Metropolitan Area Transit
Paratransit Service Boundary Study

David Ripplinger
Associate Research Fellow

Small Urban & Rural Transit Center
Upper Great Plains Transportation Institute
North Dakota State University

August 2005

Disclaimer

The preparation of this document was funded in part by the United States Department of Transportation with funding administered through the North Dakota & Minnesota Department's of Transportation, the Federal Highway Administration and the Federal Transit Administration. Additional funding was provided by the Minnesota Department of Transportation and through local contributions from the governments of Fargo, West Fargo, and Cass County in North Dakota; and Moorhead, Dilworth, and Clay County in Minnesota. The United States Government and the States of North Dakota and Minnesota assume no liability for the contents or use thereof.

This document does not constitute a standard, specification, or regulation. The United States Government, the States of North Dakota and Minnesota, and the Metropolitan Council of Governments do not endorse products or manufacturers. Trade or manufacturers' names appear herein only because they are considered essential to the objective of this document.

The contents of this document reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the policies of the state and federal Departments of Transportation.

The contents presented in this report are the sole responsibility of the Upper Great Plains Transportation Institute and the authors.

Table of Contents

List of Figures

List of Tables

Executive Summary

Determining the optimal form of service where economic realities and the desire for a high level of customer service must find balance is one of the most difficult challenges facing providers of community transportation. Accurately estimating the impacts of changes in service policy in terms of ridership, revenues, and costs is just one, though important, aspect of service design. Considering the political, economic, and customer service implications resulting from such changes is also necessary. When altering ADA complementary paratransit service care must be taken to ensure continued compliance with federal regulations.

In this study five options for the deployment of Metropolitan Area Transit's (MAT) complementary paratransit service in the Fargo-Moorhead Metropolitan Area are analyzed. The objective is to provide information to assist in determining the optimal form of service where economic realities and the desire for a high level of customer service must find balance. The options vary only by the fare charged and the availability of service. The remainder of MAT's paratransit operations policy is expected to remain in its present form.

All service alternatives meet federal Americans with Disabilities Act (ADA) regulations regarding complementary paratransit service. This includes the mandated delivery of comparable paratransit service within three-quarters of a mile of fixed-route lines with fares no higher than twice that of fixed-route service. Though MAT provides uniform service at the same fare to all of Fargo, Moorhead, West Fargo, and Dilworth, MAT has ability to determine what, if any, service is provided and at what fare in areas more than three-quarters of a mile from fixed-route lines.

MAT's paratransit fleet is equipped with mobile data terminals (MDTs) and is managed with the aid of software and dispatch software. The presence of such technology readily provides MAT with the technical capability of adopting the more complex service alternatives considered. Being readily able to account for and collect the correct fare for premium fare trips, based on distance or zone, is necessary for the services to be successful.

The issue of uniformity of paratransit service in the metropolitan area is an important one. The cost of managing a complex system and educating riders and the community is sure to be higher than when a relatively uniform service structure is in place. Equitable local support of public transportation, which is not the current situation within MAT, is also valuable. As a result, the delivery of paratransit service to Dilworth was of particular interest to those commissioning the study.

Federal regulations require that complementary paratransit service be made available to those within three-quarters of a mile of fixed-route service if the transit agency has the legal authority to do so. It is assumed by SURTC that MAT does have the authority to provide trips within the City of Dilworth, given the fact they currently supply such service, and that it must provide the federally mandated minimum level of service. Though a formal contractual agreement between the cities of Fargo and West Fargo for the delivery of paratransit service to West Fargo locations is in place, there does not appear to be a mechanism or precedent for compelling municipalities, such as Dilworth, to contribute financially to public transportation in their situation.

The Five Service Options

Five service options for delivering ADA compliant paratransit service in the Fargo-Moorhead metropolitan area were analyzed. General descriptions of each of the service options, including the perceived benefits and costs in terms of system uniformity, financial cost, and fairness are described below. Adoption of some of the alternatives may be unlikely, primarily because of adverse political ramifications or contractual obligations. However, quantifying their impact should aid in the evaluation process. Maps presenting the geographic boundaries for each of the five service options can be later found in the report.

Metro Service

Presently, MAT provides uniform paratransit service at a charge of $2 a ride, twice that of fixed-route service, to the communities of Fargo and West Fargo, N.D., and Moorhead and Dilworth, Minn. This includes the elective delivery of service to areas more than three-quarters of a mile from fixed-route where service is mandated by the ADA. The complementary paratransit fare is limited by the ADA to twice the fixed-route fare for service within three-quarters of a mile of fixed-route lines, but it is unrestricted for trips beginning or ending beyond that distance. The first service option is to keep this system in place in its entirety.

The metro service option provides a high level of customer service delivered by a single, uniform system which is easier to manage than the following alternatives. However, such service comes at a high cost financially. The option is not fair in an economic sense because individuals who take longer, more expensive trips pay the same fare as other riders. As the City of Dilworth does not provide local funds, though their residents receive the same service as residents of the other municipalities, there is also a degree of political unfairness in MAT's current service policy.

Three-Quarter-Mile Service

The three-quarter-mile service option provides the minimum amount of service as mandated by ADA. Here the MAT's paratransit service area would extend three-quarters of a mile from existing MAT fixed-route service. This results in the loss of service to the majority of the city of Dilworth, portions of residential Fargo and West Fargo, and industrial and non-developed portions of Fargo and Moorhead.

The three-quarter mile service option is the lowest cost service alternative. It also results in the largest number of forgone rides. There is an element of political unfairness as residents whose local taxes support MAT and who desire to travel to or from outlying areas will no longer be able to do so. Service to a large portion of Dilworth is also lost, an action that aggressively compensates for the absence of local contributions to MAT. Much of the southwest portion of the metropolitan area, which has been seeing rapid growth, would also lose service. The significant reduction in service that would result from the implementation of three-quarter-mile service might draw the ire of government officials and agencies who oversee MAT operations and funding. It would also likely violate the contractual agreement for the delivery of public transportation service that exists between Fargo and West Fargo.

Two-Zone Service

The two-zone service alternative divides the metropolitan area into two zones. Zone 1 consists of areas within three-quarters of a mile of MAT fixed-route service. Zone 2 consists of the remaining parts of the four communities. Rides originating or terminating within Zone 2 would be subject to a fare of $5 compared to the existing $2 paratransit fare. The calculations for two-zone service rely on assumptions regarding riders' response to the change in price which are based on data collected from fare changes in Sheybogan, Wis., during the 1990's.

Two-zone service results in a moderate cost savings, but requires additional resources to manage. There is also a political cost to having lower levels of service in outlying areas. A degree of economic fairness is introduced as those who make trips to distant locations impose higher costs on the system, costs offset to some degree by higher fares. Satisfactions levels may also suffer as customers will need to be educated about the new, more complex service. Two-zone service would likely require the agreement between Fargo and West Fargo for the delivery of transit service to be altered.

Three-City Service

The three-city service option would end MAT paratransit service to those parts of Dilworth more than three-quarters of a mile from existing MAT fixed-routes while continuing to provide service to all parts of the other three communities. This service option results in a loss of service to a large portion of Dilworth. However, service to the entire city is not ended to maintain compliance with the ADA.

The three-city service option results in modest financial savings and decrease in rides delivered. The option maintains a uniform system for the areas that retain service. As with three-quarter-mile service, the three-city alternative aggressively compensates for the absence of local funding from the City of Dilworth and the higher cost of rides provided to the area. The three-quarter-mile service option would likely violate the current contractual agreement between West Fargo and Fargo.

Three-City-Two-Zone Service

The three-city-two-zone service option is essentially the same as the two zone service option described previously. The only difference is that in this case service to those parts of Dilworth more than three-quarters of a mile from MAT fixed-route service will no longer be available.

Adopting the three-city-two-zone service option will result in modest decreases in both trips delivered and financial cost. The system would loose a degree of uniformity in exchange for an increase in economic fairness. As with the two-zone option, riders traveling to or from distant locales will be required to pay a higher fare to offset the higher cost of the rides. Three-city two-zone service would also likely require the agreement between Fargo and West Fargo for the delivery of transit service to be altered.

