City of Minot

COMPREHENSIVE SYSTEM ANALYSIS

Volume II: Service Plan

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NELSON
NYGAARD

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1 INTRODUCTION

Volume II of the Comprehensive Service Analysis provides detail on the phased plan for future transit service in Minot. The service plan is presented in terms of three phases: Short-Term (1-3 years), Mid-Term (3-10 years), and Longer-Term/Vision (10 + years). In general, the proposed service plan is designed to improve the customer usability of transit services and maximize use of City resources. The service plan is also scalable, which means the Short-Term Service Plan serves as the foundation for future service improvements as the city grows and obtains additional resources for transit.

Based on the key findings from the Volume I: Existing Conditions report, this service plan includes a detailed evaluation of existing transit services in Minot, a summary of public and rider survey efforts, and other commuter outreach activities that occurred as part of this study. To preface the service plan and to set the stage for the service plan, Volume II begins with a recommended set of service goals and planning principles (Chapter 2). The goals and service planning principles provide guidance for how transit services in Minot should be allocated and designed to meet community needs that adhere to financial, political, and land use development constraints. Following these two chapters are the Short-, Mid- and Long-term Service Plans in Chapters 3, 4 and 5, respectively.

The final chapters of this Volume relate to implementation of the service plan and include:

- **Chapter 6 - Downtown transit center.** This chapter evaluates potential sites for a new downtown transit center.
- **Chapter 7 - Marketing and branding considerations.** This chapter evaluates Minot City Transit's marketing and branding efforts and provides future considerations.
- **Chapter 8 - Paratransit services.** This chapter evaluates the policies and procedures of ADA paratransit services provided by Souris Basin Transit, and recommendations are related to the eligibility process.
- **Chapter 9 - Fare policy and collection.** This chapter evaluates MCT's fare policies and fare collection process. Recommendations are related to new fareboxes and performance data collecting.
- **Chapter 10 - Performance monitoring.** This chapter provides guidance on how to evaluate and track performance of the transit services in Minot (both fixed route and paratransit).

The plan concludes with an implementation chapter (Chapter 11) that includes a timeline of system changes, an organizational plan, and an operating and capital plan detailing financial impacts of the changes.

COMMUNITY OUTREACH

The service plan and other information presented in Volume II reflect the results of the community outreach process. Throughout the outreach process, project planners presented key findings back to the community, allowing community members to fully integrate their values into the planning process. Feedback from the community played a critical role in shaping the final recommendations. Volume I: Existing Conditions provides a summary of the community outreach conducted earlier in the project, which included a community survey, an on-board survey (both fixed route and paratransit), a "Planning Game" workshop, and stakeholder interviews. At the conclusion of the existing conditions phase of the project, two public open house meetings were held to get more community input and to confirm or deny information gathered through earlier outreach efforts.

Once service concepts were developed and published in the form of a Draft Service Plan document, two more open house meetings were held in September 2013 to present the service concepts and hear feedback from the community. Well over 50 individuals attended one of the open house meetings to learn about the service concepts and/or provide input. Their additional input was crucial in developing the recommendations of this report. An online survey provided another opportunity for community members to comment on the service concepts.

Other community outreach activities have been conducted throughout the study:

- **Meetings with City staff.** A core group of City staff have been briefed at various stages of the project to provide input and guidance. Project planners also briefed the City Manager, Public Works Director, and Finance Director at several points in the study.
- **Meetings with Minot School District.** Because a significant amount of transit service focuses on the school market, project planners conducted several meetings with representatives from the school district to brief them on the project and receive their input.
- **Project website.** A project website was developed early in the study (www.minotbusstudy.com) to provide information about the study, allow people to download documents, and give more opportunities to submit general comments. About 30 people have signed up to receive updates on the study, not including the 110 people who provided their email when they took the community survey (summarized in Volume I).
- **E-newsletters.** About 140 people who signed up on the website or through the community survey received several electronic newsletters throughout the study. People who provided an email address either through the community survey or website were also sent a notification prior to the open house meetings.
- **Media appearances.** KMOT, KXMC, and the *Minot Daily News* have graciously run several stories related to this study, and both have encouraged members of the public to get involved.

