

Table 13
General Characteristics of Monorail¹⁷

Capital Cost Per Mile (\$ millions)	Running Surface	Speed (max./avg.)	Stop/Station Spacing
40 to 80	Elevated Guideway	55mph/35mph	1 to 2 mi.

Applicability to the Iowa Quad Cities

Monorail transit systems have some advantages over other technologies as they are quiet and can use air space for its right-of-way. However, monorail is not common, partially due to its high capital cost and complicated operation. Specifically, track or guideway switching is more complicated than switching with conventional rail track. This has tended to relegate monorail to shuttle or loop service within an activity center, and has limited its use for line-haul applications. In consideration of switching complications, high capital costs, and limited implementation for line-haul applications, **monorail is not recommended for further study.**

¹⁷ Source: BRW, Inc.

Summary

The initial definition of transit options for consideration in this study identified the following alternatives:

- No Build Alternative – No changes to existing transit service
- Baseline Alternatives
 - Cost-neutral actions
 - Service additions with increases in operating/capital costs (low, medium and high)
- Build Options – Addition of new service and technology, with associated increases in capital and operating and maintenance costs:
 - BRT
 - LRT
 - Commuter rail
 - Streetcar/trolley
 - PRT
 - AGT
 - Monorail

Table 14 presents a summary of the general characteristics of the various Build alternatives, along with the recommended next step in this study.

Alternatives for Further Study

In summary, the following alternatives will be refined and analyzed in the next phase of this study:

1. No Build Alternative
2. Baseline Alternatives
 - Cost-neutral actions
 - Service additions with increases in operating/capital costs (low, medium and high)
3. BRT
4. Streetcar/Trolley

The next section of this report presents the refined definitions of the above alternatives.

Table 14
Evaluation of Initial Set of Transit Alternatives

Transit Technology	Streetcar/Trolley	BRT	LRT	Commuter Rail	PRT	AGT	Monorail
<i>Application</i>	Short distance, local trips	Line haul, medium distance trips	Line haul, medium distance trips (15 to 20 miles)	Line haul, long distance (20 to 100 miles)	Short distance, local trips	Short distance, local trips	Short distance trips
<i>Capital cost per mile</i>	\$10-30 million	\$10-40 million	\$20-40 million	\$3-15 million	Not available	\$40-\$60 million	\$40-80 million
<i>Operating cost per passenger trip¹⁸</i>	Kenosha, WI: \$4.56	Boston: \$11 million/year ¹⁹	St. Louis: \$2.47	Dallas: \$12.58	No system in operation	Detroit: \$3.50 ²⁰	Las Vegas: \$2.21 ²¹
<i>Operating Speed</i>							
▪ <i>Maximum</i>	30 MPH	50 MPH	55 MPH	79 MPH	30 MPH	62 MPH	55 MPH
▪ <i>Average</i>	15 MPH	30 MPH	40 MPH	50 MPH	18 MPH	40 MPH	35 MPH
<i>Station spacing</i>	1/8 to 1/4 mile	1/2 to 1 mile	1/4 to 1 mile	2 to 5 miles	Less than 1/2 mile	1/4 to 1 mile in activity centers 1 to 2 miles in other areas	Comparable to LRT
<i>Typical vehicle capacity</i>	60 passengers	81 passengers	166 passengers	120 passengers	1-2 passengers	Comparable to streetcar/trolley	Comparable to LRT
<i>Ridership</i>	Kenosha: 67,600/year	Boston: 110,500/day ¹⁹	St. Louis: 14.8 million/year	Dallas: 1.4 million/year	Not available	Detroit: 5,000/day	Las Vegas: 25,800/day
<i>Running surface</i>	On-street, shared lane	Separate right-of-way is preferred	Exclusive fixed guideway	Exclusive fixed guideway	Exclusive fixed guideway	Exclusive fixed guideway	Exclusive fixed guideway
<i>Environmental impacts</i>	Right-of-way, noise	Right-of-way, noise, emissions	Right-of-way, noise	Noise, emissions	Aesthetic impacts of elevated structures	Aesthetic impacts of elevated structures, required grade-separation	Aesthetic impacts of elevated structures, required grade-separation
<i>Potential corridors in the Iowa Quad Cities</i>	Brady/Harrison 53 rd Street River Drive 18 th Street (Bettendorf) Locust Street/Middle Road	Brady/Harrison	Brady/Harrison 53 rd Street	I&M Rail Link Iowa Interstate Railroad I&M Railroad	Not applicable	Not applicable	Not applicable
<i>Recommended Action</i>	Need further study	Need further study	No further study needed	No further study needed	No further study needed	No further study needed	No further study needed

¹⁸ Source: Trinity Railway Express, 2003 National Transit Database, Federal Transit Administration.

¹⁹ Source: Federal Transit Administration, 2003 Annual Report on New Starts. For year 2010 of Silver Line Phase III, Massachusetts Bay Transportation Authority.

²⁰ Source: <http://en.wikipedia.org>.

²¹ Source: *Las Vegas Review-Journal*, December 14, 2005.

III. REFINED DEFINITION OF ALTERNATIVES

Based on the findings of Sections II, the following alternatives will be included in this Alternatives Analysis and defined in greater detail in this section:

1. No Build Alternative
2. Baseline Alternatives
3. Build Alternatives
 - Bus Rapid Transit
 - Streetcar/Trolley

A. No Build Alternative

The No Build Alternative is defined as the transit system that currently exists in the Iowa Quad Cities. It assumes that the exact same transit service and accompanying amenities that exist today would also exist in 2035. Figure 13 presents the existing fixed routes that serve the Iowa Quad Cities through Bettendorf Transit and Davenport CitiBus.

Figure 13
Existing Transit Routes in the Iowa Quad Cities



B. Baseline Alternatives

After identifying a menu of potential low-cost modifications to the existing service provided by Bettendorf Transit and CitiBus, the Baseline Alternatives to be analyzed in this study are defined. These alternatives use results of the refined analyses of existing transit operating data and demographic information, supplemented by discussions with Bettendorf Transit and CitiBus operations staff.

This section of the document describes the various Baseline alternatives defined for both Bettendorf and Davenport. As this study deals with two separate transit providers; this document presents the Baseline Alternatives considered for each city.

As indicated in Section II, two groups of service elements are presented—those which are “cost neutral” and those involving “service expansion”:

- **Cost-Neutral Options** – These service options have no net overall change in operating and capital costs. Services are added only with corresponding cost savings identified elsewhere in operation. It is possible to have an overall savings under the cost neutral condition where savings may be used elsewhere in the non-revenue parts of the operation.

Further, under this category of service modifications, two sub-types are defined for Bettendorf and Davenport. The first group of options, Baseline Alternative A, is intended to be easily implemented service changes that address many, but not necessarily all, of the problem areas in the existing transit service. The second group, Baseline Alternative B, addresses the problem areas more completely, but contains options that would require more effort to implement. Additionally, Baseline Alternative B assumes implementation of the changes included in Alternative A. Both types of cost-neutral options have been presented to Bettendorf Transit and CitiBus staff and the general public. Based on the reactions of staff and the general public, these groups have been refined and made part of the Baseline Alternatives.

- **Service Expansion** – Service expansion involves adding service and results in a net increase in operating costs. Three levels of funding increases are explored in this study: A five percent, 10 percent and 15 percent increase in annual operating costs for Bettendorf Transit and CitiBus. The service improvements associated with these different levels of increase in operating cost are specified in this section.

Cost-Neutral Options

Bettendorf Transit

As documented in Section II of this report and Technical Memorandum #2: Existing Transit Conditions, the following service improvements were identified for Bettendorf Transit:

- Reconfigure low productivity routes
- Reduce service to Kimberly Road/Middle Street
- Improve transfer connections with Davenport service
- Adjust service to reflect demand
- Improve running time on Scott County Community College route
- Develop 18th Street/Spruce Hills Drive Transit Center

These service improvements are captured in Alternatives A and B, described as follows. Generally, Alternatives A and B would have no significant impact on existing ridership.

ALTERNATIVE A

Figure 14 depicts the proposed transit routes for Bettendorf Transit. As previously stated, the proposed changes are considered cost-neutral, i.e. they will not result in an increase in annual operating and maintenance cost for Bettendorf Transit. A detailed description of Bettendorf Alternative A is presented in Appendix A.

In summary, the main changes included under Alternative A are as follows:

- Route 2 (Gold) – Add segment serving the Hy-Vee from the restructured Route 4 (Green). Add south segment of Route 5 (Purple).
- Route 4 (Green) to/from Scott Community College – To address the existing running time issue on Route 4 and improve transfers, the segment serving the the Hy-Vee at Devil’s Glen Road and Middle Road is eliminated. Service to the Hy-Vee would be provided by the restructured Route 2 (Gold).
- Route 5 (Purple) - Restructure Purple route to pick up portions of the Gold route.

Figure 14
 Bettendorf Alternative A

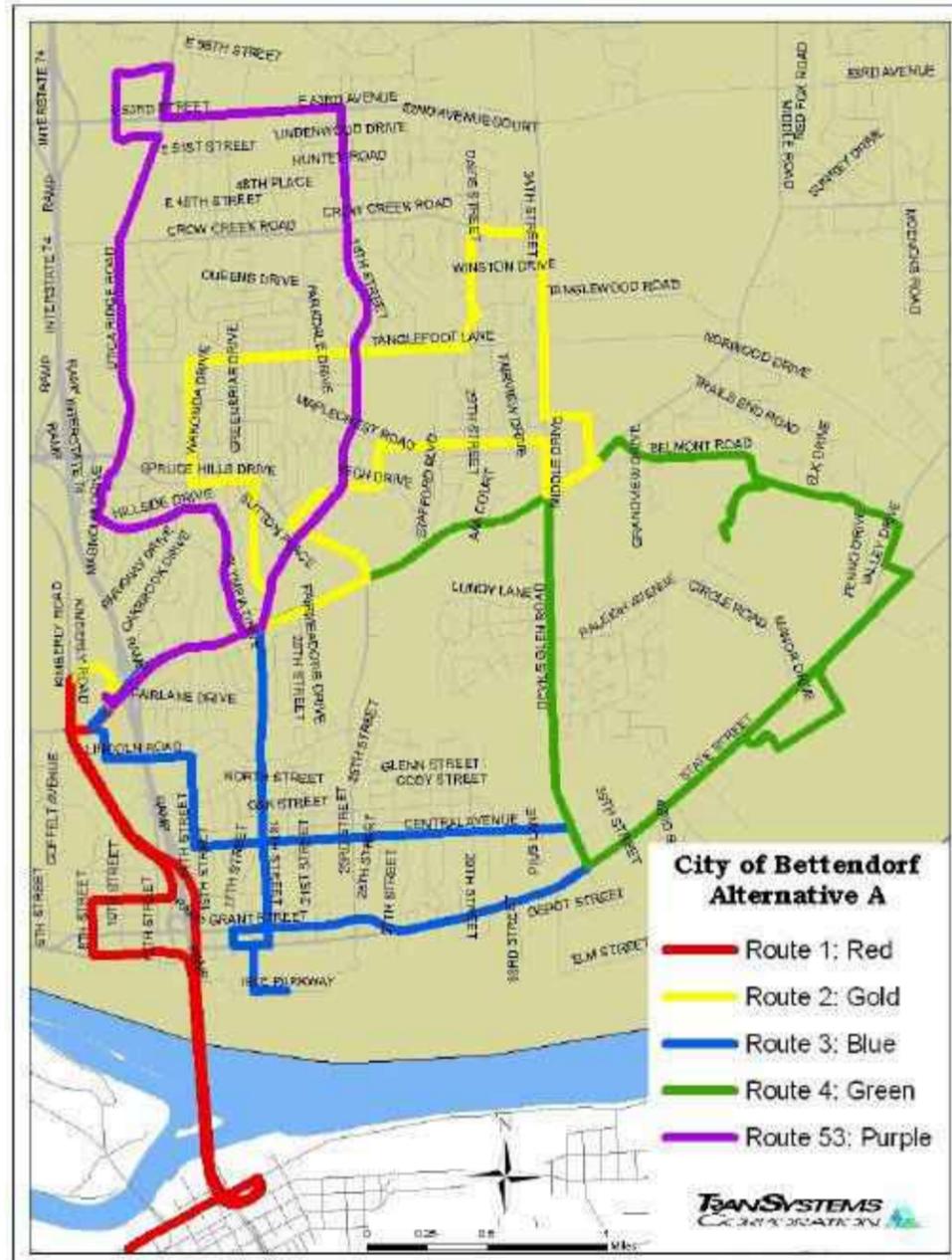
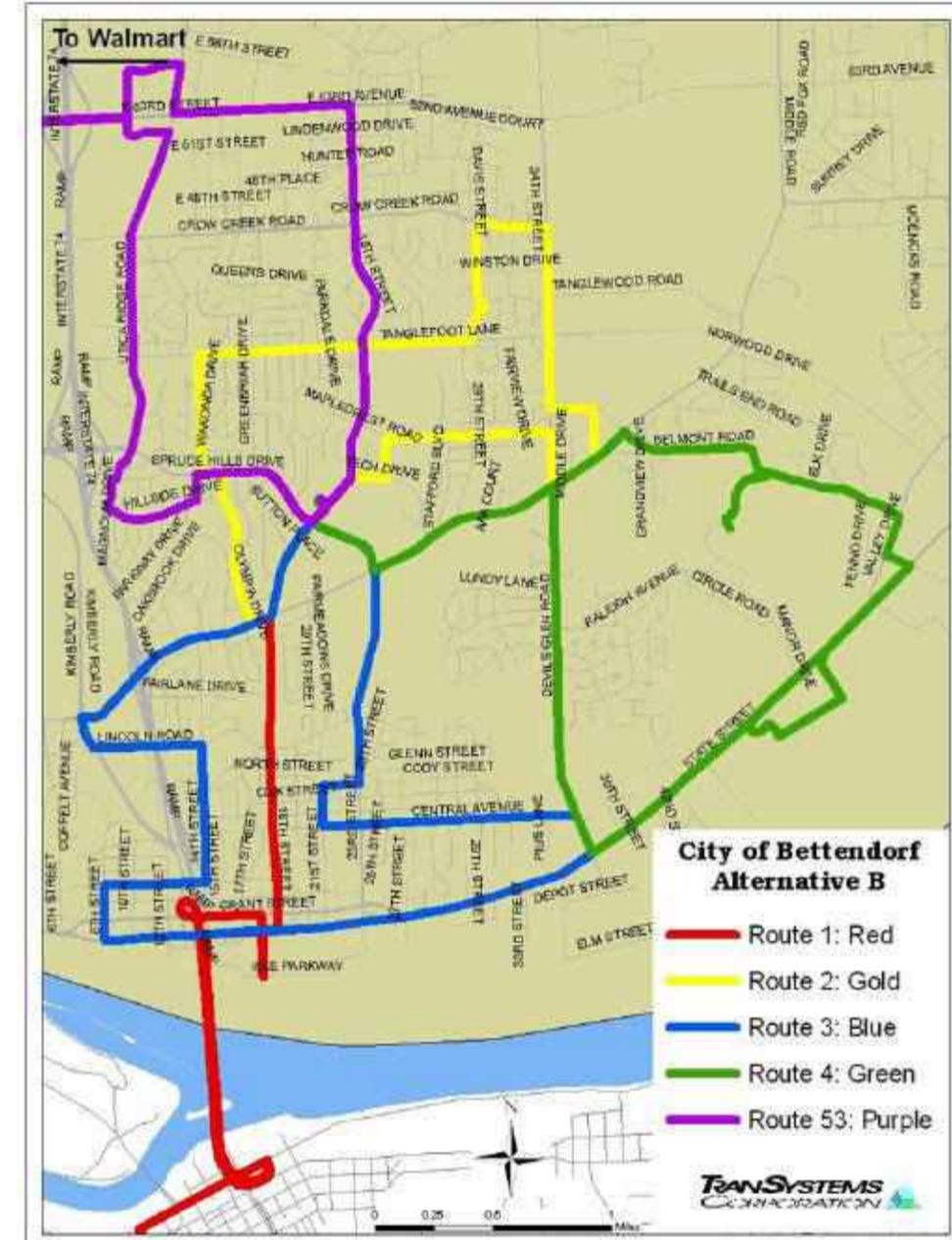


Figure 15
 Bettendorf Alternative B



ALTERNATIVE B

Figure 15 depicts the proposed transit routes system for Bettendorf Transit under Baseline Alternative B. As previously stated, the proposed changes are considered cost-neutral, i.e. they would not result in an increase in annual operating and maintenance cost for Bettendorf Transit. Additionally, these changes assume the implementation of the route modifications proposed under Baseline Alternative B. A detailed description of Bettendorf Alternative B is presented in Appendix A.

The main changes included under Alternative B are as follows:

- Reduce service to Kimberly Road/Middle Road by having all routes meet at 18th Street and Spruce Hills Drive.
- Changes made under “Alternative A” above, in addition to the Purple Route being extended to the Wal-Mart at Elmore Avenue and 53rd Street in Davenport. The Purple Route is contingent upon Davenport extending Route 10 East to 18th Street and Spruce Hills Drive. See the following discussion on Davenport “Alternative B.”

Similar to Bettendorf Alternative A, Alternative B would have no impact on existing ridership.

Davenport

The following are the service improvements identified for CitiBus:

- Improve running time/transfer connections
- Provide more direct service to St. Ambrose University
- Provide more frequent headways
- Improve route spacing (near Westside)
- Review northwest Davenport service (Route 6)
- Provide more Kimberly service, service to Wal-Mart
- Adjust service to reflect demand
- Provide Jersey Ridge service
- Provide Downtown circulator route
- Consider use of smaller vehicles
- Consider providing “school out” schedule
- Consider demand response/on-call service (selected areas and on weekends)
- Connect Routes 4 and 7 and, perhaps, 11.

As with the Bettendorf Baseline options, two alternatives for improving service in Davenport have been developed and presented to the CitiBus staff and general public. Based on the feedback from these two groups, the following definitions for the Davenport Baseline Alternatives are presented. As already stated, Alternative A is intended to be easily implemented and includes solutions that aim to address many, but not necessarily all, of the current problems with the existing CitiBus service. Last, Alternative B aims to address these problem areas more completely and also includes options that would require more effort to implement.

ALTERNATIVE A

Figure 16 presents the proposed transit service under Alternative A. As previously stated, the proposed changes are considered cost-neutral, i.e. they will not result in an increase in annual operating and maintenance cost for CitiBus. A detailed description of Davenport Alternative A is presented in Appendix B.

- Route 2 (Marquette) – Operate weekday off-peak trips via Kimberly Road and peak trips via 35th Street. Modify routing through downtown Davenport and the GTC. Maintain one hour headways on Saturdays and eliminate the second bus.
- Route 3 (Fairgrounds) – Modify routing through downtown and the GTC.
- Route 4 (Brady/Harrison) – Modify outbound routing to include service to St. Ambrose University. Combine with Route 7.
- Route 5A (North Park) – Eliminate Grand-Central Park-Bridge loop. Move Eastern Avenue segment between 32nd Street and Kimberly Road to Jersey Ridge Road.

- Route 6 (Ridgeview) – Convert to deviated fixed route service.
- Route 7 (Bridgeline) – Combine with Route 4 (Brady/Harrison).
- Route 8 (Telegraph) – Modify routing through the GTC.
- Route 9 (Hickory Grove) – Modify routing through the GTC.

ALTERNATIVE B

Similarly, Baseline Alternative B for Davenport entails implementation of Alternative A. Figure 17 presents the proposed routing transit service under Alternative B for CitiBus. The major changes are as follows. A detailed description of Davenport Alternative A is presented in Appendix B.

- Route 1 (Rockingham) – Combine with Route 8.
- Route 2 (Marquette) – Operate weekday off-peak trips via Kimberly Road and peak trips via 35th Street. Modify routing through downtown Davenport and the GTC. Maintain one hour headways on Saturdays and eliminate the second bus. Extend route to Hy-Vee on Kimberly Road to increase service within the corridor.
- Route 3 (Fairgrounds) – Shorten route length. Modify downtown/GTC routing. Terminate route at West Central Park Avenue to achieve 30-minute headway.
- Route 4 (Brady/Harrison) – Redirect to a new proposed transit center located at or near St. Ambrose University. Combine with Route 7 to minimize transfers and improve running time.
- Route 5A (North Park) – Redirect to a new proposed transit center located at or near St. Ambrose University. Increase frequency. Patrons destined to downtown Davenport would transfer at the new transit center.
- Route 5B (Kimberly Downs) – Redirect to a new proposed transit center located at or near St. Ambrose University. Patrons destined to downtown Davenport would transfer at the new transit center. Increase frequency. Move to Jersey Ridge.
- Route 6 (Ridgeview) – Convert to deviated fixed route.
- Route 8 (Telegraph) – Combine with Route 1.
- Route 9 (Hickory Grove) – Combine with Route 10 West (see below).

- Route 10 (Central Park West) – Split into west and east segments and serve existing Route 9 service area.
- Route 10 (Locust East) – Extend to 18th Street and Spruce Hills Drive in Bettendorf.
- Route 11 (Tripper) – Convert to deviated fixed route service. This change would improve service frequency, from irregular to hourly, all day (6:00 AM to 6:00 PM) and on Saturdays.

This modification requires Bettendorf Transit to extend its Purple Route to the west and for Davenport to extend Route 10 East easterly to 18th Street and Spruce Hills Drive in Bettendorf. The Purple Route extension works for Bettendorf if the new focal point for their service is at 18th Street and Spruce Hills Drive as proposed in Bettendorf's Alternative B. Since the new focal point moves the Davenport/Bettendorf connection east of the Duck Creek Mall area (the current transfer point), it requires an extension of the Route 10 East to 18th Street and Spruce Hills Drive. Davenport's Route 10 is the main connection between Davenport and Bettendorf services.

- Route 12 (East Davenport) – No service east of Elmore Avenue. Bettendorf Purple Route would pick up the service and provide transfer opportunity at Wal-Mart.
- Route 53 (53rd Street) – Combine with Route 11.

Figure 16
 Davenport Alternative A – Final Proposal

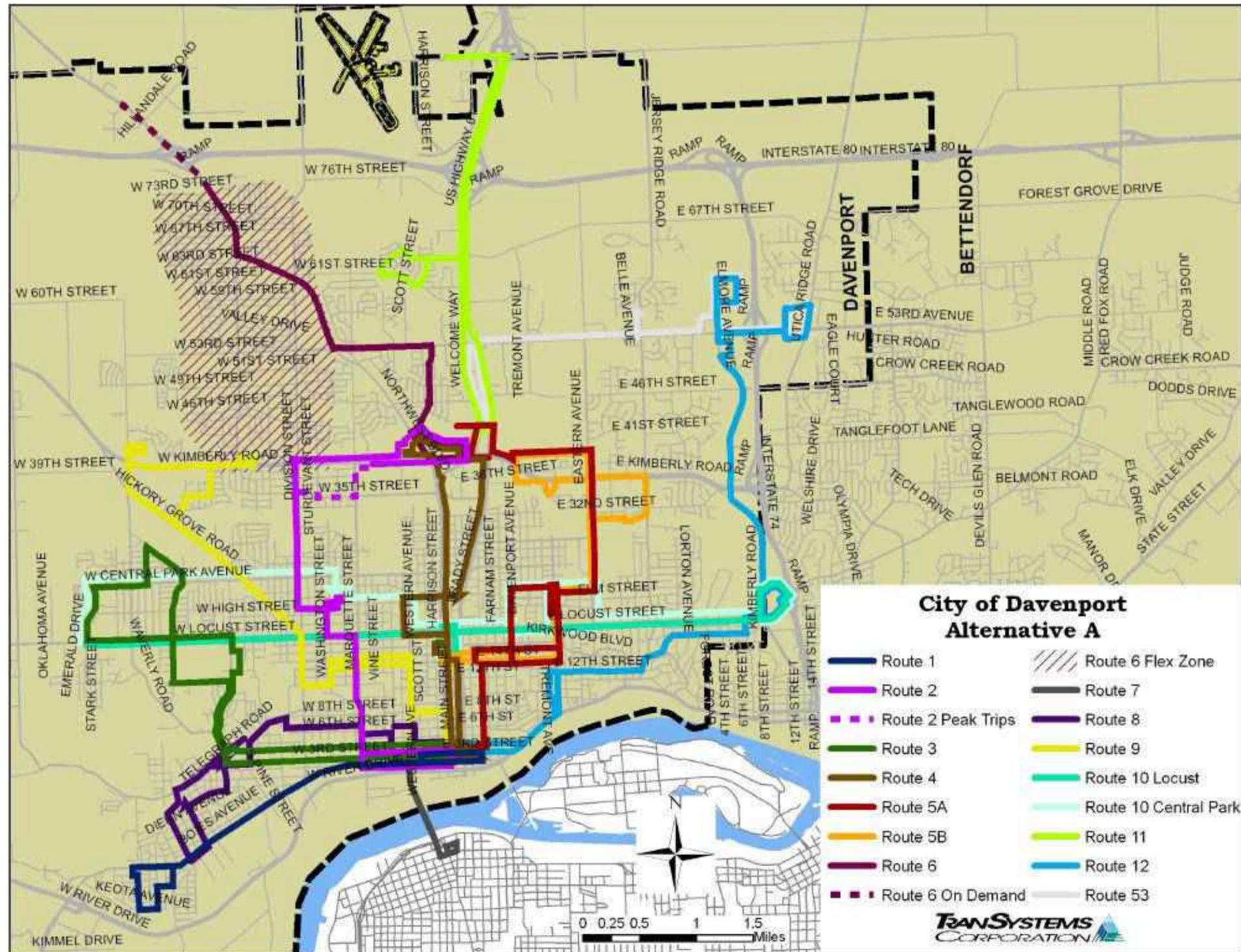
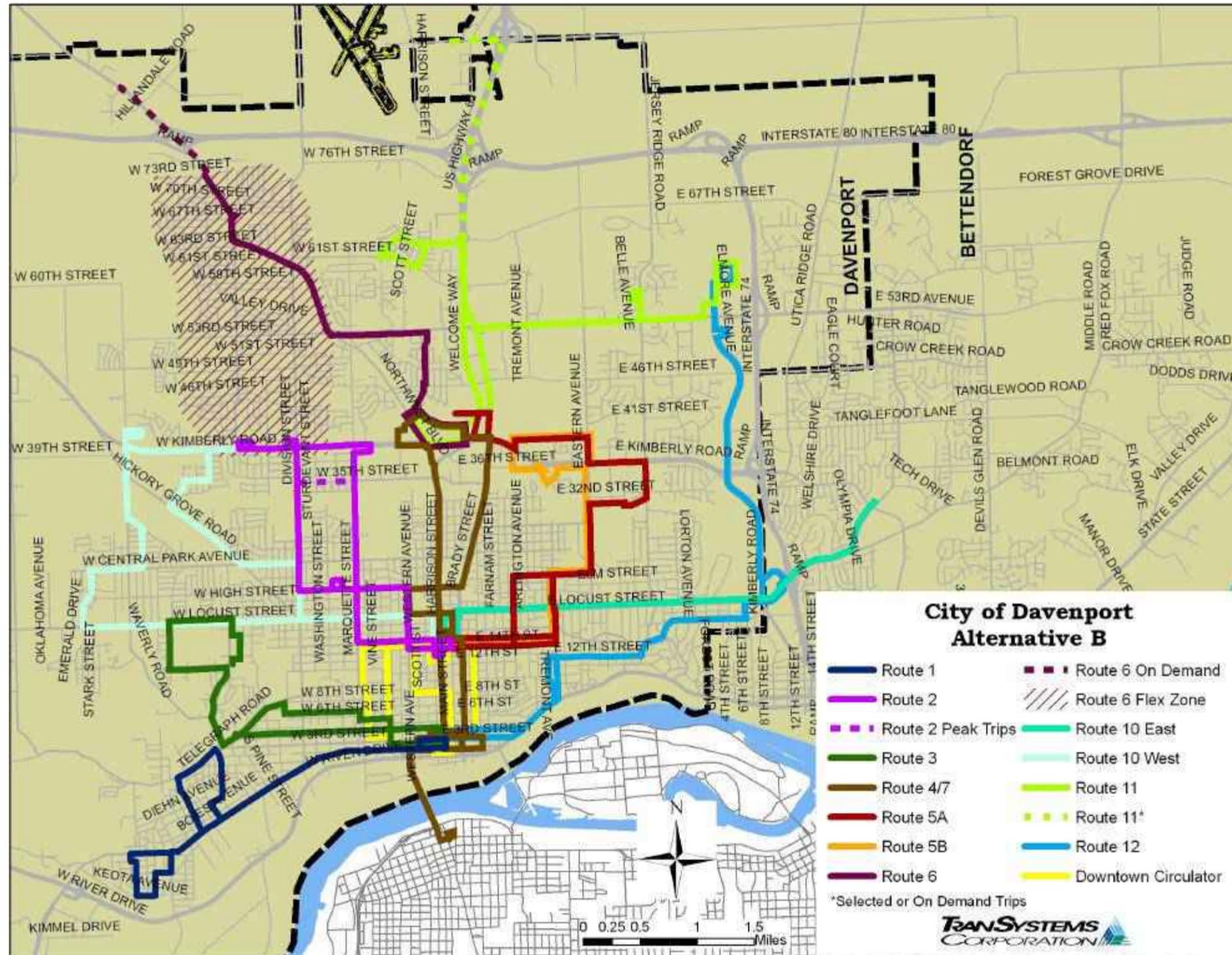


Figure 17
 Davenport Alternative B – Final Proposal



Budgetary Impact of Revised Davenport Alternatives A and B

Overall, the revised Davenport Alternative A is cost neutral. Only about \$8,000 (in 2005 dollars) annually is saved which is almost insignificant. In fact, there may be a slight net cost increase due to the operation of a deviated fixed route in the northwest part of the service area. The cost increase may come about if current CitiBus staff is unable to handle calls for service and additional staff is needed to field calls during peak periods. The revised Alternative B, however, reduces vehicle requirements and despite a potential cost increase due to the deviated fixed route, provides measurable savings. About \$300,000 (in 2005 dollars) annually is expected to be saved by the proposed changes²². This savings includes the latest Route-11-12-53 combination as well as extensions of the new Route 10 East to 18th Street and Spruce Hills Drive in Bettendorf. This extension into Bettendorf is needed for Bettendorf Transit to extend its Purple Route to the Wal-Mart near 53rd Street and Elmore Avenue.

Further, in terms of the trade of Davenport providing service within the corporation limits of Bettendorf and vice versa, division of mileage would appear to be equitable. Bettendorf will be providing about 84 daily miles into Davenport while Davenport will provide about 48 daily miles into Bettendorf. While the mileages in each community are not equal, other factors create a more equitable trade for these services. First, Davenport's operating costs are higher than Bettendorf's. Second, Bettendorf will be collecting relatively higher revenue for the extension than Davenport will for its extension. Thus, factoring in the economics of the trade-off, the provision of service in the respective communities appears to be equitable.

Use of Small Buses

In addition to the specific modifications considered in this study to improve transit service and operations in the Iowa Quad Cities, the use of smaller vehicles is a possible area for improvement for CitiBus. Small buses typically have a passenger capacity of about 15 to 17 seats plus two wheelchair positions. See Figure 18 for an example of a small bus. These vehicles are about 25 feet long and almost 10 feet high. In comparison, Bettendorf's small bus vehicles are 30 feet long and have a 27-passenger capacity.

Given a 15-passenger vehicle, routes with 10 or fewer riders per hour are candidates for small buses, or an average of as many as two-thirds of seats would be filled. Variations in ridership based on individual trips basis could fill all seats and may, on occasion, cause standees. However, ridership information per trip is not available for CitiBus; thus, it is not known how often and by how much the average hourly vehicle loads fluctuate. Only three CitiBus routes are candidates for small buses. They are:

- Route 2—Marquette with 7.3 riders per hour;
- Route 3—Fairgrounds with 9.2 riders per hour;
- Route 6—Ridgeview with 8.7 riders per hour.

²² This is based on CitiBus' operating cost of \$50 per revenue hour (excludes overhead cost). On weekdays, two buses are reduced each day and on Saturdays, one bus is reduced in operating.

Figure 18
Sample Small Bus



Operating cost will generally be similar to that of standard buses now operated by CitiBus. Most of the operating cost for CitiBus is labor-related. CitiBus does not pay drivers less for driving a smaller vehicle. The labor cost of mechanics is not significantly different for maintaining a small bus versus a large bus. Thus, the labor cost component would not be reduced.

Fuel efficiency on a small bus is better than a standard vehicle, though overall maintenance costs are surprisingly similar. Small buses have a shorter useful life (typically 4 years) than standard coaches (typically 10 to 12 years) and require a more frequent overall expenditure for parts as well as for major components (engines, transmissions which need repair and/or replacement sooner than on larger vehicles). So while parts on a unit basis are less expensive than for a standard coach, the turnover of parts inventory for small buses nearly offsets the high unit costs associated with standard vehicles.

Finally, operating a mixed fleet limits flexibility in assigning vehicles to various routes. Only the above CitiBus routes would have small buses while the rest would have standard vehicles. It would be difficult to operate a small bus on a major route though the reverse would not be true.

Other than the marketing value of the small buses and their ability to navigate tight spaces, there is not a significant advantage for operating a small bus over a standard bus. However, CitiBus might experiment with the vehicle on one or more of the above routes assuming those routes do not have many trips where the seating capacity of the small vehicles are exceeded.

Service Expansion Options

In addition to the “Cost Neutral” proposals, several service expansion options were prepared for consideration as part of the TSM/Baseline Alternative. Table 15 summarizes expansion options for both Davenport’s and Bettendorf’s operations. Various levels are presented: low, medium, and high levels of expansion investment. The “low” level, assumes a 5 percent increase in operating costs. Similarly, “medium” is a 10 percent service expansion while “high” is a 15 percent increase. The Table shows for each level the approximate dollar value of each increase. Finally, the Table shows costs in 2005 dollars.

Many of the expansion ideas are for additional services on existing routes; either more days per week (for example, Sunday service) as well as longer service days. There are some new routes and services provided. One example is more service in the Jersey Ridge Road corridor under the 10 percent service increase level. Another is the institution of demand response service on Sundays under the “high” expansion level. Finally, some expansion ideas are not services at all, such as the inclusion of a marketing budget under all levels.

The additional services as noted in Table 15 would require some kind of increased funding. As Davenport is virtually at its maximum levy for transit taxes, a new and high tax ceiling would be required or new local sources of funds.

In addition to the operating costs associated with expansion, there are capital costs. Table 16 summarizes those expenditures. The capital costs include infrastructure such as for transit centers in Bettendorf and mid-town Davenport, as well as additional equipment to operate service. The costs are in 2005 dollars.

Table 15
Service Expansion Options²³

Possible Expansion Level/Services	Change in Operating Cost	Comments
Low (5% Increase = \$200,000)		
Implement Davenport Alternative A	(\$8,000)	
Implement Bettendorf Alternative A	\$0	
Additional Saturday service to all Davenport routes	\$107,250	
Additional Saturday service to all Bettendorf routes	\$35,750	
Additional service to Davenport Route 11 (weekday)	\$44,625	
Marketing budget	\$25,000	
TOTAL	\$204,625	
Medium (10% Increase = \$400,000)		
Implement Davenport Alternative A	(\$8,000)	
Implement Bettendorf Alternative A	\$0	
Additional Saturday service to all Davenport routes	\$53,625	
Additional Saturday service to all Bettendorf routes	\$17,875	
Operate Sunday service in Davenport and Bettendorf	\$118,300	Combination of fixed route and demand response
Add weekday service to Jersey Ridge Corridor	\$140,250	Would require capital cost of acquiring bus
Add Saturday service to Jersey Ridge Corridor	\$22,000	
Marketing Budget	\$50,000	
TOTAL	\$394,050	
High (15% Increase = \$600,000)		
Implement Davenport Alternative B	(\$300,000)	
Implement Bettendorf Alternative B	\$0	
Operate Sunday service in Davenport and Bettendorf	\$118,300	Combination of fixed route and demand response
Additional 5 demand response buses on Sunday	\$118,300	
Additional Saturday service to all Davenport routes	\$107,250	
Additional Saturday service to all Bettendorf routes	\$35,750	
Additional service to Davenport Routes 12 and 53	\$309,825	
Additional service to Davenport Route 11 (weekday)	\$58,013	
Add weekday service to Jersey Ridge Corridor	\$140,250	Would require capital cost of acquiring bus.
Add Saturday service to Jersey Ridge Corridor	\$22,000	
Marketing budget	\$50,000	
TOTAL	\$659,689	

²³ In year 2005 dollars.

Table 16
Service Expansion Capital Costs^{24,25}

Element	Description	Annual Cost
Additional shelters	Add 20 shelters throughout Davenport and Bettendorf at a cost of \$5,000/each (maintenance costs not included).	\$100,000
Additional bus stop signage/ Amenities	Add improved signage, benches, newspaper stands, etc. to 50 locations throughout the system at a cost of \$1,000 each.	\$50,000
Improved On-Street Transfer Center in Davenport (Minor transit center)	Improve existing location at 16th/Main with additional amenities, small weather protected area, operator restrooms.	\$250,000
Jersey Ridge bus	Additional bus needed to operate service on both Weekdays and Saturdays.	\$250,000
Marketing	Additional marketing for Davenport and Bettendorf transit systems	\$50,000
New transfer center in Davenport	Cost is a general estimate. Ultimately dependent on land acquisition, type and amount of passenger amenities and the design of the structure.	\$1,000,000
New transfer center in Bettendorf	Cost is a general estimate. Ultimately dependent on land acquisition, type and amount of passenger amenities and the design of the structure.	\$1,000,000

²⁴ In year 2005 dollars.

²⁵ These capital costs are not included in Table 15.

C. Build Alternatives

In addition to the No Build and Baseline Alternatives, seven Build options will also be evaluated in this study. The Build options include both limited stop and express bus/BRT service along with trolley service. This section of the report describes each of the seven Build alternatives, listed as follows and illustrated in Figure 19.

Table 17
Build Alternatives

Corridor	Type of Service
Brady/Harrison Streets	Commuter/BRT
18 th Street (Bettendorf)	Commuter/BRT
Locust Street/Middle Road	Limited Stop/Express
Kimberly Road	Limited Stop
53 rd Street	Limited Stop
Riverfront Connector	Circulator
67 th Street	Limited Stop

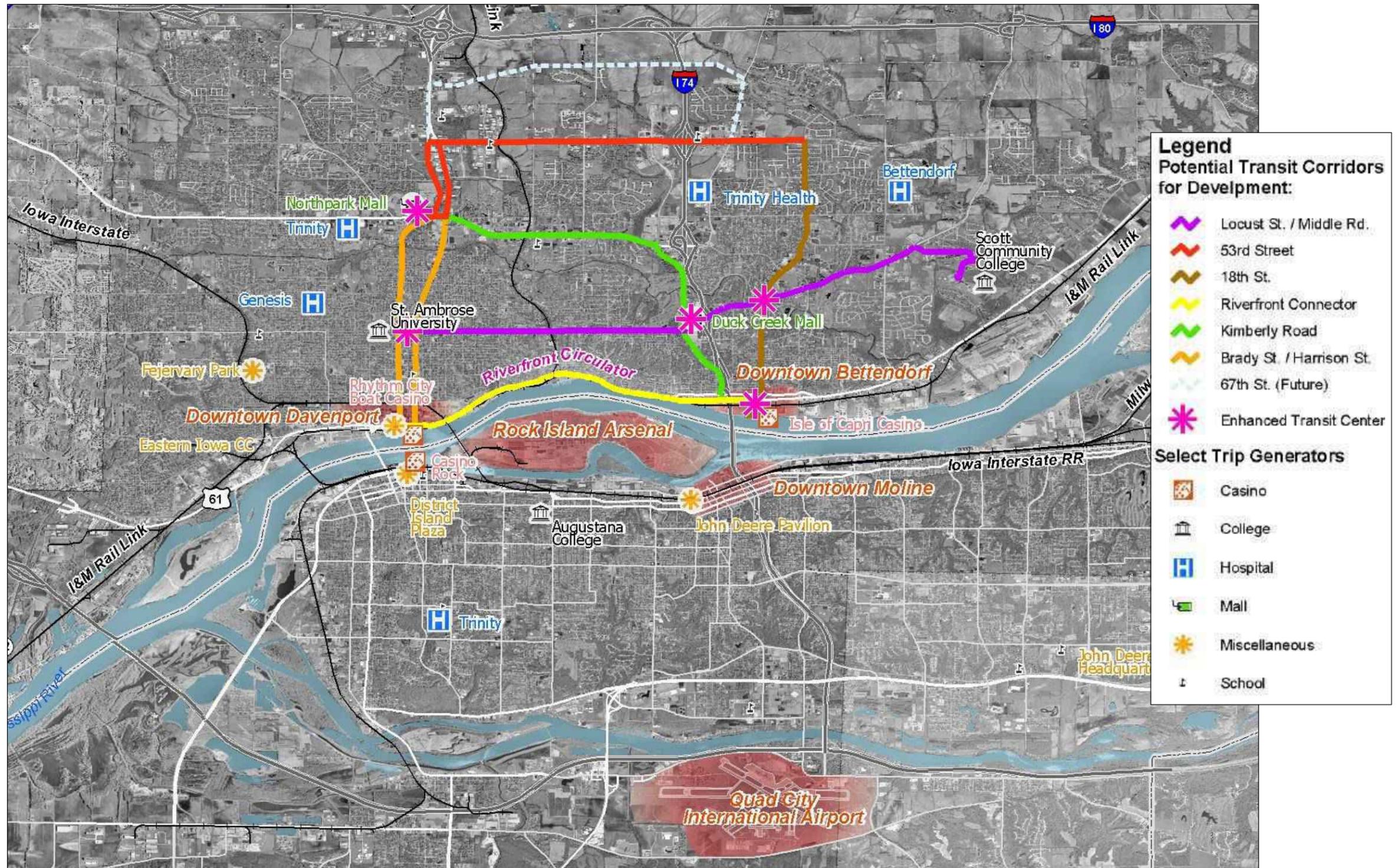
The proposed Brady/Harrison Streets and 18th Street services are seen as seminal in that they would be implemented together and before any of the other corridors identified in Table 17 are developed. These two corridors would function as the spines of transit service in the Iowa Quad Cities and would also operate at a higher level of service than the existing routes.

The description of each of the seven Build alternatives includes physical and operational characteristics such as:

- Route termini and length
- Areas served
- Proposed stops and park-and-ride facilities
- Hours of service
- Transfer locations
- Frequency.

These Build alternatives are in addition to the existing transit service operating in the Iowa Quad Cities, i.e. they do not entail the consolidation or elimination of any of the existing Bettendorf Transit and CitiBus routes.

Figure 19
Transit Build Alternatives



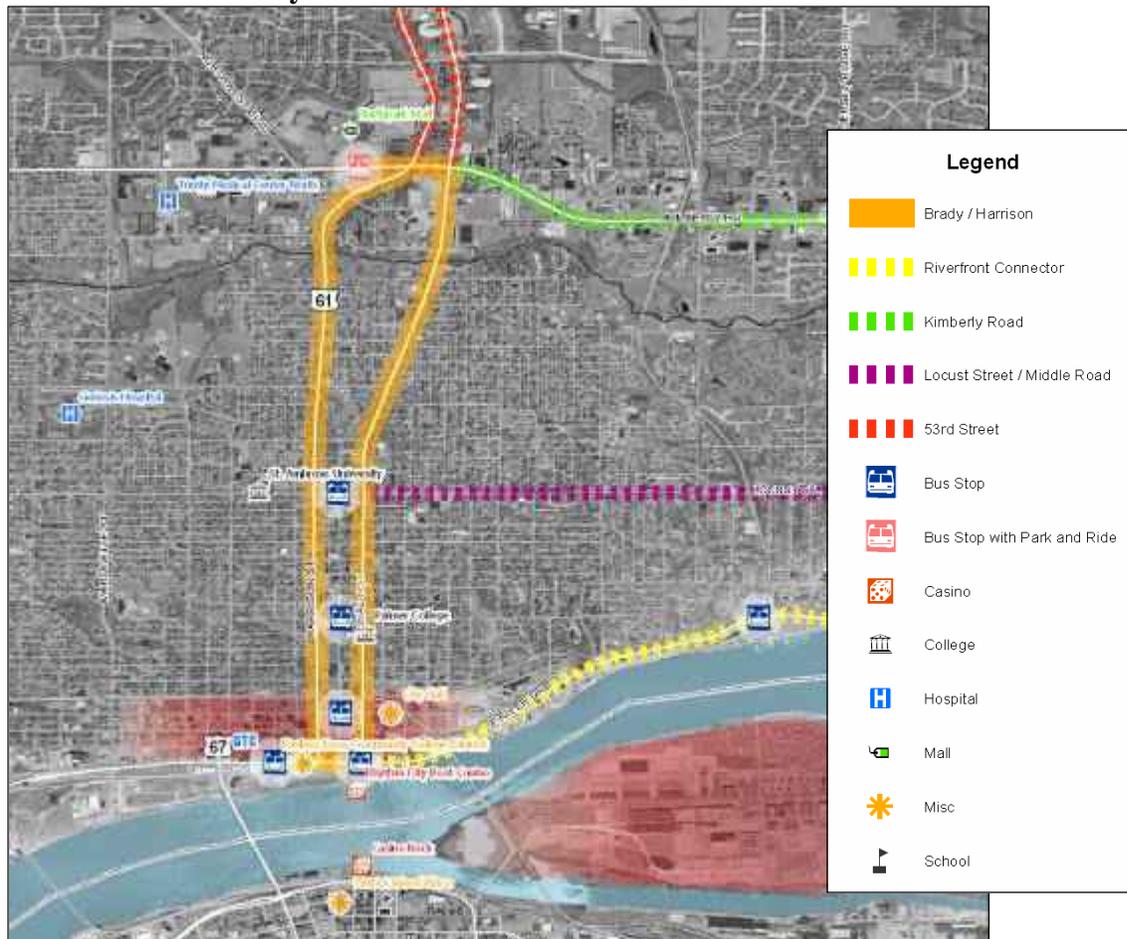
Brady/Harrison

The proposed commuter/BRT service on the Brady/Harrison corridor would operate between Northpark Mall and the downtown Davenport GTC. This proposed service is in addition to the existing Route 4 operated by CitiBus. The approximate one-way length of the route is 3.1 miles. This route would operate from 6:00 AM to 9:00 AM and 3:00 PM to 6:00 PM on weekdays. The proposed frequency is 15 minutes. Stops are proposed at:

- Downtown GTC
- City Hall (4th Street)
- Palmer College (10th Street)
- St. Ambrose University (Locust Street)
- Northpark Mall (Kimberly Road).

Patrons can transfer to other CitiBus routes at the GTC, Locust Street, and Kimberly Road. Under this scenario, a park-and-ride facility is included at Northpark Mall. Figure 20 illustrates the proposed Brady/Harrison commuter/BRT service.

Figure 20
Brady/Harrison Commuter/BRT Service



18th Street

A new, all-day commuter/BRT service is proposed on 18th Street in Bettendorf between 53rd Street and the Isle of Capri Casino in downtown, illustrated in Figure 21. The approximate one-way length of the route is 4.0 miles. The route would operate from 8:00 AM to 8:00 PM on weekdays with 15-minute headways. Stops are proposed at:

- Isle of Capri Casino
- Bettendorf City Hall
- Middle Road
- Spruce Hills Drive (Bettendorf Library, Family Museum of Arts and Science)
- Tanglefoot Lane (Bettendorf High School)
- 53rd Street (also a park-and-ride).

Patrons could transfer to east-west routes at City Hall for the proposed Riverfront Connector, Middle Road and 53rd Street.

Figure 21
18th Street Commuter/BRT Service



Locust Street/Middle Road

The proposed all-day service on Locust Street/Middle Road between St. Ambrose University in Davenport and Scott Community College in Bettendorf would operate in conjunction with the existing CitiBus Route 10 and Bettendorf Transit Green Route. One of the advantages of this route is that a passenger traveling between Davenport and Bettendorf would no longer be required to transfer. Figure 22 illustrates the proposed limited stop service on Locust Street/Middle Road.

The approximate one-way length of the route is 6.6 miles. This route would operate every 15 minutes from 8:00 AM to 8:00 PM on weekdays. Passengers can transfer at St. Ambrose University, Kimberly Road, and 18th Street. Stops are proposed at the following locations:

- St. Ambrose University (Brady Street/Harrison Street)
- Kimberly Road
- 18th Street
- Scott Community College.

**Figure 22
 Locust Street/Middle Road Limited Stop Service**



Kimberly Road

This proposed limited stop service would be in addition to existing transit service on Kimberly Road and segments thereof, illustrated in Figure 23. It would operate every 15 minutes from 8:00 AM to 8:00 PM on weekdays between Northpark Mall and Bettendorf City Hall. The approximate one-way length of the route is 5.4 miles. Stops are proposed at the following locations. Transfer locations are denoted with an asterisk (*):

- Northpark Mall/Brady/Harrison Streets (also a park-and-ride)*
- Jersey Ridge
- Elmore Avenue
- Middle Road*
- Bettendorf City Hall.

**Figure 23
 Kimberly Road Limited Stop Service**



Legend	
	Kimberly Road
	Diary School/Hunter Green
	State Street
	9th Street
	Lowell Street/Middle Road
	16th Street
	Adventure Connector
	Bus Stop
	Bus Stop with Limited Stop
	Casino
	College
	Hospital
	Mall
	Museum
	Pond

53rd Street

The proposed limited stop service on 53rd Street (illustrated in Figure 24) would serve existing commercial and retail development. It would operate every 15 minutes on weekdays from 8:00 AM to 8:00 PM, between Brady/Harrison Streets in Davenport and 18th Street in Bettendorf. This new service would require the northerly extension of the Brady/Harrison commuter/BRT service from Northpark Mall to 53rd Street. The route is approximately 5.2 miles long, one-way. Stops are proposed at the following locations, which would also have park-and-ride facilities. Patrons can transfer at Brady/Harrison Streets and 18th Street.

- Brady/Harrison Streets
- Jersey Ridge
- 18th Street.

Figure 24
53rd Street Limited Stop Service



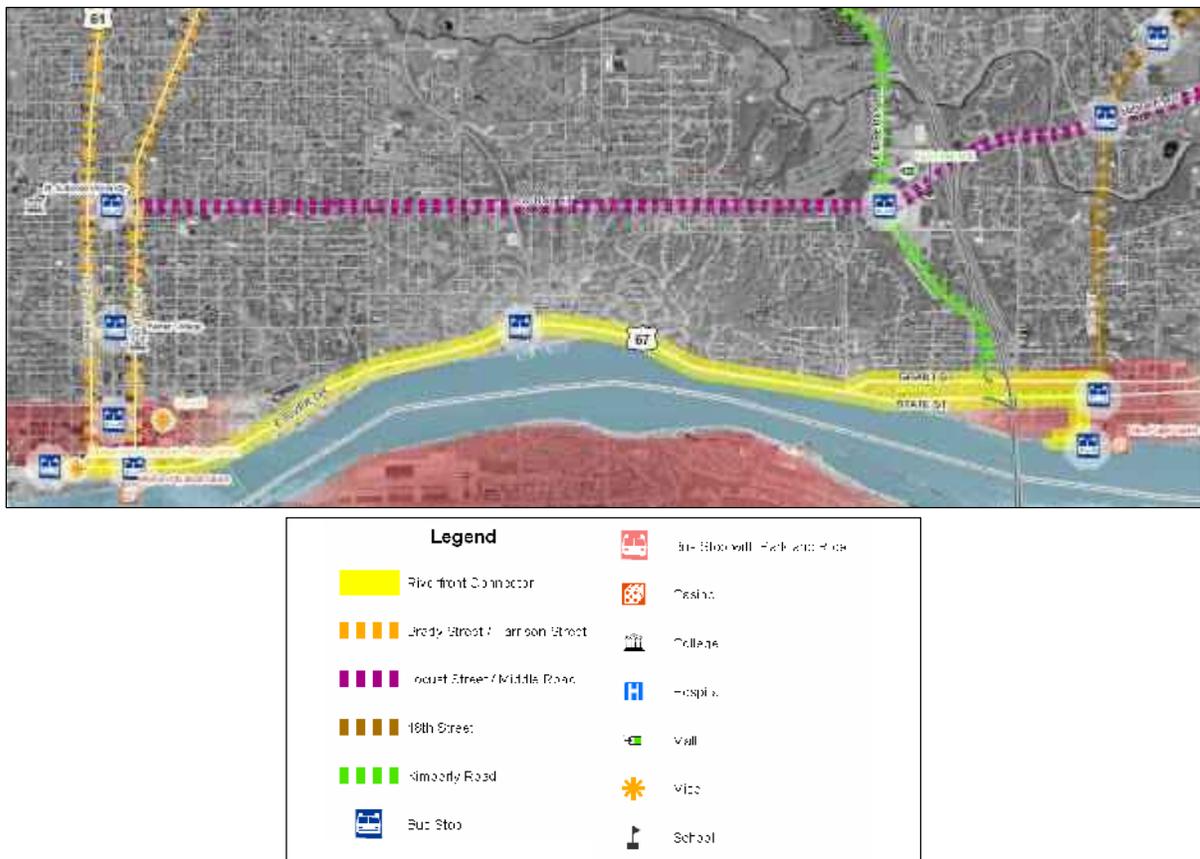
Riverfront Connector

A new, all-day connector service is proposed along the riverfront of downtown Davenport and Bettendorf. This service could enhance tourism in the Iowa Quad Cities by connecting the downtowns, the quaint Village of East Davenport, and casinos along East River Drive. As such, this service is also envisioned to use a trolley vehicle instead of a regular bus. The proposed route would operate on East River Drive and the one-way pair of State and Grant Streets in Bettendorf. The approximate one-way length of the route is 4.3 miles. Service would be available between 8:00 AM and 8:00 PM on weekdays, with 15-minute headways. Stops are proposed at the following locations:

- Davenport downtown GTC
- Rhythm City Casino
- Village of East Davenport
- Bettendorf City Hall
- Isle of Capri Casino.

Patrons could transfer to other transit routes at the GTC and Bettendorf City Hall. Figure 25 illustrates the proposed Riverfront Connector.

**Figure 25
 Riverfront Connector**



67th Street

The 2035 Bi-State Regional Commission travel demand model estimates that the zone that includes the future 67th Street corridor between Jersey Ridge and I-74 would experience significant growth in employment. Currently, there are 140 jobs in the zone, and this number is expected to increase to 1,710 by 2035. As such, the Study Advisory Committee considers it relevant to provide transit service in this corridor. The proposed limited stop service would operate every 15 minutes from 8:00 AM to 8:00 PM on weekdays. This new service would require the northerly extension of the proposed Brady/Harrison commuter/BRT service between 53rd Street and 67th Street. It also assumes that the 53rd Street limited stop service is already in place. The route is approximately 4.9 miles long one-way. Figure 26 illustrates the proposed 67th Street limited stop service. Patrons can transfer at 53rd Street for other routes. Stops are planned at the following locations:

- Highway 61 (Brady/Harrison Streets)
- Jersey Ridge (also a park-and-ride)
- Utica Ridge
- 53rd Street.

Figure 26
67th Street Limited Stop Service



IV. SUMMARY

This document has defined the initial set of alternatives for consideration in this study. Table 18 presents those transit options that define the candidates for refinement and the subsequent actions that have been taken, i.e. whether to refine the definition of these alternatives so that they will be evaluated in the study. The second step of this documentation defined those transit alternatives that have been recommended for further study. They are presented in Table 19.

The next step in the study is the evaluation of the alternatives defined in Table 19 to identify the locally preferred alternative or strategy in improving transit service in the Iowa Quad Cities.

Table 18
Evaluation of Initial Set of Transit Alternatives

Transit Technology	Streetcar/Trolley	BRT	LRT	Commuter Rail	PRT	AGT	Monorail
<i>Application</i>	Short distance, local trips	Line haul, medium distance trips	Line haul, medium distance trips (15 to 20 miles)	Line haul, long distance (20 to 100 miles)	Short distance, local trips	Short distance, local trips	Short distance trips
<i>Capital cost per mile</i>	\$10-\$30 million	\$10-40 million	\$20-40 million	\$3-15 million	Not available	\$40-\$60 million	\$40-80 million
<i>Operating cost per passenger trip²⁶</i>	Kenosha, WI: \$4.56	Boston: \$11 million/year ²⁷	St. Louis: \$2.47	Dallas: \$12.58	No system in operation	Detroit: \$3.50 ²⁸	Las Vegas: \$2.21 ²⁹
<i>Operating Speed</i>							
▪ <i>Maximum</i>	30 MPH	50 MPH	55 MPH	79 MPH	30 MPH	62 MPH	55 MPH
▪ <i>Average</i>	15 MPH	30 MPH	40 MPH	50 MPH	18 MPH	40 MPH	35 MPH
<i>Station spacing</i>	1/8 to 1/4 mile	1/2 to 1 mile	1/4 to 1 mile	2 to 5 miles	Less than 1/2 mile	1/4 to 1 mile in activity centers 1 to 2 miles in other areas	Comparable to LRT
<i>Typical vehicle capacity</i>	60 passengers	81 passengers	166 passengers	120 passengers	1-2 passengers	Comparable to streetcar/trolley	Comparable to LRT
<i>Ridership</i>	Kenosha: 67,600/year	Boston: 110,500/day ¹⁹	St. Louis: 14.8 million/year	Dallas: 1.4 million/year	Not available	Detroit: 5,000/day	Las Vegas: 25,800/day
<i>Running surface</i>	On-street, shared lane	Separate right-of-way is preferred	Exclusive fixed guideway	Exclusive fixed guideway	Exclusive fixed guideway	Exclusive fixed guideway	Exclusive fixed guideway
<i>Environmental impacts</i>	Right-of-way, noise	Right-of-way, noise, emissions	Right-of-way, noise	Noise, emissions	Aesthetic impacts of elevated structures	Aesthetic impacts of elevated structures, required grade-separation	Aesthetic impacts of elevated structures, required grade-separation
<i>Potential corridors in the Iowa Quad Cities</i>	Brady/Harrison 53 rd Street River Drive 18 th Street (Bettendorf) Locust Street/Middle Road	Brady/Harrison	Brady/Harrison 53 rd Street	I&M Rail Link Iowa Interstate Railroad I&M Railroad	Not applicable	Not applicable	Not applicable
<i>Recommended Action</i>	Need further study	Need further study	No further study needed	No further study needed	No further study needed	No further study needed	No further study needed

²⁶ Source: Trinity Railway Express, 2003 National Transit Database, Federal Transit Administration.

²⁷ Source: Federal Transit Administration, 2003 Annual Report on New Starts. For year 2010 of Silver Line Phase III, Massachusetts Bay Transportation Authority.

²⁸ Source: <http://en.wikipedia.org>.

²⁹ Source: *Las Vegas Review-Journal*, December 14, 2005.

Table 19
Definition of Alternatives

NO BUILD ALTERNATIVE

Maintain current transit services provided by Bettendorf Transit and CitiBus.

BASELINE ALTERNATIVES

A. Cost-Neutral Options

1. Bettendorf A

- Route 2 (Gold) – Add segment serving the Hy-Vee from the restructured Route 4 (Green). Add south segment of Route 5 (Purple).
- Route 4 (Green) to/from Scott Community College – Eliminate segment serving the Hy-Vee along Devil’s Glen Road and Middle Road. Provide this service by restructuring Route 2 (Gold).
- Route 5 (Purple) – Restructure Route 5 to pick up portions of Gold Route.

2. Bettendorf A

- Implement changes specified under Alternative A.
- Reduce service to Kimberly Road/Middle Road by having all routes meet at 18th Street and Spruce Hills Drive.
- Extend Purple Route to Wal-Mart at Elmore Avenue and 53rd Street, contingent upon extension of CitiBus Route 10 East to 18th Street at Spruce Hills Drive.

3. Davenport A

- Route 2 (Marquette) – Operate weekday off-peak trips via Kimberly Road and peak trips via 35th Street. Modify routing through downtown Davenport and the GTC. Maintain one hour headways on Saturdays and eliminate the second bus.
- Route 3 (Fairgrounds) – Modify routing through downtown and the GTC.
- Route 4 (Brady/Harrison) – Modify outbound routing to include service to St. Ambrose University. Combine with Route 7.
- Route 5A (North Park) – Eliminate Grand-Central Park-Bridge loop. Move Eastern Avenue segment between 32nd Street and Kimberly Road to Jersey Ridge Road.
- Route 6 (Ridgeview) – Convert to deviated fixed route service.
- Route 7 (Bridgeline) – Combine with Route 4 (Brady/Harrison).
- Route 8 (Telegraph) – Modify routing through the GTC.
- Route 9 (Hickory Grove) – Modify routing through the GTC.

Table 19 (continued)
Definition of Alternatives

BASELINE ALTERNATIVES (CONTINUED)

A. Cost-Neutral Options

4. Davenport B

- Route 1 (Rockingham) – Combine with Route 8.
- Route 2 (Marquette) – Operate weekday off-peak trips via Kimberly Road and peak trips via 35th Street. Modify routing through downtown Davenport and the GTC. Maintain one hour headways on Saturdays and eliminate the second bus. Extend route to Hy-Vee on Kimberly Road to increase service within the corridor.
- Route 3 (Fairgrounds) – Shorten route length. Modify downtown/GTC routing. Terminate route at West Central Park Avenue to achieve 30-minute headway.
- Route 4 (Brady/Harrison) – Redirect to a new proposed transit center located at or near St. Ambrose University. Combine with Route 7 to minimize transfers and improve running time.
- Route 5A (North Park) – Redirect to a new proposed transit center located at or near St. Ambrose University. Increase frequency. Patrons destined to downtown Davenport would transfer at the new transit center.
- Route 5B (Kimberly Downs) – Redirect to a new proposed transit center located at or near St. Ambrose University. Patrons destined to downtown Davenport would transfer at the new transit center. Increase frequency. Move to Jersey Ridge.
- Route 6 (Ridgeview) – Convert to deviated fixed route.
- Route 8 (Telegraph) – Combine with Route 1.
- Route 9 (Hickory Grove) – Combine with Route 10 West (see below).
- Route 10 (Central Park West) – Split into west and east segments and serve existing Route 9 service area.
- Route 10 (Locust East) – Extend to 18th Street and Spruce Hills Drive in Bettendorf.
- Route 11 (Tripper) – Convert to deviated fixed route service. This change would improve service frequency, from irregular to hourly, all day (6:00 AM to 6:00 PM) and on Saturdays. Requires Bettendorf Transit to extend its Purple Route to the west and for Davenport to extend Route 10 East easterly to 18th Street and Spruce Hills Drive in Bettendorf, the new transfer hub.
- Route 12 (East Davenport) – No service east of Elmore Avenue. Bettendorf Purple Route would pick up the service and provide transfer opportunity at Wal-Mart.
- Route 53 (53rd Street) – Combine with Route 11.

Table 19 (continued)
Definition of Alternatives

BASELINE ALTERNATIVES (CONTINUED)

B. Service Expansion Options

Possible Expansion Level/Services	Change in Operating Cost
Low (5% Increase = \$200,000)	
Implement Davenport Alternative A	(\$8,000)
Implement Bettendorf Alternative A	\$0
Additional Saturday service to all Davenport routes	\$107,250
Additional Saturday service to all Bettendorf routes	\$35,750
Additional service to Davenport Route 11 (weekday)	\$44,625
Marketing Budget	\$25,000
TOTAL	\$204,625
Medium (10% Increase = \$400,000)	
Implement Davenport Alternative A	(\$8,000)
Implement Bettendorf Alternative A	\$0
Additional Saturday service to all Davenport routes	\$53,625
Additional Saturday service to all Bettendorf routes	\$17,875
Operate Sunday service in Davenport and Bettendorf (Combination of fixed route and demand response)	\$118,300
Add weekday service to Jersey Ridge Corridor (Would require capital cost of acquiring bus)	\$140,250
Add Saturday service to Jersey Ridge Corridor	\$22,000
Marketing Budget	\$50,000
TOTAL	\$394,050
High (15% Increase = \$600,000)	
Implement Davenport Alternative B	(\$300,000)
Implement Bettendorf Alternative B	\$0
Operate Sunday service in Davenport and Bettendorf (Combination of fixed route and demand response)	\$118,300
Additional 5 demand response buses on Sunday	\$118,300
Additional Saturday service to all Davenport routes	\$107,250
Additional Saturday service to all Bettendorf routes	\$35,750
Additional service to Davenport Routes 12 and 53	\$309,825
Additional service to Davenport Route 11 (weekday)	\$58,013
Add weekday service to Jersey Ridge Corridor (Would require capital cost of acquiring bus)	\$140,250
Add Saturday service to Jersey Ridge Corridor	\$22,000
Marketing Budget	\$50,000
TOTAL	\$659,689

Table 19 (continued)
Definition of Alternatives

BASELINE ALTERNATIVES (CONTINUED)

B. Service Expansion Options – Capital Costs

Element	Description	Annual Cost
Additional Shelters	Add 20 shelters throughout Davenport and Bettendorf at a cost of \$5,000/each (maintenance costs not included).	\$100,000
Additional Bus Stop Signage/ Amenities	Add improved signage, benches, newspaper stands, etc. to 50 locations throughout the system at a cost of \$1,000 each.	\$50,000
Improved On-Street Transfer Center in Davenport	Improve existing location at 16th/Main with additional amenities, small weather protected area, operator restrooms.	\$250,000
Jersey Ridge Equipment	Additional bus needed to operate service on both Weekdays and Saturdays.	\$250,000
Marketing	Additional marketing for Davenport and Bettendorf transit systems	\$50,000
New Transfer Center in Davenport	Cost is a general estimate. Ultimately dependent on land acquisition, type and amount of passenger amenities and the design of the structure.	\$1,000,000
New Transfer Center in Bettendorf	Cost is a general estimate. Ultimately dependent on land acquisition, type and amount of passenger amenities and the design of the structure.	\$1,000,000

Table 19 (continued)
Definition of Alternatives

BUILD ALTERNATIVES³⁰				
Corridor	Limits	Length (one-way)	Type of Service	Stops/ Areas Served³¹
Brady/Harrison	GTC – Northpark Mall	3.1 miles	Commuter/ BRT	GTC+ City Hall (4th Street) Palmer College (10 th Street) St. Ambrose University+ Northpark Mall*+
18 th Street	Isle of Capri Casino – 53 rd Street	4.0 miles	Commuter/ BRT	Isle of Capri Casino Bettendorf City Hall+ Middle Road+ Spruce Hills Drive Tanglefoot Lane 53 rd Street*+
Locust Street/ Middle Road	St. Ambrose University – Scott Community College	6.6 miles	Limited Stop/ Express	St. Ambrose University+ Kimberly Road+ 18 th Street+ Scott Community College
Kimberly Road	Northpark Mall – Bettendorf City Hall	5.4 miles	Limited Stop	Northpark Mall*+ Jersey Ridge Elmore Avenue Middle Road+ Grant Street/State Street+ Bettendorf City Hall
53 rd Street ³²	Brady/Harrison – 18 th Street	5.2 miles	Limited Stop	Brady/Harrison*+ Jersey Ridge* 18 th Street*+
Riverfront Connector	GTC – Isle of Capri Casino	4.3 miles	Circulator	GTC+ Rhythm City Casino Village of East Davenport Bettendorf City Hall+ Isle of Capri Casino
67 th Street/ Utica Ridge ³³	Highway 61 – Utica Ridge 67 th Street – 53 rd Street	4.9 miles	Limited Stop	Highway 61+ Jersey Ridge* Utica Ridge 53 rd Street+

³⁰ All new service would operate on weekdays and have 15-minute headways. Hours of operation are from 8:00 AM to 8:00 PM except for Brady/Harrison and 18th Street Commuter/BRT service, which would operate from 6:00 AM to 9:00 AM and 3:00 PM to 6:00 PM.

³¹ A “*” denotes that the bus stop is also a park-and-ride facility while a “+” denotes that the stop is also a transfer location.

³² Would require the extension of the Brady/Harrison service from Northpark Mall to 53rd Street.

³³ Would require the extension of the Brady/Harrison Commuter/BRT service from 53rd Street to 67th Street. Assumes that the 53rd Street Limited Stop service would already be in place.

Appendix A

Definition of Bettendorf Baseline Alternatives

Table A-1
Baseline Alternative: Bettendorf "A" – Proposed Route Modifications^{1,2}

Action: Reconfigure routes with low ridership.			
Routes Affected	Description	Comments	Potential Impact on Existing Ridership
Route 2 (Gold)	Maintain same routing to Maplecrest/29th and then via Maplecrest-Devils Glen-Hy-Vee-Devils Glen-Middle-Middle Haven-Belmont-Devils Glen-Crow Creek-31st-Park Wild-Tanglefoot-Oakwood-Welshire-Spruce Hill-Avalon-18th-Middle-Kimberly Transfer point.	Picks up Hy-Vee portion of Green route and south portion of Purple route.	<ul style="list-style-type: none"> Weekday: A total of 6 weekday riders are affected, although all are within 2 blocks of either the restructured Gold or Purple routes. This accounts for 6 percent of the average daily ridership. Saturday: No impact.
Route 5 (Purple)	Same routing to Utica Ridge/Spruce Hill and then via Utica Ridge-Hillside-Olympia-Middle-Kimberly Transfer point.	Picks up portion of Gold route. If possible, route should be routed through Duck Creek Mall entering at Home Depot and exiting between McDonald's and Walgreens.	<ul style="list-style-type: none"> Weekday: No impact. Saturday: No impact.
Action: Improve connections/transfers at Kimberly Road/Locust Road.			
Routes Affected	Description	Comments	Potential Impact on Existing Ridership
Route 2 (Gold)	Maintain same routing to Maplecrest/29th and then via Maplecrest-Devils Glen-Hy-Vee-Devils Glen-Middle-Middle Haven-Belmont-Devils Glen-Crow Creek-31st-Park Wild-Tanglefoot-Oakwood-Welshire-Spruce Hill-Avalon-18th-Middle/Kimberly Transfer point.	Picks up Hy-Vee portion of Green route and south portion of Purple route.	<ul style="list-style-type: none"> Weekday: A total of 6 weekday riders are affected, although all are within two blocks of either the restructured Gold or Purple routes. This accounts for 6 percent of the average daily ridership. Saturday: No impact.
Route 4 (Green)	Hy-Vee portion of route eliminated.	Segment picked up by restructured Gold route.	<ul style="list-style-type: none"> Weekday: No impact. Saturday: No impact.
Route 5 (Purple)	Same routing to Utica Ridge/Spruce Hill and then via Utica Ridge-Hillside-Olympia-Middle-Kimberly Transfer point.	Picks up portion of Gold route. If possible, route should be routed through Duck Creek Mall entering at Home Depot and exiting between McDonald's and Walgreens.	<ul style="list-style-type: none"> Weekday: No impact. Saturday: No impact.
Action: Improve travel time to/from Scott Community College.			
Routes Affected	Description	Comments	Potential Impact on Existing Ridership
Route 4 / Green	Hy-Vee portion of route eliminated.	Segment picked up by restructured Gold route.	<ul style="list-style-type: none"> Weekday: No impact. Saturday: No impact.
Option: Implement after six months if Saturday ridership does not increase after implementation of above route changes.			
Routes Affected	Description	Comments	Potential Impact on Existing Ridership
Route 1 (Red) Route 3 (Blue) Saturday Service only	Combine Blue and Red routes and move Purple route to 60 minute headway. Route would operate Kimberly/Locust Transfer point-Lincoln-14th-Central-28th-State-Isle of Capri-State-I-74-MetroLink Station, returning via I-74-State-18th-Lincoln-Kimberly/Middle Transfer point.	Option operates Saturday service with 2 buses only. 4 routes would all operate on 1 hour headway.	<ul style="list-style-type: none"> Saturday: No impact on Route 3 (Blue) riders Saturday: 3 riders on Route 1 (Red) Route affected, approximately 10 percent of average Saturday ridership.

¹ No changes to Bettendorf Transit Routes 1 (Red) and 3 (Blue).

² Source: TranSystems.

Table A-2
Baseline Alternative: Bettendorf “B” – Proposed Route Modifications³

Action: Reduce service to/from Kimberly Road/Middle Street.			
Routes Affected	Description	Comments	Potential Impact on Existing Ridership
Route 1 (Red)	Outbound routing via New TC-18th-State-G Thuenen-Isle of Capri-G Thuenen-Grant-I-74-River-Centre Station MetroLink. Inbound routing same, exiting I-74 at State and continuing to Isle of Capri, and 18th street north to New TC.	New route picks up connections to Moline and a portion of the old Blue route (including the Isle of Capri).	<ul style="list-style-type: none"> Weekday: Riders from the Holmes/8th/State loop traveling to Moline (4 a day, or 4% of average daily ridership) will need to transfer from the restructured Blue route to this route at a designated location (probably City Hall). Saturday: Riders from the Holmes/8th/State loop traveling to Moline (2 a day, or 7% of average Saturday ridership) will need to transfer from the restructured Blue route to this route at a designated location (probably City Hall).
Route 2 (Gold)	Outbound routing via New TC-18th-Tech Drive-Victoria-Maplecrest-Devils Glen (Hy-Vee)-Devils Glen-Middle-Middle Haven-Belmont-Devils Glen-Crow Creek-31st-Park Wild-Tanglefoot-Oakwood-Welshire-Spruce Hills-Olympia-Middle-18th-New TC.	Route serves new development east of Devils Glen and existing Gold route destinations (such as the Post Office).	<ul style="list-style-type: none"> Portions eliminated affect 8 riders (or 8% of average daily ridership), however all within 2 blocks of restructured service. Existing riders on Hawthorne, Hillside, and Magnolia will be covered by the revised Purple route.
Route 4 (Green)	Outbound routing via New TC-18th-Spruce Hills-Middle-Belmont-Scott CC-State-Devils Glen-Middle-Spruce Hills-New TC.	Route no longer serves Hy-Vee (now served by Gold route). On-demand continues to operate on east end of route.	<ul style="list-style-type: none"> Weekday: No impact, although some passengers would be served by the restructured Gold route. Saturday: No impact, although some passengers would be served by the restructured Gold route.
Route 5 (Purple)	Outbound routing via New TC-18th-53rd-Hy-Vee/Borders loop-53rd-Elmore-Super Wal-Mart-53rd-Cinema 53-Utica Ridge-Hillside-Woodlawn-Spruce Hills-18th-New TC.	Route picks up Hillside portion of old Gold route and now provides service to Wal-Mart. Connections can be made at both Wal-Mart and Northridge Shopping Center.	<ul style="list-style-type: none"> Weekday: No impact, although some passengers would be served by the restructured Gold route. Saturday: No impact, although some passengers would be served by the restructured Gold route.

Action: Reconfigure routes with low ridership.			
Routes Affected	Description	Comments	Potential Impact on Existing Ridership
Route 5 (Purple)	Outbound routing via New TC-18th-53rd-Hy-Vee/Borders loop-53rd-Elmore-Super Wal-Mart-53rd-Cinema 53-Utica Ridge-Hillside-Woodlawn-Spruce Hills-18th-New TC.	Route picks up Hillside portion of old Gold route and now provides service to Wal-Mart. Connections can be made at both Wal-Mart and Northridge Shopping Center.	<ul style="list-style-type: none"> No existing riders would be affected although some would be served by the restructured Gold route. No existing riders would be affected although some would be served by the restructured Gold route.

³ Source: TranSystems.

Table A-3
Baseline Alternative: Bettendorf “B” – Proposed Route Modifications⁴ (continued)

Action: Relocate transfer point to 18th Street/Spruce Hills Drive.⁵			
Routes Affected	Description	Comments	Potential Impact on Existing Ridership
Route 1 (Red)	Outbound routing via New TC-18th-State-G Thuenen-Isle of Capri-G Thuenen-Grant-I-74-River-Centre Station MetroLink. Inbound routing same, exiting I-74 at State and continuing to Isle of Capri, and 18th street north to New TC.	New route picks up connections to Moline and a portion of the old Blue route (including the Isle of Capri).	<ul style="list-style-type: none"> Weekday: Riders from the Holmes/8th/State loop traveling to Moline (4/day or 4 percent of average daily ridership) will need to transfer from the restructured Blue route to this route at a designated location (probably City Hall). Saturday: Riders from the Holmes/8th/State loop traveling to Moline (2 a day, or 7 percent of average Saturday ridership) will need to transfer from the restructured Blue route to this route at a designated location (probably City Hall).
Route 2 (Gold)	Outbound routing via New TC-18th-Tech Drive-Victoria-Maplecrest-Devils Glen (Hy-Vee)-Devils Glen-Middle-Middle Haven-Belmont-Devils Glen-Crow Creek-31st-Park Wild-Tanglefoot-Oakwood-Welshire-Spruce Hills-Olympia-Middle-18th-New TC.	Route serves new development east of Devils Glen and existing Gold route destinations (such as the Post Office).	<ul style="list-style-type: none"> Weekday: Portions eliminated affect 8 riders (or 8 percent of average daily ridership). However, all are within two blocks of restructured service. Saturday: Existing riders on Hawthorne, Hillside, and Magnolia will be covered by the revised Purple route.
Route 3 (Blue)	Outbound routing via New TC-18th-Middle-Kimberly/Locust Transfer point-Kimberly-Lincoln-14th-Mississippi-Holmes-8th-State-Devils Glen-Central-21st-Cody-23rd-Spruce Hills-18th-New TC.	Route picks up Holmes/8th/State loop and portions of old Blue route. If feasible, route should be routed through Mall at Home Depot, exiting between McDonald's and Walgreens with a transfer point at JoVann's. If running time permits, the route could also be routed to Isle of Capri.	<ul style="list-style-type: none"> Weekday: No impact, although some riders would be served by the restructured Red route. Saturday: No impact, although some riders would be served by the restructured Red route.
Route 4 (Green)	Outbound routing via New TC-18th-Spruce Hills-Middle-Belmont-Scott CC-State-Devils Glen-Middle-Spruce Hills-New TC.	Route no longer serves Hy-Vee (now served by Gold route). On-demand continues to operate on east end of route.	<ul style="list-style-type: none"> Weekday: No impact, although some riders would be served by the restructured Gold route. Saturday: No impact, although some riders would be served by the restructured Gold route.
Route 5 (Purple)	Outbound routing via New TC-18th-53rd-Hy-Vee/Borders loop-53rd-Elmore-Super Wal-Mart-53rd-Cinema 53-Utica Ridge-Hillside-Woodlawn-Spruce Hills-18th-New TC.	Route picks up Hillside portion of old Gold route and now provides service to Wal-Mart. Connections can be made at both Wal-Mart and Northridge Shopping Center.	<ul style="list-style-type: none"> Weekday: No impact, although some riders would be served by the restructured Gold route. Saturday: No impact, although some riders would be served by the restructured Gold route.

Action: Improve travel time to/from Scott Community College			
Routes Affected	Description	Comments	Potential Impact on Existing Ridership
Route 4 (Green)	Outbound routing via New TC-18th-Spruce Hills-Middle-Belmont-Scott CC-State-Devils Glen-Middle-Spruce Hills-New TC.	Route no longer serves Hy-Vee (now served by Gold route). On-demand continues to operate on east end of route.	<ul style="list-style-type: none"> No existing riders would be affected although some would be served by the restructured Gold route. No existing riders would be affected although some would be served by the restructured Gold route.

⁴ Source: TranSystems.

⁵ This system enhancement could include a facility with restrooms and other passenger amenities.

Appendix B

Definition of Davenport Baseline Alternatives

Table B-1
Baseline Alternative "A" – Davenport Final Proposal for Weekday Service

Routes Affected	Summary of Change	Frequency minutes		Potential Impact on Existing Ridership			Number of Vehicles Required		Comments
		Current	New	Current	Change	New	Current	New	
Route 1 (Rockingham)	No Change: Demand response was considered but the more efficient use for vehicles is to continue operating existing service. Demand response in these and other areas will be more effective if started on Sunday because it would be a "new" service. Reducing existing service to demand response would not save money.	40	40	157	0	157	1	1	
Route 2 (Marquette)	<ul style="list-style-type: none"> Weekday: Operate off peak trips via Kimberly and peak trips via 35th Street. GTC routing inbound via 3rd-Harrison-2nd-GTC / Outbound via 2nd. Saturday: Maintain 1 hour headway and eliminate 2nd bus. Modify GTC routing. 	30	30	139	-9	130	2	1	
Route 3 (Fairgrounds)	<ul style="list-style-type: none"> GTC routing inbound via 3rd-Harrison-2nd-GTC. Outbound via 2nd. 	60	60	115	0	115	1	1	
Route 4 (Brady/Harrison)	<ul style="list-style-type: none"> Outbound routing from Main/16th serves St. Ambrose University via Locust-Gaines-Lombard-Brady-regular routing. Inbound routing remains the same. Combine with Route 7. 	30	30	530	-5	525	2	2	Outbound deviation to St. Ambrose University will take approximately 5 minutes of additional running time. Schedule currently has a 12 minute layover, so deviation is possible.
Route 5 (Grand Avenue)				213	-3	210			
Route 5A (North Park)	<ul style="list-style-type: none"> Eliminated Grand-Central Park-Bridge loop. Move Eastern Avenue segment (between 32nd St. and Kimberly) to Jersey Ridge Road. 	60	60				1	1	
Route 5B (Kimberly Downs)	No change.	60	60				1	1	
Route 6 (Ridgeview)	Convert to a deviated fixed route. The default route would be NorthPark Mall, Kimberly, Northwest Boulevard, Ripley, 53rd Street, Northwest Boulevard to 73rd Street with on-demand service to Hillandale Road area. The zone of deviation would be generally the current service area.	60	60	106	-1	105	1	1	Saturday service--Outbound routing same as Weekday via NorthPark Mall-Northwest-53rd, then west on 53rd to Pine, to regular routing. Inbound routing from Northwest/Ridgeview via Pine-Kimberly (Hy-Vee)-Walgreens -40th-Division-53rd-regular routing.
Route 7 (Bridgeline)	Combine with Route 4.	30	30	281	0	281	1	1	
Route 8 (Telegraph)	GTC routing inbound via 3rd-Harrison-2nd-GTC / Outbound via 2nd.	40	40	168	0	168	1	1	
Route 9 (Hickory Grove)	GTC routing inbound via 3rd-Harrison-2nd-GTC Outbound via 2nd.	60	60	137	0	137	1	1	
	No changes are proposed to the following routes:			396	0	396			
	<ul style="list-style-type: none"> Route 10 (Locust E/W) Route 10 (Central Park W) Route 10 (Locust E) Route 11 (Tripper) Route 12 (East Davenport) Route 53 (East 53rd Street) 	60	60				1	1	
		60	60				1	1	
		30-60 ⁶	30-60 ¹⁴	78	0	78	1	1	
		60	60	156	0	156	1	1	
		60	60	75	-2	73	1	1	
Totals				2,551	-20	2,531	17	17	

⁶ Irregular

Table B-2
Baseline Alternative “B” – Davenport Final Proposal for Weekday Service

Routes Affected	Summary of Change	Frequency minutes		Potential Impact on Existing Ridership			Number of Vehicles Required		Comments
		Current	New	Current	Change	New	Current	New	
Route 1 (Rockingham)	Route operates from GTC via 2nd-Rockingham-Minnie-Homestead-Michigan-Keota-Fairmont-Johnson-Rockingham-Clark-Telegraph-Elmwood-McKinley-Birchwood-Rockingham-2nd-Western-3rd-Harrison-GTC. Combined with Route 8.	40	60	157	161	318	1	1	Combines with route 8; riders lost board outbound trips and ride loop back downtown.
Route 2 (Marquette)	Operate Off Peak trips via Kimberly and Peak trips via 35 th Street. GTC routing inbound via 3rd-Harrison-2nd-GTC / Outbound via 2nd. On Saturdays, maintain 1 hour headway and eliminate 2nd bus. Modify GTC routing.	45	60	139	-9	130	2	1	Provides service and additional connection (to Routes 6 and restructured Route 10) at the Wal-Mart on Kimberly. Affected riders can use new circulator
Route 3 (Fairgrounds)	Route operates from GTC via 2nd-Ripley-4th-Telegraph-Waverly-13th-Clark (Fairgrounds)-Central Park-Lincoln(Hy-Vee)-Waverly-Telegraph-Wilkes-7th-Marquette-6th-Warren-3rd-Harrison-GTC. End route at West Central Park Avenue.	60	30	115	-10	105	1	1	Becomes a shorter route (30 minute headway) and picks up portions of Route 8. Affected riders can use new downtown circulator
Route 4 (Brady/Harrison)	Outbound routing from Main/16th serves St. Ambrose University via Locust-Gaines-Lombard-Brady-regular routing. Inbound routing remains the same. Combine with Route 7.	30	30	530	-5	525	2	2	Outbound deviation to St. Ambrose University will take approximately 5 minutes of additional running time. Schedule currently has a 12 minute layover, so deviation is possible.
Route 5 (Grand Avenue)				213	-3	210			
Route 5A (North Park)	Route operates from the new TC via 14th-Grand and then same routing. Inbound routing via 15th-Brady-15th-Harrison-new TC. As is the case in Alternative A, the Grand-Central Park-Bridge loop is eliminated. Serve Jersey Ridge Road between 32nd Street and Kimberly.	60	45				1	1	Becomes a shorter route with a more frequent headway. The Grand-Central Park-Bridge loop affects no riders. Could add service area to route to maintain 60 minute headway.
Route 5B (Kimberly Downs)	Route operates from the new TC via 14th-Grand and then same routing. Inbound routing via 15th-Brady-15th-Harrison-new TC.	60	45				1	1	The Grand-Central Park-Bridge loop affects no riders. Could add service area to route to maintain 60 minute headway.
Route 6 (Ridgeview)	Convert to deviated fixed route. Saturday service would have route changed to be same as weekday.	45	60	106	-1	105	1	1	Saturday service--Outbound routing same as Weekday via NorthPark Mall-Northwest-53rd, then west on 53rd to Pine, to regular routing. Inbound routing from Northwest/Ridgeview via Pine-Kimberly(Hy-Vee)-Walgreens-40th-Division-53rd-regular routing.
7-Bridgeline	Combine with Route 4.	30	30	281	0	281	1	1	
8-Telegraph	Combine with Route 1--Rockingham	40	None	168	-168	0	1	0	
9-Hickory Grove	Combine with Route 10 West	60	None	137	-137	0	1	0	Riders along the inbound and outbound portions of Gaines are now served by the Downtown Circulator.
10-Locust E/W				396	0	396			
10-Central Park (West)	Route operates from the new TC via Harrison-13th-Ripley-Locust-Emerald-Central Park-Michigan-Heatheron-Fairmount-Kmart-Kimberly-Wal-Mart-40th(Hy-Vee)-Kimberly-Thornwood-35th-Hillandale-Hickory Grove-Central Park-Division-Locust-Harrison-new TC.	60	60		137		1	1	Riders on the current Route 10 Central Park accessing Gaines West Hospital can now do so on the new Route 2. There is a significant school boarding pattern picking up at Emerald and dropping off at West High School (at Nevada/Locust) that would be affected. During school season only, a tripper should be tacked on to the Route 11 HDC Tripper, perhaps moving that trip back about 20 minutes dependent on the school arrival time. This would add 30 minutes of revenue time to the route.

**Table B-3
 Baseline Alternative "B" – Davenport Final Proposal for Weekday Service**

Routes Affected	Summary of Change	Frequency minutes		Potential Impact on Existing Ridership			Number of Vehicles Required		Comments
10-Locust (East)	Route operates from the new TC via 14th-Brady-Locust-Middle-18th-new Bettendorf TC. Inbound via Locust-Harrison-new TC.	60	60				1	2	Provides connection to Bettendorf system at new transfer point at 18th/Spruce Hill. Riders on the current Route 10 Locust accessing Gaines East Hospital are able to do so on the restructured Route 5A/5B.
11-Tripper	Combine with Route 53.	30-60 (irregular)	60	78	0	78	1	1	
12-East Davenport	No service east of Elmore; Bettendorf Purple route would pick up the service and offer transfer connections at Wal-Mart.	60	60	156	0	156	1	1	
53-East 53rd St	Combine with Route 11.	60		75	0	75	1	0	
Downtown Circulator	Route operates from GTC via 2nd-Ripley-3rd-Pershing-15th-Brady-15th-Harrison-new TC-Marquette-3rd-Warren-14th-Gaines-8th-Harrison-2nd-GTC.	New	30	0	0	0	New	1	Picks up portions of restructured routes and provides connections to both the GTC and the new TC located at Harrison and 14th.
Totals				2,551	-35	2,379	17	15	

Table B-4
Baseline Alternative “A” – Davenport Initial Proposal

Action: Improve running times and connections.							
Routes Affected	Existing Headway (minutes)	Existing Vehicles	Proposed Headway (minutes)	Proposed Vehicles	Description	Comments	Potential Impact on Existing Ridership
Route 2 ⁷ (Marquette)	Weekday: 45 Saturday: 45	Weekday: 2 Saturday: 2	Weekday: 30 Saturday: 60	Weekday: 2 Saturday: 1	<ul style="list-style-type: none"> Weekday: Operate every other trip only to Walgreens. Inbound trips from Mall would operate via Marquette-35th-Sturdevant-Division. GTC routing inbound via 3rd-Harrison-2nd-GTC / Outbound via 2nd. Saturday: Maintain 1 hour headway throughout the day and eliminate the 2nd bus (saving 3.4 revenue hours). GTC routing inbound via 3rd-Harrison-2nd-GTC / Outbound via 2nd. 		<ul style="list-style-type: none"> Weekday: Loss of frequency for Walgreens riders who can still access destination (affecting 4 ons and 3 offs per day, or 5% of average daily ridership). Saturday: Loss of frequency for Saturday afternoon riders.
Route 3 (Fairgrounds)	60	1	60	1	GTC routing inbound via 3rd-Harrison-2nd-GTC / Outbound via 2nd.		<ul style="list-style-type: none"> Weekday: No impact. Saturday: No impact.
Route 6 ⁸ (Ridgeview)	60	1	60	1	“School Out” schedule operates via NorthPark Mall-Northwest Blvd-53rd.	Eliminates stops at North High School and Harrison Elementary.	Changes affect 1 on and 2 offs per day (or 3% of average weekday ridership) and save 3 minutes.
Route 8 (Telegraph)	40	1	40	1	GTC routing inbound via 3rd-Harrison-2nd-GTC / Outbound via 2nd.		<ul style="list-style-type: none"> Weekday: No impact. Saturday: No impact.
Route 9 Hickory Grove	60	1	60	1	GTC routing inbound via Harrison-2nd-GTC / Outbound via 2nd-Gaines.		<ul style="list-style-type: none"> Weekday: No impact. Saturday: No impact.
Action: Make route more direct.							
Routes Affected	Existing Headway (minutes)	Existing Vehicles	Proposed Headway (minutes)	Proposed Vehicles	Description	Comments	Potential Impact on Existing Ridership
Route 5A (North Park)	60	1	60	1	Eliminate Grand-Central Park-Bridge loop, route operates directly east on Rusholme.		<ul style="list-style-type: none"> Weekday: No impact. Saves 2 to 3 minutes. Saturday: Change affects three riders per day, or 4 percent of average Saturday ridership. Also saves 2 to 3 minutes.
Action: Reconfigure routes with low ridership							
Routes Affected	Existing Headway (minutes)	Existing Vehicles	Proposed Headway (minutes)	Proposed Vehicles	Description	Comments	Potential Impact on Existing Ridership
Route 6 (Ridgeview)	60	1	Weekday: 60 Saturday: 45	1	Weekday: “School Out” schedule operates via NorthPark Mall-Northwest Blvd-53rd. Saturday: Outbound routing same as Weekday via NorthPark Mall-Northwest-53rd, then west on 53rd to Pine, to regular routing. Inbound routing from Northwest/Ridgeview via Pine-Kimberly (Hy-Vee)-Walgreens-40th-Division-53rd-regular routing.	Eliminates stops at North High School and Harrison Elementary.	<ul style="list-style-type: none"> Weekday: Changes affects 1 on and 2 offs per day (or 3% of average weekday ridership) and saves 3 minutes. Saturday: Change affects 1 on and 1 off a day (or 5% of average Saturday ridership). Would operate on 45 minute headway instead of 1 hour.

7 Route 2’s existing headway is noted as 45 minutes. It has 30 minute frequency in the peak and 60 minute frequency in the off-peak, or an overall level of service (frequency) of 45 minutes.

8 Route 6 “School Out” schedule runs only on weekdays.

Table B-5
Baseline Alternative “A” – Davenport Initial Proposal (continued)⁹

Action: Provide more direct service to St. Ambrose University							
Routes Affected	Existing Headway (minutes)	Existing Vehicles	Proposed Headway (minutes)	Proposed Vehicles	Description	Comments	Potential Impact on Existing Ridership
Route 4 (Brady/Harrison)	30	2	30	2	Outbound routing from Main/16th serves St. Ambrose University via Locust-Gaines - Lombard-Brady-regular routing. Inbound routing remains the same.	Outbound deviation to St. Ambrose University will take approximately 5 minutes of additional running time. Schedule currently has a 12 minute layover, so deviation is possible.	<ul style="list-style-type: none"> ▪ Weekday: Five riders along Brady Street affected, or 1 percent of average weekday ridership. Additional riders served with direct access to St. Ambrose University. ▪ Saturday: Five riders along Brady Street affected, or 2 percent of average Saturday ridership. Additional riders served with direct access to St. Ambrose University.

Action: Provide service to Jersey Ridge and east-west access on Kimberly Road.							
Routes Affected	Existing Headway (minutes)	Existing Vehicles	Proposed Headway (minutes)	Proposed Vehicles	Description	Comments	Potential Impact on Existing Ridership
Route 53 (East 53 rd)	60	1	60	1	On every other trip from Northridge Shopping Center via 53rd-Jersey Ridge-Kimberly-NorthPark Mall.		<ul style="list-style-type: none"> ▪ Weekday: A total of 2 ons and 5 offs a day (or 9% of average weekday ridership) will be affected on the current 12 trips. Riders will have to plan accordingly. ▪ Saturday: A total of 2 ons and 6 offs a day (or 8% of average Saturday ridership) will be affected on the current 9 trips. Riders will have to plan accordingly.

⁹ No changes to the following Davenport routes under this alternative: Routes 1 (Rockingham), 5B (Kimberly Downs), 7 (Bridgeline), 10 (Central Park), 10 (Locust), 11/61, and 12 (East Davenport).

Table B-6
Baseline Alternative “B” – Davenport Initial Proposal¹⁰

Action: Improve running time and connections							
Routes Affected	Existing Headway (minutes)	Existing Vehicles	Proposed Headway (minutes)	Proposed Vehicles	Description	Comments	Potential Impact on Existing Ridership
Route 2 ¹¹ (Marquette)	Weekday: 30 Saturday: 45	2	45	1	Route operates from new TC in a loop via Harrison-13th-Ripley-15th-Marquette-Lombard(Genesis West)-Division (Walgreens)-Kimberly(Wal-Mart)-Kimberly-Marquette(Trinity Medical Center)-Lombard-Gaines-14th-Main-15th-Harrison-New TC.	Provides service and additional connection (to Routes 6 and restructured Route 10) at the Wal-Mart on Kimberly.	<ul style="list-style-type: none"> Weekday: A total of 9 ons and 7 offs are affected along Marquette Street but are now served by the new Downtown Circulator. Saturday: Riders along Marquette now served by new Downtown Circulator.
Route 3 (Fairgrounds)	60	1	45	1	Route operates from GTC via 2nd-Ripley-4th-Telegraph-Waverly-13th-Clark (Fairgrounds)-Central Park-Lincoln(Hy-Vee)-Waverly-Telegraph-Wilkes-7th-Marquette-6th-Warren-3rd-Harrison-GTC.	Becomes a shorter route (45-minute headway) and picks up portions of Route 8.	<ul style="list-style-type: none"> Weekday: A total of 9 ons and 10 offs along 3rd Street (inbound) are affected. However, these riders will be served by the new Downtown Circulator. Saturday: Riders along 3rd Street (inbound) are affected. Some of these riders can access the new Downtown Circulator.

Action: Provide more direct service to St. Ambrose University							
Routes Affected	Existing Headway (minutes)	Existing Vehicles	Proposed Headway (minutes)	Proposed Vehicles	Description	Comments	Potential Impact on Existing Ridership
Route 4 (Brady/Harrison)	30	2	30	2	Outbound routing from Main/16th serves St. Ambrose University via Locust-Gaines-Lombard-Brady-regular routing. Inbound routing remains the same.	Outbound deviation to St. Ambrose University will take approximately 5 minutes of additional running time. Schedule currently has a 12 minute layover, so deviation is possible.	<ul style="list-style-type: none"> Weekday: Five riders along Brady Street affected, or 1 percent of average weekday ridership). Additional riders served with direct access to St. Ambrose University. Saturday: 5 riders along Brady Street affected (2% of average Saturday ridership). Additional riders served with direct access to St. Ambrose University.

Action: Provide more service on Kimberly and access to Wal-Mart.							
Routes Affected	Existing Headway (minutes)	Existing Vehicles	Proposed Headway (minutes)	Proposed Vehicles	Description	Comments	Potential Impact on Existing Ridership
Route 2 (Marquette)	Weekday: 30 Saturday: 45	2	45	1	Route operates from new TC in a loop via Harrison-13th-Ripley-15th-Marquette-Lombard(Genesis West)-Division (Walgreens)-Kimberly(Wal-Mart)-Kimberly-Marquette(Trinity Medical Center)-Lombard-Gaines-14th-Main-15th-Harrison-New TC.	Provides service and additional connection (to Routes 6 and restructured Route 10) at the Wal-Mart on Kimberly.	<ul style="list-style-type: none"> Weekday: A total of 9 ons and 7 offs are affected along Marquette Street but are now served by the new Downtown Circulator. Saturday: Riders along Marquette now served by new Downtown Circulator.

¹⁰ No changes for t following CitiBus routes: Routes 7 (Bridgeline), 11/61, and 12 (East Davenport).

¹¹ Average headway for Route 2 is 45 minutes, based on morning frequency of 60 minutes and afternoon frequency of 30 minutes.

Table B-7
Baseline Alternative "B" – Davenport Initial Proposal (continued)

Action: Provide more frequent service.							
Routes Affected	Existing Headway (minutes)	Existing Vehicles	Proposed Headway (minutes)	Proposed Vehicles	Description	Comments	Potential Impact on Existing Ridership
Route 5A (North Park)	60	1	45	1	Route operates from the new TC via 14th-Grand and then same routing. Inbound routing via 15th-Brady-15th-Harrison-new TC. As is the case in Alternative A, the Grand-Central Park-Bridge loop is eliminated. Eastern segment to serve Jersey Ridge Road between 32 nd and Kimberly Roads.	Becomes a shorter route with a more frequent headway. The Grand-Central Park-Bridge loop affects no riders.	<ul style="list-style-type: none"> Weekday: A total of 3 ons and 16 offs along Pershing are affected. However, these riders will be served by the new Downtown Circulator. Riders can transfer at the new TC to the restructured Route 5A. Saturday: Riders along Pershing can now access the new Downtown Circulator.
Route 5B (Kimberly Downs) ¹²	60	1	45	1	Route operates from the new TC via 14th-Grand and then same routing. Inbound routing via 15th-Brady-15th-Harrison-new TC.		The Grand-Central Park-Bridge loop affects no riders.
Action: Provide service to Jersey Ridge and east-west access on Kimberly Road.							
Routes Affected	Existing Headway (minutes)	Existing Vehicles	Proposed Headway (minutes)	Proposed Vehicles	Description	Comments	Potential Impact on Existing Ridership
Route 53 (East 53 rd)	60	1	60	1			
Action: Provide downtown circulator service.							
Routes Affected	Existing Headway (minutes)	Existing Vehicles	Proposed Headway (minutes)	Proposed Vehicles	Description	Comments	Potential Impact on Existing Ridership
New Downtown Circulator	None	None	30	1	Route operates from GTC via 2nd-Ripley-3rd-Pershing-15th-Brady-15th-Harrison-new TC-Marquette-3rd-Warren-14th-Gaines-8th-Harrison-2nd-GTC.	Picks up portions of restructured routes and provides connections to both the GTC and the new TC located at Harrison and 14th.	Not applicable.

¹² Weekday only.

Table B-8
Baseline Alternative “B” – Davenport Initial Proposal (continued)

Action: Reconfigure routes with low ridership.							
Routes Affected	Existing Headway (minutes)	Existing Vehicles	Proposed Headway (minutes)	Proposed Vehicles	Description	Comments	Potential Impact on Existing Ridership
Route 1 (Rockingham)	40	1	60	1	Route operates from GTC via 2nd-Rockingham-Minnie-Homestead-Michigan-Keota-Fairmont-Johnson-Rockingham-Clark-Telegraph-Elmwood-McKinley-Birchwood-Rockingham-2nd-Western-3rd-Harrison-GTC.	Route 1 and 8 combined and operated with 1 vehicle on a 60-minute headway.	<ul style="list-style-type: none"> Two riders a day are affected, but could still board outbound on Rockingham and ride loops around to return to GTC.
Route 6 ¹³ (Ridgeview)	60	1	Weekday: 60 Saturday: 45	1	Convert to a deviated fixed route.		
Route 8 (Telegraph)	40	1	Combined with Route 1	Combined with Route 1	Route operates from GTC via Rockingham-Minnie-Homestead-Michigan-Keota-Fairmont-Johnson-Rockingham-Clark-Telegraph-Elmwood-McKinley-Birchwood-Rockingham-GTC.	Route 1 and 8 combined and operated with 1 vehicle on a 60-minute headway.	<ul style="list-style-type: none"> Weekday: Four to five riders a day are affected, but could still board inbound to return to GTC. Saturday: Three to four riders a day are affected but all are within walking distance of restructured Route 1.
Route 9 (Hickory Grove)	60	1	Incorporated into Route 10 West	Incorporated into Route 10 West			<ul style="list-style-type: none"> Riders along the inbound and outbound portions of Gaines are now served by the Downtown Circulator.
Route 10 (West)	60	1	60	1	Route operates from the new TC via Harrison-13th-Ripley-Locust-Emerald-Central Park-Michigan-Heatherton-Fairmount-Kmart-Kimberly-Wal-Mart-40th(Hy-Vee)-Kimberly-Thornwood-35th-Hillandale-Hickory Grove-Central Park-Division-Locust-Harrison-new TC.	Picks up portions of Route 8 and provides riders along Locust with destinations along Kimberly.	<ul style="list-style-type: none"> Weekday: Riders on the current Route 10 Central Park accessing Gaines West Hospital can now do so on the new Route 2. There is a significant school boarding pattern picking up at Emerald and dropping off at West High School (at Nevada/Locust) that would be affected. During school season only, a tripper should be tacked on to the Route 11 HDC Tripper, perhaps moving that trip back about 20 minutes dependent on the school arrival time. This would add 30 minutes of revenue time to the route. Saturday: No impact.
Route 10 (East)	60	1	60	1	Route operates from the new TC via 14th-Brady-Locust-Middle-18th-new Bettendorf TC. Inbound via Locust-Harrison-new TC.	Provides connection to Bettendorf system at new transfer point at 18th/Spruce Hill.	<ul style="list-style-type: none"> Weekday: Riders on the current Route 10 Locust accessing Gaines East Hospital are able to do so on the restructured Route 5A/5B. Saturday: No impact.

¹³ Average headway during the day; varies from 30 to 60 minutes.

Appendix C

Davenport Interim Baseline Alternative

**Iowa Quad Cities Alternatives Analysis:
City of Davenport Interim TSM/Baseline Alternative**

Technical Memorandum

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Section 1: Introduction

In late 2004, the Bi-State Regional Planning Commission, on behalf of the Iowa Quad City transit operators, engaged URS Corporation to conduct an alternatives analysis. TranSystems, a member of the URS team, was tasked to examine current transit operations and help develop TSM/baseline alternatives for two of the three Iowa Quad City transit operators: the City of Bettendorf and the City of Davenport. TranSystems developed two basic alternatives for each community.

The two alternatives developed for Davenport's CitiBus represented two levels of service improvement. The first level alternative ("*Alternative A*") contained improvements that could be made relatively immediately. The next level ("*Alternative B*") was improvements that would require more time and effort to implement in terms of public outreach and capital investment. While both alternatives were considered viable for CitiBus, transit staff desired the consulting team to develop a third alternative that would capture much of the efficiencies promised by *Alternative B*, but needing less time and effort to implement. In working closely with CitiBus staff, this third or "interim alternative" was developed that would help the system address immediate cost-efficiency challenges.

This technical memorandum presents this *interim alternative*.

1.1 Data Collection

The service proposals contained in this technical memorandum were based on extensive primary and secondary data collection conducted for the overall Iowa Quad Cities Alternatives Analysis. Among the data collected for this study were:

- *Counted passenger boardings and alightings* on all CitiBus routes. These data shows which route segments were busy and which were not.
- *Conducted a transfer count* which showed which routes riders tended to make transfers to and from.
- *Conducted an on-board rider survey*, seeking information about how riders use CitiBus service.
- *Interviewed bus drivers and management staff* about issues and problems with the current service.
- *Developed route statistics* showing relative service utilization and efficiency.
- *Used Census 2000 data* to compare areas with high transit needs with areas with existing service to determine any gaps.

The data collected for the study is contained in a separate report entitled *Technical Memorandum #2: Existing Transit Conditions, May 2005*.

Section 2: Background—TSM/Baseline Alternatives

The development of two “TSM/Baseline” alternatives for Davenport’s CitiBus attempted to address a number of operating issues. Addressing these issues could make the existing bus system more attractive to riders, encouraging greater system use while increasing efficiency. Operating issues such as unproductive route segments, tight running time on routes, missed transfer connections, and underserved areas were among the challenges that the alternatives sought to solve.

Before discussing the “interim alternative” in the next section, this section reviews salient aspects of the original, TSM/Baseline and “No Build” alternatives. The discussion here first presents important facets about the current CitiBus service, which is the “No Build” alternative.

2.1 Existing CitiBus Service

Fifteen routes operate in Davenport including the tripper routes and variations of Routes 5 and 10. Service is available Monday through Friday from 5:30 AM to 6:00 PM, and on Saturday from 9:00 AM to 6:00 PM, except on major holidays. On weekdays, three of the Davenport routes operate every one-half hour, two operate every 40 minutes and nine operate every hour. On Saturday, routes continue to operate at the same intervals but during the shortened hours of operation. On Saturday, Routes 5B, 11 and the H.D.C. tripper do not operate. Although most Davenport routes go through the downtown Ground Transportation Center (GTC), they do not operate on a “pulse” system. However, some routes do depart at the same time from the GTC, including Routes 1 and 8; Routes 2, 7 and 12; and Routes 4 and 9.

CitiBus is owned and operated by the City of Davenport. It operates 20 transit coach vehicles with a seating capacity of 25 to 39 passengers. The vehicles range in age from one year to 11 years. This type of vehicle has a typical useful life of 10 to 12 years.

Table 1 presents key operating statistics for CitiBus based on fiscal year 2003-2004, which covers the period from July 1, 2003 to June 30, 2004. Data in the table includes “Frequency” which is how often buses arrive and depart from each location; “one-way trips” which are the number (in the case of loop design routes) of departures from the starting point made by each route; “daily revenue hours” which are the hours of bus operation for each route; and “riders per revenue hour” which is a measure of system productivity. During this period, CitiBus served 2,550 riders per day using 17 buses. Route 4, which operates on Brady and Harrison Streets, had the highest number of riders per day (530) and one of the highest number of riders per revenue hour (20.9). Route 7 (Bridgeline) had the highest number of riders per revenue hour at 21.0. The system average number of riders per revenue hour was 15.0.

Table 1: CitiBus Operating Statistics – FY 2003-2004

Route/Name	Frequency (minutes)	Daily One- Way Trips	Daily Revenue Hours ¹	Vehicles in Operation	Daily Riders ¹	Riders Per Revenue Hour ¹
Route 1 - Rockingham	40	36	11.8	1	157	13.3
Route 2 - Marquette	30	39	19.1	2	139	7.3
Route 3 - Fairgrounds	60	26	12.5	1	115	9.2
Route 4 - Brady St/Harrison St	30	52	25.4	2	530	20.9
Route 5			18.8	2	213	11.3
5A - NorthPark	60	25				
5B - Kimberly Downs	60	12				
Route 6 - Ridgeview	60	24	12.3	1	106	8.7
Route 7 - Bridgeline	30	54	13.4	1	281	21.0
Route 8 - Telegraph	40	36	11.9	1	168	14.1
Route 9 - Hickory Grove	60	24	11.7	1	137	11.7
Route 10			24.7	2	396	16.1
10 - Central Park	60	25				
10 - Locust	60	25				
Route 11 - Route 61	30-60	22	6.0	1	78	12.9
Route 12 - East Davenport	60	25	12.1	1	156	12.9
Route 53 ² - East 53rd St	60	25	12.2	1	75	6.1
Totals	N/A	450	191.9	17	2,550	15.0

Source: Davenport CitiBus data as compiled by TranSystems.

¹ Data represents daily average from July 2003 to June 2004

² Data for Route 53 is from July to September 2004

2.2 Davenport TSM/Baseline Alternative A

In the course of developing the TSM alternatives, service proposals evolved. First, initial changes to the existing system were proposed. Then, those initial proposals were modified based on staff and general public input.

The major changes to the current system that were initially made for the *Alternative A* package were:

- To improve running time on Routes 2, 3, 8, and 9 by reducing the circulation of these routes through downtown Davenport. Route 6 would not serve North High School and Harrison Elementary when school is not in session. This change for Route 6 also adjusts service to demand.
- Make service more direct on Route 5A by recommending the elimination of the Grand-Central Park-Bridge loop.
- Provide more direct service by re-directing the outbound trips of the Brady/Harrison route (Route 4) accessing St. Ambrose University and no changes to the inbound segment which already serves the University.
- Provide greater Jersey Ridge and Kimberly service by re-directing every other Route 53 trip via Jersey Ridge Road and Kimberly Road.

After discussions with City staff and the general public, the above proposals were modified in the following as noted below and are shown in Figure 1.

- *2-Marquette*—have peak hour service via 35th Street and base service via Kimberly.
- *4-Brady St. /Harrison*—operationally, combine with Route 7 to eliminate need for transfer and to provide additional running time on Route 4. Otherwise, agree with change to serve St. Ambrose University.
- *5-Grand Avenue*—Route 5A segment should move to Jersey Ridge Road.
- *6-Ridegview*—convert route to deviated fixed route.
- *7-Bridgeline*—combine operationally with 4-Brady Street route.
- *11-Tripper*—convert to deviated fixed route.
- *53-East 53rd Street*—do not change as proposed.

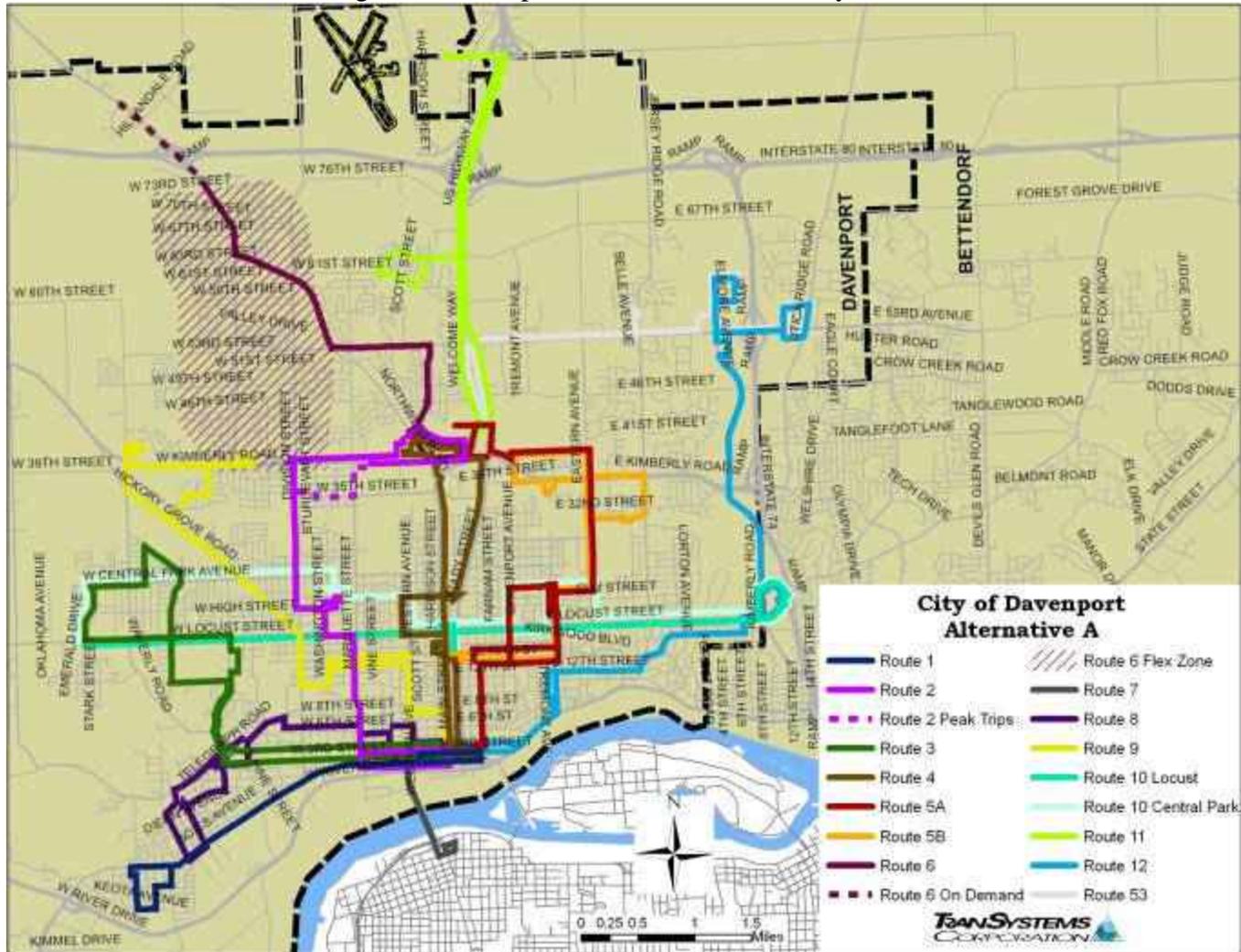
2.3 Davenport TSM/Baseline Alternative B

As transpired with the *Alternative A* proposals, the *Alternative B* proposals also evolved from initial changes to a set of preferred changes following consultation with service stakeholders.

- Redirecting Route 2, 5A, and 5B to a new proposed transit center to be located at or near St. Ambrose University. These changes would reduce the mileage on these routes as they would no longer go downtown. Patrons wishing to go downtown would make a timed transfer connection with Route 4 at the new transit center.
- Improving running time on Routes 2 and 3 by increasing headway on Route 2 and shortening route length on Route 3.
- Provide more direct service to St. Ambrose University by re-directing Route 4 as discussed with Alternative A.
- More service on Kimberly by re-directing Route 2 to serve west Kimberly near Fairmount.
- Increase frequencies on Routes 5A and 5B by shortening the routes (as they will service a new transit center at or near St. Ambrose University).
- Adjust service on routes to reflect demand. Specifically Routes 1 and 8 would be combined; Route 10 would be split into a “west” and “east” segment; the Route 9 service areas would be absorbed by the new Route 10 West; and the Route 10 East would be extended to 18th and Spruce within the City of Bettendorf.

As with the *Alternative A* initial proposals, discussions with transit staff and the general public led to the following changes to the initial Davenport *Alternative B* Service Proposals which are also illustrated in Figure 2:

Figure 1: Davenport Alternative A Route System



- *2-Marquette*—have peak hour service via 35th Street and base service via Kimberly. Maintain 60-minute frequency and extend route to Hy-Vee on Kimberly.
- *3-Fairgrounds*—truncate the proposed outer end of route to get route to a 30-minute frequency (currently 60-minute frequency).
- *4-Brady St. /Harrison*—operationally, combine with Route 7 to eliminate need for transfer and to provide additional running time on Route 4. Otherwise, agree with change to serve St. Ambrose University.
- *5-Grand Avenue*—agreed with original proposal for Route 5A (North Park). For Route 5B, move to Jersey Ridge.
- *6-Ridegview*—convert route to deviated fixed route.
- *7-Bridgeline*—combine operationally with 4-Brady Street route.
- *10-Locust*—agree with proposed change on west. The east extension to Bettendorf (18th/Spruce) will require 2 buses, not one.
- *11-Tripper*—convert to deviated fixed route.
- *53-East 53rd Street*—do not change as proposed.

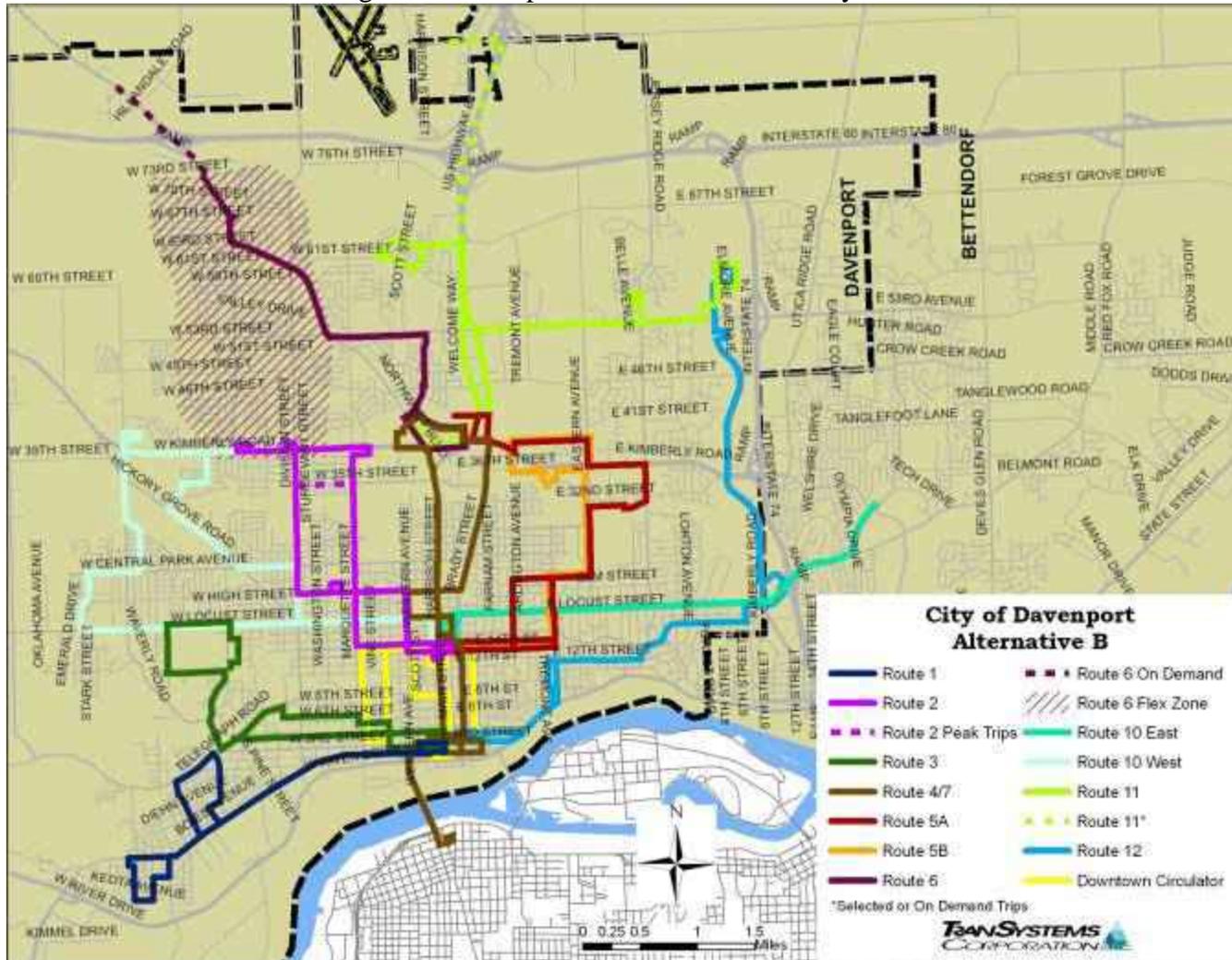
Since the review of the above changes with City staff, a new proposal regarding Route 12/53 and Route 11 was included and made part of the *Alternative B* grouping of service changes. The change involves eliminating Route 12 service east of Elmore, and having the service terminate at the Wal-Mart near 53rd and Elmore. The Bettendorf Purple route would pick up the mileage east of Elmore.¹ In addition, the 53rd Street portions of the service would be combined with the current Route 11 providing service to the Goose Creek area. Route 11 would have improved service as it would have service on an hourly basis (now it is irregular), a full service day (about 6am to 6pm), and on Saturdays as well.

For the new Route 11 combination to work, it will be necessary for Bettendorf to extend its Purple route west and for Davenport to extend Route 10 East easterly to 18th and Spruce in Bettendorf. The Purple Route extension works for Bettendorf if the new focal point for their service is at 18th and Spruce as proposed in Bettendorf's *Alternative B*. Since the new focal point moves the Davenport/Bettendorf connection east of the Duck Creek Mall area (the current transfer point), it would need an extension of the Route 10 East to 18th and Spruce. Davenport's Route 10 is the main connection between Davenport and Bettendorf services.

Changes to Routes 10, 11, 12, 53 and the Bettendorf Purple route are illustrated in Figure 2.

¹ This would assume the implementation of the Bettendorf *Alternative B* proposal.

Figure 2: Davenport Alternative B Route System



2.4 Budgetary Impact of Alternatives A and B

Overall, the revised Davenport *Alternative A* is cost neutral. That is, the net change in operating cost is almost zero. Only about \$8,000 (in 2005 dollars) annually is saved which is almost insignificant. In fact, there may be a slight net cost increase due to the operation of a deviated fixed route in the northwest part of the service area. The cost increase may come about if current CitiBus staff is unable to handle calls for service and additional staff is needed to field calls during peak periods. The revised *Alternative B*, however, reduces vehicle requirements and despite a potential cost increase due to the deviated fixed route, provides measurable savings. About \$300,000 (in 2005 dollars) annually is expected to be saved by the proposed changes.² This savings includes the latest Route-11-12-53 combination as well as extensions of the new Route 10 East to 18th and Spruce in Bettendorf. This extension into Bettendorf is needed for that City to extend its Purple Route to the Wal-Mart near 53rd Street and Elmore.

Further, in terms of the trade of Davenport providing service within the corporation limits of Bettendorf and vice versa, division of mileage would appear to be equitable. Bettendorf will be providing about 84 daily miles into Davenport while Davenport will provide about 48 daily miles into Bettendorf. While the mileages in each community are not equal, other factors create a more equitable trade for these services. First, Davenport's operating costs are higher than Bettendorf's. Second, Bettendorf will be collecting relatively higher revenue for the extension than Davenport will for its extension. Thus, factoring in the economics of the trade-off, the provision of service in the respective communities appear to be equitable.

² This is based on CitiBus' operating cost of \$50 per revenue hour. On weekdays, two buses are reduced each day and on Saturdays one bus is reduced in operation.

Section 3: CitiBus Interim TSM/Baseline Alternative

While Davenport *Alternative B* would seem to save a significant amount of operating costs, such savings would need time and capital investment to be realized. A key component of *Alternative B* would be the establishment of a transfer facility at or near the St. Ambrose University campus. Given that available land is scarce in that part of Davenport and that a transfer facility would require significant federal capital funds, it is estimated that it would take three to five years to implement *Alternative B*. Much of this time is due to accumulating federal funds through congressional earmarks as well as time to negotiate a transfer center arrangement either with St. Ambrose or some other nearby land owner.

Given that the CitiBus staff desired cost savings similar to the levels for *Alternative B* in order to support continued overall cost increases as well as to offset special system funding due to lapse in 2007. To that end, the CitiBus staff worked closely with TranSystems in modifying *Alternative B* to create an interim alternative that could be implemented in a timely fashion. This intermediate alternative is discussed on this section.

3.1 Overview of the Interim Alternative

The interim alternative actually modifies some of the elements of *Alternative B* as presented in Section 2 of this technical memorandum. While some of the *Alternative B* proposals were retained, those involving a St. Ambrose transfer center were changed. In addition, route extensions into Bettendorf were not seen as desirable until inter-community cooperation can be negotiated.

The proposed changes to the overall system were:

- *Route 1*—as proposed in *Alternative B* except Rockingham segment between Concord and Birchwood. New alignment would still serve this area.
- *Route 2*—same as existing service, reduce one vehicle to match service with demand.
- *Route 3*—as proposed in *Alternative B*.
- Combination of *Routes 4 and 7* as proposed in *Alternatives A and B*.
- *Route 5A*—*Alternative B* proposal except no Jersey Ridge service and maintain current alignment including the downtown segment.
- *Route 5B*—eliminate due to low demand..
- *Route 6*—maintain existing service except eliminate back loops west for Northwest Boulevard and connect service with Wal-Mart near Kimberly and Fairmount. The back loops have very little to no ridership.
- *Route 8*—eliminate as proposed in *Alternative B*. Much of key service area of *Route 8* is served by the reconfigured *Route 1*.
- *Route 9*—maintain existing service.
- *Route 10 (East)*—do not extend service to Bettendorf.

- *Route 10 (West)*—use staff’s new alignment to Wal-Mart.
- *Route 11*—make a full-time service.
- *Route 12/53*—maintain current service.

Figure 3 shows the new route system. Appendix A of this technical memorandum provides maps of each of the individual routes.

3.2 Budgetary and Rider Impact of the Interim Alternative

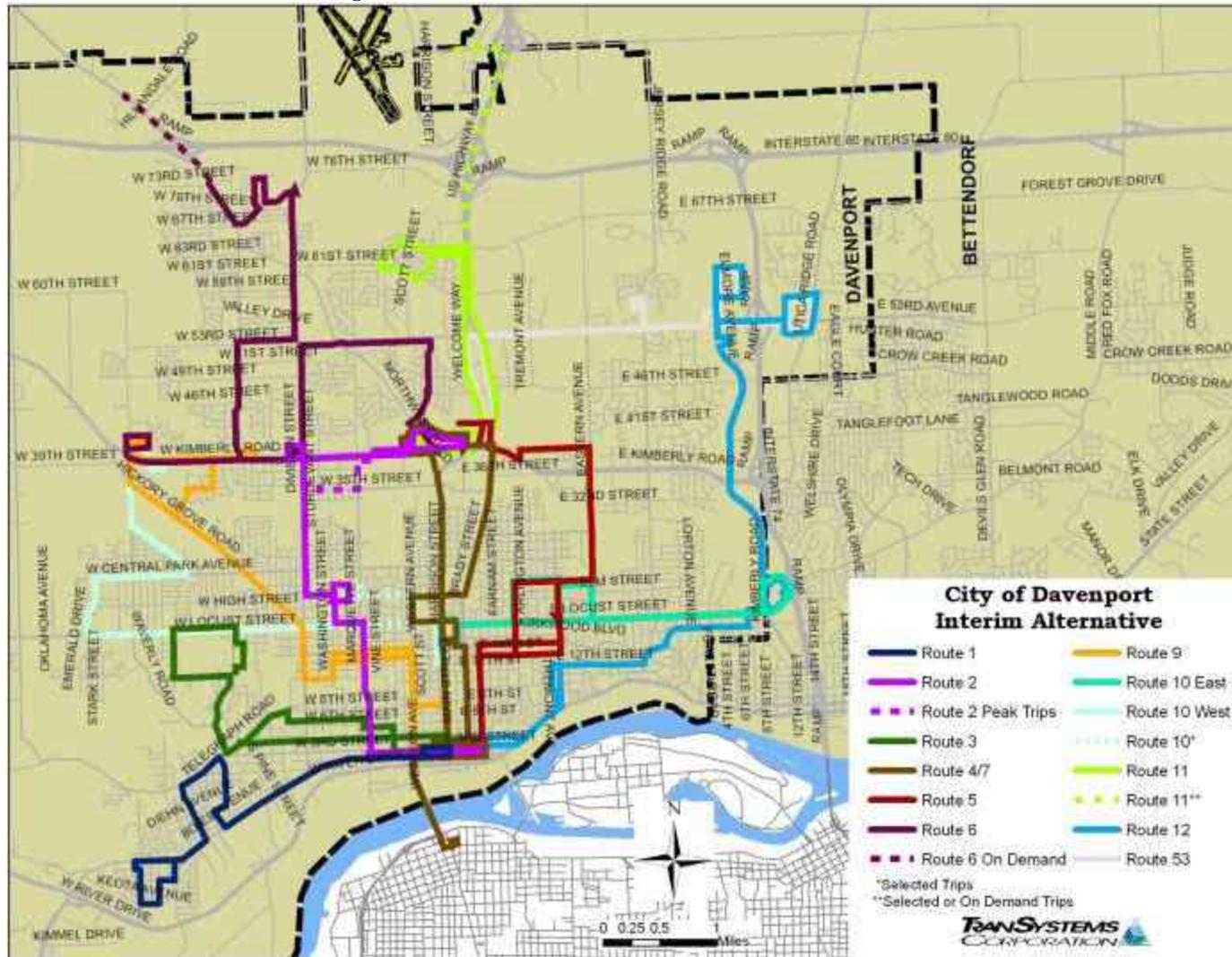
Table 2 summarizes key statistics of the “interim alternative.”

Table 2: Key Interim Alternative Statistics

Route	Changes	Frequency (mins)		Rider Impact (daily)			Vehicles	
		Current	New	Current	Change	New	Current	New
1-Rockingham	Combines key parts of current Route 1 and Route 8	40	60	157	161	318	1	1
2-Marquette	Reduce frequency.	30	60	139	-9	130	2	1
3-Fairgrounds	Increase frequency; truncate route; portions served by new Route 10 West.	60	30	115	-10	105	1	1
4-Brady St/Harrison St.	Deviates to St. Ambrose. Combined with Route 7.	30	30	530	-5	525	2	2
5-Grand Avenue				213	-3	210	2	1
5A-NorthPark	Bridge Street deviation eliminated, little to no riders.	60	60					
5B-Kimberly Downs	Eliminated	60	0					
6-Ridgeview		60	60	106	-5	101	1	1
7-Bridgeline	Combined with Route 4.	30	30	281	0	281	1	1
8-Telegraph	Eliminated, though Route 1 picks up some of the lost service area.	40	None	168	-168	0	1	0
9-Hickory Grove	No Changes.	60	60	137	0	137	1	1
10-Locust E/W				396	137	533	2	3
10-Central Park (West)	New routing to serve Kimberly and Fairmount area.	60	60					
10-Locust (East)		60	60					
11-Tripper	Becomes all day service.	30-60	60	78	10	88	1	1
12-East Davenport	No changes	60	60	156	0	156	1	1
53-East 53rd St	No changes	60	60	75	0	75	1	1
Totals				2,551	108	2,659	17	15

Overall, the alternative reduces the daily bus require to 15 from 17. Saving two weekdays buses would save about \$270,000 in annual operating expenses.

Figure 3: CitiBus Interim Alternative Route Structure



Section 4: Next Steps

This section discusses some of the steps the City could take in moving forward with the interim alternative. This discussion assumes that necessarily approvals have been obtained and public hearings have taken place.

4.1 Implementation Checklist

This section presents a checklist of major activities that should be accomplished in implementing the recommended service changes. The main components of the checklist involve informing passengers, drivers and others about the new routes and schedules. It is best to start that process as soon as the routes, schedules, etc. are verified and finalized. Using the mass media, public forums, stakeholders, and drivers can be good communication outlets that are recommended in the checklist. On the next page, Table 3 shows the major steps and timing of service implementation activities.

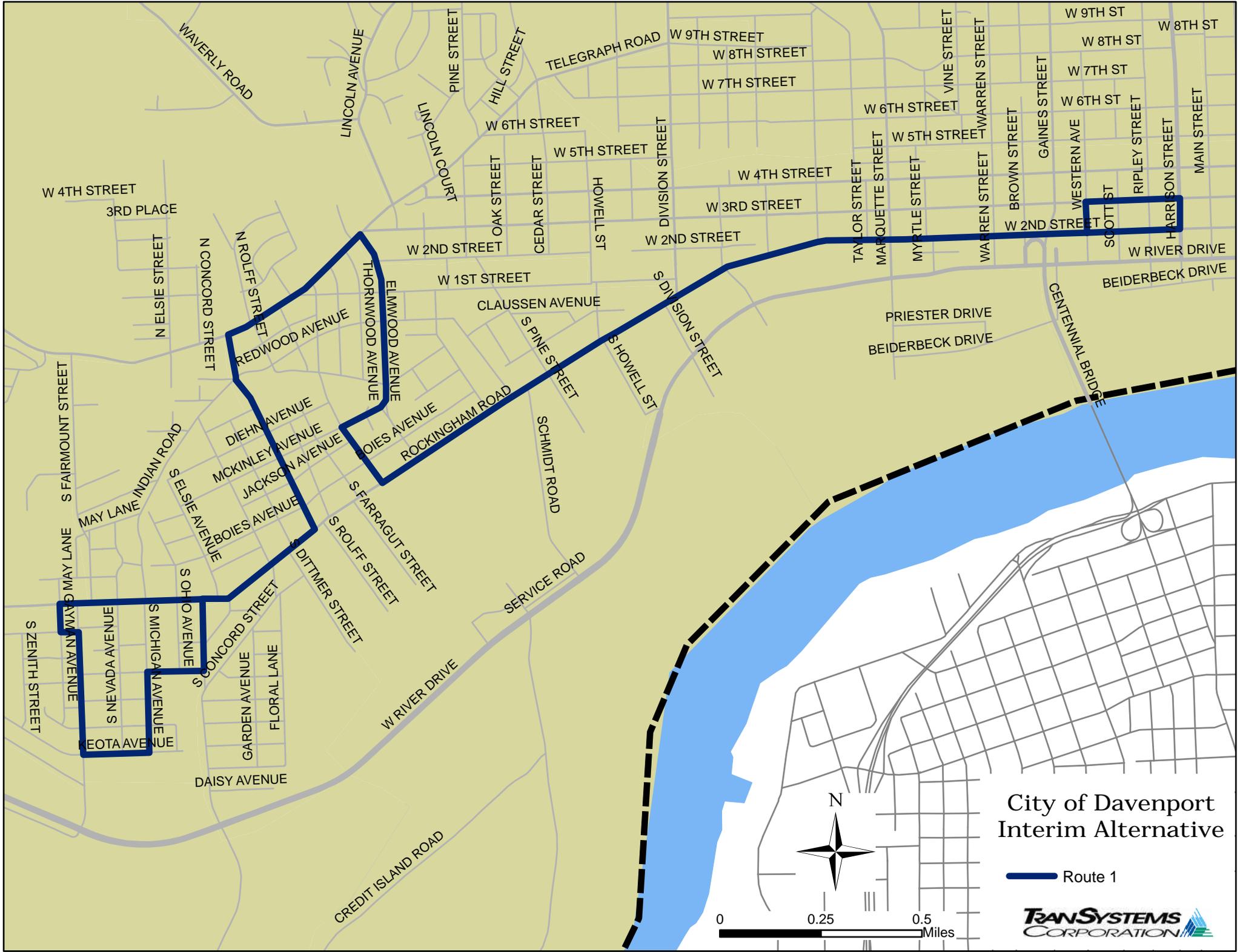
The table shows the lead time (i.e., “weeks before start”) in which a given activity should take place as well as the “category” of that activity. Depending on the availability of staff, the indicated time period can be shorten or lengthen. Each indicated activity is assigned to a category in order for CitiBus to know which staff might be appropriate to carry out the assignment.

Table 3: Checklist of Service Implementation

Weeks Before Start	Category	Activity
24	<i>Operations</i>	Verify schedule times and time points
21	<i>Operations</i>	Test drive routes; make sure turns can be made and schedule can be met. Make sure no vehicle clearance issues. Obtain “turn-by-turn” directions.
17	<i>Transit Staff</i>	Inform and educate staff
16	<i>Operations</i>	Determine how bus stop signs to be installed and by who and when.
16	<i>Property Owners</i>	Make sure key owners will accept buses on property (e.g., Wal-Mart). If possible, get permission in writing.
16	<i>Transit Staff</i>	Meet with drivers on the new routes.
14	<i>Operations</i>	Determine total number and location of bus stop signs needed per policy
11	<i>Operations</i>	Order and install bus stop signs
10	<i>Public Information</i>	Hold Public Forum before service change and give chance for riders to ask questions.
9	<i>Public Information</i>	Develop public schedules/maps on new routes .
8	<i>Public Information</i>	Hold press conference on changes.
8	<i>Transit Staff</i>	Drive groups of drivers on routes with staff.
6	<i>Buses</i>	New designation signage for any new routes or destinations on existing routes.
6	<i>Public Information</i>	Work with key social service agencies and other important destinations to publicize route changes. Staff may visit with agencies and clients and hold information session.

4	<i>Transit Staff</i>	Determine which drivers will drive which routes.
3	<i>Public Information</i>	Produce and distribute schedules and maps to GTC, City Hall, library, social service agencies, key destinations (e.g., Wal-Mart) as well as web site.
3	<i>Transit Staff</i>	Provide driver schedule for assigned route(s).
2	<i>Public Information</i>	Prepare on-board announcements—post on bus and distribute.
3 to 4 days	<i>Public Information</i>	Ask drivers to let riders know about changes.
3 days	<i>Public Information</i>	Prepare press release one-day prior to new service (release on Friday before service starts if service starts on a Monday).
2 days	<i>Transit Staff</i>	Test run new system on weekend; one or two round trips.
0	<i>Public Information</i>	First day (assume a Monday)—post staff at GTC to provide and distribute information.

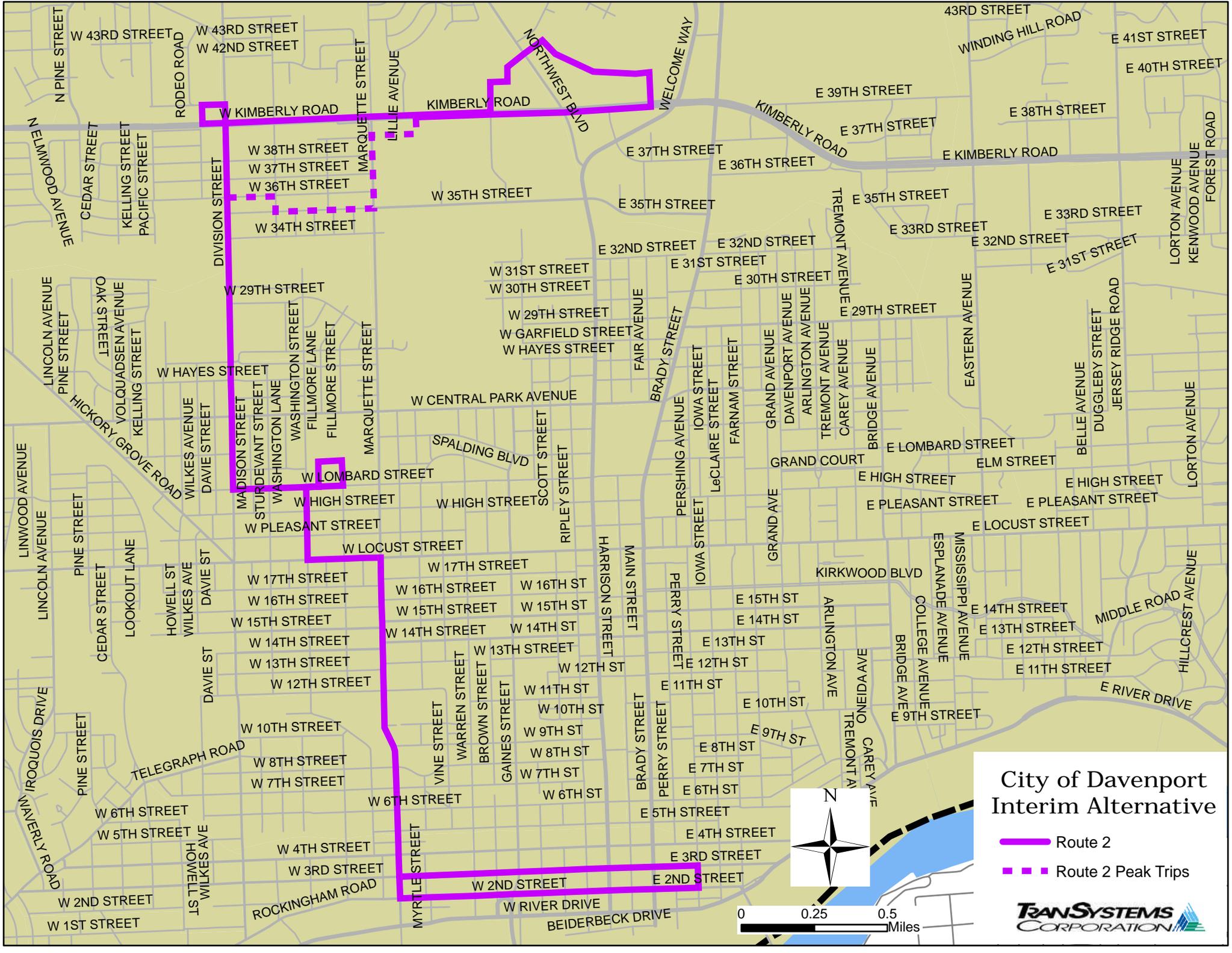
Appendix A: Individual Route Maps

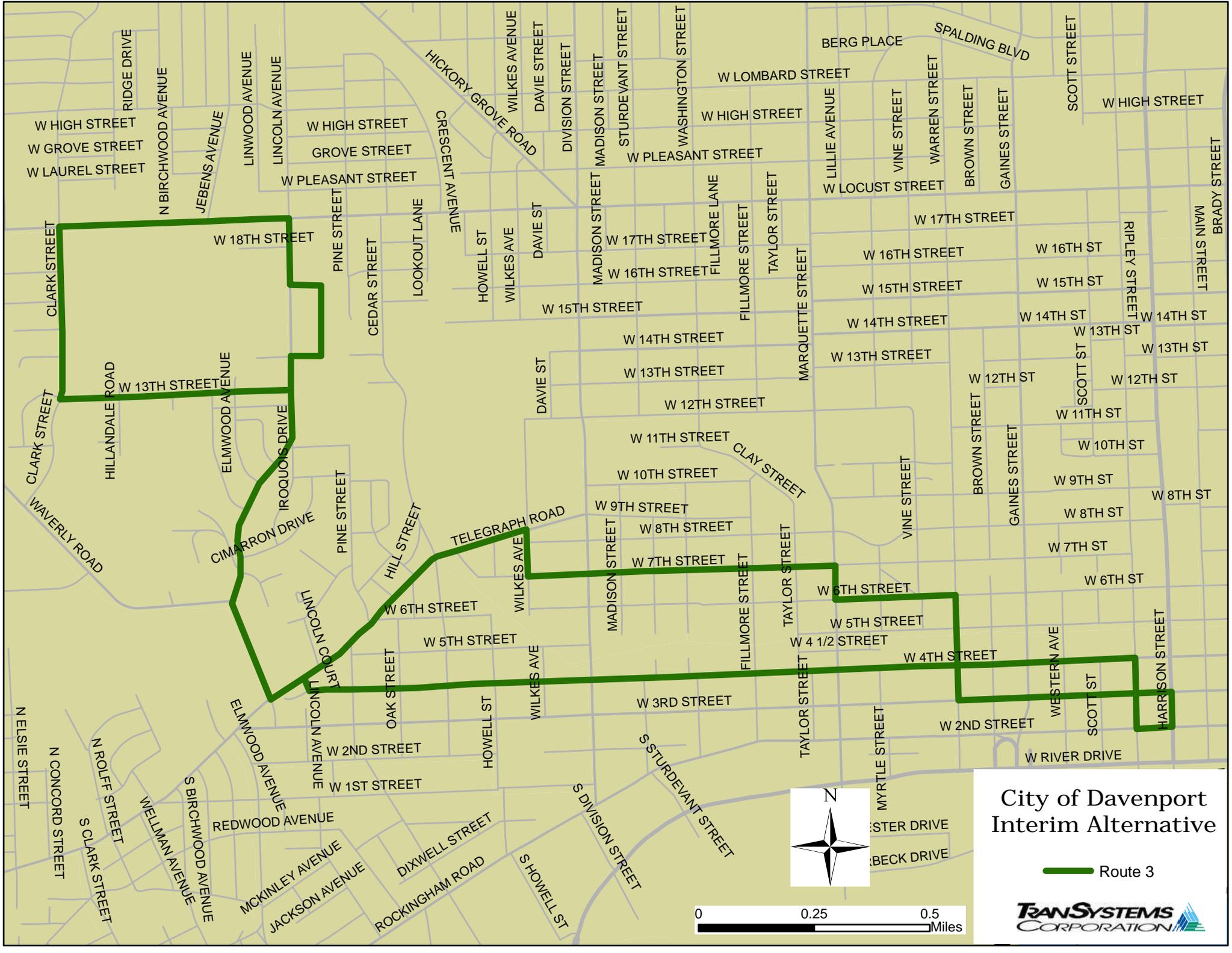


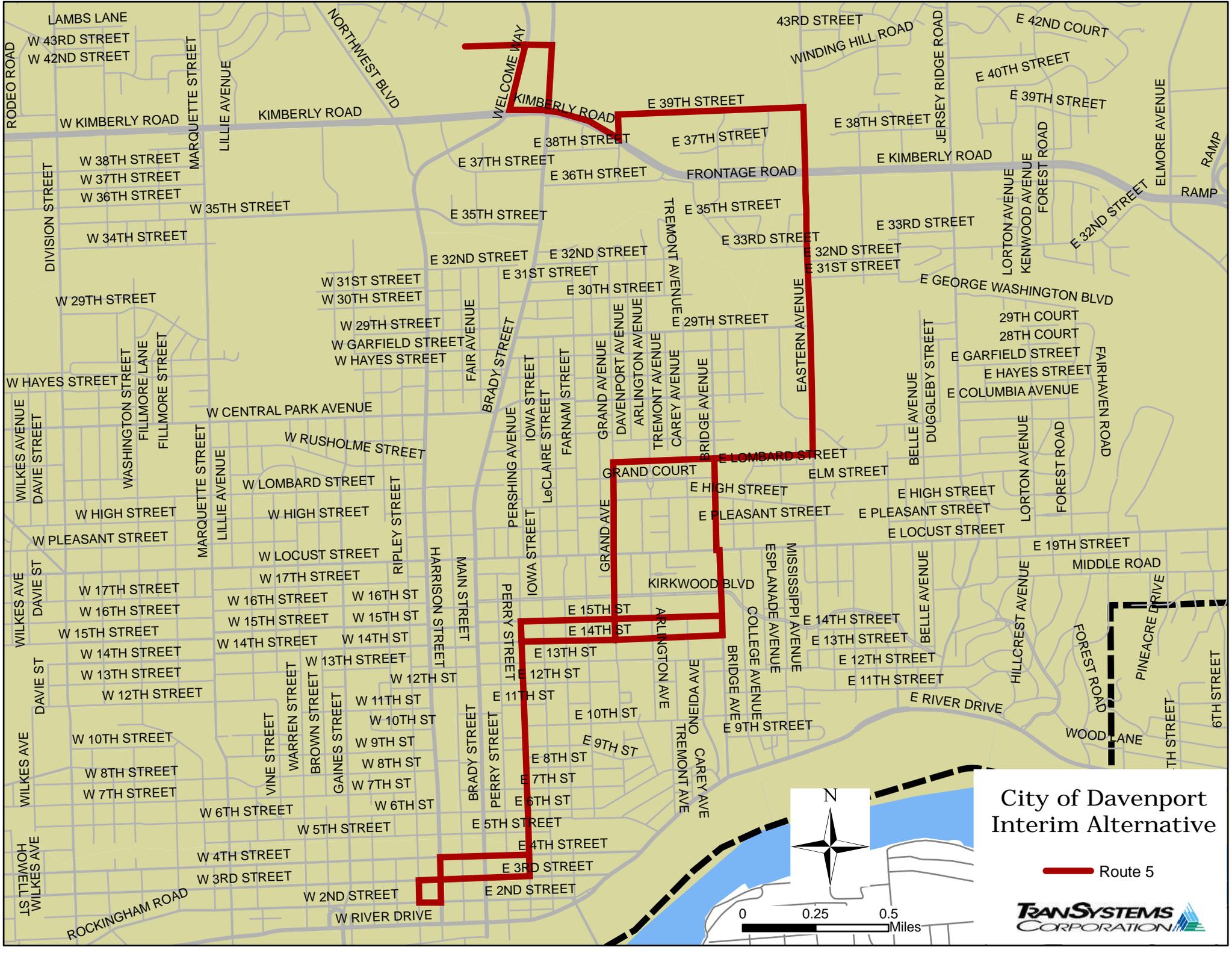
City of Davenport Interim Alternative

Route 1





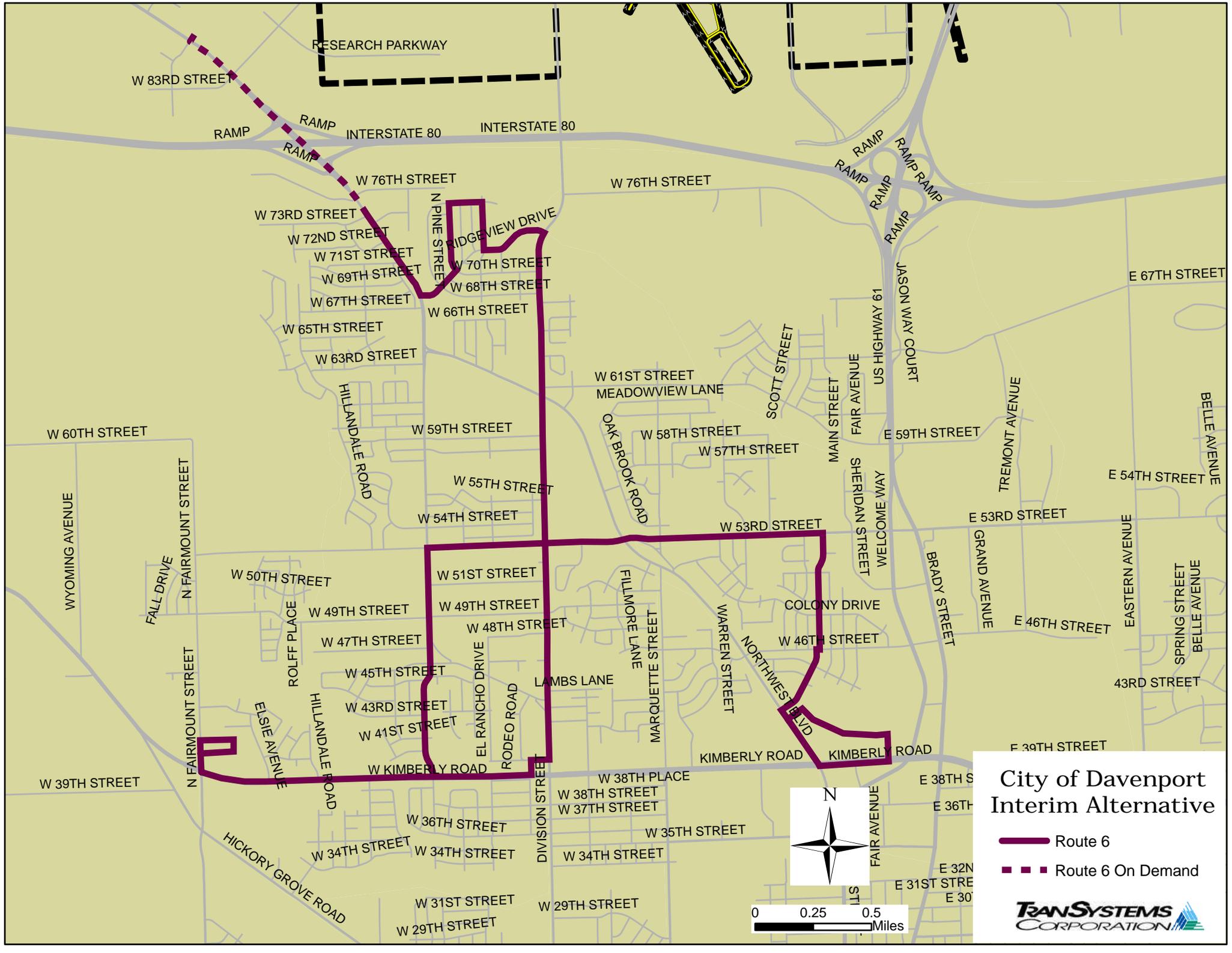




City of Davenport Interim Alternative

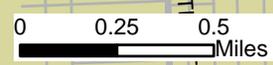
 Route 5

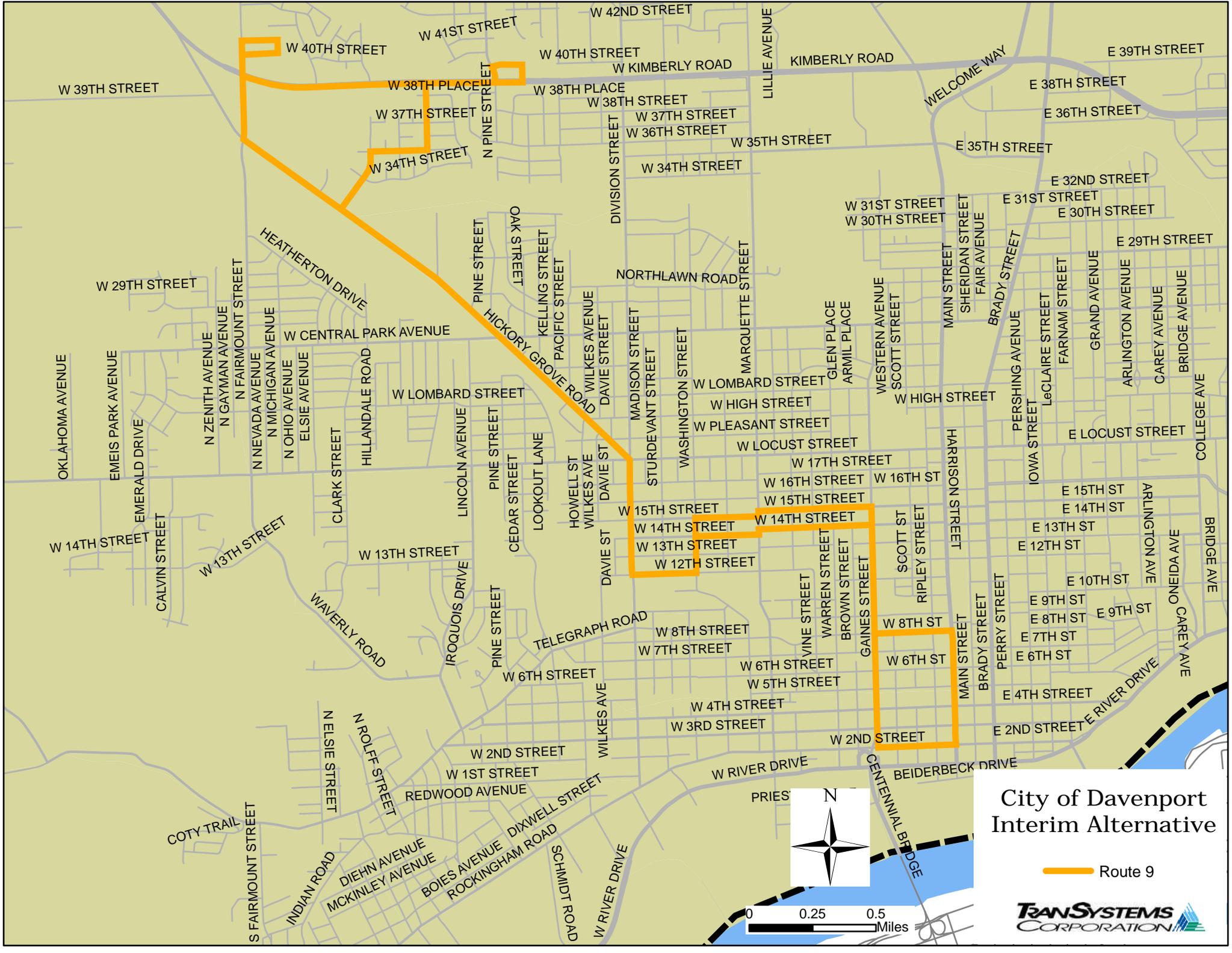




City of Davenport Interim Alternative

- Route 6
- Route 6 On Demand

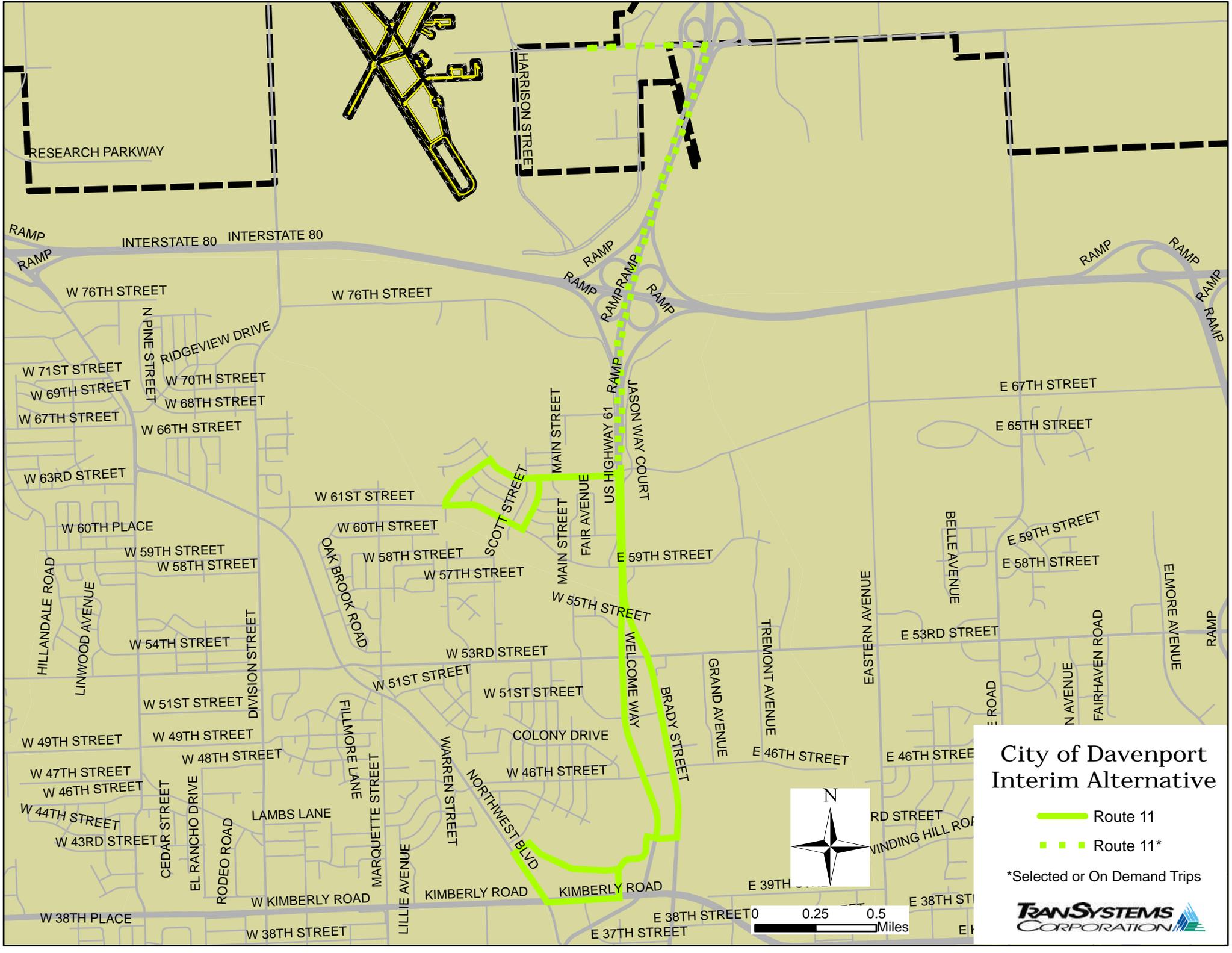




City of Davenport Interim Alternative

Route 9





RESEARCH PARKWAY

HARRISON STREET

INTERSTATE 80 INTERSTATE 80

W 76TH STREET

W 76TH STREET

W 71ST STREET
W 69TH STREET
W 67TH STREET

N PINE STREET
RIDGEVIEW DRIVE
W 70TH STREET
W 68TH STREET
W 66TH STREET

W 63RD STREET

W 61ST STREET

US HIGHWAY 61

W 60TH PLACE

W 60TH STREET

SCOTT STREET

MAIN STREET

FAIR AVENUE

JASON WAY COURT

W 59TH STREET
W 58TH STREET

W 58TH STREET

W 57TH STREET

E 59TH STREET

HILLDALE ROAD
LINWOOD AVENUE

W 54TH STREET

OAK BROOK ROAD

W 53RD STREET

W 55TH STREET

BELLE AVENUE

E 59TH STREET
E 58TH STREET

W 51ST STREET

W 51ST STREET

W 51ST STREET

W 55TH STREET

WELCOME WAY

BRADY STREET

TREMONT AVENUE

EASTERN AVENUE

E 53RD STREET

W 49TH STREET

W 49TH STREET

FILLMORE LANE

W 51ST STREET

W 51ST STREET

COLONY DRIVE

W 55TH STREET

GRAND AVENUE

TREMONT AVENUE

EASTERN AVENUE

E 53RD STREET

W 47TH STREET
W 46TH STREET

W 48TH STREET

LAMBS LANE

W 51ST STREET

W 51ST STREET

COLONY DRIVE

W 55TH STREET

WELCOME WAY

BRADY STREET

TREMONT AVENUE

EASTERN AVENUE

E 53RD STREET

W 44TH STREET
W 43RD STREET

CEDAR STREET

EL RANCHO DRIVE

RODEO ROAD

LAMBS LANE

FILLMORE LANE

W 51ST STREET

W 51ST STREET

COLONY DRIVE

W 55TH STREET

WELCOME WAY

BRADY STREET

TREMONT AVENUE

EASTERN AVENUE

E 53RD STREET

W 38TH PLACE

W 38TH STREET

LILLIE AVENUE

KIMBERLY ROAD

KIMBERLY ROAD

E 38TH STREET

E 37TH STREET



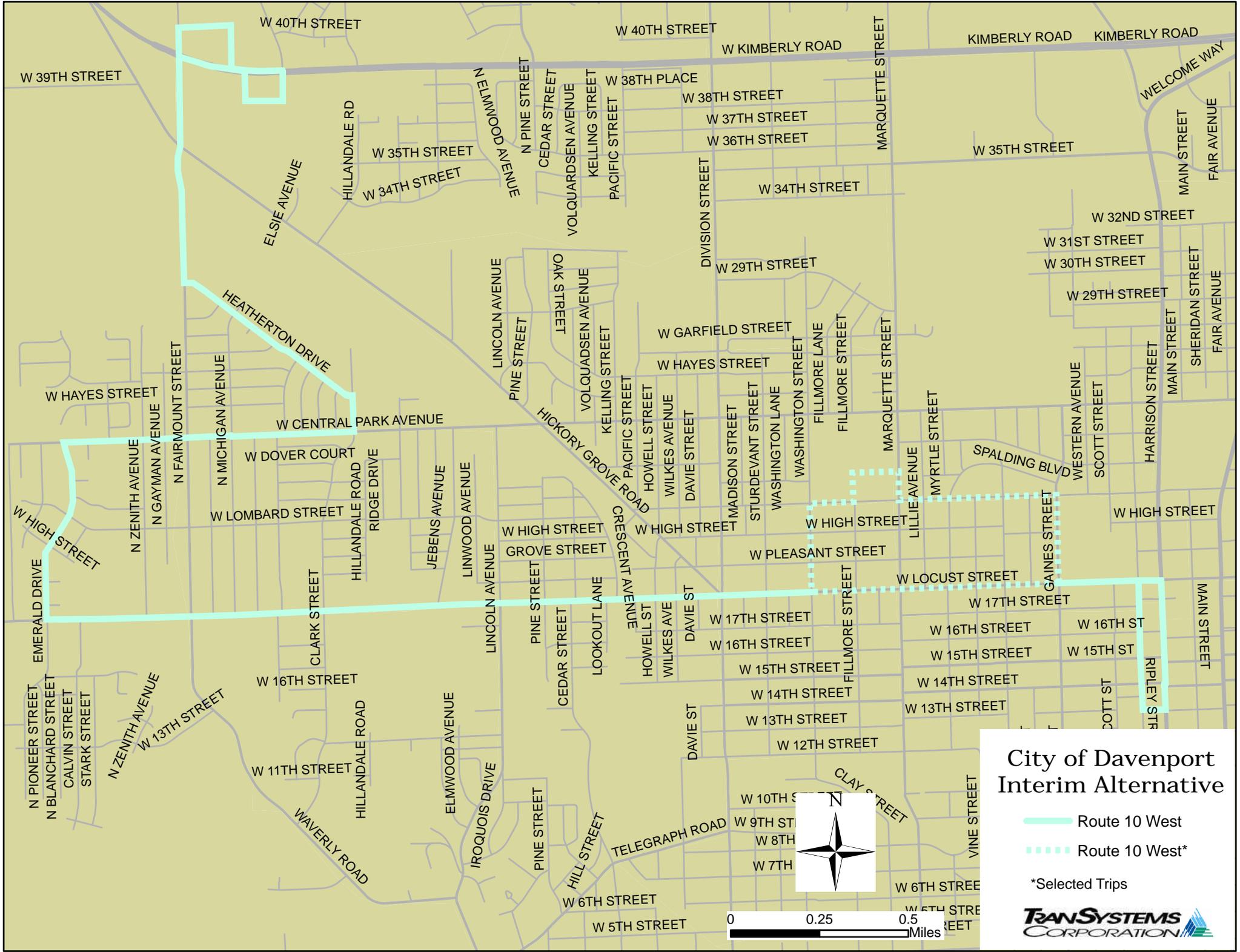
0 0.25 0.5 Miles

City of Davenport Interim Alternative

- Route 11
- Route 11*

*Selected or On Demand Trips

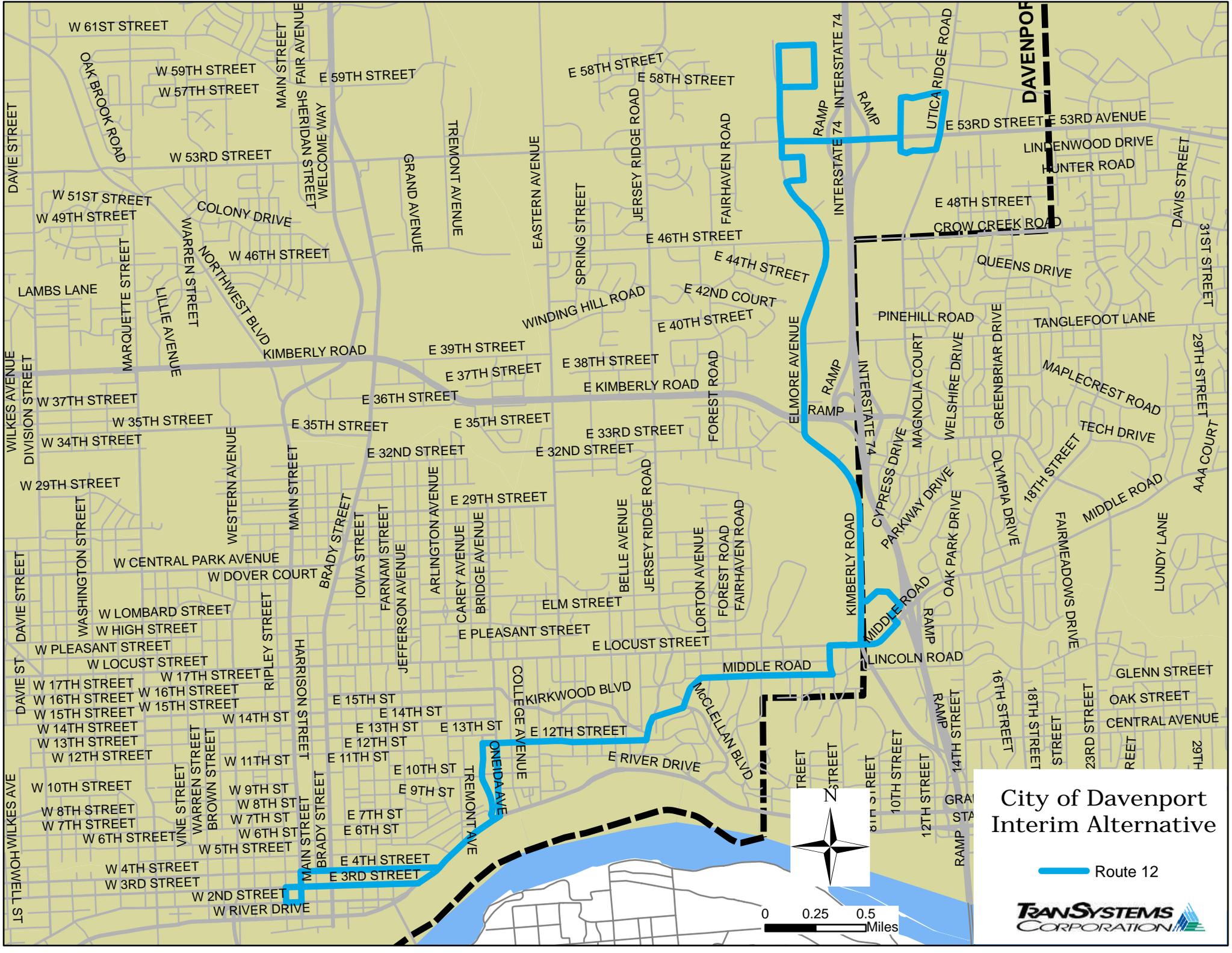
TRAN SYSTEMS CORPORATION



City of Davenport Interim Alternative

-  Route 10 West
-  Route 10 West*

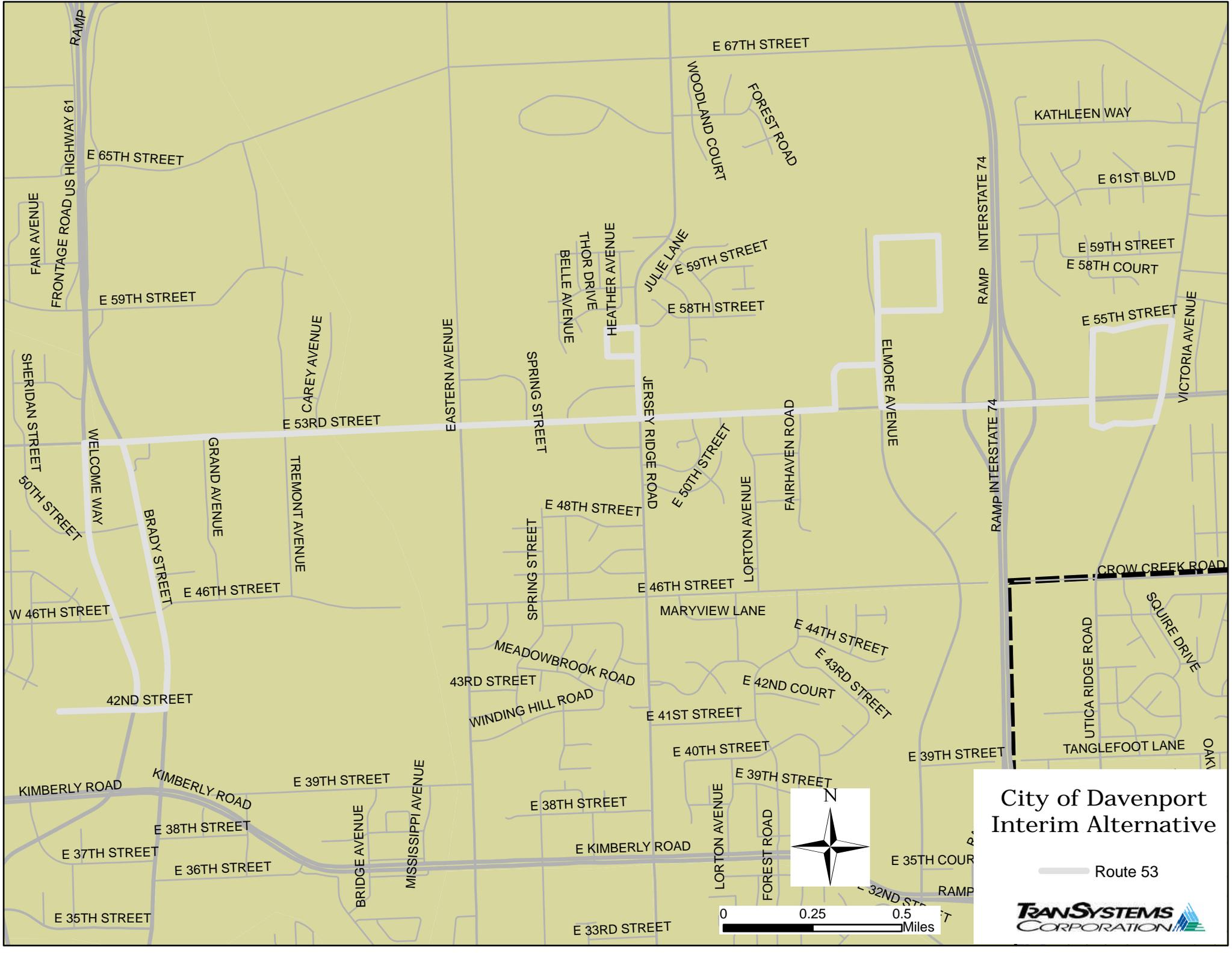
*Selected Trips



City of Davenport Interim Alternative

Route 12





City of Davenport
Interim Alternative

Route 53



TransSystems
CORPORATION