The Analysis

The formal analysis relies on information available from MAT and the transit service planning literature. Only operating costs are considered in the analysis. Neither the cost of transitioning to a new system, which may be substantial in the case of the implementation of two-zone service, nor the capital savings from operating a smaller fleet are included. MAT currently employs mobile data terminals (MDTs) on its paratransit fleet and makes use of scheduling and dispatch software that allows for more complex fare structure and billing. Under the most liberal assumptions, it does not appear that more than one vehicle would be saved by reducing service under any of the five scenarios. In most cases the fleet size would remain constant.

Results

Estimates of the change in ridership, measured in unlinked passenger trips, fare revenue, operating expense, and savings under the five service options are presented in Table 1. These estimates rely on moderate assumptions; the full report also presents figures arising from more conservative and liberal assumptions for each of the service options. The metro service option values are actual MAT numbers for the calendar year 2004.

The alternative service options have relatively small impacts on ridership and savings as most MAT Paratransit trips originate and terminate within three-quarters of a mile of fixed-route service where service is required by federal law.

Two values on the service options comparison table need to be defined. The first term, uncovered expense is operating expense less fare revenue. The second is the term savings, which is the difference between the uncovered expenses under the current service policy versus those from a particular alternative. For example, using the metro service option in Table 1, the operating expense, $536,571, minus fare revenue of $177,698 yields an uncovered expense of $358,873. The savings from implementing the three-quarter-mile service option, $21,953, is equal to the uncovered expense under the metro service option, $358,873, minus $336,920, the uncovered expense under the three-quarter-mile alternative.

Table 1. Service Options Comparison

	Unlinked Trips	Trips Forgone	Fare Revenue	Operating Expense	Uncovered Expense	Savings
Metro	39,705	-	$ 177,698	$ 536,571	$ 358,873	-
Three-Quarter Mile	37,937	1,768	$ 169,785	$ 506,705	$ 336,920	$ 21,953
Two Zone	38,998	707	$ 174,904	$ 524,625	$ 349,721	$ 9,152
Three City	39,237	468	$ 175,603	$ 528,665	$ 353,062	$ 5,811
Three City-Two Zone	38,717	988	$ 173,276	$ 519,881	$ 346,605	$ 12,268

Relatively significant financial savings of $21,953 are estimated for paratransit service limited to three-quarters of a mile from existing MAT fixed-route lines. This comes at the cost of a sizable decrease in trips delivered, 1,768. Implementation of the two-zone alternative is expected to have

less pronounced affects with a decrease in annual trips of 707, resulting in a $2,794 decrease in fare revenue and an $11,946 reduction in operating expense. Three-city service results in 468 fewer trips delivered per year compared to 988 for three-city-two-zone Service; options which have expected savings of $5,811 and $12,268 respectively.

Given the tradeoffs that exist between financial cost and customer service, it is not possible to objectively determine which of the service options best meet the needs of MAT's customers. For example, while the three-quarter-mile service option yields the greatest savings it is also the least politically palatable as residents of Dilworth, Fargo, Moorhead, and West Fargo will be denied service, based on the location of their ride origin or destination. For the two-zone options the concept of economic fairness is addressed as trips that begin or end in areas from the geographic center of the metropolitan area that are significantly more costly than other trips are charged higher fares. Finally, the current service policy provides the highest level of customer service, but at a significant financial cost.

The Impacts of MAT Fixed-Route Expansions

The service options were studied given current MAT fixed-route and paratransit service performance. Due to the interrelated nature of the two transportation types, which arises as a consequence of ADA regulations, the impact of future fixed-route expansion, which will be addressed as part of the 2007 Transit Development Plan, should also be considered when deciding upon paratransit service options in the near term.

Given the rapid growth of southwest Fargo and West Fargo, the addition of fixed routes to MAT's current service in the future is plausible. In light of this, the alteration or elimination of paratransit service becomes less pragmatic. To change service only having to change it back a short period later, after the addition of fixed-route service in these areas, would impose a number of costs on MAT both financially and in terms of service quality.

Additional Service Alternatives

Though this study looked specifically at the impacts of various service alternatives where either flat fares or zonal fares are used, there are other, possibly viable alternatives, for MAT's paratransit service/fare structure. One option, touch on briefly in this paper, is the implementation of per-mile charges for those trips outside the three-quarter mile service area similar to that used by Bis-Man Transit in providing rides to outlying rural areas. Another possibility is that of introducing agency rates. This alternative has been considered before and was the subject of a 1998 Fargo-Moorhead Metropolitan Council of Governments study.

Service Policy Considerations and Recommendation

As part of the study SURTC was asked to provide a recommendation as to the best MAT paratransit service policy. Based on the analysis, SURTC recommends that, if possible, MAT maintain its current operations policy and its high level of customer service by continuing to provide uniform paratransit service Dilworth, Fargo, Moorhead, and West Fargo. The potential

benefits of the alternatives, which in essence scale back the level of service, are offset by significant non-financial costs on communities in the form of forgone paratransit rides.

1. Paratransit Service Design

This study looks at the merits of five paratransit service options for Metropolitan Area Transit, popularly referred to by the acronym MAT, to deliver transportation solutions to eligible paratransit riders in the communities of Dilworth and Moorhead, Minn., and Fargo and West Fargo, N.D. The first section looks at four issues: MAT's existing paratransit service and the need for service alternatives; a brief note on complementary paratransit service and the Americans with Disabilities Act (ADA); the benefits of having a consistent service policy; and service in similar-sized communities. It is followed in the next section by the analysis of each of the five service alternatives. Here the data and methodology are described and the assumptions, numerical results, and pros and cons of each service discussed. In the final section, the alternatives are compared, long term considerations presented, and SURTC's recommendation for future service made.

1.1 MAT Paratransit Service

MAT currently provides paratransit service at a fare of $2 a ride, twice the fixed-route fare, to the communities of Fargo and West Fargo, N.D., and Moorhead and Dilworth, Minn. This includes the elective delivery of service to parts of these communities more than three-quarters of a mile from fixed-route where service is mandated by the ADA. The paratransit fare is limited by ADA to twice that of the fixed-route fare for service within three-quarters of a mile of fixed-route lines, but it is unrestricted for trips beginning or ending beyond that distance. Thus, MAT does not have the ability to increase its fare for rides originating or terminating within three-quarters of a mile of fixed-route service unless the fixed-route fare was increased.

For 2004, the cost of delivering paratransit service by Fargo and Moorhead was $14.28 per ride. This cost was covered by fares, federal, state, and local funds. West Fargo currently has an agreement with the City of Fargo to provide it with public transportation service, including paratransit. In exchange for paratransit service equivalent to that available to Fargo residents, West Fargo pays Fargo $12, in addition to the $2 fare. This $12 fee, paid with local funds, is meant to cover the operating, capital, and administrative costs of delivering service to West Fargo. No such agreement exists between Dilworth and Moorhead. The passenger local contribution by community is shown in Table 2.

Table 2. Fares and Costs for 2004 MAT Paratransit Service

	MAT Paratransit Fare	Cost to Municipality
Dilworth	$2	$0.00
Fargo	$2	$12.28
Moorhead	$2	$12.28
West Fargo	$2	$12.00

MAT receives section 5307 formula grants based on the population and population density of the Fargo-Moorhead Urbanized Area which includes parts of Fargo, Moorhead, West Fargo and Dilworth. The area, defined in 2002 in conjunction with the 2000 Census, is presented in Figure

1. The urbanized area includes most of the four cities, except the industrial areas in northwest Fargo and north West Fargo.

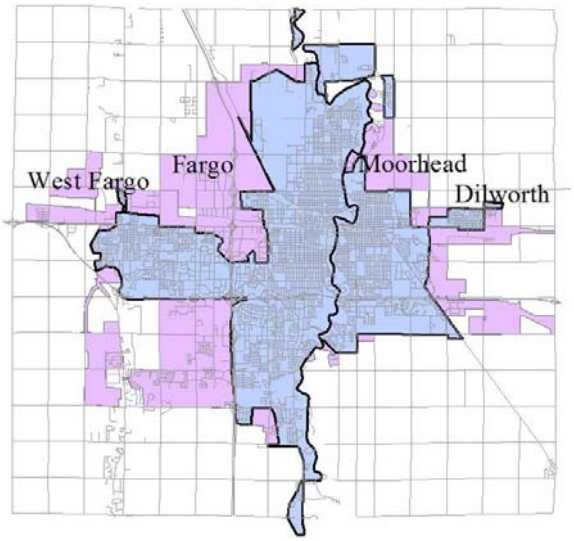


Figure 1. Fargo-Moorhead Urbanized Area

For the week beginning March 16, 2005, 34 of the 719 (about 4.7 percent) of MAT's paratransit trips originated or terminated further than three-quarters of a mile away from any fixed-route line. A graphical presentation of this information is presented in Figure 2. This proportion can be expected to increase dramatically given the population growth in areas beyond that distance, particularly those in the southern parts of Fargo and West Fargo.

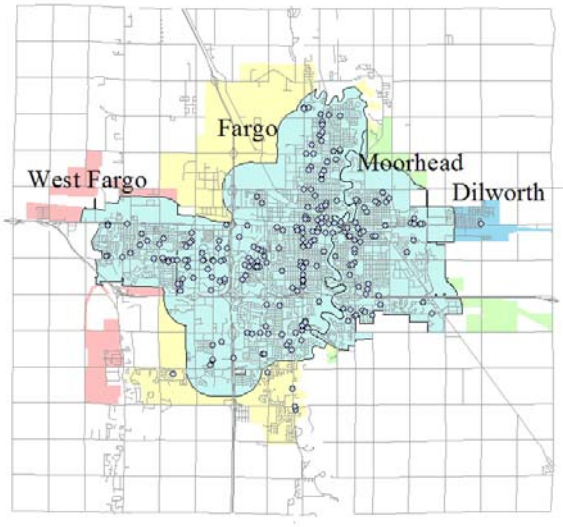


Figure 2. Locations of Ride Origin and Termination

MAT paratransit ridership by community for the years 2000-2004 is presented in Table 3. Though the behavior is not constant across the communities or across time, there has been a

marked increase in MAT paratransit ridership from 2000 to 2004. This is especially true in Moorhead and West Fargo where ridership nearly doubled over the five year period.

Table 3. Paratransit Ridership by Community

	2000	2001	2002	2003	2004
Dilworth	366	222	145	318	446
Fargo	20,656	20,446	20,787	24,331	25,953
Moorhead	4,910	4,562	4,266	7,623	9,504
West Fargo	2,214	2,377	2,635	2,573	3,802

Table 4 presents operating expense estimates for the delivery of paratransit service to West Fargo and Dilworth in 2004. The estimated cost of service is a function of the number of rides delivered. The 20 percent and 50 percent shares are included to present the approximate amount of the cost covered by state and federal funds, respectively. West Fargo has a higher fare box operating ratio than Dilworth, .12 versus .10. The basis for this difference is quite intuitive as the delivery of service to Dilworth, which is relatively more expensive than other trips due to location, is subject to the same fare of $2 as trips to or from West Fargo.

Table 4. Dilworth & West Fargo 2004 Operating Expense Estimates

	Dilworth	West Fargo
Rides	446	3,802
Fare box Revenue	$ 936	$ 9,672
Est. Cost	$ 9,484	$ 81,668
20% Share	$ 1,897	$ 16,334
50% Share	$ 4,742	$ 40,834
Fare box Operating Ratio	0.10	0.12

1.2 Complementary Paratransit and the ADA

Though the economics of the service and the quality of the riders' experience are important, the starting point of all considered service options is compliance with the Americans with Disabilities Act (ADA) regulations. MAT's current operations policy embodies the relevant ADA regulations regarding complementary paratransit service (49CFR37.121-155). As a result, the need to reiterate them here would be redundant. It should be noted that the fare for complementary paratransit service within three-quarters of a mile of fixed-route line is limited to twice the fixed-route fare.

Those with greater interest in the topic are referred to the federal code or MAT's operations policy. In short, the primary intent is to ensure that eligible individuals, those with handicaps that prevent them from using fixed-route service, are provided comparable paratransit service. All service options considered in the analysis comply with ADA regulations.

In the event of the alteration of service by MAT, it is recommended that public participation be allowed. This could include actively soliciting participation by various members of the community, consulting with individuals with disabilities, providing a mechanism for public comment, or holding a public input meeting. Similar activities are required by the ADA during the initial design of complementary paratransit service. The benefits of ensuring that a particular service policy meets a community's needs are as relevant to expansion as they are to its initial design.

1.3 The Benefits of Uniform Service

The service alternatives in the study vary only by service boundaries and fares charged. All other aspects of MAT's paratransit service policy are expected to remain in present form. The primary motivation for maintaining a single operations policy is that it will allow MAT to benefit from a relatively high level of uniformity throughout its system and over time. It will also help MAT guard against any community or legal criticisms that may arise. The benefits of relatively uniform service can be classified by the following subjects:

1.3.1 Service development

As the current MAT Paratransit Operations Policy complies with ADA regulations, it will not need to be altered due to the expansion of service with the exception of the addition of an explanation of service zones and fare structure.

1.3.2 Understanding and awareness of MAT service

A single service policy will aid MAT drivers and staff in both explaining policies and delivering consistent service to its customers. This will help the community, including non-riders, understand and better utilize the services MAT provides.

1.3.3 Vehicles and equipment

A consistent platform for delivery of service with regard to vehicles and equipment will provide MAT the ability to commingle its vehicles and drivers between areas within and outside ADA boundaries. This will also ease the contracting and procurement process.

1.3.4 Expansion of fixed-route service

Continued growth of the Fargo-Moorhead metropolitan area in both physical size and population may necessitate the expansion of fixed-route service. This new service would expand the three-quarter mile service area required to be ADA complaint.

The importance of uniformity takes on an added dimension in the case of MAT. As service is provided to four communities located in two states, uniform service across jurisdictions is important to riders. Uniformity in local funding, which is not the presence case, would also be beneficial.

1.4 A Note on Service to Dilworth

Currently one stop just inside Dilworth city limits is serviced by fixed-route while the entire city, some of which is located more than three-quarter miles from this stop, is provided paratransit service delivered in the same manner and at the same fare as other parts of the metropolitan area. In the past fixed-route service extended further into the city. Given the importance of equitable funding, the knowledge of the availability of a mechanism to compel the City of Dilworth to provide some level of funding to compensate for the services provided was desired.

No specific information on this question was located in either the Code of Federal Regulations or case law. It should be noted that regardless if fixed service is provided to Dilworth or not, MAT may be required to provide service to the part of the community within three-quarter miles of existing MAT fixed-route service. As MAT currently has legal authority to provide service to Dilworth it may be required to provide paratransit service even though it is outside of its jurisdictional boundaries (49CFR37.131). For a more formal response, legal counsel should be retained.

Sec. 37.131 Service criteria for complementary paratransit.

> (3) *Jurisdictional boundaries.* Notwithstanding any other provision of this paragraph, an entity is not required to provide paratransit service in an area outside the boundaries of the jurisdiction(s) in which it operates, if the entity does not have legal authority to operate in that area. The entity shall take all practicable steps to provide paratransit service to any part of its service area.

1.5 Case Studies of Four Similar Systems

As part of the study, the service policies and experiences of four similar transit systems were reviewed. The agencies included the Duluth Transit Authority (DTA) which provides service in Duluth and Proctor, Minn., and Superior, Wis.; City of Rochester Public Transportation in Rochester, Minn.; St. Cloud Metropolitan Transit Commission (Metro Bus), which provides service to St. Cloud, Sartell, Sauk Rapids, and Waite Park, Minn., and Bis-Man Transit in Bismarck and Mandan, N.D. The aim was to use the lessons learned from these agencies' experiences to help guide the latter portion of the study. Although none of the four transit agencies contacted has recently or plans to revisit their paratransit service policy, there is value in comparing both MAT's current service and potential service policy to these other agencies.

Superior, Wis., which is serviced by the Duluth Transit Authority, is the only community where the ADA minimum three-quarter mile service boundaries are used. Two transit agencies, Bis-Man Transit and Metro Bus in St. Cloud, allow the commingling of ADA eligible and non-eligible riders. A commingling alternative for MAT paratransit service was discussed, but its pragmatic value was discounted as the operation of such a system while ensuring compliance with ADA is extremely demanding.

Metro Bus generates a significant amount of its local funding with a local property tax. This tax is assessed at the same rate for each of the four cities, St. Cloud, Sartell, Sauk Rapids, and Waite Park. The presence of equitable local funding provides each of the communities a voice in the design and operation of Metro Bus transportation services.

Bis-Man Transit is the only agency of the four systems studied to use a tiered fare system where the geographical distance traveled affects the fare charged. In this case, there is a higher fare for intercity travel and a per mile charge for trips to locations outside city limits. For example, a rider traveling to a location three miles outside of Bismarck pays both the standard fare of $1.50, plus $1.50 for each of the three miles between the destination and the city limits, for a total cost of $6.

A premium fare structure similar to Bis-Man's could also be used to charge for MAT paratransit trips to locations outside the three-quarter mile service area. In the case of MAT, a rider located on the east side of Dilworth, one mile from the three-quarter mile service boundary, could be charged a premium per-mile charge in addition to the $2 paratransit fare. If the per-mile fare were $2, the total cost of the one-way trip would be $4.

A summary of each transit agencies' paratransit service policy including hours and location of service, fare information, and operating statistics can be found in Appendix I.

2. MAT Paratransit Service Options

In this section, the data and methodology used in the analysis are presented, as are general descriptions of each of the five MAT paratransit service options, and the results of the analysis for each alternative. The options vary only by service boundary and fare charged. The remainder of MAT's Paratransit operations policy is expected to remain in its present form. This will ensure compliance with ADA and allow the system to benefit from relative consistency as described in the previous section.

As a result of their formulation, the service options allow the issues of economic and political fairness, in addition to concerns of managing service cost, to be addressed. The issue of economic fairness is important as certain rides such as those longer than average or those originating or terminating away from municipal centers are considerably more expensive than others. The latter often incur higher costs because of the time it takes for MAT vehicles to reposition. As the financing MAT receives from the municipalities is unequitable, including the absence of funding contributions from the City of Dilworth, the question of political fairness also arises. Adoption of some of the alternatives may be unlikely, primarily due to adverse political ramifications. However, quantifying their impact should aid in the evaluation process.

Three of the five service options would impose a flat-fare for all paratransit rides provided by MAT, while the other two have a two-fare system based on the location of origination and termination of a ride. The flat-fare options include: metro service, where Dilworth, Fargo, Moorhead, and West Fargo are provided equivalent service as is the present case; three-quarter-mile service where only those areas within three-quarters of a mile in each of the four cities is provided service; and three-city service where the majority of Dilworth will no longer be provided paratransit service. The two-fare options include the two-zone option, where all parts of the metropolitan are included in one of two zones, and the three-city-two-zone option where service to most of Dilworth is eliminated.

Three of the service options considered would, for the most part, end service to the City of Dilworth. In two of these, service to Dilworth is specifically targeted for elimination. There are two reasons for including these service alternatives. The first relates to the cost of providing trips to or from the community which are much higher because of its location. The second, weaker argument, relates to the absence of local funding being provided by the city.

The contractual relationship between West Fargo and Fargo, described in the previous section, would likely be violated by the introduction of three-quarter mile service. The introduction of zonal pricing, which are the basis for two other service alternatives, would likely require the current contract between the cities to be amended.

2.1 Data and Methodology

The analysis relies on information available from MAT, which is the same as that reported to the Federal Transit Administration for inclusion in the National Transit Database, and various parameters from the literature. This includes actual ride data during the week beginning March

16, 2005, operating and financial statistics, and own-price elasticities of demand for complementary paratransit service.

Because of the complexity of transportation system analysis, the methodology used is not particularly rigorous. This should not diminish its pragmatic value as the estimates of financial and ridership changes that occur under each of the service options should be relatively accurate though they are neither precise nor the result of an elaborate model.

Fortunately, MAT's current paratransit service is located at the end of a service/cost continuum where no other service alternative will expand the service boundaries or lower the fare. As either an increase in fares or elimination of service to a geographic area will result in a decrease in ridership, MAT's current ridership, vehicle ownership, and operating costs are upper bounds across all considered alternatives.

The numerical results of the analysis focus on a limited number of operating and financial estimates. They do not, however, include values for the cost of the development and implementation of the new service policy regimes. These one time costs, especially in the case where premium fares are collected, are sure to be sizable and may be equal to, if not greater than, the annual cost savings they would create.

MAT's paratransit fleet is equipped with mobile data terminals (MDTs) and is managed with the aid of software and dispatch software. The presence of such technology readily provides MAT with the technical capability of adopting the more complex service alternatives considered. Being readily able to account for and collect the correct fare for premium fare trips, based on distance or zone, is necessary for the services to be successful.

For each of the service options, assumptions as to true parameter values are made. This is the case for the annual number of riders in geographic sub-regions, the costs of rides to distant areas, and elasticities. As a result, three estimates for each service option are made: one conservative, one moderate, and one liberal. The assumptions for each option are explained fully in their respective section.

2.2 Service Option I: Metro Service

2.2.1 Service Description

Presently, MAT provides uniform paratransit service to the communities of Fargo and West Fargo, N.D., and Moorhead and Dilworth, Minn, at a fare of $2. The first service option is to keep this system in place in its entirety.

Figure 1 presents the current municipal boundaries of the four cities and the locations of ride origin and termination during the week beginning March 16, 2005. They are not scaled to depict the number of rides that begin or end in a certain place.

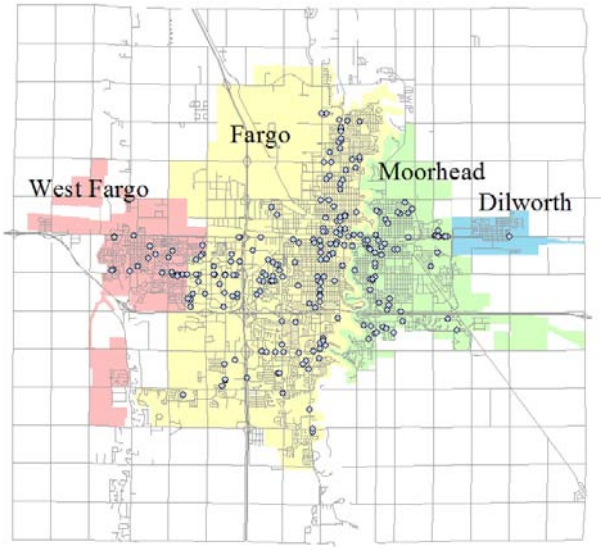


Figure 3. MAT Paratransit Service Map

2.2.2 Revenues and Costs

The revenues, costs, and number of unlinked passenger trips provided by MAT for the year 2004 are presented in Table 2. For the calendar year ending Dec. 31, 2004, MAT completed 39,705 unlinked passenger trips, an increase of nearly 14 percent over the previous year. It had fare revenues of $177,698 and operating expenses of $536,571 for the demand-response portion of its operations.

Table 5. Revenues and Costs for actual 2004 service

		Metro
Unlinked Trips		39,705
Fare Revenue	$	177,698
Operating Expense	$	536,571

Source: Metropolitan Area Transit

2.2.3 Pros and Cons of Continuing Current Service

The metro service option provides a high level of customer service delivered by a single, uniform system which is easier to manage than some of the alternatives. However, such service comes at a high cost financially. The option is not fair in an economic sense as individuals who take longer, more expensive trips pay the same fare as other riders. As the City of Dilworth does not provide local funds, though their residents receive the same service as residents of the other municipalities, there is a degree of political unfairness in MAT's current paratransit service policy.

2.3 Service Option II: Three-Quarter-Mile Service

2.3.1 Service Description

This service option provides the minimum amount of service as mandated by ADA. Here the service area extends three-quarters of a mile from existing MAT fixed routes. This results in the loss of service to the majority of the city of Dilworth, portions of residential Fargo and West Fargo, and industrial and non-developed portions of Fargo and Moorhead. Figure 2 visually displays the boundaries of the three-quarter-mile service area and the ridership nodes from the week of March 16.

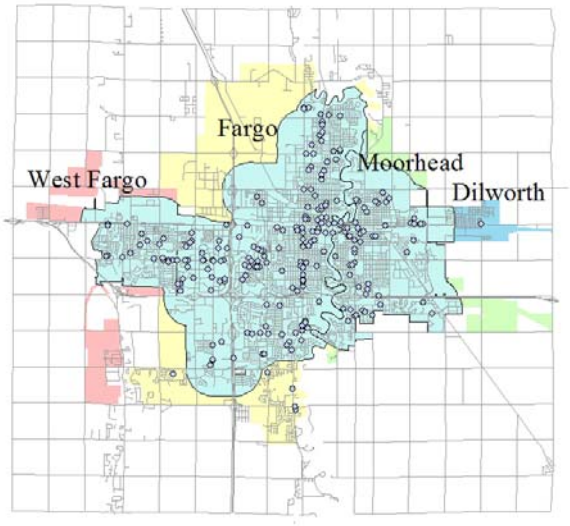


Figure 4. Three-Quarter-Mile Service Area

2.3.2 Revenues and Costs

To estimate the ridership, revenues, and costs incurred under the three-quarter-mile service policy, a few assumptions need to be made as neither the actual annual number of rides nor the actual average operating expense per unlinked passenger trip are known with certainty.

During the week following March 16, 2005, there were 34 trips originating or terminating in areas outside the three-quarter-mile boundary. This equates to 1,768 trips per year. A conservative value of 1,560 trips used in the analysis corresponds to 30 trips per week and the more aggressive value of 1,976 trips corresponds to 38 trips per week. The conservative, moderate, and liberal estimates of the actual operating expenses of the forgone trips are $13.48, $16.85, and $20.23. These values corresponded to 100, 125 and 150 percent of the actual operating expense per unlinked passenger trip during 2004. It is assumed that the average fare revenue per trip, $4.48 will remain constant across all scenarios.

Two terms, presented in Table 3, need to be defined. The first term, uncovered expense is operating expense less fare revenue. The second is the term savings, which is the difference between the uncovered expenses under the current service policy versus a particular alternative. For example, using the metro service option in Table 3, the operating expense, $536,571, minus fare revenue of $177,698 yields an uncovered expense of $358,873. Under the moderate set of assumptions, the savings from implementing the three-quarter-mile service option, $21,953, is equal to the uncovered expense under the metro service option, $358,873, minus $336,920, the uncovered expense under the three-quarter-mile alternative.

Table 6. Estimated Revenues and Costs for Three-Quarter-Mile Service

	Metro	Conservative	Moderate	Liberal
Unlinked Trips	39,705	38,025	37,937	37,849
Fare Revenue	$ 177,698	$ 170,181	$ 169,785	$ 169,390
Operating Expense	$ 536,571	$ 515,489	$ 506,705	$ 496,516
Uncovered Expense	$ 358,873	$ 345,308	$ 336,920	$ 327,126
Savings from Change		$ 13,565	$ 21,953	$ 31,747
Unlinked Trips Forgone		1,560	1,768	1,976
Operating Expense per Trip		$ 13.51	$ 16.89	$ 20.27

The annual savings from implementing three-quarter-mile service is expected to range from $13,565 to $31,747 based on the preceding assumptions. Fares are expected to decline between $7,515 to $8,308 and operating expenses between $21,082 to $40,055. Under the set of most liberal assumptions, 1,976, or 38 rides per week would be forgone. At most, this might allow to the three-quarter-mile service removing one vehicle from the road.

2.3.3 Pros and Cons of Three-Quarter Mile Service

The three-quarter-mile service option is the lowest cost service alternative. Though it continues to provide uniform service, it also results in the largest number of forgone rides because some areas will no longer receive MAT paratransit service. There is an element of political unfairness as residents who desire to travel to or from outlying areas will no longer be able to do so. Service to a large portion of Dilworth is also lost which aggressively compensates for the absence of local contributions to MAT. Much of the areas of growth in West Fargo and Fargo, in the southwestern part of the metropolitan area, would also lose service under the three-quarter-mile alternative. The three-quarter-mile service option would likely violate the current contractual agreement between West Fargo and Fargo.

2.4 Service Option III: Two-Zone Service

2.4.1 Service Description

The third service alternative divides the metropolitan area into two zones. Zone 1 consists of areas within three-quarters of a mile of MAT fixed-route service. Zone 2 consists of the remaining parts of the four communities as shown in Figure 3. Rides originating or terminating within Zone 2 are subject to a fare of five dollars compared to the existing two dollar fare.

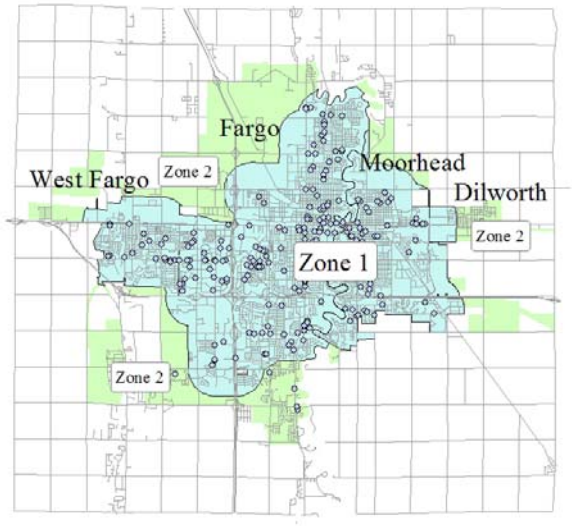


Figure 5. Two-Zone Service Map

2.4.2 Revenues and Costs

As the service option includes a fare increase, assumptions regarding the own-price elasticity of demand for ADA complementary service in the Fargo-Moorhead area are necessary. Values are based on previous studies as summarized by Spielberg and Pratt regarding changes in ADA complementary paratransit fare in Sheboygan, Wis. This is the only ADA complementary paratransit elasticity referred to in the literature. No studies calculating the own-price elasticity of demand with zone implementation of paratransit were found by the authors. As the true rider response is not known, a range of values for the elasticity of demand are included. The conservative elasticity value used is -.1, the moderate estimate -.26, and the liberal estimate -.4. As with three-quarter-mile service, the average fare revenue within Zone 1 is assumed to be $4.48 and the operating expense cost per unlinked trip ranges from $13.52 to $20.23. Estimated operating measures under two-zone service are presented in Table 4.

Table 7. Estimated Revenues and Costs for Two-Zone Service

	Metro	Conservative	Moderate	Liberal
Unlinked Trips	39,705	39,422	38,998	38,644
Fare Revenue	$ 177,698	$ 176,580	$ 174,904	$ 173,507
Operating Expense	$ 536,571	$ 532,748	$ 524,625	$ 515,068
Uncovered expense	$ 358,873	$ 356,168	$ 349,721	$ 341,561
Savings from Change		$ 2,705	$ 9,152	$ 17,312
Unlinked Trips Forgone		283	707	1,061
Operating Expense per Trip		$ 13.51	$ 16.89	$ 20.27

The savings from the change range from $2,705 to $17,312, the number of trips forgone from 283 to 1,061. Fare revenue declines are estimated to be between $1,118 and $4,191. Because of the inelastic nature of paratransit service demand, the increase in fare results in only a small decrease in total fare revenue, as the higher fares offset the slight decline in ridership. Operating expenses are expected to decline between $3,823 and $21,503. Under the most liberal set of assumptions, 1,061 trips per year, about 21 per week would be forgone. At most this might equate to the two-zone service removing one vehicle from the road.

2.4.3 Pros and Cons of Two Zone Service

Two-zone service results in a moderate cost savings, but requires additional resources to manage. There is also a political cost to having lower levels of service in outlying areas. A degree of economic fairness is introduced as those who make trips to distant locations impose higher costs on the system, costs which are offset to some degree by higher fares. Satisfactions levels may also suffer as customers will need to be educated about the service. Two-zone service would likely require an adjustment to the current contractual agreement between West Fargo and Fargo.

2.5 Service Option IV: Three-City Service

2.5.1 Service Description

The three-city service option would end service to those parts of Dilworth more than three-quarters of a mile from existing MAT fixed-route service while continuing to provide service to all parts of the other three communities. This service option results in a loss of service to a large portion of the city as seen in Figure 4. However, service to the entire city is not ended in order to maintain compliance with the ADA. This alternative is considered as the provision of service to Dilworth imposes significant costs on MAT paratransit services as a whole as trips either originating or terminating in the city require significant time to reposition vehicles. For the week of March 16, service was provided to a single origin/termination location in this area.

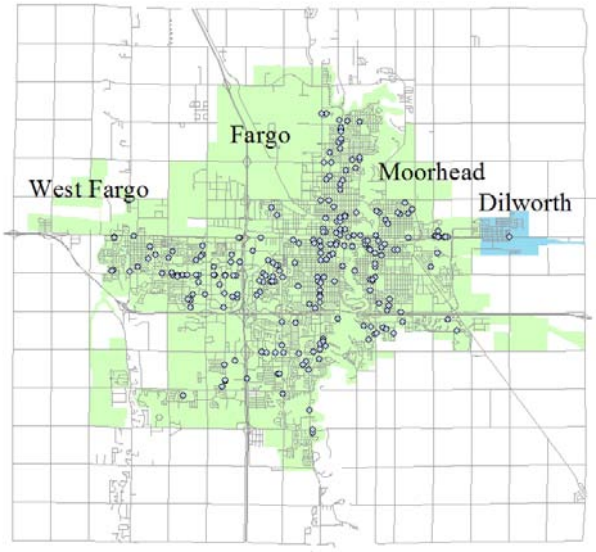


Figure 6. Service Map for Three-City Service

2.5.2 Revenues and Costs

Different values for the number of annual unlinked passenger trips that would be forgone under the service policy change range from 416 on the conservative side to 520 on the more aggressive. The values used correspond to eight, nine, the actual number during the third week in March, 2004, or 10 unlinked trips per week on average. The average operating expense per ride ranges from $13.51 to $20.27, 150 percent of that value. Average fare revenue is expected to remain the same at $4.48 per trip. Estimated revenues and costs are presented in Table 5.

Table 8. Estimated Revenues and Costs for Three-City Service

	Metro	Conservative	Moderate	Liberal
Unlinked Trips	39,705	39,289	39,237	39,185
Fare Revenue	$ 177,698	$ 175,836	$ 175,603	$ 175,371
Operating Expense	$ 536,571	$ 530,949	$ 528,665	$ 526,030
Uncovered expense	$ 358,873	$ 355,113	$ 353,062	$ 350,659
Savings from Change		$ 3,760	$ 5,811	$ 8,214
Unlinked Passenger Trips Forgone		416	468	520
Operating Expense per Unlinked Passenger Trip		$ 13.51	$ 16.89	$ 20.27

Fare revenue is expected to decline by between $1,862 and $2,372. The expected decrease in operating expense ranges from $5,662 to $10,541. Annual savings from eliminating service to Dilworth is expected to be between $3,760 to $8,214 based on the preceding assumptions. Under the most liberal set of assumptions, 520 trips per year would be forgone under three-city service, likely resulting in no change in the current fleet size

2.5.3 Pros and Cons of Three-City Service

The three-city service option results in a modest savings in expenses in exchange for a decrease in rides delivered. The option maintains a uniform system in the areas that retain service. As with three-quarter-mile service, the three-city alternative aggressively compensates for the absence of local funding from the City of Dilworth.

2.6 Service Option V: Three-City-Two-Zone Service

2.6.1 Service Description

The three-city-two-zone service option is essentially the same as the two-zone service option described previously. Once again, the four cities will be divided into two zones based on their proximity to MAT fixed-route lines with those within three-quarters of a mile being unaffected. Trips within the cities of Fargo, Moorhead, or West Fargo and originating or terminating beyond that area will be subject to a $5 fare. However, under this option service to those parts of Dilworth more than three-quarters of a mile from MAT fixed-route service will no longer be provided service as seen in Figure 5.

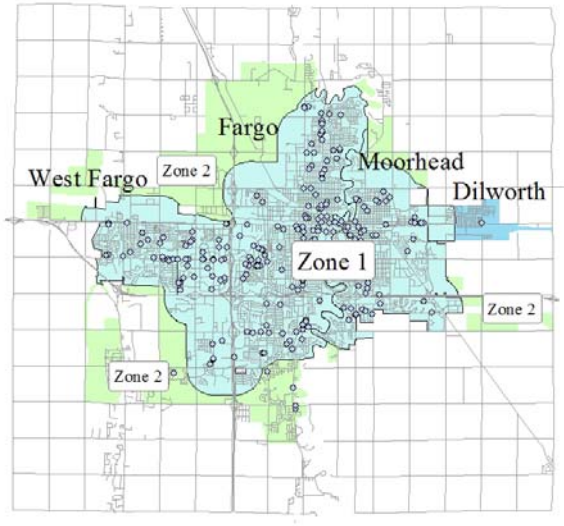


Figure 7. Three City-Two Zone Service Map

2.6.2 Revenues and Costs

The assumptions for the three-city-two-zone service option are the same as those for the two-zone service described previously. Elasticities of -.1,-.25, and -.4 are used. Operating expense per unlinked passenger trip once again range from $13.51 to $20.27 and average fare revenue is for Zone 1 trips is remains at $4.48. Table 6 presents the estimated revenues and costs for three-city-two-zone service.

Table 9. Estimated Revenues and Costs for Three-City-Two-Zone Service

	Metro	Conservative	Moderate	Liberal
Unlinked Trips	39,705	39,073	38,717	38,436
Fare Revenue	$ 177,698	$ 175,200	$ 173,794	$ 172,685
Operating Expense	$ 536,571	$ 528,026	$ 519,881	$ 510,851
Uncovered expense	$ 358,873	$ 352,826	$ 346,087	$ 338,166
Savings from Change		$ 6,047	$ 12,786	$ 20,707
Unlinked Trips Forgone		632	988	1,269
Operating Expense Avoided		$ 13.51	$ 16.89	$ 20.27

The number of unlinked trips forgone ranges from 632 using conservative assumptions to 1,269 using liberal ones. Fare revenue is expected to fall between $2,498 to $5,013; operating expense from $8,545 to $25,720. This results in expected savings from $6,047 and $20,707. Under the most liberal set of assumptions 1,269 trips per year would be forgone. At most this might equate to the three-city-two-zone service removing one vehicle from the road.

2.6.3 Pros and Cons of Three-City-Two-Zone Service

Adopting the three-city-two-zone service option will result in modest decreases in both trips delivered and financial cost. The system would loose a degree of uniformity in exchange for an increase in economic fairness. As in the two-zone option, riders traveling to or from distant locales will be required to pay a higher fare to offset the higher cost of the rides. Three-city two-zone service would also likely require an adjustment of the contractual agreement between West Fargo and Fargo.

3. Summary of Results

In this section, the five service options will be compared in financial, customer service, and other terms. This will be followed by discussion on long-term considerations and SURTC's paratransit service option recommendation for MAT.

3.1 Comparing the Service Alternatives

The alternative service options have relatively small impacts on ridership and savings as most MAT paratransit trips originate and terminate within three-quarters of a mile of fixed-route service where service is required by federal law. Table 7 presents a side- by-side comparison of the five service alternatives whose estimates are based on moderate assumptions.

Table 10. Service Options Comparison

	Unlinked Trips	Trips Forgone	Fare Revenue	Operating Expense	Uncovered Expense	Savings
Metro	39,705	-	$ 177,698	$ 536,571	$ 358,873	-
Three-Quarter-Mile	37,937	1,768	$ 169,785	$ 506,705	$ 336,920	$ 21,953
Two-Zone	38,998	707	$ 174,904	$ 524,625	$ 349,721	$ 9,152
Three-City	39,237	468	$ 175,603	$ 528,665	$ 353,062	$ 5,811
Three-City-Two-Zone	38,717	988	$ 173,276	$ 519,881	$ 346,605	$ 12,268

Relatively significant financial savings of $21,953 are estimated for paratransit service limited to three-quarters of a mile from existing MAT fixed-route lines. This comes at the cost of a sizable decrease in trips delivered, 1,768. Implementation of a two-zone paratransit service policy is expected to have less pronounced affects with a decrease in annual trips of 707, resulting in a $2,794 decrease in fare revenue and a $11,946 reduction in operating expenses. Three-city service results in 468 fewer trips delivered per year compared to 988 for three-city-two-zone service with an estimated savings of $5,811 and $12,268 respectively.

Given the tradeoffs that exist between financial cost and other factors, it is not possible to objectively determine which of the service options best meet the needs of MAT's customers and the communities it serves. For example, while the three-quarter-mile service option yields the greatest savings it is also the least politically palatable as residents of Dilworth, Fargo, Moorhead, and West Fargo will be denied service, based on the location of their ride origin or destination. For the two-zone options, the concept of economic fairness is addressed as trips that begin or end in areas away from the geographic center of the metropolitan area are significantly more costly than those that are not. Finally, the current service policy provides the highest level of customer service, but at a significant financial cost.

Table 11 presents service availability, fare, and the local cost of providing service for each of the five service alternatives and eight areas. Each of the four cities is divided into two areas, those within and those beyond three-quarters of a mile of current MAT fixed-route service. The cost of

Table 11. Service Option Quality Measures

	Metro		Three-Quarter Mile		Two-Zone		Three City		Three City-Two Zone		
	Service Available	Fare	Service Available	Fare	Service Available	Fare	Service Available	Fare	Service Available	Fare	Cost to Municipality
Fargo											
<3/4	Yes	$2	Yes	$2	Yes	$2	Yes	$2	Yes	$2	$12.28
>3/4	Yes	$2	*No*	-	Yes	*$5*	Yes	$2	Yes	*$5*	$12.28
Moorhead											
<3/4	Yes	$2	Yes	$2	Yes	$2	Yes	$2	Yes	$2	$12.28
>3/4	Yes	$2	*No*	-	Yes	*$5*	Yes	$2	Yes	*$5*	$12.28
Dilworth											
<3/4	Yes	$2	Yes	$2	Yes	$2	Yes	$2	Yes	$2	$0
>3/4	Yes	$2	*No*	-	Yes	*$5*	*No*	-	*No*	-	$0
West Fargo											
<3/4	Yes	$2	Yes	$2	Yes	$2	Yes	$2	Yes	$2	$12
>3/4	Yes	$2	*No*	-	Yes	*$5*	Yes	$2	Yes	*$5*	$12

providing service is the cost paid by each of the four cities. Once again it should be noted that the source of these funds vary by municipality. Fargo and Moorhead receive federal, state, and local funds to provide public transportation service. West Fargo receives service as the result of a contract with the city of Fargo, currently at a cost of $12 per ride to the city. Dilworth makes no local contribution.

3.2 Metropolitan Area Growth and Long-Term Considerations

The service options were studied given current MAT fixed-route and paratransit service. Because of the interrelated nature of the two transportation types, which arises as a consequence of ADA regulations, the impact of future fixed-route expansion should also be considered when deciding upon paratransit service options in the near term.

One issue is the fare box recovery ratio, which MAT, like many other transit agencies would like to be .15 or higher. ADA regulations limiting paratransit fare limited to twice that of fixed-route service for those rides within three-quarters of a mile of fixed-route lines constrains MAT from reaching this goal. Given rising operating costs for both the fixed-route and paratransit services provided by MAT, fixed-route and paratransit fares are likely to be a focus of much attention of MAT's 2007 Transit Development Plan.

Given the rapid growth of southwest Fargo and West Fargo, the addition of fixed-routes to MAT's current service in the future is plausible. In light of this, the alteration or elimination of paratransit service becomes less pragmatic. To change service in these ways, only having to change it back a short period later after the addition of fixed-route service in these areas, would impose a number of costs on MAT both financially and in terms of service quality. This is especially true as the upcoming 2007 Transit Development Plan will consider expanding fixed-route service to Dilworth resulting in the need for complementary paratransit service for the entire city.

3.3 Additional Service Alternatives

Though this study looked specifically at the impacts of various service alternatives where either flat fares or zonal fares are used, there are other, possibly viable alternatives, for MAT's paratransit service/fare structure. One option, touched on briefly in this paper, is the implementation of per-mile charges for those trips outside the three-quarter mile service area similar to that used by Bis-Man Transit in providing rides to outlying rural areas.

3.4 Service Policy Considerations & Recommendations

The value of MAT supplying uniform paratransit service was discussed in the first section of the paper. For MAT to continue to provide the uniform, high quality paratransit service equitable funding in the form of fares and municipal support is important. This could include, but is not limited to, finding a mechanism for Dilworth to contribute local dollars for the public transportation provided to it by MAT. An issue related to equitable funding by community is that of charging special fares for rides booked by social service agencies. This agency rate alternative

has been considered before and was the subject of a 1998 Fargo-Moorhead Metropolitan Council of Governments study.

As part of the study, SURTC was asked to provide a paratransit service recommendation to MAT. In light of the analysis, it is SURTC's recommendation that, if possible, MAT maintain its current metro service policy and high level of customer service. The potential benefits of the alternatives, which in essence scale back the level of service, impose significant non-financial costs on communities in the form of forgone paratransit rides. The cost of changing service, especially in the case of the two zone alternatives, does not appear to justify the benefits.

References

Federal Transit Administration. Office of Civil Rights. *Premium Charges for Paratransit Services*. Washington, DC: Federal Transit Administration. http://www.fta.dot.gov/14865_ENG_HTML.htm (accessed January 19, 2005).

Metropolitan Area Transit. *Operations Policy*. Fargo, ND: Metropolitan Area Transit, March 2003.

Metropolitan Council of Governments. *Paratransit Agency Rates Technical Paper*. Fargo, ND: Metropolitan Council of Governments December 1998.

"Paratransit as a Complement to Fixed Route Service." *Code of Federal Regulations* Title 37, Pts. 121-155, 2005 ed.

Spielberg, F. and R. Pratt. *TCRP Report 95: Traveler Response to Transportation System Changes*. Washington, DC: Transportation Research Board, 2004.

Appendix I: Case Study Summaries

Duluth Transportation Authority

(STRIDE)

Urbanized Area Statistics	
Duluth, MN-WI	
Sq. Miles	66
Population	118,265
Service Area Statistics	
Sq. Miles	143
Population	122,970

The Duluth Transportation Authority (DTA) provides both fixed-route and demand-response (STRIDE) service to the cities of Duluth and Proctor, Minn., and Superior, Wis. ADA-compliant demand-response service is provided by STRIDE (Special Transit Ride). DTA manages the service, which is available only to those who are unable to ride on fixed-route bus because of physical or mental capabilities. DTA contracts out the scheduling and driving functions and for STRIDE vehicles.

STRIDE service is available to eligible individuals within the city limits of Proctor and Duluth and within three-quarters of a mile of DTA routes in Superior. STRIDE provides curb-to-curb service with fares of $2 for one-way peak hour trips and half that rate during non-peak periods. This compares with $1 rides during peak periods for adults while those 18 and under pay 75 cents. During non-peak hours fixed-route fare for all riders is 50 cents. STRIDE is operated from 6 to 11 a.m. weekdays and from 8 a.m. to 6 p.m. weekends. Peak hours are from 7 a.m. to 9 a.m. and 2:30 to 6 p.m. weekdays.

The Duluth Transportation Authority has no plans to alter its paratransit service in the near future.

STRIDE's 2003 operating statistics as reported in the National Transit Database are presented in Table 9. In 2003, STRIDE completed 27,021 unlinked passenger trips with operating expenses of $499,631 or $18.49 per unlinked passenger trip. This service included 194,368 vehicle revenue miles delivered over 16,189 vehicle revenue hours performed by eight vehicles at a cost of $2.57 per vehicle revenue mile. For this service, DTA collected $37,615 in fares. Additional funds of $2,798,714, for both fixed-route and demand response and operating capital expenses, were raised locally via a mill levy.

Table 12. 2003 STRIDE Operating Statistics

Vehicles Operated	8	Operating Expense / Vehicle Revenue Mile	$2.57
Annual Unlinked Trips	27,021		
Annual Vehicle Revenue Hours	16,189	Operating Expense / Unlinked Passenger Trip	$18.49
Annual Vehicle Revenue Miles	194,368		
Fare Revenues	$ 37,615	Unlinked Passenger Trips / Vehicle Revenue Mile	0.14
Operating Expenses	$ 499,631		

City of Rochester Public Transportation

(ZIPS)

Urbanized Area Statistics	
Rochester, MN	
Sq. Miles	40
Population	91,271
Service Area Statistics	
Sq. Miles	144
Population	104230

The City of Rochester Public Transportation provides fixed-route and demand-response service in Rochester, Minn. The demand-response service, referred to as ZIPS (Zumbro Independent Passenger Service), provides ADA compliant paratransit service within the city limits of Rochester. This door-to-door service is available only to those individuals who are unable to use the fixed-route service because of a physical or mental disability.

The city contracts out scheduling, dispatch, and driving and maintenance functions but owns the vehicles used to deliver service. During high demand periods, evenings and Saturdays ZIPS makes use of taxi service to complement its operation.

Fares are $2 one way at all times for ZIPS service as opposed to $1.25 for fixed route rides. The increase of paratransit fares to $2.50 is currently under consideration. Agency scheduled trip fares are $4.85 one way. Service is provided from 5:30 a.m. to 10 p.m. Monday through Friday and from 8 a.m. to 7 p.m. on Saturdays. There is no service on Sunday and holidays. ZIPS is considering adding an off-hour subscription service to provide return trips for riders who make the first leg of their trip using fixed-route service.

ZIPS' 2003 operating statistics as reported in the National Transit Database are presented in Table 10. ZIPS operating expenses were $441,034 in 2003. This allowed for the operation of five vehicles which completed 48,256 unlinked passenger trips generating $129,613 of revenue at the fare box. It cost ZIPS, on average, $9.14 per unlinked passenger trip. With 159,735 vehicle revenue miles traveled in 2003, this figures out to .3 unlinked passenger trips per vehicle revenue mile.

Table 13. 2003 ZIPS Operating Statistics

Vehicles Operated	5	Operating Expense	$2.76
Annual Unlinked Trips	48,256	Vehicle Revenue Mile	
Annual Vehicle Revenue Hours	11,784	Operating Expense	$9.14
Annual Vehicle Revenue Miles	159,735	Unlinked Passenger Trip	
Fare Revenues	$ 129,613	Unlinked Passenger Trips	0.30
Operating Expenses	$ 441,034	Vehicle Revenue Mile	

St. Cloud Metropolitan Transit Commission

(Metro Bus Specialized Service)

Urbanized Area Statistics	
St. Cloud, MN	
Sq. Miles	39
Population	91,305
Service Area Statistics	
Sq. Miles	29
Population	91,305

The Saint Cloud Metropolitan Transit Commission, commonly referred to as Metro Bus, provides fixed-route and demand-response service to St. Cloud, Sartell, Sauk Rapids, and Waite Park, Minn. Metro Bus operates a traditional Dial-a-Ride service in addition to its complementary paratransit service, which is referred to as Specialized Service. Specialized Service provides door-to-door driver assisted transportation for those who are unable to use fixed-route service. Dial-a-Ride service is available late weeknights and Sundays and where fixed-route is not available. Dial-a-Rider users are not assisted by drivers outside the vehicle.

Both fixed-route and demand-response service are operated and managed by Metro Bus, there is no contracting for external service. Fares for Specialized Service and Dial-a-Ride are $1.40, agency trips are $2.60. This is twice the fixed-route regular rate of 70 cents with transfers costing an additional 25 cents. Hours for Specialized Service and Dial-a-Ride are 5:30 a.m. to 12 a.m. Monday through Friday, 8:00 a.m. to 6:30 p.m. Saturday, and 9:00 a.m. to 6:00 p.m. Sunday. Service is not provided on holidays.

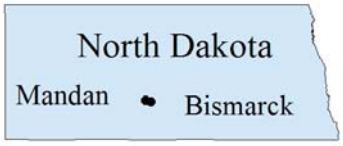
Metro Bus' 2003 operating statistics as reported in the National Transit Database are presented in Table 11. The demand-response component of Metro Bus operated 13 vehicles during 2003 at a cost of $1,655,936. This allowed them to complete 125,292 unlinked trips at an average cost of $13.22 per trip. The system had 405,933 vehicle revenue miles in 33,921 vehicle revenue hours. This figures to $4.08 in operating expense and .31 unlinked passenger trips per vehicle revenue mile. Local property taxes provided $86,215 for capital spending.

Table 14. 2003 St. Cloud Specialized Service Operating Statistics

Vehicles Operated	13	Operating Expense	$4.08
Annual Unlinked Trips	125,292	Vehicle Revenue Mile	
Annual Vehicle Revenue Hours	33,921	Operating Expense	$13.22
Annual Vehicle Revenue Miles	405,933	Unlinked Passenger Trip	
Fare Revenues	$ 177,862	Unlinked Passenger Trips	0.31
Operating Expenses	$ 1,655,936	Vehicle Revenue Mile	

Bis-Man Transit

Urbanized Area Statistics	
Bismarck, ND	
Sq. Miles	34
Population	74,991
Service Area Statistics	
Sq. Miles	137
Population	94,719



Bis-Man Transit provides fixed-route service to the cities of Bismarck and Mandan, and demand-response service to those cities and surrounding areas. Bis-Man's demand-response service area covers a region far beyond the mandated three-quarter mile ADA zone. Bis-Man is unique in that its demand response service was only recently complemented by fixed-route service in 2004. Door-to-door service is provided 24 hours a day, seven days a week. Commingling of ADA eligible riders and others is allowed.

Bis-Man currently contracts out for scheduling, dispatch, vehicles, maintenance, and drivers but retains the employment of an operations manager. Fares for fixed-route service are $1 or 50 cents if the rider is elderly or disabled. Users of the demand response system pay $1.50 if they travel within the city limits of either Bismarck or Mandan. A $2.25 fare is charged if they travel between the two cities, to the University of Mary or to the city of Lincoln. For travel to outlying areas, the fare is $1.50 per mile in addition to the in-town fare of $1.50. Agency fares are $6 within either Bismarck or Mandan or $12 if outside of the city of origin.

Bis-Man's 2003 operating statistics as reported in the National Transit Database are presented in Table 12. During 2003, Bis-Man operated 29 vehicles at a cost of $1,685,533. Local support for the service is provided in the form of mill levy in the cities of Bismarck and Mandan and is supplemented by funds donated by local charities. This allowed Bis-Man Transit to complete 193,764 trips covering 717,349 vehicle revenue miles over the course of 53,100 vehicle revenue hours. This results in an operating expense per vehicle revenue mile cost of $2.35 or $8.70 per unlinked passenger trip. There was, on average, one unlinked passenger trip per .27 vehicle revenue miles.

Table 15. 2003 BIS-MAN Transit Operating Statistics

Vehicles Operated	28	Operating Expense	$2.35
Annual Unlinked Trips	193,764	Vehicle Revenue Mile	
Annual Vehicle Revenue Hours	53,100	Operating Expense	$8.70
Annual Vehicle Revenue Miles	717,349	Unlinked Passenger Trip	
Fare Revenues	$ 315,349	Unlinked Passenger Trips	0.27
Operating Expenses	$ 1,685,533	Vehicle Revenue Mile	