2 VISION, GOALS, AND TRANSIT PLANNING PRINCIPLES

As noted throughout this project, Minot is changing quickly and is expected to continue along a similar growth trajectory for many years to come. By 2030, Minot is expected to have between 47,400 and 54,900 residents, an increase over the 2011 Census population estimate of 11 -29%[1]. Whereas this study focuses largely on restructuring transit services in the short- and mid-term timeframes (next 10 years), it is important to identify a longer-term vision up front to ensure that transit becomes an even more integral component of the City's transportation system. This vision for transit in Minot recognizes that transit has a role to play in organizing development patterns and that the City is making the most efficient use of the existing transit system. Providing the most efficient system possible minimizes the future financial burden to operate and maintain the transportation system (including the transit system) and ultimately improves the quality of life for all Minot residents.

In any growing city, the quality of transit service should be an important criterion for land use development, and yet land use is also a key criterion for supporting quality transit service. In fact, the correlation between land use density and transit demand is very strong. As such, the best long-range transit plans are in fact land use plans that provide guidance for how a city's land use patterns should be guided to support transit ridership.

VISION FOR TRANSIT IN MINOT

It is proposed that the vision for transit in Minot be to develop a "Complete Transit System" that supports a broad range of trips for residents, employees, and visitors. The Complete Transit System concept is used as a framework for describing and organizing service and capital development priorities. The Complete Transit System is also complementary to the Minot Comprehensive Plan, which aims to encourage walking, bicycling, and active living in general while also reducing car trips through an emphasis on compact development. The Complete Transit System relies on high quality access and supportive community design, all of which are promoted in the Comprehensive Plan. All points of transit access, from a stop in a residential neighborhood to a central transfer location/transit center, will be accessible for people of all abilities. Bicycle facilities—including end of trip facilities, bicycle racks on buses, and a safe network of on- and off-street bicycle infrastructure—are also a key component of a Complete Transit System.

To create a Complete Transit System, the City must implement policies, programs, and investment priorities that result in a system where taking transit is easy and desirable. To help

[1] 2011 Population estimates from the Census are 42,485. 2030 Population estimates are from the Minot Comprehensive Plan.

achieve this as an overall vision, it is recommended that the City establish goals that clearly state transit's role in the transportation network and opens a dialogue with other City departments and residents about a shared vision for transit.

In support of the City's broader goals discussed in the Comprehensive Plan, the long-term vision for transit in Minot suggests the following proposed goals:

- **Goal 1 - Accessibility**: Provide a system of transit services that is responsive to the needs of all residents, particularly those for whom transit is a necessity (e.g. youth, seniors, people with disabilities, low income populations, and people without access to an automobile).
- **Goal 2 - Quality of Service:** Provide safe, convenient, and reliable service to priority commercial and residential centers in the community.
- **Goal 3 - Development and Land Use:** Expand the transit network to foster transit-oriented development and help meet local sustainability, growth management, and economic development goals.
- **Goal 4 - Environment & Air Quality:** Improve air quality and reduce vehicle miles travelled in the Minot region.
- **Goal 5 - Multimodal Approach:** Foster safe and convenient connections among transit, pedestrian, and bicycle facilities.
- **Goal 6 - Transit Experience:** Create stops that enhance the community and reinforce connections between neighborhoods and commercial districts.
- **Goal 7 - Funding:** Balance system implementation with fiscal, operational, and policy constraints.

To achieve its longer-term goals for transit, the City of Minot should commit to and build a Complete Transit System that puts the passengers first, makes transit convenient, uses transit to build a healthy and vibrant community, and improves transit service and quality through local partnerships. This will require the City to adopt a truly multimodal approach that supports transit users of all abilities to bike, walk, carpool, and take transit, develop information technology that provides riders with up-to-date traveler information, and partner with organizations in the city to expand educational and outreach programs and materials to encourage people to ride transit.

Elements of the Complete Transit System

This section outlines the four main components of creating a complete transit system and corresponding guiding principles that will serve Minot residents and visitors:

Figure 2-1 Components of a Complete Transit System & Guiding Principles

Complete Transit System Component	Guiding Principles
Put passengers first	▪ Make transit easy to use ▪ Create a safe, tactile environment for transit passengers ▪ Make transit universally accessible ▪ Make transit comfortable at all points in the trip
Make transit convenient	▪ Provide mobility to a wide range of destinations ▪ Facilitate fast and reliable service ▪ Increase ridership by integrating other modes and making access safe and easy ▪ Invest in service and infrastructure where it can attract the most users
Use transit to build a healthy vibrant community	▪ Make transit facilities central to community gathering places ▪ Increase walking and bicycling to improve health outcomes ▪ Employ best practices in transit-oriented design ▪ Use transit to meet environmental targets ▪ Use energy responsibly
Improve transit service and quality through partnerships	▪ Work with the City to maintain fast and reliable operations ▪ Collaborate and share assets among transportation providers ▪ Build political alliances

Put Passengers First

Create facilities that make passengers feel comfortable and dignified

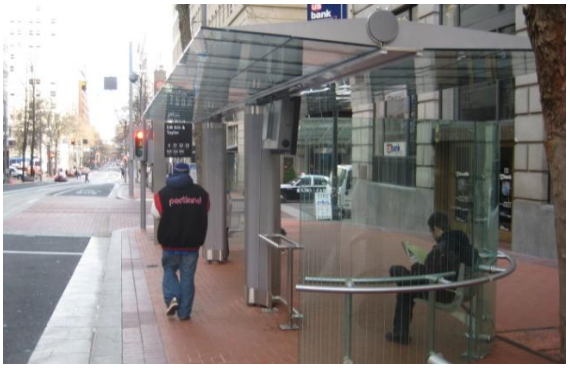
Places where people access, wait for, and transfer between transit routes must be comfortable and dignified. However, to elevate this further, the City should strive to integrated bus stops with active community life. This means providing amenities at bus stations and transit centers that include protection from the elements, comfortable seating, ample lighting, and clean facilities both on-board and at stations.

A person's decision to choose transit depends on their perception of transit being a comfortable, convenient, and dignified experience. Passenger comfort must be attended to both at the transit

A passenger waits for the bus on the side of the road in Flint, Michigan.
Source: Nelson\Nygaard

station and on-board.

Waiting on a sidewalk-less curb next to high speed traffic can be an uncomfortable experience: passengers are exposed to the elements, there is nowhere to sit and relax, and there is little protection between the passenger and passing traffic. Alternatively, a more dignified transit experience allows the passenger to feel protected from the elements and traffic, secure due to street activity, and comfortable because there is opportunity to sit and relax.



A passenger sits and reads under a bus shelter while waiting for the bus in Portland, Oregon.
Source: Nelson\Nygaard

Create clean and safe facilities

Transit facilities should be open, well-lit, and constantly monitored to ensure the transit experience is comfortable at all hours of the day. Incorporating crime prevention through environmental design (CPTED) principles– also referred to as defensible design – into transit facility design increases both real and perceived safety. These principles include:

- Ensuring spaces are visible to others and well lit
- Delineating public and private space
- Managing access portals
- Ensuring facilities are regularly maintained and cleaned

Make Transit Convenient

Provide service that is frequent, reliable, and useable

A core purpose of transit is to provide frequent, reliable, and useable transit service that links residents and visitors to work, shopping, and entertainment.

Convenient, top-quality transit service connects key destinations in the region with services that meet the basic needs of transit passengers, such as reliability and frequency. Frequent transit service should be provided in high-demand corridors and is frequent enough that travelers do not need to rely on a schedule. As such, transportation investment should be focused in these key corridors with high frequency service. The idea is that providing frequent, reliable, and easy-to-use transit service to a core set of transit routes is more efficient than spreading resources throughout the region to deliver infrequent transit service to more people. Initially, frequent transit service assumes at lease service every 30 minutes for 12 hours per day on weekdays (as is proposed for the North and South Core routes in the Short-Term service plan). Eventually, however, service on the primary transit corridors should be every 15 minutes at least 16 hours a day (on weekdays) and 30 minutes or better on weekends.

Provide multimodal access opportunities for all users

The amenity and safety of access to transit has a strong influence on mode choice. Almost all transit trips start and end with a walk or bicycle trip. The pedestrian and cycling environments are critical components of building a complete transit network to ensure the entire transit trip is

safe, convenient, and comfortable for all road users. Since the City is in charge of designing and building the streets that transit operates on, it is critical that the transit and the Public Works departments work closely together to ensure transit can operate reliably and with consistent speeds throughout the day.

Great transit streets

It is essential to consider how walking, cycling, and transit can support one another to make alternatives to auto-travel convenient, comfortable, safe, and enjoyable.

To ensure multimodal access for all transit users, many jurisdictions have adopted a Complete Streets policy that requires integration of all modes for all abilities into the streetscape. The Complete Streets organization defines a complete street as one that is "designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to safely move along and across a complete street." Complete streets are important for transit because:

Minot Downtown Framework Plan

The City is currently in the process of developing a Downtown Framework Plan, which discusses Complete Streets principles.

- The pedestrian network serves as the backbone of the transit system. Every transit trip begins and ends as a pedestrian trip. Poorly planned access to bus stops is a *real* barrier for disabled travelers and a *perceived* barrier for all travelers.
- Complete streets encourage multiple organizations and city departments to engage in important discussions about how to implement quality facilities for all street users.

Great transit streets include the following features:

- **Active Sidewalks:** Wide sidewalks with engaging street furniture that connect to pedestrian-oriented land uses.
- **Parallel & Connecting Bicycle Facilities:** Integrating bicycles with transit is also essential – both by way of end-of-trip facilities and by way of an integrated bicycle network that connects safely and directly to transit stations. The six primary buses in the Minot fleet have bike racks, and evidence from the on-board passenger survey shows they are generally well utilized.

All Minot City Bus vehicles are equipped with bike racks.
Source: Nelson\Nygaard

- **Visible & Safe Crossings:** Pedestrians should feel comfortable crossing the street to access stations/stops and land uses that line a transit street. Intersections should be well-marked and have curb ramps.
- **Managed Speeds:** Signal progressions, raised medians, and pedestrian refuges reduce vehicular speed and make pedestrians feel safe.
- **Clear Linkages to Destinations:** Wayfinding directs pedestrians to transit streets, stations, and stops.

- **Landscaping:** Green features soften hardscapes and provide an inviting place for people to wait for transit.

Universal accessibility

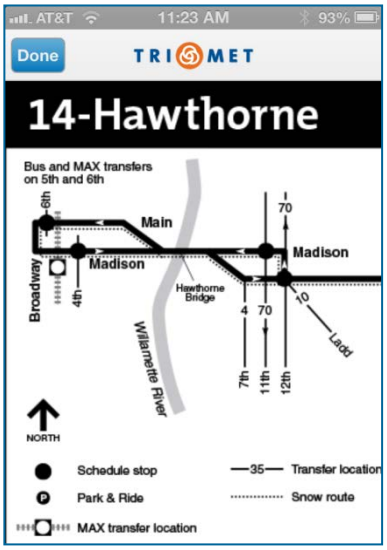
Providing transit services that are universally accessible expands personal mobility, independence, and transportation affordability. When transit facilities are built or reconstructed, discrimination by design must be actively avoided. The following considerations should be made as transit facilities are designed:

- Minimal level changes in multi-floor facilities and direct access to elevators and escalators, where needed
- Direct ramp access and blended curb/sidewalk transitions at street interface
- Deliberate tactility at conflict zones or abrupt edges to warn the visually impaired of potentially dangerous street environments
- Level boarding to ensure ease of access for people with disabilities or in wheelchairs
- Obstacle-free connections to paratransit vehicles, taxis, pick-up and drop-off points, and park-and-ride lots

Traveler information should be provided in audio, visual, and tactile formats; language and cultural differences should also be considered.

Develop information technology that makes the system transparent and easy to use

People's tendency to ride transit correlates to both their awareness of it and their ability to depend on it. With the emergence of smart phone and transit tracker technologies, a complete transit system provides travelers with multimodal trip planners (both online and by phone) and up-to-date information on the buses' locations. Easy access to this information enables people to plan their schedule around the true schedule of the bus, therefore reducing frustration and viewing transit as a more reliable and efficient mode of travel.



In Portland, Oregon, TriMet's mobile ticketing app allows passengers to purchase and use tickets using just their smart phones. The app also provides real-time arrival information, trip planning, maps and schedule information.

Source: TriMet

Use Transit to Build a Vibrant and Healthy Community

Create marketing and outreach materials to educate about transit benefits

Getting people to shift modes from the private automobile to transit can take tremendous marketing and outreach efforts. Effective transportation demand management (TDM) marketing programs involve a range of partners within a community, including public officials, community organizations, the private sector, and individuals who support transportation alternatives. Marketing activities include:

- Surveying users and potential users to determine preferences, barriers, and opportunities to change travel behavior
- Educating public officials and businesses about TDM strategies
- Targeting the most likely consumers who would be willing to change their travel patterns (often referred to as *individualized marketing*)
- Promoting the benefits of changing attitudes about alternative modes, such as being healthy, productive, and cost-effective
- Encouraging transit ridership by making transit service more convenient and easy to use

In partnership with the Minot Area Chamber of Commerce, the Minot Convention and Visitors Bureau, employers across the region, and other partners, the City has an opportunity to make deliberate effort to reach out to the community to incent, encourage, and educate people to ride transit.

Encourage transit-supportive land uses

Local land use defines the market demand for transit. How land uses are oriented to the street, how much parking is provided, and the mix of uses within buildings all impacts how effectively transit can serve residents, workers, and visitors in an area. An efficient and effective transit system must be accompanied by transit-supportive land uses. A rich diversity of land uses and housing types—both at the neighborhood and corridor scale—makes for an efficient transit line because transit vehicles are less apt to be crowded in one direction and running empty in the other direction. Diverse land uses also means that the demand for service is likely spread out throughout the day. Land uses that generate trips in the off-peak times (retail, service, residential, entertainment) must be integrated with high-peak uses such as employment sites. With high demand in each direction at all stops, existing transit service is optimized and better service can be justified.

SERVICE ALLOCATION AND DESIGN PRINCIPLES

In general, transit service should be simple, comprehensive and scaled to meet the demands in each community. The City of Minot strives to serve as many residents, workers, and visitors as it can with its available resources. To achieve this, the City will need to balance its types of transit services to best match the varied travel demands, trip purposes, and transportation patterns of riders and these sometimes competing demands. This section highlights a number of service design principles that should be considered when developing new transit service to address the needs identified in this study.

Service Allocation Goals

Before discussing actual design principles, it is helpful to consider the primary service types embraced by transit providers and the customers each serves. The desire to appeal to both transit-dependent and choice riders often results in a difficult tradeoff for transit agencies. Services that are intended to meet the basic transportation needs of residents who cannot drive can be considered coverage-based services while those aimed at increasing ridership and attracting residents with transportation options to transit are considered productivity-based service. Ideally a transit provider should determine upfront to what degree they want to provide productivity services over coverage ones or vice versa. This will help define the how limited resources should be allocated. It should be noted that how services are allocated between coverage and productivity

is not a technical exercise, but rather a community decision on how transit resources should be spent.

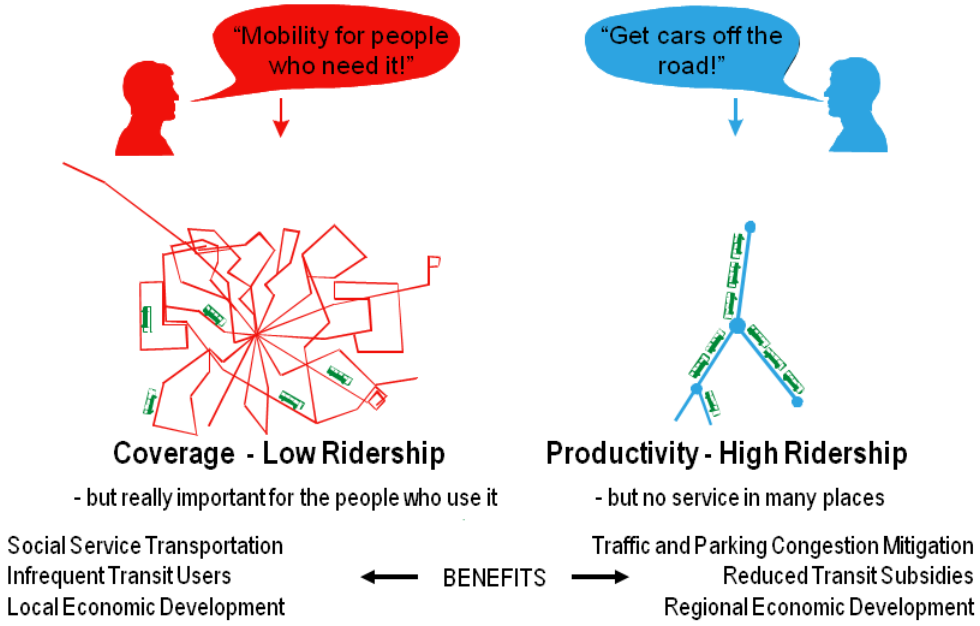
Productivity-Oriented Services

A productivity-focused strategy effectively maximizes ridership and increases system efficiency. This is often achieved with high-frequency, convenient service. Productivity, measured in boardings per revenue hour, is a basic measure of the degree transit is used relative to the investment made in it. Productivity is financially important because higher productivity means that less is spent on a per-passenger basis and that fares pay a higher percentage of costs. Productive routes can help a region in meeting its air quality and congestion mitigation goals and offer an alternative to automobile travel. These services are typically the most expensive to operate as they require a larger number of buses and vehicle operators to provide the reduced headways required.

Coverage-Oriented Services

A strategy focused on coverage says that ideally, everyone should have access to the same level of transit service. The main problem with a coverage-based system is low ridership and productivity (boardings per revenue hours of service), which in turn means fewer benefits for the region in terms of air quality and congestion management. Low-frequency services, which tend to prevail in a coverage-based system, simply cannot compete with the automobile. This does not mean, however, that these are not important services. Coverage-oriented services play an important role in ensuring that transit dependent residents have access to key medical, social and other lifeline services.

Figure 2-2 The Coverage vs. Productivity Tradeoff



Based on the community involvement that has occurred up until this point in this project (including the planning game workshop), it is recommended that 60% of resources in Minot be focused on providing coverage-oriented service throughout the community, and 40% of resources be focused on productivity. As such, the short-, mid- and long-term service plans reflect this proposed allocation of resources.

Service Design Guidelines

The following guidelines should be considered when designing or restructuring all types of transit service – whether they are focused on coverage or productivity. Most service principles strive to maximize a transit system's cost efficiencies and customer convenience. Productivity-based services should be expected to follow the efficiency guidelines to a greater degree while all services should adhere to the rider convenience aspects.

Service Should Be Simple

For people to use transit, service should be designed so that it is easy to understand. In this way, current and potential riders can grasp and use the transportation options available to take them where and when they want to go with ease. Most of the guidelines in this section are aimed at making service intuitive, logical, and easy to understand. In addition to building simplicity into route designs and bus schedules, passenger information should be equally intuitive and easy to access.

Routes Should Operate Along a Direct Path

Routes should not deviate from the most direct alignment unless there is a compelling reason to do so. The fewer directional changes a route makes, the easier it is to understand. Conversely, circuitous alignments are disorienting and difficult to remember. Direct routes minimize travel time allowing transit to be more competitive with automobile travel. As noted above, those routes that focus more on productivity should adhere more closely to this guideline, while coverage-based services can be more flexible.

Route Deviations Should Be Minimized

As described above, service should be relatively direct. The use of route deviations—the deviation of service off of the most direct route—should be minimized. However, there are instances when the deviation of service off of the most direct route is appropriate, for example to provide more coverage to neighborhoods, employment sites, schools, etc. In these cases, the benefits of operating the route off of the main route must be weighed against the inconvenience caused to passengers already on board, as well as the purpose of that route (whether it is focused on coverage or productivity).

Route deviations should be implemented only if:

1. The goal for the route's productivity (in terms of passengers per revenue vehicle hour) would be equal to or better than without the deviation.
2. The number of new passengers that would be served is equal to or greater than 25% of the number of passengers who would be inconvenienced.
3. The deviation would not interfere with the provision of regular service frequencies and/or the provision of coordinated service with other routes operating in the same corridor.

In most cases, where route deviations are provided, they should be provided on an all day basis. Exceptions are during times when the sites that the route deviations serve have no activity—for example route deviations to shopping centers do not need to serve those locations early in the morning before employees start commuting to work. Deviations for schools are of special concern and are discussed at the end of this chapter.

Major Transit Routes Should Operate Along Arterials

Key Corridor routes should operate on major roadways and should generally avoid deviations off of these routes to provide local circulation. Riders and potential transit users typically have a general knowledge of an area's arterial road system and use that knowledge for geographic points of reference. The operation of bus service along arterials makes transit service faster and easier for riders to understand and use. This guideline is less important for less frequent, coverage-based services than for services focused on productivity.

Routes Should Be Symmetrical

Routes should operate along the same alignment in both directions to make it easy for riders to know how to return to their location of trip origin. Routes that focus on productivity should operate along the same alignment in both directions, except in cases where such operation is not possible due to one-way streets or turn restrictions. In those cases, routes should be designed so that the opposite directions parallel each other as closely as possible. Large one-direction loops are generally discouraged for productivity-oriented service to eliminate excessive out-of-direction travel by passengers. One-way loops are acceptable for coverage based services as long as the travel time along half of the loop is relatively short (less than 15 minutes).

Routes Should Serve Well-Defined Markets

To make service easy to understand and to eliminate service duplication, service should be developed to serve clearly defined markets, terminating at clearly defined anchors. Ideally, major corridors should be served by only one route unless the routes are complementary (such as providing higher levels of service on common segments or transfer opportunities between routes), or when multiple routes should logically operate through the same corridor to unique destinations.

Services Should Be Well-Coordinated

When multiple routes operate through the same corridor but to different destinations, service should be coordinated to maximize its utility and minimize redundancy. To avoid bunching of buses and to balance loads, routes of the same route type that serve the same corridor should be scheduled to operate at the same service frequencies and should alternate trips at even intervals. At transfer locations, schedules should be coordinated to the greatest extent possible to minimize connection times for the predominant transfer flows.

Service Should Be Consistent

Routes should operate along consistent alignments and at regular intervals (headways). People can easily remember repeating patterns but have difficulty remembering irregular sequences.

For example, routes that provide two trips an hour should depart from their terminals every 30 minutes. Limited exceptions can be made in cases where demand spikes during a short period in order to eliminate or reduce crowding on individual trips.

Most routes intersect with other routes at transfer centers, major transfer locations, and street intersections. At major transfer locations, schedules should be coordinated to the greatest extent possible to minimize connection times for the predominant transfer flows.

Stops Should Be Spaced Appropriately

Transit stops are the customers' access and egress points for transit services and should be conveniently located. Fixed stops also help market a transit system and facilitate riders' and prospective riders' understanding of the service. However, transit stops are also the major reason that transit service is slower than automobile trips. