

**Commuter Rail Feasibility Study
For The
Des Moines, Iowa Metropolitan Area**

***DES MOINES AREA
METROPOLITAN PLANNING ORGANIZATION***

Submitted By

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TASK I. SYSTEM DEFINITION

REQUIREMENT

The following are extracted from the Des Moines Area Metropolitan Planning Organization's Request for Proposals for this study, and are stated here to indicate the requirement with regard to a commuter rail system. The system should:

Respond to 2001-2006 re-construction of I-235.

Provide a low cost, plain vanilla commuter rail system.

Provide short term relief, and be a long term effective travel alternative.

Be operational by 2003.

Attract enough riders to reduce travel disruptions during reconstruction of I-235.






Use conventional locomotive and passenger car technologies or perhaps self-propelled or diesel multiple unit equipment. The equipment could be used, new, or leased, whichever is the least expensive for the short term. The system is to provide service at least in the peak hours (6-9 a.m. and 3-6 p.m.) at perhaps 2-4 round trips during those peak hours. Modular or inexpensive stations, easy and flexible ticketing, and integrated bus connections would be considered.

ROUTE STRUCTURE

The commuter rail service corridors and passenger stations to be examined are shown in Map 1. East and west ends of service ideally should be at points (1) near trip origins (and/or destinations), (2) further from downtown Des Moines than expected a.m. peak hour congestion during I-235 reconstruction, and (3) far enough from downtown so that it is worthwhile getting out of the car, transferring to a train, and arriving downtown before those who remained in their cars. The Altoona end of the system shown on the map is about 10 miles from downtown Des Moines on the Iowa Interstate Railroad, Ltd., (IAIS); the Waukee end is 15 miles distant on the Perry Branch of the Union Pacific Railroad (UP). Rail right of way ownership is mixed between these end points.

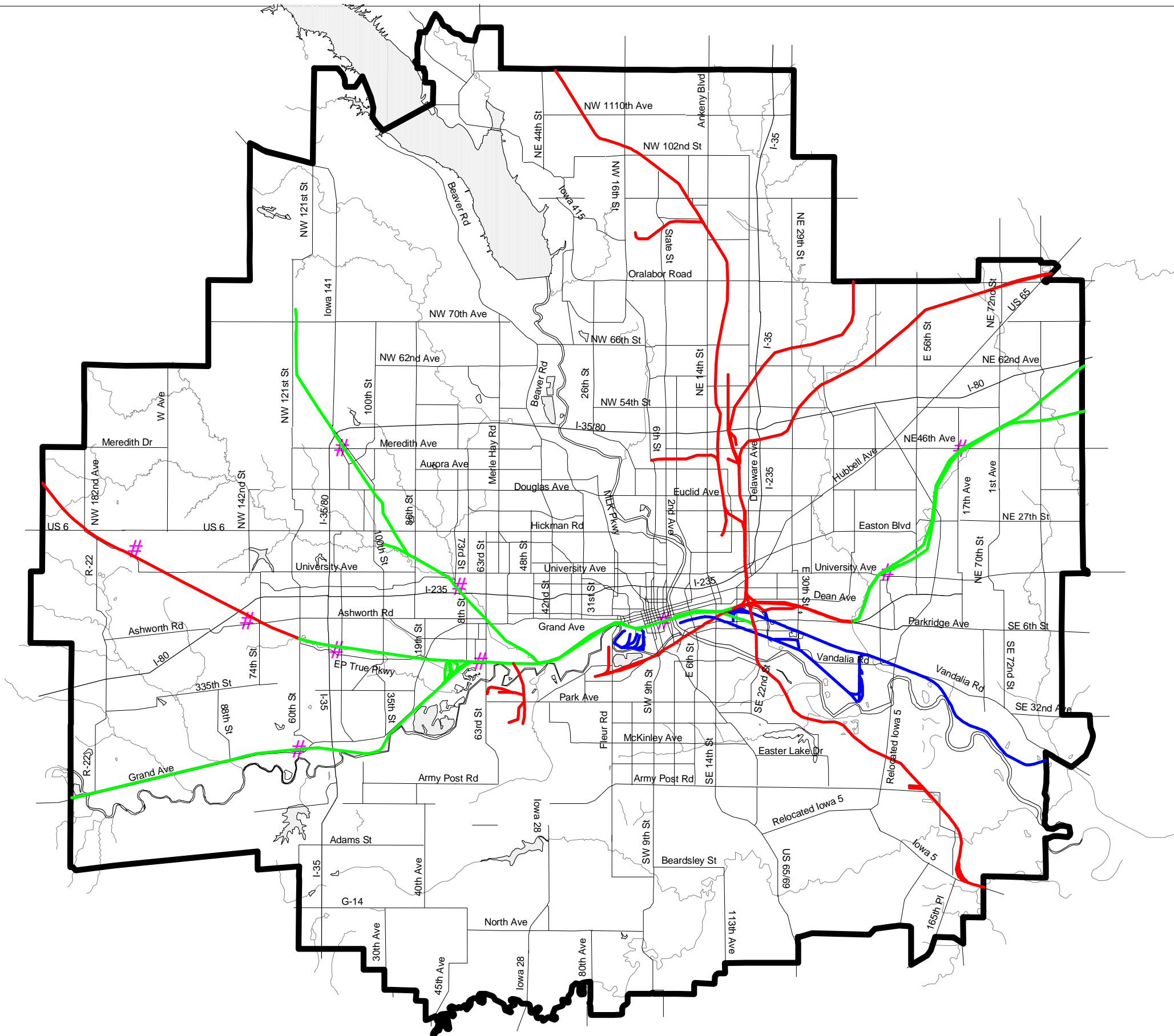
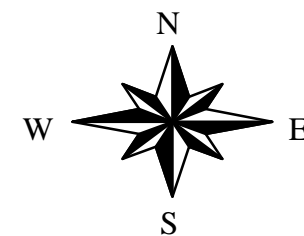
Map 1

Potential Commuter Rail Corridors

-  Iowa Interstate Railroad
-  Norfolk Southern Railway
-  Union Pacific Railroad
-  Loading Points/
Park-and-Ride Lots
-  MPO Boundary

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THE PREPARATION OF THIS MAP WAS FINANCED IN PART THROUGH FEDERAL FUNDS PROVIDED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION, AND/OR FEDERAL TRANSIT ADMINISTRATION.



To stand any chance of competing with the automobile, commuter rail service must offer competitive trip times—a tall order when average rail trip length is 10 to 15 miles.

To get highway-competitive trip times requires track improvements because most of the track to be used for Des Moines commuter rail is currently low speed (10 -20 mph) track. Also, most rail is 112-pound jointed, and some is lighter. There are no categorical standards, but--considering train speed, rail defects per mile, whether rail was control cooled during manufacture, and quality of ride--it is recommended that existing rail be replaced with 115-pound CWR (continuous welded rail) for passenger train operation, and that track speed be improved to at least 60 mph. The Federal Railroad Administration (FRA) classifies track by characteristics of installation, maintenance and allowable speed. FRA Class 3 track permits speeds of 60 mph. Thus FRA Class 3 track is recommended.

All right of way to be used by the prospective commuter rail system is “dark”, that is, unsignalled. This may be acceptable for operation of a limited number of trainsets during interim (I-235 reconstruction) operation, and a top commuter train speed of 59 mph¹ may be adequate to develop sufficient ridership attracted from highway travel, but switch point protection (a signal ½ mile from each switch to provide advance indication if switch is misaligned) should be added for passenger safety. Operation of commuter rail in dark territory on two or three branches west of Des Moines suggests that it may be desirable, notwithstanding the “plain vanilla” goal, to include a commuter dispatcher and switchtenders, the latter so that commuter trains do not have to stop at switches. Alternatively, a limited signaling system with powered switches may be appropriate so that higher speeds may be attached.

Increased grade crossing protection will necessarily add cost even to a plain vanilla low cost project. Today, train speeds on the proposed commuter rail routes vary considerably, with much of the track limited to 10 mph, some 20 mph, and a small portion 40 mph. With 59 mph maximum speed trains, a minimum activation timing must be re-set on the crossing protection flashers and/or gates to insure proper warning duration. The presence of higher speeds and a greater number of trains suggest review of crossing protection adequacy, for example flashlights, gates and cantilevered lights.

Of crucial importance is that the prospective commuter rail service be connected with trip origins and destinations of sufficient volume to make the venture worthwhile. Downtown Des Moines and the area westward as far as Waukee appear to hold particular promise in this regard, and fortunately these areas are connected by existing rail rights of way.

¹ FRA regulations require, for passenger trains speeds of 60 mph or greater, that a block signal system be installed. Therefore we use 59 mph as the maximum passenger train speed in unsignalled territory.

Keeping potential ridership (demand) in mind, the principal service corridor should connect Waukee and downtown Des Moines (Court Avenue). It is convenient and appropriate to extend this service eastward to Altoona.

Service connecting Urbandale with downtown Des Moines, a distance of about 11 miles, would take advantage of continuing development along the Norfolk Southern Grimes Line, operated by IAIS. Investigation of another line, using UP and IAIS rights of way and connecting West Des Moines Valley Junction with a station near 60th Street/Grand Avenue, reveals insufficient population density in the station catchment area for commuter rail operations to be feasible. After development of a planned mall in the vicinity of that proposed station site, reconsideration may be appropriate.

In summary, the proposed route structure would consist of two lines, with distances and trip times as indicated :

Waukee-Des Moines-Altoona

Waukee-Des Moines: 15.2 miles, 19 minutes
Altoona-Des Moines: 9.7 miles, 13 minutes

Urbandale-Des Moines

11.4 miles, 15 minutes

Express Bus Service Modifications

It is important to make a public transportation system convenient to prospective riders. In this regard, intermodal connections in general and feeder bus services in particular must be a component of commuter rail planning. Rail transit and bus transit should be fully integrated, with feeder buses/vans conveying riders to and from the outlying commuter rail stations, and distributor buses/vans conveying riders from and to the downtown station. In this context, generally-stated intermodal connections are described in this section.

Express bus service operated by the Des Moines Metropolitan Transit Authority (MTA) currently exists throughout much of the Des Moines regional area. The service area is generally located to the west of downtown with limited service extending east toward Altoona. There are seven express routes and two commuter routes. The express routes include:

- Clive
- E.P. True
- Northwest
- Urbandale
- Vista
- Westown
- Windsor Heights

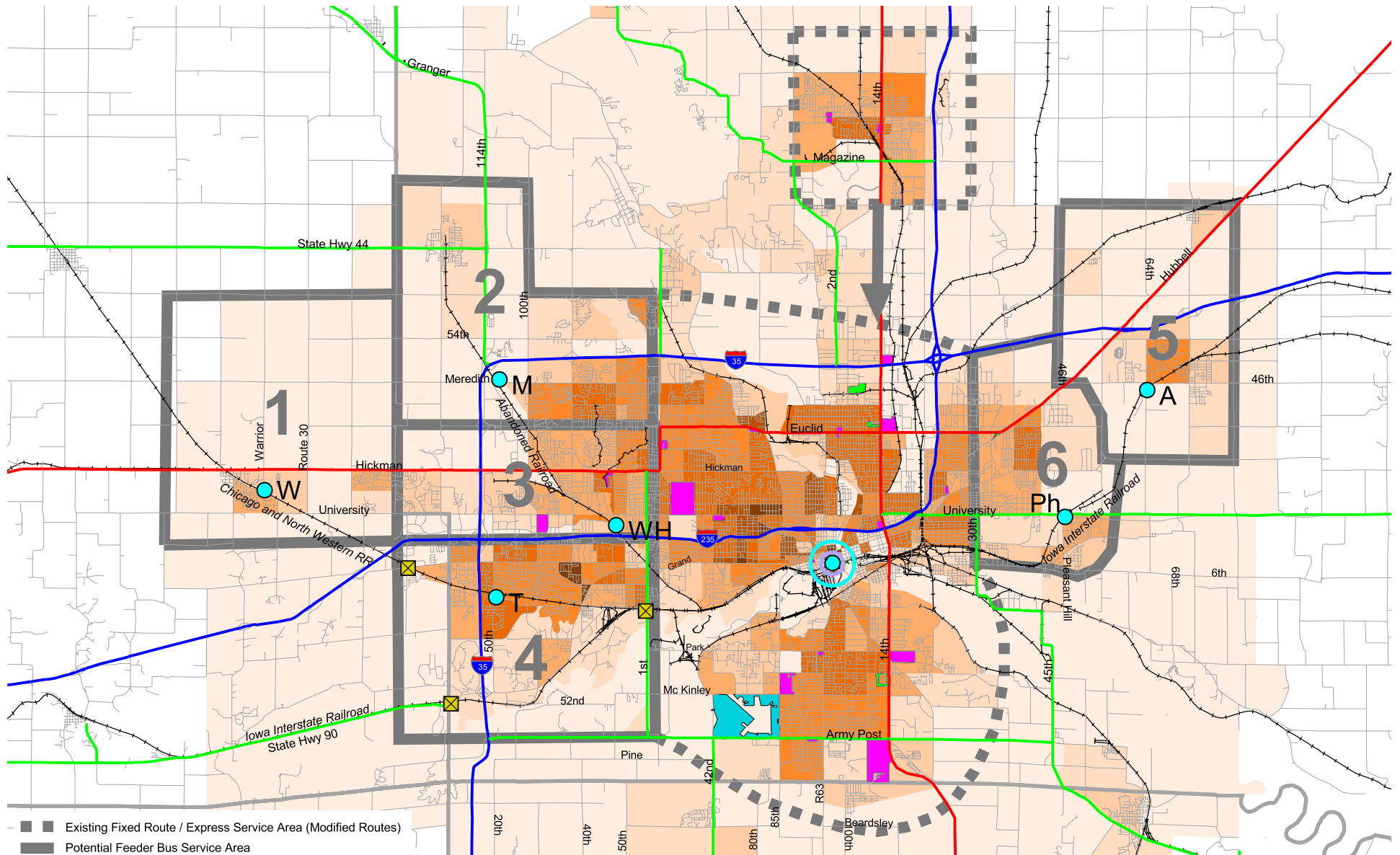
The commuter routes include:

- Ankeny
- Altoona

Express service is provided Monday through Friday during the a.m. and p.m. rush hour. The service requires passes or an exact fare of \$1.25.

As part of the proposed commuter rail project, modifications to the existing express bus service were explored. The fact that the proposed commuter rail alignment would cover the same approximate service area as many of the existing express bus routes suggests route modifications. In particular, many of the existing express routes could be replaced by a feeder bus service bringing riders to commuter rail stations, from which rapid access to the central business district (CBD) would be provided via the proposed commuter trains.

Map 2 shows conceptual transit service coverage that includes six zones that could offer feeder bus service to the proposed commuter rail stations. Those zones, designated 1-6 on the map, correspond to the six commuter rail stations outside the CBD, namely, Altoona (A), Urbandale (U), Pleasant Hill (PH), West Des Moines (T), Windsor Heights (WH) and Waukee (W), each of which will have its own feeder bus service. Transit routes could be identified within these zones that would connect the service area to the proposed commuter rail stations. Potential express bus service that could be converted to a feeder bus service includes the following routes:



- Existing Fixed Route / Express Service Area (Modified Routes)
- Potential Feeder Bus Service Area

<ul style="list-style-type: none"> Freeway / Expressway Principal Arterial Minor Arterial Railroad Recommended Station Potential Future Station 	<ul style="list-style-type: none"> Parks Airport Shopping County Line 	<p>Population Density (per sq/mi)</p> <ul style="list-style-type: none"> 0 - 300 300 - 1,030 1,030 - 2,180 2,180 - 3,480 3,480 - 5,100 5,100 - 7,080 7,080 - 10,640 10,640 - 22,850
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Map 2 Conceptual Transit Coverage Area Plan

BWR BUCHER, WILLIS & RATLIFF CORPORATION

Base data provided by Des Moines Metropolitan Planning Organization
2000-190trp/gis/map.apr. 5/11/00. PWH

- Clive Express Route converted to Feeder Bus to cover Zone 2
- E.P. True Express Route converted to Feeder Bus to cover Zone 4
- Westown Express Route converted to Feeder Bus to cover Zone 1
- Vista Express Route converted to Feeder Bus to cover Zone 3
- Altoona Commuter Route converted to Feeder Bus to cover Zone 5

Downtown Shuttle Service

A downtown shuttle service, or distribution system, would connect the commuter rail Court Avenue station to the major downtown employers. The shuttle service would operate during the same periods as the proposed commuter rail service and would coordinate with arrival and departure times of the commuter rail trains. The shuttle bus service would pick-up passengers at the CBD commuter rail station (Des Moines Court Avenue station) and would then drop passengers off (or pick them up) at designated locations within the downtown area.

Another option would utilize a more flexible shuttle system that would allow route deviation to occur. Under this option, the shuttle buses could divert from regular routes to drop passengers at or closer to their final destination(s). Shuttle buses or vans, or possibly small buses, could be utilized in such a service.

The shuttle bus system could operate based on zonal coverage. A select number of zones (two to four) could be established within the CBD. Within each zone major destinations would be identified as designated stops along the route.

OPERATIONS

Minimum commuter rail operation is typically 2 to 4 trains to the CBD, in the morning peak period, and the same number of trains out during the p.m. peak. A low fare would encourage ridership during reconstruction of I-235, and a simplified fare payment system, for example, an honor system in which riders deposit payment in unattended fareboxes would serve to minimize cost. The alternative could be (at greater cost) to install automated fare machines and ticket validators. With regard to on board beverage and food services, the 10-15 mile ride has a trip time rather short for this; in any event, Des Moines could consider licensing entrepreneurs to provide either on-board or at-station services (at no cost to the community).

Ideally, the commuter rail service operator would be one of the railroads, in a purchase of service transaction. This resolves a number of issues, including track access, dispatching and labor. IAIS has indicated interest in this arrangement.

A number of Des Moines-area employers give incentives to use buses; it seems reasonable to assume they will provide the same incentives for commuter rail riders. Every reasonable action should be taken to encourage ridership.

Considering the relatively short 10-15 mile distance between the outlying stations and downtown Des Moines, it may be appropriate in the future--assuming development and prospective ridership warrant--to look at stations still further out. Commuter rail's ability to compete with the auto improves with distance. Furthermore, looking beyond I-235 reconstruction, the principal motivator of this feasibility study, it has been suggested that rail lines in addition to those featured on Map 1 be considered for passenger rail operations, e.g., rail lines to Ankeny and Carlisle, and extensions of the proposed service as new origins and destinations grow in magnitude, e.g., service to Booneville or Grimes.

Potential Operating Plans

In addition to physical improvements to support 59 mph operations, all service scenarios require improvements to procedures governing train movement authority. In particular, arrangements must be made with UP to expedite movement through those route segments under UP control that under present freight train rules would require yardmaster permission. Commuter trains will need to be able to pass through the UP-controlled segments at speed; such authority can be secured.

60 Minute Headways²

This level of service is readily attainable. Two trainsets would be required for Altoona-Waukee service. One trainset would be required for Urbandale service. All train meets would occur at the Des Moines downtown station, which must be capable of accommodating two trains at once. Switches used to meet trains at downtown station should be power-operated (by the dispatcher or from the locomotive cabs) or a switch tender should be positioned there to handle the switch.

The Downtown-Grimes Line Junction segment would see the highest traffic, at four trains per hour. Either the Grimes Line Junction switch should be power-operated (by the dispatcher or from the locomotive cab) or a switch tender should be positioned there to handle the switch.

²Headway is the passenger transportation term used to denote time separation between passenger units. In this case, the term is used to state the scheduled time between successive commuter trains.

45 Minute Headways

This scenario attempts to identify a cost-effective operating plan that provides better than hourly service but at a lower fixed plant capital cost than the 30 and 15 minute headways would require. Three trainsets would be required for Altoona-Waukees service. Two trainsets would be required for Urbandale service. All train meets would occur at the downtown station, which must be capable of accommodating two trains at once, with switches operated with hourly headways.

The Downtown-Grimes Line Junction segment would see the highest traffic, at five to six trains per hour. The Grimes Line Junction switch should be operated/contained in the same manner as those at the downtown station.

30 Minute Headways

This service would be difficult to provide without extensive improvements in addition to those related to train speed. Train meets would occur at downtown station and east of Waukees. Sufficient double track would be required at both locations to make timely meets. A full CTC signal system would be appropriate to keep the service running on schedule. Four trainsets would be required for Altoona-Waukees service. Two trainsets would be required for Urbandale service.

The Downtown-Grimes Line Junction segment would see the highest traffic, at eight trains per hour. A new dispatching position should be created to expedite commuter train movement. If the commuter trackage is unswitched and the dispatcher therefore must issue track warrants to each commuter train, the new dispatching position should have few responsibilities outside the commuter territory.

15 Minute Headways

This service would require complete CTC signal system installation and double tracking of most or all of the commuter rail lines, in addition to the track improvements related to improving train speed. Seven trainsets would be required for Altoona-Waukees service. Four trainsets would be required for Urbandale service.

The Downtown-Grimes Line Junction segment would see the highest traffic, at 16 trains per hour, with a new dispatching position created with responsibility similar to the 30 minute scenario.

SYSTEM PARAMETERS USED IN ESTIMATING RIDERSHIP

Following are the system parameters used in estimating ridership.

Schedules/Headways

Headways of 60, 45, 30 and 15 minutes during 6-9 a.m. and 3-6 p.m. peak periods.

Fares/Ticketing

Fares and ticketing should be integrated into the MTA system. In order to make it easy for the customer, there should be one payment for the entire trip; that is, if the passenger chooses to transfer between bus and train, no additional fare or cash payment should be required. "Proof of payment" should be the method of fare payment verification on the rail portion, in order to keep operating costs low. That is, there should be no requirement to collect fares or validate fare payment aboard the train; rather, the customer should be required to carry aboard proof that payment has been made; occasional monitoring by police traffic officers will minimize fare evasion.

On-Board or At-Station Services

In order to keep operating costs low, it is recommended that private entrepreneurs be allowed to provide these services, such as reading matter or refreshment. Prohibiting alcoholic beverages will lessen liability claims.

Maintenance

Track should be maintained to FRA Class 3 standards, that is, 60 mph passenger train maximum speed. Standard maintenance cycles should be adhered to for maintenance of rolling stock, which may be performed by contract. Cars and stations should be cleaned daily.

Operator

A purchase of services agreement in which IAIS would provide the train crews and perform dispatching functions, while MTA, or another extant organization, would provide all other administrative functions of the commuter rail service, including marketing, ticketing and security, would be the plainest, simplest organizational arrangement likely to stand the rigor of time and accountability.

EQUIPMENT

The two greatest costs, if commuter rail service is implemented in Des Moines, will be right of way improvements to safely accommodate automobile-competitive passenger train speeds, and the equipment (rolling stock). In order to minimize initial costs, leased equipment, or acquisition of used or rebuilt equipment, should be considered. A rebuilt engine costs about \$1.5 million and is entirely adequate for several hours' use each day; a new locomotive costs about \$2.4 million. (There exists at least one instance in which a commuter railroad obtained a better warranty on rebuilt locomotives than on new ones.) A new coach costs about \$1.75 million; used or renovated coaches may be available for considerably less, but may require rehabilitation to be attractive to prospective riders. Past experience shows that rehabilitated coaches have been acquired for \$0.5 to \$0.7 million. Modern diesel multiple unit (DMU) equipment has not been introduced into revenue operation in the United States; reconditioned Budd RDC's (rail diesel cars) are now in use, for example, in Dallas. It is likely that use of conventional locomotive-hauled coaches would have lower overall maintenance as well as capital costs, compared with new FRA-compliant DMUs. Dallas DMU's, reconditioned, cost \$1.9 million each. To keep costs low, the operating plan will be devised to obtain maximum utilization of as small a number of trainsets or DMUs as possible.

Could light rail transit (LRT) vehicles, vice conventional commuter equipment, be used? Given the relatively short distances, this would seem an attractive option. The issue of safety and the federal government regulation thereof, however, make this option problematic. Time-separated service is a possibility, if IAIS, UP and FRA/FTA agree. Grade crossing protection becomes even more important, and probably more costly, because of the lighter weight of LRT vehicles. Given Des Moines' desire for a low cost system to assist in mitigating I-235 reconstruction congestion, it is deemed more timely and appropriate to consider compliant vehicles for this service.

Given the declining number of DMUs available, as well as their age, we will assume each commuter rail trainset is composed of a locomotive and at least two coaches. The minimum cost of such a trainset is about \$2.5 million.

Using 60 mph as the maximum passenger train speed on rehabilitated right of way, and accounting for reduced speeds where required, for example, through curves and at stations stops, and calculating where train meets take place, operating scenarios are reckoned for various headways. We begin with the assumption that trains will depart Waukee and Altoona, pass each other at some point, and proceed to the opposite end of this principal commuter rail corridor (Waukee-Des Moines Court Avenue-Altoona). At least one additional trainset operates between Urbandale and Des Moines Court Avenue.

These calculations reveal the required number of trainsets, and their approximate cost, based upon the scenario:

<u>Headways</u>	<u>Number of Trainsets</u>	<u>Cost (\$ million)</u>
60 minutes	3	\$7.5
45 minutes	5	12.5
30 minutes	6	15.0
15 minutes	11	27.5

FACILITIES

Station Locations

The number of stations depends on where the origins and destinations are, and a balance must be struck between the number of stations (and delays associated with stopping) and trip time (again, competition with the auto). The Task III Demand Analysis is also quite pertinent in making final decisions on station locations.

Station location criteria are listed at Appendix A.

Map 1 shows loading points (stations)/ park and ride lots selected by the communities. These are listed and discussed below.

Waukee Branch: Waukee (Warrior Lane crossing)
West Des Moines 74th Street (& Ashworth)
West Des Moines 50th Street (near E.P. True Parkway)

Urbandale Line: Urbandale (Meredith Drive)
Windsor Heights (where I-235 crosses over railroad)

IAIS Main Line: West Des Moines 60th Street (& Grand Avenue)
West Des Moines 1st Street
Downtown Des Moines (Court Avenue)
Pleasant Hill (University Ave. crossing)
Altoona (17th Avenue)

The Waukee station as selected by the community appears to be an appropriate location. This location was evaluated in a 1999 survey of residents as a park and ride location likely to be used,³ and was a preferred park and ride location in the MTA's "Western Suburbs Transit Study".⁴ It must be stated that neither the survey

³ "Impact of Planned Construction on I-235: Citizen Survey and Focus Groups: Executive Summary of Results", conducted by ETC Institute in association with TranSystems Corporation, June 1 999, Charts/Graphs page 12.

⁴ "Western Suburbs Transit Study", prepared for Des Moines Metropolitan Transit Authority by TranSystems in association with ETC Institute, December 1999, Table 6, page 38.

nor study was associated with commuter rail; both were directed at I-235 reconstruction and potential mitigation thereof. However, the survey and study findings are nonetheless useful and at least partially transferable to prospective commuter rail service. Warrior Lane crosses the UP branch line at a location on the Des Moines side of Waukee, near new housing development. It appears that a station site with sufficient space for parking could be constructed in the vicinity.

West Des Moines 74th Street station is about 3 miles southeast of the proposed Waukee station, and just south and east of the point where I-80 crosses the UP branch line. Existing undeveloped space adjacent to Country Club Office Plaza, to the west of 74th Street, may be available for station parking. This is an area of commercial office and residential development.

The station proposed at West Des Moines 50th Street is another location determined to be a preferred park and ride location in the MTA study. Thus this appears to be a good location. There is considerable housing development in the vicinity. Because of the extent of development, undeveloped land for parking may be difficult to find. Where 50th Street crosses the UP right of way, the southeast quadrant is undeveloped low-lying land which may be suitable for station parking. Other quadrants are developed with housing (northwest, northeast) and recreational fields (southwest).

The potential station site at Urbandale is located where Meredith Drive crosses the railroad right of way. The location of existing housing suggests that a location further south may attract more riders; the West Suburbs Transit Study identified good park and ride locations along Douglas Avenue, one about a mile east and the other a mile west of the point where Douglas crosses the railroad right of way.

The other station site identified on the Grimes rail line is located at the southwest corner of Windsor Heights, where I-235 crosses over the rail line. Parking for more than 100 automobiles might be available in the lot of the closed lumber/home repair store.

West Des Moines 60th Street (& Grand Avenue) is the westernmost station identified along the IAIS main line. There is virtually no present development west or south of the station and it therefore does not appear to be a promising station location. It is understood that a mall is to be developed just north of this station, and station prospects may improve in the future.

As a prospective commuter rail station, West Des Moines 1st Street enjoys nearby housing, to the north and west. Valley Junction, however, was considered in the West Suburbs Transit Study as a park and ride location and rejected because of low upstream potential, meaning that there were deemed an insufficient number of potential users residing in a 5-6 mile half circle "upstream", or in the direction opposite morning peak traffic flow.⁵

In downtown Des Moines, the former passenger train depot at Court Avenue is the obvious location for the destination for many prospective commuter rail passengers, and it is reported that the property owner has indicated willingness to cooperate permitting use of the area adjacent to the track for boarding and alighting. MTA has indicated its willingness to support commuter rail with downtown (as well as suburban) distribution (and feeder) bus service.

The population density in the immediate vicinity of a proposed Pleasant Hill (University Ave. crossing) station suggests that there would be few walk and ride customers. Parking at this somewhat uneven (rugged, sloping) terrain would also be problematical.

The population density at Altoona (17th Avenue) suggests that this also would be a relatively low ridership station; however, it would seem reasonable to construct at least one station east of downtown Des Moines for those commuters living in that direction.

Considering various factors all related to potential ridership, three stations should be dropped: West Des Moines 60th Street (and Grand Avenue) because there would be few or no riders; West Des Moines 74th Street (and Ashworth) because of the relatively short distances to stations on either side; and West Des Moines 1st Street (Valley Junction) because of low upstream passenger potential. This leaves seven stations:

Waukee Branch:	Waukee (Warrior Lane crossing) West Des Moines 50th Street (near E.P. True Parkway)
Urbandale Line:	Urbandale (Meredith Drive) Windsor Heights (where I-235 crosses over railroad)
IAIS Main Line:	Downtown Des Moines (Court Avenue) Pleasant Hill (University Avenue crossing) Altoona (17th Avenue)

⁵ "West Suburbs Transit Study", page 23.

Downtown Des Moines Station Considerations

Because of plans by the City of Des Moines for improvements in the vicinity of the Des Moines Court Avenue Station, RLBA was asked to discuss the commuter rail study with city officials. In particular, four issues were discussed: (1) stopping of passenger trains to let passengers on and off, and short-term (up to 2 minutes) blocking of streets, (2) construction of a second track to allow train meets at the station, (3) specific station location, and (4) overnight storage of trains and longer-term (overnight) blocking of streets. Conclusions from discussions with Jim Grant, Director of Community Development, and Gary Fox, City Traffic Engineer, are as follows⁶:

Short-term Street Blockage. The required train length for implementation of commuter rail service would be 235 feet--two passenger cars plus a locomotive. This length train could be stopped at the Des Moines Court Avenue Station without requiring closure of a street during the approximately 2-minute station dwell time. If ridership grows and a third passenger car is added, then 4th Street would have to be blocked during the time the train stops at the station. It is deemed acceptable to block 4th Street for a minute or two during boarding and alighting. Crossing protection devices should be designed so that no street is blocked by lights and gates when the train stopped at the station does not actually block the street in question.

Construction of a Second Station Track. From the commuter rail perspective, construction of a second station track at the Des Moines Court Avenue Station is necessary because this (1) allows trains to meet at the station with highest passenger use, (2) facilitates scheduling wish meets at a rough mid-point on the major route, and (3) eases passenger transfers between Urbandale trains and Altoona-Waukee trains. Relocation of the most important passenger station to a site further removed from downtown Des Moines would have an adverse affect of ridership and is not advisable. A second track formerly existed at this location, and has gone into private ownership, but the former track right of way hasn't been built on. Thus if a decision is made to implement commuter rail, a first order of business is to acquire sufficient additional real estate to allow construction of a second station track. Allowing room for two turnouts (switches) and potential future expansion, a distance of 1,584 feet is used in the Task II estimate.⁷

Specific Station Location. The Depot at 4th (also called Des Moines Court Avenue) has been considered, in the estimation of ridership, the downtown Des Moines station location. RLBA believes that this should be the Des Moines station location owing to its proximity to Des Moines destinations. Alternatively, the block between 3rd and 4th, would likewise be close to

⁶ Conversation with Jim Grant on April 27, 2000, and phone conversation with Gary Fox on May 26, 2000, both interviewed by Ken Withers, RLBA.

⁷ See Table F, Task II.

downtown business locations. The park and ride location planned for 13th-16th Street is deemed too far removed from the city's center.

Overnight Storage of Trains. Because of the city's redevelopment plans, and the importance of through traffic on 3rd and 5th Streets, overnight storage of trains should not be considered at the Des Moines Court Avenue Station.

Amtrak has indicated plans to implement new intercity passenger rail service, extending to Des Moines from Chicago. If commuter rail is also implemented, the rising importance of passenger train travel in Des Moines suggests giving prominence and importance, in city redevelopment plans, to the city's passenger rail station.

Station Components

Each station should be provided with sufficient parking to avoid turning away prospective riders. At least temporary weather shelters will be required, considering Iowa winters. Modular and/or other low-cost station structures are recommended. The downtown terminal has its own special needs, including a customer-oriented bus distributor system coordinated with train arrivals and departures.

Station Components/Amenities are discussed at Appendix B.

Maintenance and Train Storage Facilities

Layover facilities ideally should be near the outer ends of each line. However, given the relatively short distances and branching nature of the proposed network, it may be simpler to locate them centrally (on an available siding in or near downtown Des Moines) in a consolidated daytime/nighttime layover facility. For short term (reconstruction of I-235) service, location should not be an issue. In order to keep costs down, lease of existing rail facilities should be explored.

To keep costs low, it is recommended that the initial commuter rail system contract out all rolling stock maintenance. Daily cleaning of cars and stations may likewise be performed by contractors. These services can, of course, be among the functions included in a purchase of services agreement.

Stations will require at the minimum a 400 feet long by 12 feet wide platform, adequate parking for all prospective riders, a weather shelter, a lift for the disabled, and lighting. For these minimum amenities, estimated cost is \$90,000 per station, exclusive of real estate and site preparation (drainage, grading) costs, which are site specific. Cost of paved parking is about \$477 per space, again exclusive to real estate and site preparation costs.

CONCLUSIONS

Minimum infrastructure improvements deemed necessary for automobile-competitive commuter rail service--upgrading track to 60 mph maximum speed, installing powered switches, and installing grade crossing protection necessary for the higher speed and more frequent number of trains--would cost about \$41.5 million (see Task II). Calculation of train running times and locations where trains would meet show that this infrastructure would support both 60 minute headways and 45 minute headways.

In the case of headways more frequent than 45 minutes, additional infrastructure improvements would be required to accommodate the more frequent train meets. Indeed, at 15 minute headways the meets would be so numerous that system double-tracking and Centralized Traffic Control (CTC)⁸ would be required, at a cost of about \$3 million dollars per mile, or perhaps \$75 million for the 25-mile commuter rail system.

Thus, for the low cost plain vanilla commuter rail service, the scenario of interest is the 45 minute headways. Attractive as it would be in enhancing ridership—demand estimates indicate that the 15 minute headways scenario would almost double ridership, compared with 45 minute headways⁹—the considerable cost of double-tracking the commuter rail lines appears not to coincide with the objective of a low cost system.

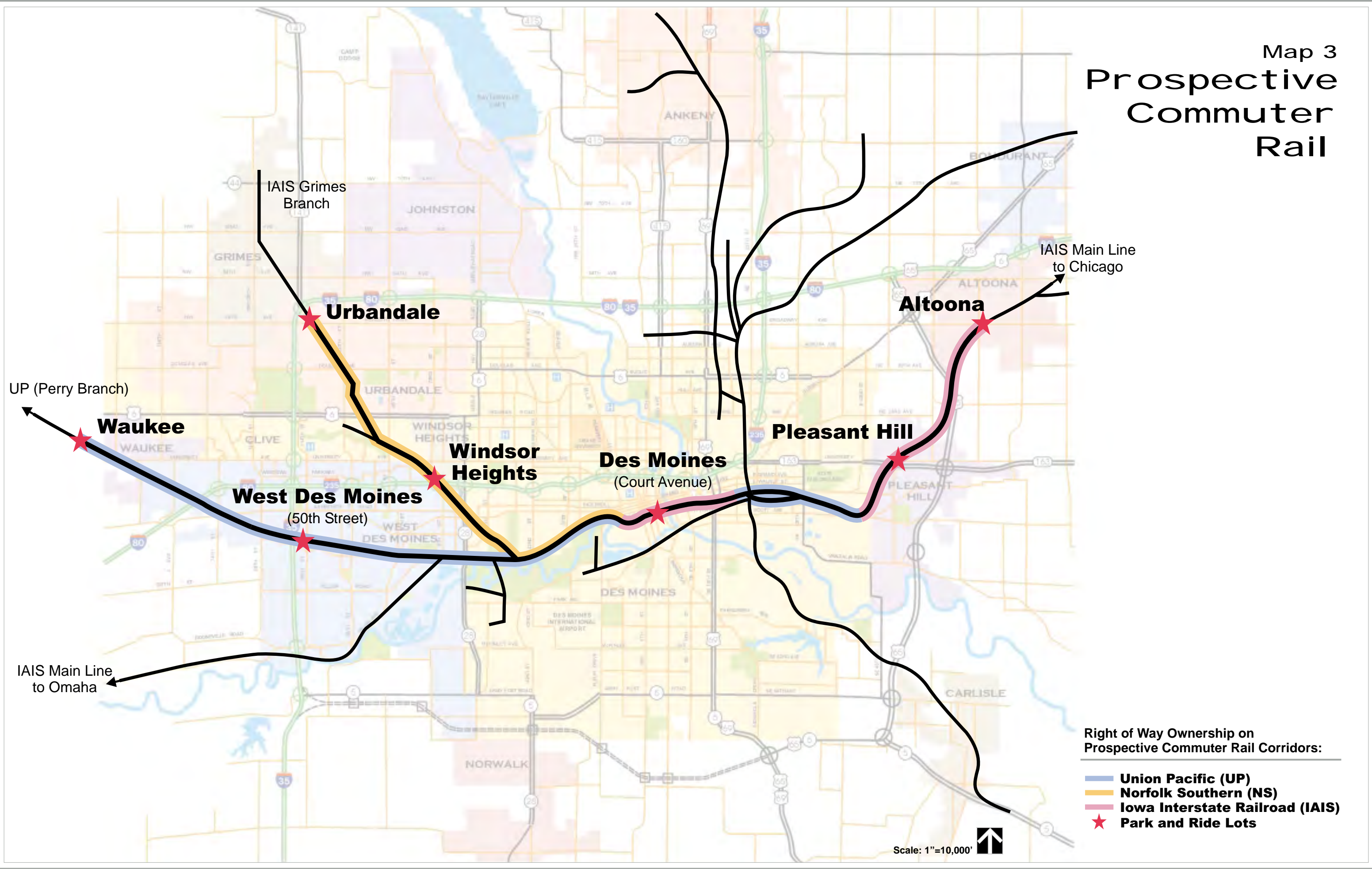
The remaining analysis therefore focuses on the 45 minute headways scenario. As already described, use of the UP branch line and IAIS main line west of Valley Junction (West Des Moines 1st Street) is not feasible because there would be few riders. As already stated, three stations have been eliminated from consideration for the demand forecast. Thus the defined system is shown on Map 3, which also shows right of way ownership. In summary, the initial commuter rail system:

⁸ Train control system in which the dispatcher controls the throwing of switches and clearing of signals from a central location.

⁹ See Task III.

- Connects end stations Waukee, Urbandale and Altoona with Des Moines Court Avenue,
- Operates 6-9 a.m. and 3-6 p.m. on 45 minute headways,
- Utilizes 5 trainsets plus spares, and
- Is fully integrated into the existing bus transit system.

Map 3 Prospective Commuter Rail



TASK II. CAPITAL COST ANALYSIS

REQUIREMENT

Determine the capital costs of developing the system defined in Task I, including: (1) track and track systems, (2) rolling stock, (3) stations and other facilities, (4) rail/road crossing protections, (5) train control and signal systems, and (6) park and ride facilities.

DISCUSSION

As explained in Task I (System Definition), it is believed necessary to upgrade the track and signal systems to be used by prospective commuter rail in order that commuter rail trip times be competitive with automobile trip times. Stated another way, there will be few commuter rail riders if the travel time is slow, compared with the automobile. A maximum passenger train speed of at least 60 mph (FRA Class 3 track) is deemed necessary. Also, it does not make sense to stop the train each time a switch is encountered; therefore powered switches are included in the upgraded right of way cost estimates. In other words, a limited signalling system is included, as discussed in Task I.

Commuter rail service would increase train speed and frequency at railroad/highway grade crossings. This represents an increased safety risk; RLBA has therefore included in this capital cost estimate upgraded grade crossing protection: flashing lights, gates and new time settings to account for activation of crossing protection devices at the required time in advance of higher speed passenger trains.

This analysis of capital costs results from inspection of available track charts and timetables, on-site inspection of the proposed commuter rail routes, discussions with and information obtained from IAIS, and information available in RLBA's data banks. IAIS conducted a hi-rail tour of all railroad right of way considered for use in the commuter rail system.

The capital cost analysis includes:

- Track/track systems
- Rolling stock, including cars and locomotives
- Stations and other facilities, such as those for maintenance and train storage
- Rail/road crossing protections
- Train control and signals systems
- Park and ride facilities, and
- Feeder buses.

Track, Signal and Grade Crossing Protection

The proposed improvements include:

- Replacement of rail
- Replacement of turnouts (switches)
- Replacement of crossties
- Addition of ballast and surfacing
- Crossing gates, predictors
- Flashlights
- Drainage works
- Powered turnouts and accompanying signals
- Brush cutting
- 25 percent addition for engineering, construction management and contingency
- Miscellaneous repairs

Tables A through F are detailed listings of proposed improvements. Tables A through E relate to specific segments of track, as described in the table title. Table F estimates the cost of a passing track and layover track in downtown Des Moines, which would allow two trains to meet at the Des Moines Court Avenue station.

Total estimated cost of track, signal and grade crossing protection is \$41.5 million.

It is recommended that, should it be decided to implement commuter rail, all railroad bridges be examined by a structural engineer to determine whether any improvements are required to assure that bridges are adequate to withstand passenger train speed impact loadings.

Rolling Stock

Task I includes a discussion of rolling stock and its costs.

The Task III Demand Analysis estimates, for year 2005, 1,299 riders per day in the 45 minute headways scenario. The analysis further shows the highest daily ridership to be associated with the Windsor Heights station. The Urbandale line is the highest ridership line. There will be five trains each peak period, and a two-coach train, with seats for 170 total, will be adequate.

Table A
Track and Structures Rehabilitation and Improvement Estimate
Altoona-Des Moines (10.9 miles)
59 mph Operation

<u>RLBA Code</u>		<u>Mile Post</u>	<u>Mile Post</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Item Subtotals (\$000)</u>
	<i>New Track</i>						
3	Restore former track grade	356.2	356.6	2112	Feet	25	\$53
105	Construct Track New 115RE CWR	356.2	356.6	2112	Feet	130	\$275
152	New Turnout - 15 mph - Shortline	356.2	356.6	2	Each	75,000	\$ 150
	<i>Rail</i>						
205	Replace Rail with New 115 CWR (IAIS)	346.9	353.2	6.3	Mile	300,000	\$1,890
207	Replace Rail with New 133 CWR (UP)	353.2	355.9	2.7	Mile	350,000	\$945
205	Replace Rail with New 115 CWR (IAIS)	355.9	357.8	1.9	Mile	300,000	\$570
221	Replace #10 T.O. Steel and 30 Ties	Altoona		2	Each	50,000	100
151	New Turnout - 15 mph - Class I	EE Short Line Yd.		1	Each	100,000	100
151	New Turnout - 15 mph - Class I	WE Short Line Yd.		7	Each	100,000	700
291	Replace Railroad Crossing Diamond	19th Street		1	Each	90,000	90
	<i>Ties</i>						
302	Replace Ties - IAIS	346.9	353.2	8505	Each	\$ 55	468
301	Replace Ties - UP	353.2	355.9	2430	Each	85	207
302	Replace Ties - IAIS	355.9	357.8	2565	Each	55	141
	<i>Surfacing</i>						
402	Surface/line with 2 inch raise - Regional	346.9	353.2	6.3	Mile	15,000	95
401	Surface/line with 2 inch raise - Class I	353.2	355.9	2.7	Mile	20,000	54
402	Surface/line with 2 inch raise - Regional	355.9	357.8	1.9	Mile	15,000	29
492	Relocate Main Track	355.5	355.6	528	Feet	35	18
	<i>Highway Crossings</i>						
571	New Gates and Predictor	346.9	357.8	4	Each	100,000	400
572	New Gates and Predictor - overlap circuit	346.9	357.8	10	Each	250,000	2,500
573	Install Gates	346.9	357.8	1	Each	50,000	50
575	Install Predictor	346.9	357.8	2	Each	50,000	100
576	Install Predictor- overlap circuit	346.9	357.8	1	Each	200,000	200
523	New Concrete Crossing - Regional	346.9	357.8	15	Each	25,000	375
	<i>Bridges and Structures</i>						
631	Replace bridge ties	Br. 347.8		273	Each	250	68
641	Repair Spalling Concrete	Br. 3491		1	Sum	10,000	10
682	Repair culverts	3497	3498	1	Sum	3,000	3
	<i>Ditching</i>						
781	Work train, ditcher and air-dump cars	346.9	357.8	2	Day	4,000	8
791	Work train and spreader	346.9	357.8	3	Day	2,500	8
771	Backhoe	346.9	357.8	10	Day	600	6
	<i>Brush Cutting</i>						
701	Cut Brush - light, scattered	346.9	357.8	10.9	Mile	500	5
	<i>Signals</i>						
841	Signal Interlocking - One Turnout	353.4		1	Each	550,000	550
842	Signal Interlocking - One Crossover	355.2		1	Each	700,000	700
843	Signal Interlocking - Two Crossovers	354.5		1	Each	800,000	800
891	Turnout Protection	346.9	357.8	9	Each	75,000	675
	SUBTOTAL						\$11,864
1000	Engineering and Project Management				Percent	10%	1,186
1100	Contingencies				Percent	15%	1,958
	TOTAL						\$15,008
	Source: RLBA estimates.						

Table B Track and Structures Rehabilitation and Improvement Estimate Des Moines-New Grimes Jct. (3.2 miles) 59 mph Operation							
RLBA Code		Mile Post	Mile Post	Quantity	Unit	Unit Cost	Item Subtotals (\$000)
	<i>Rail</i>						
205	Replace Rail with New 115 CWR (IAIS)	357.8	361	3.2	Mile	300,000	\$960
221	Replace #10 T.O. Steel and 30 Ties	358.5	358.6	1	Each	50,000	50
	<i>Ties</i>						
302	Replace Ties - IAIS	357.8	361	4800	Each	\$55	264
	<i>Surfacing</i>						
402	Surface/line with 2 inch raise - Regional	357.8	361	3.2	Mile	15,000	48
	<i>Highway Crossings</i>						
571	New Gates and Predictor	357.8	361	1	Each	100,000	100
572	New Gates and Predictor - overlap circuit	357.8	361	5	Each	250,000	1,250
561	New Flashlights and Gates	357.8	361	2	Each	150,000	300
523	New Concrete Crossing - Regional	357.8	361	5	Each	25,000	125
	<i>Bridges and Structures</i>						
631	Replace bridge ties	Br. 358.55		12	Each	250	3
622	Miscellaneous steel work	Br. 3609		1	Sum	5,000	5
683	Install Culvert, fill and remove bridge	Br. 364.5		1	Sum	20,000	20
638	Replace or Post Pile	Br. 3672		1	Each	5,000	5
639	Replace Timber Floor	Br. 3672		1	Sum	2,000	2
623	Repair/replace steel straps + wing wall	Br. 3695		1	Sum	6,000	6
638	Replace or Post Pile	Br. 3697		1	Each	5,000	5
622	Miscellaneous steel work	Br. 3697		1	Sum	5,000	5
637	Repair Backwall	Br. 3709		1	Each	4,000	4
683	Install Culvert, fill and remove bridge	Br. 3724		1	Sum	10,000	10
	<i>Ditching</i>						
781	Work train, ditcher and air-dump cars	357.8	361	2	Day	4,000	8
791	Work train and spreader	357.8	361	2	Day	2,500	5
771	Backhoe	357.8	361	10	Day	600	6
	<i>Brush Cutting</i>						
701	Cut Brush - light, scattered	357.8	361	3.2	Mile	500	2
	<i>Signals</i>						
891	Turnout Protection	357.8	361	2	Each	75,000	150
	SUBTOTAL						\$3,333
1000	Engineering and Project Management				Percent	10%	333
1100	Contingencies				Percent	15%	550
	TOTAL						\$4,216
	Source: RLBA estimates.						

Table C							
Track and Structures Rehabilitation and Improvement Estimate							
New Grimes Junction - West Des Moines (Valley Junction) [1.6 miles]							
59 mph Operation							
RLBA Code		Mile Post	Mile Post	Quantity	Unit	Unit Cost	Item Subtotals (\$000)
	<i>Rail</i>						
205	Replace Rail with New 115 CWR (IAIS)	361	362.6	1.6	Mile	300,000	\$480
221	Replace #10 T.O. Steel and 30 Ties	361.8		1	Each	50,000	50
	<i>Ties</i>						-
302	Replace Ties - IAIS	361	362.6	2160	Each	\$ 55	119
	<i>Surfacing</i>				0	-	-
402	Surface/line with 2 inch raise - Regional	346.9	353.2	6.3	Mile	15,000	95
401	Surface/line with 2 inch raise - Class I	353.2	355.9	2.7	Mile	20,000	54
402	Surface/line with 2 inch raise - Regional	355.9	357.8	1.9	Mile	15,000	29
492	Relocate Main Track	355.5	355.6	528	Feet	35	18
	<i>Highway Crossings</i>						
571	New Gates and Predictor	346.9	357.8	1	Each	100,000	100
	<i>Ditching</i>						-
791	Work train and spreader	361	362.6	2	Day	2,500	5
771	Backhoe	361	362.6	5	Day	600	3
751	Place Rip Rap	361	362.6	5	Carload	3,000	15
	<i>Brush Cutting</i>						-
701	Cut Brush - light, scattered	361	362.6	1.6	Mile	500	1
	<i>Signals</i>						-
891	Turnout Protection	361	362.6	1	Each	75,000	75
	SUBTOTAL						\$1,043
1000	Engineering and Project Management				Percent	10%	104
1100	Contingencies				Percent	15%	172
	TOTAL						\$1,319
	Source: RLBA estimates.						

Table D
Track and Structures Rehabilitation and Improvement Estimate
Valley Junction - Waukee (8.8 miles)
59 mph Operation

<u>RLBA Code</u>		<u>Mile Post</u>	<u>Mile Post</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Item Subtotals (\$000)</u>
	<u>New Track</u>						
	<u>Rail</u>						
207	Replace Rail with New 133 CWR (UP)	296.3	305.1	8.8	Mile	350,000	\$3,080
151	New Turnout - 15 mph - Class I	296.3	305.1	3	Each	100,000	300
	<u>Ties</u>						-
301	Replace Ties - UP	296.3	305.1		Each	85	1,122
				13,200			
	<u>Surfacing</u>				0	-	-
401	Surface/line with 2 inch raise - Class I	296.3	305.1	8.8	Mile	20,000	176
	<u>Highway Crossings</u>						
571	New Gates and Predictor	296.3	305.1	11	Each	100,000	1,100
572	New Gates and Predictor - overlap circuit	296.3	305.1	0	Each	250,000	-
573	Install Gates	296.3	305.1	5	Each	50,000	250
575	Install Predictor	296.3	305.1	0	Each	50,000	-
576	Install Predictor- overlap circuit	296.3	305.1	1	Each	200,000	200
523	New Concrete Crossing - Regional	296.3	305.1	9	Each	25,000	225
	<u>Bridges and Structures</u>						
681	Culverts and bridges	296.3	305.1	1	Sum	50,000	50
	<u>Ditching</u>						-
781	Work train, ditcher and air-dump cars	296.3	305.1	0	Day	4,000	-
791	Work train and spreader	296.3	305.1	2	Day	2,500	5
771	Backhoe	296.3	305.1	5	Day	600	3
	<u>Brush Cutting</u>						-
701	Cut Brush - light, scattered	296.3	305.1	8.8	Mile	500	4
	<u>Signals</u>						-
891	Turnout Protection	296.3	305.1	3	Each	75,000	225
	SUBTOTAL						\$ 6,740
1000	Engineering and Project Management				Percent	10%	674
1100	Contingencies				Percent	15%	1,112
	TOTAL						\$ 8,527
	Source: RLBA estimates.						

Table E Track and Structures Rehabilitation and Improvement Estimate New Grimes Junction - Urbandale (10.6 miles) 59 mph Operation							
RLBA Code		Mile Post	Mile Post	Quantity	Unit	Unit Cost	Item Subtotals (\$000)
	<i>New Track</i>						
	<i>Rail</i>						
205	Replace Rail with New 115 CWR (IAIS)	343.2	353.9	10.7	Mile	300,000	\$3,210
171	New Turnout - 40 mph	343.2	353.9	1	Each	175,000	175
152	New Turnout - 15 mph - Shortline	343.2	353.9	9	Each	75,000	675
	<i>Ties</i>						
302	Replace Ties - IAIS	343.2	353.9	18,618	Each	55	1,024
	<i>Surfacing</i>						
402	Surface/line with 2 inch raise - Regional	343.2	353.9	10.7	Mile	15,000	161
	<i>Highway Crossings</i>						
571	New Gates and Predictor	343.2	353.9	11	Each	100,000	1,100
572	New Gates and Predictor - overlap circuit	343.2	353.9	3	Each	250,000	750
573	Install Gates	343.2	353.9	0	Each	50,000	-
575	Install Predictor	343.2	353.9	0	Each	50,000	-
576	Install Predictor- overlap circuit	343.2	353.9	0	Each	200,000	-
523	New Concrete Crossing - Regional	343.2	353.9	12	Each	25,000	300
	<i>Bridges and Structures</i>						
681	Culverts and bridges	343.2	353.9	3	Sum	50,000	150
	<i>Ditching</i>						
781	Work train, ditcher and air-dump cars	343.2	353.9	2	Day	4,000	8
791	Work train and spreader	343.2	353.9	3	Day	2,500	8
771	Backhoe	343.2	353.9	10	Day	600	6
	<i>Brush Cutting</i>						
701	Cut Brush - light, scattered	343.2	353.9	10.7	Mile	500	5
	<i>Signals</i>						
841	Signal Interlocking - One Turnout	343.2		1	Each	550,000	550
891	Turnout Protection	343.2	353.9	9	Each	75,000	675
	SUBTOTAL						\$ 8,796
1000	Engineering and Project Management				Percent	10%	880
1100	Contingencies				Percent	15%	
							1,451
	TOTAL						\$11,127
	Source: RLBA estimates.						

Table F Des Moines Second Station Track Construction Cost Estimate (minimal facility)							
RLBA Code		Mile Post	Mile Post	Quantity	Unit	Unit Cost	Item Subtotals \$000
	<i>Construct Station/Layover Track at Essex Park & Ride, Milepost 110.3</i>						
152	New Turnout - 15 mph - Shortline	0		2	Each	\$75,000	\$150
1	Grade for Second Track - Light	0	0.3	1,584	Feet	67	106
105	Construct Track New 115RE CWR	0	0.3	1,584	Feet	130	206
933	Utilities	0	0.3	1	Sum	100,000	100
911	Layover Electric Power	0.1	0.3	1	Each	200,000	200
912	Locker and Storage Building	0.1	0.3	1	Each	50,000	50
913	Layover Roadway, Fencing and Gates	0.1	0.3		Sum	53,000	53
990	Permitting	0	0.3	1	Sum	50,000	50
	SUBTOTAL						\$915
1000	Engineering and Project Management				Percent	17%	155
1100	Contingencies				Percent	20%	214
	TOTAL						\$1,284
	Source: RLBA estimates.						

As discussed in Task I, a trainset consisting of rehabilitated locomotive plus two coaches, one of them a “cab car” enabling the trainset to be operated in either direction without having to turn the train around, would cost about \$2.5 million. Five trainsets would therefore cost about \$12.5 million. A spare locomotive and two spare cab cars should be included in the starter fleet, bring total rolling stock costs to \$15 million. In addition, it would be prudent to have on hand a stock of repair components, estimated at 5 percent of total rolling stock cost, or \$0.75 million. Finally, procurement of the rolling stock and training in its use adds another 15 percent, or \$2.25 million.

Thus total rolling stock procurement, assuming leased equipment is not available, would be \$18 million. (At the time of rolling stock procurement, Des Moines should survey the market for leased passenger rail equipment and determine whether to buy or lease.)

Stations and Park and Ride Facilities

As described in Task I, minimum station facilities would include a 400 feet long by 12 feet wide platform, adequate parking for all prospective riders, a weather shelter, a lift for the disabled, and lighting. For these minimum amenities, estimated cost is \$90,000 per station, exclusive of real estate and site preparation (drainage, grading) costs, which are site specific. Cost of paved parking is about \$477 per space, again exclusive of real estate and site preparation costs.

Construction of the minimum facilities at seven stations would cost about \$0.63 million. Construction of parking facilities on a prepared site (graded and drained) would cost about \$0.21 million. (Product of \$477 constructed cost per parking space and that portion of one-half of daily ridership which is expected to use park and ride, increased by 15 percent to provide assurance that parking space is available to all who choose to use the commuter rail service.)

Thus stations and parking facilities would require \$0.84 million plus cost of land acquisition, drainage works, grading and any special site access requirements, drop-off lanes and bus facilities if required, and an amount for engineering, construction management and contingency. The latter is estimated at about 25 percent, or \$0.21 million.

Feeder Bus Service

In order to adequately support the outlying stations with feeder bus service, MTA estimates the requirement for 12 30-foot coaches at an estimated cost of \$2.6 million.¹⁰

TOTAL CAPITAL COST

Total capital cost is the sum of above-described components:

	<u>(millions)</u>
Track, signal and grade crossing protection	\$41.5
Rolling stock	18.0
Feeder buses	2.6
Stations and park and ride facilities	<u>1.1</u>
Total	\$63.2

To the above amount must be added cost of land acquisition and site preparation.

¹⁰ Phone conversation, Steve Spade (MTA) and Ken Withers, June 5, 2000.

TASK III. DEMAND ANALYSIS

REQUIREMENT

Determine the level of demand (ridership) that would be served by the proposed system. Provide ridership totals by route segment at peak hours for long and short term (during I-235 construction) forecasts.

Provide an analysis of the short term impacts of commuter rail service on other modes and travel options, i.e., level of mitigation of travel disruption during I-235 reconstruction.

With regard to long term impacts, provide an analysis of the potential for the commuter rail system to meet a long-term goal of the metropolitan area to reduce freeway vehicle miles traveled (VMT) by 10%.

METHODOLOGY

The Des Moines regional travel demand forecasting model (TRANPLAN) was used to evaluate the future year travel along the proposed commuter rail travel corridors. The travel demand model provides the future year traffic counts for the year 2025.

A Transportation Demand Management (TDM) model was utilized to determine the impact that commuter rail would have on reducing vehicle trips within the corridor and to identify ridership projections. The TDM model uses trip tables from the TRANPLAN model and applies factors to represent the impact of the commuter rail line. The TDM model factors consider primarily the difference in travel time between the commuter rail and the automobile.

The TDM model allows for up to four scenarios to be run at one time with the results being compared to the base condition (no commuter rail). For this study, the four scenarios were defined to represent the following peak period headways on the prospective commuter rail line:

- 15 minutes
- 30 minutes
- 45 minutes
- 60 minutes

The output from the TDM model provides the percent mode share for drive alone, transit, carpool and vanpool. Commuter rail is considered to be transit. The model also provides data regarding the number of vehicle trips and vehicle miles of travel (VMT). A comparison of the base condition with the four commuter rail scenarios computes the potential reduction in vehicle trips and VMT. The reduction in vehicle trips represents a change in mode choice from the automobile to transit, in territory

beyond the present relatively urbanized service area. To obtain the projected transit ridership, the number of vehicle trips that were reduced was multiplied by an average occupancy rate of 1.2 for the year 2000 and by 1.15 for the year 2025.

This analysis assumes a fully-integrated feeder bus service, with trips now made on parallel bus routes diverted to new commuter rail service, because it would be faster.

RIDERSHIP RESULTS

The following table indicates the projected commuter rail ridership for the four scenarios in three different years: 2000, 2005 and 2025.

Total Commuter Rail Ridership				
Year	Headways			
	15 Min	30 Min	45 Min	60 Min
2000	1,843	1,558	1,121	977
2005	2,160	1,817	1,299	1,118
2025	3,427	2,854	2,014	1,683

The next four tables show ridership by station segment to the central business district (CBD). Based upon this analysis, a commuter rail scenario having 45-minute headways along with a feeder bus service increases transit ridership nearly 30% over existing express bus service serving the CBD.

In the next four tables:

A = Altoona
M = Urbandale
PH = Pleasant Hill
T = West Des Moines 50th Street
WH = Windsor Heights
W = Waukee

CBD = central business district (Des Moines Court Avenue station)

Commuter Rail Ridership (by segment for 15 minute headways)

Year	Station (to CBD)					
	A	M	PH	T	WH	W
2000	251	253	328	363	540	108
2005	318	312	353	367	577	234
2025	556	530	486	451	789	615

Commuter Rail Ridership (by segment for 30 minute headways)

Year	Station (to CBD)					
	A	M	PH	T	WH	W
2000	214	212	281	299	467	85
2005	266	259	300	305	493	193
2025	456	434	410	382	659	513

Commuter Rail Ridership (by segment for 45 minute headways)

Year	Station (to CBD)					
	A	M	PH	T	WH	W
2000	158	144	203	223	335	59
2005	195	181	213	222	348	140
2025	330	309	283	268	453	371

Commuter Rail Ridership (by segment for 60 minute headways)

Year	Station (to CBD)					
	A	M	PH	T	WH	W
2000	141	133	185	185	277	56
2005	172	162	189	184	289	122
2025	279	261	241	223	380	299

Assumptions:

- 1 – Average bus travel speed of 15 mph.
- 2 – Bus wait time (out of vehicle time) = 5 minutes.
- 3 – Average auto travel time to stations = 25 mph.
- 4 – Auto wait time (out of vehicle time) = 2 minutes.
- 5 – 80% auto access to commuter rail stations, 20% feeder bus.

- 6 – Automobile cost = \$0.30 per mile.
- 7 – Parking cost in CBD = \$4 to \$5.
- 8 – Park and ride parking plus commuter rail ride = \$2.00.

SHORT TERM AND LONG TERM IMPACTS

Future Year Impacts

The reconstruction of I-235 is scheduled to take place between 2001 and 2006. The required analysis is to determine whether or not a commuter rail system would mitigate traffic congestion during this reconstruction as well as provide a long-term solution to alleviate traffic congestion along I-235, using available data.

Current traffic counts along with future year traffic forecasts for I-235 were provided by the MPO. These counts and volumes were divided into four segments for more detailed analysis and an average daily traffic volume was determined. It should be pointed out that the forecast for the year 2025 consists of a range of traffic volumes. For example, the average daily traffic volume used for segment 1 is 104,300 vehicles per day (vpd) as shown in the following table. However, intensive analysis of segment 1 shows that there are daily traffic volume projections ranging between 75,000 vpd to nearly 119,000 vpd for the year 2025 between I-35/80 and 63rd Street. For the purpose of this study, the average daily traffic projections as shown in the following table are sufficient to estimate the potential impacts. A simple straight line projection was used to derive the year 2005 traffic volumes based on current counts and the year 2025 traffic volume projections. The following table outlines the current counts, year 2005 estimates, and the year 2025 travel demand model forecasts.

Average Traffic Counts/Projections for the I-235 Corridor

Year	<u>Segment 1</u> I-35/80 to 63 rd Street	<u>Segment 2</u> 63 rd Street to Keo Way	<u>Segment 3</u> Keo Way to Easton Blvd.	<u>Segment 4</u> Easton Blvd. to I-35/80
Current Count	71,600	95,900	55,400	52,200
2005	81,700	105,700	72,900	61,400
2025	104,300	131,200	84,700	95,800

NOTE: Current counts are an average of several segments generally for the years 1992 or 1996.

Short Term Impacts

Reconstruction of I-235 is scheduled to take place between the years 2001 and 2006. To determine the potential impact that a commuter rail system might have on I-235 traffic during the reconstruction the following assumptions were made for the year 2005.

- Commuter rail would operate during the a.m. and p.m. peak periods (3 hours during the a.m. and 3 hours during the p.m.).
- 30% of the daily traffic occurs during the peak periods (15% a.m. and 15% p.m.)

The second assumptions (30% of daily traffic during peak periods) results in a total of approximately 18,000 to 32,000 vehicles during those periods (see the following table). The 45-minute headways commuter rail scenario shows a reduction of approximately 1,100 vehicles. The 15-minute headways scenario shows a potential to reduce the number of vehicle trips by approximately 1,825.

Short Term Impacts – Year 2005

	Segment 1 I-35/80 to 63 rd Street	Segment 2 63 rd Street to Keo Way	Segment 3 Keo Way to Easton Blvd.	Segment 4 Easton Blvd. to I-35/80
Year 2005 Traffic Volume	81,700	105,700	72,900	61,400
Peak Period Volume (a.m. and p.m) *	24,500	31,700	21,900	18,400

* Assumes peak period volume equals 30% of daily traffic volume.

Given these peak period volumes, commuter rail would be expected to provide minimal traffic congestion mitigation during the reconstruction. For example, in segment 2 there are approximately 30,000 vehicles that are expected during the peak a.m. and p.m. periods combined. Assuming an equal distribution would result in 15,000 vehicles during each peak period. From the 15,000 vehicles during a peak period, approximately 550 vehicles are subtracted as a result of the commuter rail to arrive at 14,450 vehicles during each peak period, a 3.6 percent reduction in vehicle trips as a result of the commuter rail system. Other segments such as segments 1, 3 and 4 could see slightly higher reductions in the range of 5 to 6 percent. However, even with the estimated vehicle trip reductions there would still be significant traffic congestion that would require additional measures to mitigate traffic congestion further during the reconstruction of I-235.

Long Term Impacts

Reduction of Vehicle Trips

Two TDM strategies were developed along with I-235 build alternatives. The first strategy, entitled TDM-10, is essentially a voluntary program that includes employer-sponsored programs, governmental incentives to commuters, and educational programs aimed at reducing single occupant vehicle trips to work 10% by Horizon Year 2020. Although trips are not the same as VMT, the latter provide another measure of vehicle travel. Therefore one way to analyze the impact of commuter rail is to examine the year 2025 traffic projections and the related VMT. The TDM model provides an indication of the anticipated reduction in VMT that might result in the year 2025 with a commuter rail system in place. Comparing this projected reduction in VMT to the year 2025 VMT for the I-235 corridor provides an indication of how effective commuter rail would be in supporting this long-term goal.

The average traffic volumes described earlier were used along with the approximate distance of each segment to determine the projected daily VMT along I-235. The following table displays the results.

Long Term Impacts – Year 2025

	Segment 1 I-35/80 to 63 rd Street	Segment 2 63 rd Street to Keo Way	Segment 3 Keo Way to Easton Blvd.	Segment 4 Easton Blvd. to I-35/80
Year 2025 Traffic Volume *	104,300	131,200	84,700	95,800
Distance (miles)	3.8	3.5	3.2	2.9
Daily VMT	396,340	459,200	271,040	277,820

* Average of several traffic volumes.

The total estimated daily VMT for the four segments equals 1,404,400 VMT for the I-235 corridor. The anticipated reduction in VMT as a result of commuter rail (assuming 45-minute headways) in the year 2025 is 22,400 miles per day. These values result in an estimated reduction in daily VMT of 1.6 percent. If the commuter rail service were improved to a 15-minute headway scenario by the year 2025 there would be approximately a 39,100 VMT reduction, which would be a reduction of approximately a 2.8 percent. Given these percentages, it appears that commuter rail by itself will not achieve the goal of reducing VMT by 10% in the long-term.

Qualitatively stated, other short and long range impacts of commuter rail implementation include the following.

Improvement in Regional Mobility

Implementation of commuter rail would provide an alternative travel mode, and thus improve regional mobility. The numerous benefits of passenger rail travel may include reduced commuting times, and another transportation option for those who don't drive or prefer not to. Passenger rail normally provides a reliable transportation means during periods of ice and snow.

Transit-associated Development

The permanence of rail transportation offers an inducement for transit-related development adjacent to passenger rail stations.

Task V contains a further discussion of the benefits of commuter rail.

TASK IV. FINANCIAL ANALYSIS

REQUIREMENT

Determine the annual operating revenues and operating costs and identify subsidy/surplus levels.

DISCUSSION

Annual revenues and operating costs, shown in the table below, are based upon trains operating every 45 minutes in the morning and evening rush hours, year 2005. Revenues are estimated to total \$533,000, and operating costs, \$7,489,000.

Year 2005	
Des Moines, Iowa Commuter Rail Service	
Revenue and Operating Cost Estimates	
Revenues	\$ 533,000
Operating Costs:	
Train operations	\$ 1,570,000
Equipment maintenance	\$ 1,448,000
Railroad charges and fees	\$ 2,916,000
Station maintenance and operations	\$ 200,000
Insurance	\$ 638,000
Downtown shuttle service	\$ 80,000
General and administrative	\$ 637,000
Total operating costs	\$ 7,489,000
Operating Deficit	\$(6,956,000)
Source: RLBA.	

Revenues assume a base fare of \$2.00 per trip and discounts from the base fare of 15 and 33 percent for the 10 ride and monthly tickets, and for seniors, students and the disabled, and include a mixture of these alternative fare arrangements. The \$2 fare was used to correspond with other commuter rail systems, and suggests a reasonable price for the service. Actual fare may be reduced if enhancing ridership is a major objective. Included in annual revenues is a figure of \$20,000 representing the historical 4 percent ratio of transit system advertising to fare revenues in the U.S.

Operating costs assume operation over the entire Altoona - Waukee corridor and between Urbandale and Downtown Des Moines.

Costs have intentionally not been broken down by segment because any such breakdown would have no practical utility. A minimum level of operating expenses is implied by this service, and any reduction would simply reduce ridership and revenue without any significant reduction in cost.

Based on estimated year 2025 ridership, year 2025 revenues would be \$795,000 in current year dollars. Costs would remain approximately the same in current year dollars assuming no change in the operating plan.

Train operations costs are comprised of train crew wages and benefits, fuel and transportation supervision. Train crews are assumed to consist of an engineer and conductor who are compensated based upon short line wage rates. Fuel costs are based upon consumption characteristics that reflect both size of the trains and amount of service in each scenario.

Equipment maintenance costs are based on the experience of Virginia Railway Express commuter service, adjusted for operating characteristics of the Des Moines service.

Railroad charges and fees include the cost of track maintenance and inspection, dispatching, other costs, incentive payments for on-time performance and railroad overhead. Track maintenance assumes improvement of the line to allow passenger train operations up to 60 mph and maintenance to this standard following such rehabilitation.

Insurance expense assumes that the commuter rail operation is partially self-insured with excess coverage provided through commercial insurance policies. The self-insurance portion is based upon the experience of the Southern California Regional Rail Authority's (SCRRA) risk management expense, adjusted for Des Moines' operating characteristics. Commercial coverage is based on quotations to a freight railroad covering Amtrak's passenger service in New England over the freight carrier's track.

General and administrative expense (G&A) is based upon the assumption that the Des Moines service is to be administered by MTA or another existing organization. Although the current practice among new start commuter rail services is to contract out most functions, the following G&A activities are usually retained by the sponsoring entity:

- Contract negotiation and oversight
- Liaison with local government(s) and freight railroad(s)
- Marketing and public relations
- Oversight of contract operator
- Ticket sales and customer relations.

No cost is anticipated for feeder bus service to the outlying stations inasmuch as it is reasonable to assume that new commuter rail service would obviate much of the existing express service the resources of which should be adequate to cover the relatively reduced scope of new feeder buses. MTA sees the requirement for an additional bus operating shuttle service downtown, at an estimated cost of \$80,000 per year.¹¹

CONCLUSIONS

At a \$2 base fare, the estimated farebox revenues cover operating costs only to the extent of 7 percent.

It is of importance to stress that both the revenue and the operating cost estimates set out in the table at the start of the Task IV discussion rest on conservative assumptions including experience from other operating commuter rail systems.

It may be possible, especially if management of the proposed commuter rail system is assigned to MTA, to achieve economies of scale and minimize the requirement for additional staff assigned to commuter rail duties.

Potential economies could possibly reduce annual operating costs by some additional amount, perhaps as much as \$500,000 annually. Even if the operating costs were reduced by this amount, the fare box recovery ratio would be raised only to 7.6 percent, and the operating expense per passenger trip and subsidy per passenger trip would still remain in a range considerably higher than those experienced by current commuter rail systems.

Yet another opportunity to reduce the estimated cost of operation relates to railroad fees and charges, which, at about \$2.9 million, is the largest single identified annual expense category. That number is derived from a review of similar fees currently in effect elsewhere in the U.S. To our knowledge, no commuter rail service currently operates over a railroad with so uncertain a financial situation as the IAIS. We therefore believe it is entirely reasonable to expect that the railroad company

¹¹ Phone conversation between Steve Spade (MTA) and Ken Withers, June 5, 2000.

negotiations which must necessarily occur early in an implementation sequence will yield an amount of annual railroad-related expense below that estimated in the table. On the other side of this issue is the fact that IAIS trackage is but a small fraction of the approximately 25 route miles of the proposed system. The preponderance of the track is owned by two Class I railroads, NS and UP.

The point of this discussion is that the numbers advanced in the table are reasonable estimates, with uncertainties intrinsic to any set of forecasts concerning matters unique to a given locale.

TASK V. BENEFITS, COSTS AND COMPARISONS

REQUIREMENT

Identify and quantify to the extent possible the economic, social, and community benefits associated with the commuter rail system development from both the short and long term perspective.

Identify and quantify to the extent possible the economic, social, and community costs and any potential conflicts this system may cause with existing economic, social, and community goals.

Provide an extensive comparative analysis with other metropolitan area commuter rail systems.

BENEFITS

There are numerous benefits to be achieved by commuter rail, and it is over the long term that these benefits become most apparent. The capital costs of implementing commuter rail suggest that it should not be consider a short term “fix”, or solution. Also, commuter rail in an area not accustomed to rail transit may take some time to “grow” ridership and to become a new part of the community’s transportation habits.

Implementation of commuter rail normally is accompanied by the following benefits:

- travel time saved
- reduction in congestion
- improvements in accessibility
- improvements in air quality
- improved safety
- long term opportunities for development

Improving public transportation in the Des Moines metropolitan area can have a potentially positive benefit on the region’s quality of life. Expanded transit service in general and rail-based transit in particular can play important roles in maintaining a high level of mobility in the region. Integration of commuter rail and bus transit so that each perform the functions which it does best can create a multi-modal transportation system to better serve the Des Moines metropolitan area.

Given the planned construction along the I-235 corridor and traffic congestion currently present, transit can be a viable alternative to the automobile. According to a citizen survey, 41% of respondents indicated that they were either very willing or somewhat willing to take the bus as a result of the planned I-235 road construction.¹²

Commuter rail can also positively impact urban development and redevelopment. Rail transit in conjunction with other policies and actions can be a major factor in creating more compact development in the metropolitan area, or at suburban growth centers. Rail infrastructure demonstrates the commitment and permanence that developers seek. Given the right conditions, station locations can be areas with residential and commercial development potential.

Commuter rail also helps maintain the viability of the downtown area. Rail transit can ensure easy access to the downtown despite the fact that a roadway may be congested. Rail transit also provides an alternative travel mode for individuals who generally drive. A reduction in the number of individuals driving directly impacts the out-of-pocket costs incurred as a result of driving not to mention the time savings by avoiding traffic congestion.

Direct benefits that can be measured include a reduction in vehicle trips and vehicle miles of travel. Using the Travel Demand Management (TDM) model, the impact of the commuter rail on reducing vehicle trips and vehicle miles of travel was estimated. The reduction in daily VMT presented earlier (see Task III) shows a modest quantitative projected benefit of the commuter rail system, short and long term.

A commuter rail system such as proposed for the Des Moines region requires significant public investment. As a long-term investment it is important to link appropriate land uses with transit service. This linkage can best be accomplished through transit-oriented development concepts, which involve moderate- and high-intensity housing and jobs that are located within a 10-minute walking distance from transit stops.

Typical components of a transit-oriented neighborhood include a core of commercial and civic uses adjacent to the transit station, surrounded by higher-intensity residential and employment uses within walking distance of the station (approximately 2000 feet). The location, design, configuration, and mix of uses in a transit-oriented development provide an attractive alternative to conventional development by emphasizing a pedestrian-oriented environment and reinforcing the use of public transportation. Beside increasing ridership, the benefits of the transit-oriented development are many: improved accessibility, compact land patterns, walkable environments, and reduced auto use.

¹² "Impact of Planned Construction on I-235: Citizen Survey and Focus Groups: Executive Summary of Results", conducted by ETC Institute in association with TranSystems Corporation, June 1999, page 1.

COSTS AND CONFLICTS

In assessing the feasibility of commuter rail in the Des Moines region, consideration must be given to the potential downsides or negative impacts that might result. For one, the proposed commuter rail would operate during the a.m. and p.m. peak periods only. For this service to be a competitive alternative to driving alone and to the current bus service, more frequent, all-day train service would be desirable. This higher level of service in turn would require added capital and maintenance costs. However, the riders that may be attracted as a result of the additional service may not necessarily justify the added expenditures. Alternatively, the value of commuter rail service may be enhanced by the availability of a "guaranteed ride home", under which the public transportation agency offers partial or full compensation for emergency travel home during the period in which trains are not operating.

Another consideration is the fact that the ridership projections for the peak hour commuter rail service are relatively low, compared with existing commuter rail systems. The projected daily ridership of 1,299 daily riders in the 45-minute headway scenario, results, when revenue and cost forecast are applied, in a very low farebox recovery ratio--7 percent. The capital cost of the commuter rail system would represent a very large commitment of capital funds given the projected ridership.

COMPARATIVE ANALYSIS

Many regions with populations similar to or smaller than Des Moines are evaluating whether commuter or regional rail service makes sense in their near- and medium-term transportation development plans. However, no region of similar size has yet implemented a commuter/regional rail system. Therefore, in seeking peer cities with rail systems to evaluate, the most meaningful set of communities to examine are those which have implemented service in approximately the last decade (or, in one instance, assumed operation from the freight railroad which was the former line owner and service operator).

New Start Commuter Rail Services

The past decade or so has seen the start of a number of commuter rail operations throughout the country, including the following.

<u>Name</u>	Daily <u>Boardings</u>	<u>Extent</u>	Year <u>Started</u>	Area Population <u>(Millions)</u>
Tri-Rail	8,500	W. Palm Beach-Miami (71 mi.)	1989	4.0
Metrolink	27,000	416 route-miles	1992	13.0
VRE	8,000	95 route-miles	1992	1.7
Caltrain*	28,000	San Francisco-Gilroy (78 miles)	1992	2.1
W. Coast Ex.	7,600	Vancouver-Mission BC (40 mi.)	1995	1.5
Coaster	4,800	San Diego-Oceanside (42 mi.)	1995	2.5
Trinity	2,300	Dallas-S. Irving (10 miles)	1996	1.9
ACE	2,300	Stockton-San Jose (85 miles)	1998	2.0

*Southern Pacific operated service prior to 1992

Sources: 1995 Pinstrip Business Control Atlas; RLBA databanks.

The Des Moines MSA, with a population of about 0.4 million, is considerably smaller than those served by these new start commuter rail systems.

Following are some details concerning specific recent commuter rail starts.

Tri-Rail (Miami-Fort Lauderdale/TCRA)

Ridership currently ranges from 8,000 to 8,500 on weekdays. When the service was initiated in 1989, average weekday ridership was 3,000.¹³ Initial funding was \$118 million for equipment purchases so that 18 daily trains could be scheduled; additionally the state purchased 67 miles of track and right-of-way.¹⁴ Tri-Rail is continuing a multi-year \$450 million capital investment program to upgrade capacity of its 70 mile line by double tracking, and aims at 60 trains each weekday by 2004.¹⁵

Metrolink (Los Angeles Region/SCRRA)

Initiated service in 1992 with 2,300 daily passengers over three routes, 11 stations and 112 miles of track. Start up costs exclusive of purchase of rail lines were \$291 million for the initial three routes. Ridership is now 27,000 daily over six routes with a total of 46 stations and 416 miles of track.¹⁶

¹³ "Tri-Rail Reports Daily Ridership Exceeding 5000 in February", *Passenger Transport*, April 16, 1990, page 8.

¹⁴ "Tri-Rail Reports...", page 9.

¹⁵ "Fast paced growth continues", *Railway Age*, November 1997.

¹⁶ "Full Speed Ahead" Metrolink brochure, 1996-97. Recent ridership figure is from Richard Stanger, Southern California Regional Rail Authority, March 24, 1998.

Virginia Railway Express (Northern Virginia)

Initiated service in June 1992 with start up costs of \$131 million¹⁷, starting with three trains on each of two lines and 2,500 total trips per day. Ridership rose to almost 8,000 daily before I-95 HOV lane addition and CSX track and signal work hurt ridership in 1997. Ridership, however, has rebounded beyond that level and continues to rise.

Caltrain

Service previously offered by Southern Pacific was subsidized by the three area counties: San Francisco, San Mateo and Santa Clara between 1980 and 1992. The state of California created a Joint Powers Board which assumed operations of Caltrain in 1992. With service between San Francisco and Gilroy, daily ridership is around 28,000.¹⁸

West Coast Express (Vancouver, BC)

Service began in 1995 with daily ridership of about 5,000 between Vancouver and Mission, British Columbia. Today ridership is over 7,600.¹⁹

Coaster

Ridership, projected before start up at 3,500²⁰ has grown modestly since service began in 1995 to 4,800 in 1999²¹ on this line connecting San Diego with Oceanside, California. Capacity improvements are being made on the rail corridor itself, and by procurement of additional bi-level coaches.²²

Trinity-Railway Express

Ten months after operations began on December 30, 1996, on the initial 10 mile segment between Dallas and Irving, weekday average ridership was 1,250.²³ Before service started, projected ridership was 3,200 for Phase 1.²⁴ After over a year of operations, ridership was at 1,800²⁵ and is currently 2,300.²⁶ Plans are to

¹⁷ "Longtime Symbols of Decay and Delay, Commuter Railroads Undergo a Revival", *Wall Street Journal*, October 1, 1991, page B1.

¹⁸ North America's rail transit market: Where it is, where it will be" *Railway Age Passenger Rail Planner's Guide 2000*, page G28.

¹⁹ World Wide Web. westcoastexpress.com/bgr2.html, May 1, 2000.

²⁰ "Deal Struck on Transit Service in S.D.", *Los Angeles Times*, June 19, 1992, page A1.

²¹ "North America's rail transit market..." *Railway Age Passenger Rail Planner's Guide 2000*, page G27.

²² "Fast-paced growth continues".

²³ Ibid.

²⁴ "Commuter Rail New Starts in North America", *Passenger Transport*, April 22, 1996, page 22.

²⁵ "Trinity Uses Innovations To Please Its Customers", *Passenger Transport*, March 23, 1998, page 10.

²⁶ North America's rail transit market: Where it is, where it will be" *Railway Age Passenger Rail Planner's Guide 2000*, page G26.

expand to a full 37 mile corridor between Dallas and Fort Worth by the year 2000 and further expansion to the Dallas/Fort Worth Airport by 2005.²⁷ Total cost of the 10 mile first phase is about \$70 million. Phase two costs total more than \$129 million for stations, sidings, signal upgrading, cars and locomotives.²⁸

Altamont Commuter Express (ACE)

Service was initiated in 1998 between Stockton and San Jose, California, with two morning and evening rush hour trains with a ridership of 1,100.²⁹ A third morning train has been added and ridership is currently 2,300.³⁰

Commuter Rail Performance Measures

Virtually none of the world's rail passenger services produce sufficient operating revenues to cover operating costs, and that certainly is the case with U.S. commuter railroads, as may be seen in the following table, showing Commuter Rail Operating Statistics. The four commuter lines used for comparison are Southern California Regional Rail Authority (SCRRA) of Los Angeles, Peninsula Corridor Joint Powers Board (CalTrain) based in San Francisco, Tri-County Commuter Rail Authority (TCRA) with headquarters in Miami, and Virginia Railway Express (VRE) of Northern Virginia.

²⁷ Ibid.

²⁸ "Dallas on track to join commuter rail roster", Progressive Railroading, December 1996, page 48.

²⁹ North America's rail transit market: Where it is, where it will be" Railway Age Passenger Rail Planner's Guide 2000, page G27.

³⁰ World Wide Web.acerail.com/history.html April 24, 2000.

Commuter Rail Operating Statistics
New Starts and Proposed Des Moines Service

Commuter Line	Annual Operating Expenses	Annual Revenue Vehicle Miles	Annual Unlinked Passenger Trips	Annual Passenger Miles	Total Farebox Revenue
Agency	(\$ 000)	(000)	(000)	(000)	(\$ 000)
Los Angeles - SCRRA	56,838	5,683	6,218	272,186	27,238
San Francisco - CalTrain	44,622	4,076	8,632	177,044	18,166
Miami - TCRA	20,836	2,294	2,349	68,109	4,880
Northern Virginia - VRE	14,999	1,035	1,902	69,842	6,476
Des Moines , 2005	7,489	370	331	2,863	513

Source: 1998 FTA National Transit Database, RLBA.

The 1998 Federal Transit Administration (FTA) National Transit Database is the latest information available.

Many feasibility or performance measures can be used to compare operations of commuter railroads or examine the feasibility of a new start. The next table compares Commuter Rail Performance Measures of four commuter rail systems and similar measures estimated for Des Moines.

There is no rule of thumb regarding what is considered appropriate for either startup or established systems. Each commuter operation has its own individual standards and goals. Local policies and decisions vary. The commuter rail transportation alternative may be deemed an essential social benefit, as in the Los Angeles area, which offers commuter rail service to divert motorists from congested highways.

Commuter Rail Performance Measures

Commuter Line	Operating Expense Per Passenger Trip	Operating Expense Per Vehicle Mile	Operating Expense Per Passenger Mile	Subsidy Per Passenger Trip	Farebox Recovery Ratio
Agency	(\$)	(\$)	(\$)	(\$)	(%)
Los Angeles - SCRRA	9.14	10.00	0.21	4.76	48%
San Francisco - CalTrain	5.17	10.95	0.25	3.06	41%
Miami - TCRA	8.87	9.08	0.31	6.79	23%
Northern Virginia-VRE	7.89	14.49	0.21	4.48	43%
Des Moines, 2005	22.63	20.24	2.62	21.08	7%

Source: 1998 FTA National Transit Database; RLBA.

Bus Cost Comparisons

The "Service Effectiveness and Efficiency Statistics Report-Calendar Year 1999" report found the subsidy per passenger on Des Moines Metro express buses to be \$2.42, and on commuter buses, \$3.22. Similar subsidies for the above-mentioned commuter rail systems range from \$3.06 to \$6.79 per passenger trip. The proposed Des Moines rail service would have a subsidy estimated at \$21.08 per passenger trip.

TASK VI. FEASIBILITY, IMPLEMENTATION AND FUNDING

REQUIREMENT

Provide recommendation on commuter rail feasibility and summarize the results.

Provide an implementation plan. If a commuter rail system is feasible, outline the next steps in process including the financial plan.

Provide capital cost funding options--federal, state, local.

DISCUSSION

Commuter Rail Feasibility

Commuter rail for Des Moines is technically feasible; that is, it appears that the railroads would cooperate, and with appropriate track and signal improvements, and acquisition of rolling stock, the service could be initiated.

Using performance measures such as operating expense per passenger trip, operating expense per vehicle mile, operating expense per passenger mile subsidy per passenger trip, and fare box recovery ratio (see Commuter Rail Performance Measures in Task V, Comparative Analysis), it appears that commuter rail in Des Moines is not feasible from an economic point of view.

The relatively high cost of moving a passenger on the proposed Des Moines commuter rail system, about \$22 per passenger trip compared with \$5 to \$9 in existing commuter rail systems, is a function of the relatively low number of riders estimated to use the system.

With regard to the commuter rail system requirements listed on page 1 of this report, the pertinent analysis results are the following:

- Implementation of commuter rail is not deemed likely before year 2003 at the earliest, considering implementation steps and their time requirements (see below, in this Task)
- This study hypothesizes a commuter rail system that is deemed to be able to attract a reasonable ridership: \$63.2 million capital cost and, consequently, a \$7.5 million annual operating cost.
- It appears that the level of short term relief that would be provided by the commuter rail system analyzed in this report would be modest--a reduction in VMT of only 1.6 percent in 2025.

Even though the economic feasibility of commuter rail is not good at this time, RLBA recommends that Des Moines keep its options open. Des Moines should continue to monitor demographic and traffic trends, and consider preserving railroad corridors which may in the future become more important for passenger transportation. For example, should any local railroad line be abandoned, Des Moines will, prior thereto, have an opportunity to acquire the corridor for public transportation purposes. Inasmuch as railroad abandonment actions may be executed within as short a period as 60 days, it is recommended that Des Moines investigate such an opportunity should it occur and be prepared to act rapidly.

Implementation Plan

The following implementation steps are provided in the event Des Moines determines that the benefits of commuter rail are worth the costs.

Decisions Regarding Funding and Governance

Determination of funding sources should be identified in this step, along with the structure for owning, managing and operating the service. This step includes the process of coalition-building to make funding of the project a reality. Public outreach may be appropriate.

Decisions are made regarding execution of the following activities:

- Operation of the service
- Management of the service (marketing, funding, administration)
- Construction of right of way improvements and stations
- Maintenance of right of way
- Acquisition of rolling stock
- Maintenance of equipment
- Cleaning of equipment
- Dispatching
- Maintenance and cleaning of stations

Timing of this phase is dependent upon reaching agreement with regard to funding and executing the project.

One early action which is deemed very important to the system as defined in Task I of this study is acquisition of land for a second track at the Des Moines Court Avenue station.

Integration of Commuter Rail into the Overall Des Moines Area Transportation System

This is a highly-important step inasmuch as its success has very important ramifications from the viewpoint of prospective riders, who should view the transit system as an integrated "whole", with convenient, timely and simple connections, preferably with one fare for the entire trip. Because of the importance of this step it should be initiated concurrently with the first-listed step, Decisions Regarding Funding and Governance.

Arrangements for Track Access

Once funding is arranged and a governing structure is established, it is appropriate to enter into negotiations with the owning railroads to develop an agreement regarding use of the railroad's property.

It is strongly recommended that consummation of an agreement with the involved railroads, for passenger service access, be completed prior to commitment of funds for preliminary engineering, construction and equipment acquisition. Otherwise negotiating posture vis-à-vis the railroads is considerably weakened. In any case, negotiation may take some time--a year or more.

Preliminary Engineering and Environmental Assessment

Preliminary engineering is performed to provide the drawings and specifications required to refine design and more perfectly estimate cost.

In some cases station design and construction may be a community function, with local government or other entity assuming "ownership" or at least a degree of responsibility for station development. If this is the case in the Des Moines region, then it is appropriate at the outset of this step to make decisions regarding which entities are responsible for individual stations, given that all stations must meet certain common criteria.

Equipment standards and specifications should be developed in this phase. As preliminary engineering advances, project parameters should be well enough defined to make decisions about equipment, canvass new and used equipment markets as applicable, and develop specifications suitable to solicit bids.

About a year is required for preliminary engineering, including time required to advertise for and select a consultant. Environment assessment and permitting may require one to one and a half years and should be accomplished concurrently with engineering/design.

Final Engineering and Design

Final engineering and design will require about a year to produce bid packages suitable for competitive procurement of equipment (rolling stock). The earlier negotiations with the railroads (see Arrangements for Track Access above) should include agreement on how and by whom this step is handled. Often, Class I railroads will perform the final engineering and right of way construction themselves.

Construction and Equipment Acquisition

At least 18 months should be allowed for equipment procurement from the time a contract is awarded. With specialized or unique equipment, this process could require two years or more.

Simple station construction may consume as little as six months, but time must be added for the permitting process related to construction of parking at stations, if sufficient parking does not exist already.

Weather must be considered, as some of the work may have a limited season.

While this step may consume up to three years, one and a half to two years is possible in the absence of permitting problems.

Recruitment of Management

Job description and performance criteria must be prepared and recruitment follow, for the minimal staff which will manage the day to day commuter rail operation.

Testing of Equipment and Training of Staff

Testing of equipment and training of staff may be included in the equipment procurement contract. If a railroad, such as IAIS, will operate the rolling stock under a purchase of services agreement, then training of IAIS staff to operate the passenger equipment must be included.

Marketing and Promotion of the New Service

This function obviously must be considered and implemented with the appropriate amount of effort and attention to insure optimum ridership.

Considering the steps described above, implementation time following decision to initiate new commuter rail service typically requires between 3-1/2 and 5-1/2 years, but can and has a shorter period where critical public need requires, as was the case with Tri-Rail in South Florida.

Funding Options

Federal Funding Opportunities and Procedures

Capital and start up operating funds are available for regional passenger rail service new starts from the federal government in a variety of ways, perhaps chiefly through Federal Transit Administration (FTA) Capital Investment Grants, Federal Highway Administration (FHWA) flexible funds and Urbanized Area Formula Grants. Since the proposed project involves railroad improvements, Federal Railroad Administration (FRA) funds may also be available, such as the Transportation and Infrastructure Finance and Innovation Act (TIFIA) program. Capital funds probably are more readily available than funds for operating expenses, though numerous regulations and guidelines govern the distribution of both. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and subsequently the Transportation Equity Act for the 21st Century (TEA-21) have made available more funding to transit, in part through flexibility provisions which reduce restrictions on how federal transportation money is spent.

FTA and FRA strongly recommend that any potential applicant contact their regional offices early on in order to understand the eligibility requirements for federal funding.

To be eligible for a FTA Capital Investment Grant, which allows 80 percent federal funding with a 20 percent local match, a new start project must be part of the metropolitan or statewide planning process. An alternatives analysis, providing information on the benefits, costs, and impacts of alternative strategies, must be performed. The FTA New Start project planning and development process typically follows four major steps:

- System planning
- Preliminary engineering/environmental impact statement
- Final design; and
- Construction and start up.

In the past a Major Investment Study (MIS) would complete the system-planning phase, which would be structured to address FTA new start funding criteria. In addition the MIS would lead to a selection of a locally preferred solution for the community's mobility needs.³¹ TEA-21 eliminated the MIS as a separate requirement, integrating it into other planning and environmental regulations.³²

³¹ Annual Report on New Starts. U.S. Department of Transportation Federal Transit Administration, 1999, page 5.

³² Federal Register, Volume 64, Number 66, April 7, 1999, page 17063. This Notice of Proposed Rulemaking on "Major Capital Investment Projects", pages 17062-17071, is an important guide to current FTA policy.

A project with total FTA funding under \$25 million is exempt from FTA new start criteria and requires no alternatives analysis. However, it remains appropriate, even for projects below the \$25 million threshold, to provide FTA with information on which it will base a funding recommendation. Consequently, FTA advises that proponents of projects examine the FTA new start funding criteria and provide as much relevant information as possible.

FTA new start funds are not available to conduct alternatives analyses; however, funds may be available through the FTA Planning and Research Program, FTA Urbanized Area Formula Funds and flexible funds (funds that are available for use on highway or transit projects) through the Surface Transportation Program (STP) and Congestion Mitigation and Air Quality Improvement Program (CMAQ).

Prior to preliminary engineering, the agency sponsoring a new start project should submit a request for FTA approval to the FTA regional office including information regarding the planning process that led to the selection of the project, and its inclusion in the metropolitan transportation plan and transportation improvement program (TIP). The request should address project justification and local financial criteria, except where the sponsor believes the project is exempt from new start criteria, in which case the sponsor would request FTA concurrence in the exemption. Although projects costing less than \$25 million are not bound by FTA requirements to the extent of larger projects, it is appropriate for project sponsors to assist FTA by addressing and providing data which will enable FTA to make decisions based upon the new starts criteria.

In approving commencement of preliminary engineering on a project, FTA employs Section 5309 New Starts Criteria shown in the following table.

FTA Section 5309 New Starts Criteria

Criteria	Performance Measure	Measurements
1. Mobility Improvements	Value of travel time savings	New Start compared to No-Build and TSM
	Low Income households served	Number within ½ mile of boarding points
2. Environmental Benefits	Change in pollutant emissions	New Start compared to No-Build and TSM
	Change in regional energy consumption, expressed in BTU's	New Start compared to No-Build and TSM
	EPA air quality designation for region	Current EPA designation
3. Operating Efficiencies	Operating cost per passenger mile	New Start compared to No-Build and TSM
4. Cost Effectiveness	Incremental cost per incremental passenger in forecast year	New Start compared to No-Build and TSM
5. Transit Oriented Land Use	Rating on transit supportive existing land use and future patterns	Combined rating on a set of factors Existing land use Containment of sprawl Transit supportive corridor policies Supportive zoning regs Tools to implement land use policies Performance of land use policies
6. Others Factors	Optional consideration of other factors	Local policies, programs and factors relevant to success of the project
7. Local Financial Commitment	Proposed local share of project costs	Percent of capital funds from non-Federal (non-Section 5309) sources
	Stability and reliability of capital financing	High, medium, low ranking
	Stability and reliability of capital financing	High, medium, low ranking

Source: Technical Guidance on Section 5309 New Starts Criteria, FTA Office of Planning, September 1997, page 3-2.

As projects proceed through the development phase, information concerning costs, benefits, and impacts is refined, and the ratings are updated to reflect new information.

For each of the project justification and local financial commitment criteria, the new start is evaluated against both a No-Build and a Transportation System Management (TSM) alternative. FTA assigns one of five descriptive ratings (high, medium-high, medium, low-medium, and low) for each of the criteria, with other factors considered as appropriate.³³

³³ Annual Report on New Starts: Proposed Allocation of Funds for Fiscal Year 2000, FTA, March 23, 1999, page 8.

TEA-21 has added the requirement to establish summary ratings for each proposed project of "highly recommended", "recommended", and "not recommended", based on evaluation of the criteria for project justification and local financial commitment.³⁴

The primary factors in determining the combined justification rating are measures of transit-supportive land use, cost effectiveness and mobility improvements.³⁵

Preliminary engineering is typically financed with Section 5307 funds, local revenues and flexible funds under STP and CMAQ. Given the significant demands placed on the Section 5309 new start program, FTA does not support the use of new start funds for preliminary engineering except in the case of unusually large and costly projects.³⁶

The last phase of the development project is final design, which includes preparation of final construction plans, detailed specifications, construction cost estimates and bid documents. The final design stage cannot be initiated until environmental requirements have been satisfied, as evidenced by a Record of Decision or a Finding of No Significant Impact (FONSI). Final design typically is financed with Section 5309 new start funds.³⁷

Additional federal funds may be available from FHWA flexible fund categories such as the Surface Transportation Program, Donor State Bonus, Interstate Maintenance, Bridge Replacement and Rehabilitation, National Highway System, Substitute Highway, and Congestion Mitigation and Air Quality Improvement (CMAQ) program. While these funds are considered to have intermodal flexibility, there are limitations on the use of at least some portions of the programs, for example, there are funds in some programs available only to rural and only to urbanized areas.³⁸

Flexible funds may be used for any non-operating purpose under the Urbanized Area Formula Program. CMAQ funds may be used for operating assistance (as has been done in at least one commuter rail service), with certain limitations, including the time period for this assistance: 3 years.³⁹

³⁴ Ibid.

³⁵ Annual Report on New Starts: p.9.

³⁶ FTA Notice Section 5309 (Section 3(j)) FTA New Starts Criteria: p.21.

³⁷ Ibid.

³⁸ FTA Circular 9030.1C, "Urbanized Area Formula Program: Grant Application Instructions", October 1, 1998, Chapter I, Section 5.

³⁹ FTA: The Congestion Mitigation and Air Quality Improvement (CMAQ) Program Under the Transportation Equity Act for the 21st Century (TEA-21): Program Guidance, April 1999, page 8.

State and Local Funding

It is expected that federal funding would be the dominant funding, amounting to between 80 and 50 percent of the project's total requirements. In this case the role of state and local funding in to provide the necessary local "match".

It is not expected that the private railroads will be willing to contribute to project funding, even though certain improvements will be made to their track and signal infrastructure in order to operate commuter trains. Experience tells us that the freight railroads will say that the new service must pay its own way. This is not to suggest that the improvements do not provide benefits to the freight railroads, and these benefits should be used as a lever in the process of negotiating track access and track access fees, as well as in negotiating "purchase of service" fees with the commuter train operator, if this method is utilized.

There are two sources of state funding, the general fund or existing transportation funding (road use tax funding). No State of Iowa precedent exists regarding funding of passenger rail; most state funding of bus transit is formula-based. Thus a special appropriation would be required if the state were to contribute to commuter rail service costs.

There are a numerous means to raise local funding of the project, subject of course to state law and voter approval where required: general obligation bonds, tax increment financing, transit tax, sales tax or property tax. Sometimes local municipalities are asked to provide for the funding of their own stations and parking. Fare box revenues will assist in paying operating costs.

Midwest Regional Rail Initiative, Amtrak Express

What about other passenger rail initiatives which might affect Des Moines?

The Midwest Regional Rail Initiative (MRRI) being explored by 9 midwestern states (including Iowa) plus Amtrak, would be implemented gradually over a 10-year period and connect major cities (including Des Moines) via frequent intercity passenger trains traveling at speeds up to 110 mph (Iowa service would be at a speed less than 110 mph). The plan would require about \$4.1 billion in capital expenditures and calls for federal funding to the extent of 80 percent, with the remainder coming from state and local sources. Appropriation of this scale of funding by the U.S. Congress for new passenger rail service would be unprecedented.

As a major component of its requirement to attain operating self-sufficiency (that is, operate without federal subsidies for operating costs) by fiscal 2002, Amtrak announced in February 2000 a significant route and train expansion aimed at increasing annual ridership by 430,000 and attracting mail and express business.⁴⁰ The announced "approximate sequence" for new service introduction, dependent

⁴⁰ "Amtrak's expansion will shrink some trains", *Trains*, June 2000, pages 28-29.

upon agreements with the freight railroads and necessary track and station improvements, includes a 12-hour overnight run between Chicago and Des Moines which will transport, in addition to passengers, refrigerated express cars.⁴¹

Two observations are pertinent. First, addition of new passenger rail service to Des Moines represents a transportation enhancement opportunity, giving the citizens of the Des Moines area new travel options. This opportunity will be further improved if convenient intermodal connections are provided, for example, by bringing together the various modes--rail, bus, taxi and automobile--in a central downtown location. Such an arrangement can reduce automobile dependence and claim other benefits of an integrated transportation system. In the context of commuter rail implementation, addition of intercity rail service would result in a synergistic transportation improvement, each reinforcing the other.

Second, although MRRI with its proposed relatively high speed and service frequency is an attractive prospect, when or whether it will be implemented is highly uncertain. Also, Amtrak's plan to initiate intercity passenger service to Des Moines does not envision a level of service which would attract many passengers. For example, there will be no appreciable improvement in track speed, and no MRRI-type train frequency is anticipated. Amtrak's presumed objective in initiating this service is revenue from express shipments and mail. Thus even if the new Amtrak service to Des Moines is realized, it is not expected to have any significant impact on passenger transportation.

⁴¹ *Ibid.*

TASK VII. GOVERNANCE/OPERATIONS

REQUIREMENT

Suggest alternative approaches to structuring governance/operations of a short-term and long-term system.

DISCUSSION

Who should own, manage and operate new passenger rail service? These roles—owner, manager and operator—relate to the opportunities and responsibilities associated with the business of providing passenger rail services.

General

In passenger rail situations,

- the **owner** of railroad right of way and infrastructure thereon is typically responsible for maintenance, rehabilitation and real estate management, including the issues of risk and liability,
- the **manager** plans, implements, markets and bears financial responsibility for the passenger rail service, and
- the **operator** staffs and supervises train movement and also may perform other functions such as track and equipment maintenance, depending on local choice and circumstances.

Although three roles are described, there may be from one to three distinct entities involved because it is possible, and common, for one entity to fill two or even all three of the roles of owner, manager and operator.

Owners, by virtue of their property rights and in the case of freight railroads, their Federally recognized rights and responsibilities as common carriers, exert control over what services may use their facilities and under what conditions, thus controlling whether or not a new commuter service may be implemented. In addition, owners exercise a paramount influence over the ability to achieve long-term goals, to add and modify service, to institute physical improvements and to implement new technology. Owners also may exercise, if they so choose, operational control over the railroad property. By the same token, ownership is also vested with ultimate responsibility for maintenance of way and structures and for resolution of such environmental problems as may arise, as well as for liability, indemnification and insurance arrangements. Finally, owners (public agencies and Amtrak excluded) must pay taxes on and manage real property and address the public policy implications of what has been done or failed to be done with the involved property itself and with operations on it.

Managers have particular opportunities with respect to service marketing and setting of fare policies. They also generally possess an ability to specify or change operators. To a lesser extent, managers influence additions to and modifications of the service, the achievement of long term goals and the degree to which service quality is attained. By contrast, they bear responsibility for funding operating deficits, financial risk, liability and indemnification exposure, funding capital improvements, equipment supply and maintenance. Managers influence, but do not control, labor and work force arrangements, passenger security and environmental issues as well as affect public policy ramifications associated with the operation.

Operators, the third element of the institutional triad, are capable of influencing service quality substantially and, if selected by contract, enjoy an opportunity to earn a profit as well. Their responsibilities entail complete supervision over train operations and enforcement of arrangements with the work force, particularly with respect to operational safety and passenger security.

In summary, the role of rail passenger service manager provides a limited amount of fundamental authority but a noteworthy amount of significant responsibility. In contrast, a rail passenger service operator, acting on its own behalf or under contract to a service sponsor, possesses relatively less authority but nonetheless bears a significant amount of responsibility. However, the operator is uniquely positioned to realize a profit if operations are conducted in accordance with a commercial contract. Finally, ownership of the track over which rail passenger service is operated as the term "ownership" is generally understood (absent a lease to others) represents by far the greatest level of financial and human resource commitment to a rail passenger service, promising tremendous authority concurrent with numerous and significant responsibilities.

The following table illustrates some owner-manager-operator arrangements used in passenger rail services in the United States today.

Passenger Rail Owner-Manager-Owner Operator Arrangements

Passenger Rail Line	Manager	Operator	Right-of-Way Owner
Amtrak Washington-Baltimore Penn Line	MARC	<i>Amtrak</i>	<i>Amtrak</i>
Port Jervis Line in New York State	Metro-North	New Jersey Transit	<i>Conrail</i>
CalTrain: San Jose-San Francisco	Peninsula Corridor Joint Powers Board	<i>Amtrak</i>	Peninsula Corridor Joint Powers Board
Northern Indiana Commuter Transportation District (NICTD)	NICTD	NICTD	NICTD
Tri-County Commuter Rail Authority (Tri-Rail)	Tri-Rail	<i>Herzog Transit Services, Inc.</i>	FLA-DOT

Note: Table includes public agencies as well as private organizations, the latter noted in *italics*.

Source: RLBA research.

Public Ownership Option

If a public entity seeks to control use of a right of way, and preserve it for public transit or other public use, it may wish to acquire it. Ownership of a right-of-way brings with it control of activity conducted on it, by whom and under what circumstances. This allows a passenger rail sponsor to implement, alter and add services as it deems appropriate. Tenant freight operations must be given reasonable opportunity to satisfy their common carrier obligation, but essentially they would operate at the owner's convenience, subject to pre-existing contractual arrangements. On the other hand, the entity which owns the rail right of way and infrastructure bears the responsibility for maintenance, rehabilitation and real estate management, including exposure to risk and liability.

Certain public jurisdictions, as indicated in the table above, have acquired railroad rights of way. Des Moines may wish to consider acquisition of railroad rights of way, especially if they are candidates for abandonment, to preserve the long-term transportation opportunity. Informally, Norfolk Southern indicated interest in selling its Grimes Line⁴², part of which (Urbandale-Windsor Heights-16th Street in Des Moines) is a component of the commuter rail system defined in this study.

Given the context of this study, however, public ownership is not a present consideration, but may be considered later.

⁴² Phone conversation between Bill Shafer, Director, Corporate Affairs, Norfolk Southern, and Ken Withers, RLBA, May 9, 2000.

Management of the Des Moines Commuter Rail Service

The manager of the passenger rail service bears the financial responsibility for the service. Should the service be locally managed, or managed by the State? This is a public policy issue which ultimately must be decided by elected public officials. Here it is appropriate to suggest some considerations. Commuter rail service supports local and state plans. It appears logical that the commuter rail operation be managed by an entity which has an interest in its efficient operation. Commuter rail, if implemented, would be a component of the Des Moines area transportation system, which, to be successful, must be harmoniously integrated with the bus service and financially supported. An important policy articulated by ISTEPA and carried forward by its successor, TEA-21, is intermodalism, or interconnectedness of transportation modes, allowing users to select modes and change from one mode to another, based upon efficiency, utility, increased productivity, and reduction of energy consumption and air pollution. Bus, rail and other modes of transportation should be interconnected so that each may be used to its best advantage. If passenger rail is implemented, it should be done in close and harmonious coordination with the Des Moines Metropolitan Transit Authority (MTA) so that bus and rail are mutually supporting. Because of the vital importance of close coordination between rail and bus, RLBA recommends consideration of a common management system which includes bus and rail within a regional transportation operating authority. By "common management system", we do not mean addition of a management layer, but rather the integration of passenger rail into MTA's scope of functions; much less desirable is creation of a new authority to manage all regional transit operations.

Operation of the Des Moines Commuter Rail Service

Operation of the commuter rail service may be accomplished by the local transit authority, the railroad which owns the line (if it agrees), or by contract with another entity. All passenger rail operations which may be considered "new starts" (no existing service) over the past decade have chosen to operate by contract. The National Railroad Passenger Corporation (Amtrak) and Herzog Transit Services, Inc. (Herzog), of St. Joseph, Missouri, are contract operators of a number of passenger rail services. For example, Amtrak operates Massachusetts Bay Transportation Authority, Virginia Railway Express, and that portion of the State of Maryland's Rail Commuter Service (MARC) which utilizes Amtrak's Northeast Corridor. Herzog operates Tri-County Commuter Rail Authority between West Palm Beach and Miami, Florida (Tri-Rail) and Trinity Railway Express of Dallas, Texas.

Iowa Interstate Railroad has indicated interest in a purchase of service agreement in which that railroad would operate the commuter trains, but leave all passenger functions to another entity. The other entity could be MTA or some other agency. RLBA recommends this as an appropriate method of commuter rail operations.

APPENDIX A

STATION LOCATION CRITERIA

The following general criteria should govern station siting.

1. The station should be close to trip origins and/or destinations. In other words, the station location should be useful and convenient to prospective rail passengers. The biggest challenge to commuter rail is to lure commuters from their automobiles. There should be a good pedestrian network (existing or planned).
2. Station siting should be compatible with community land use and long range plans. Some communities promote growth center based transit in order to reduce automobile impacts. Intermodal transportation nodes, including several transportation options, enhance use of non-automobile modes. Environmental considerations must be taken into account.
3. A commuter rail station requires convenient highway access, as well as accommodation for park & ride, drop-offs, and bus transit where applicable.
4. There must be sufficient space for parking, so that no potential customer is turned away.
5. Cost must be reasonable.
6. Railroad-related considerations should be observed. Where possible, the station should be sited on tangent track, that is, straight track, so that the engineer can observe the entire station platform. Also, stations should be located an appropriate distance from crossovers, turnouts, and grade crossings, so as not to interfere unduly with other railroad and with highway crossings.

APPENDIX B

STATION COMPONENTS/AMENITIES

What should be at the station? How should it be configured? What are the minimum construction requirements?

Today's commuter rail stations run the gamut from highly-developed big-city intermodal passenger terminals (for example, Washington D.C.'s Union Station) to modest platforms in semi-rural settings.

What a station must include is partly covered in the discussion above, for example, a station must have adequate parking. In order to encourage ridership, free parking is recommended. The Americans with Disabilities Act of 1990 (ADA) requires provision for wheelchair boarding. It is recommended that lighting be provided if commuter trains will be operating in hours of darkness, early morning or evenings. It may be desirable to include at least a small weather shelter. Depending on magnitude of expected station usage, a bus lane and "kiss and ride" lane may be appropriate. In accord with the fare payment system decided upon, the station may include ticket vending machines. A public address system--to inform commuters when trains are late--is an appreciated feature.

A minimum cost station should include a platform, lift for the disabled, and parking. Lighting should be added if the station will be used in hours of darkness, and a weather shelter is appropriate.

Some communities have taken over "ownership"--figuratively if not literally--of "their" commuter rail stations, making them into a special community location. Obviously, this kind of attention tends to market the service and enhance ridership. By the same token encouragement of passenger service retail establishments co-located with the station performs a similar synergistic function, each reinforcing the other. Community or private initiative may take over here, transferring a mere commuter rail station into a "signature" community location and development node.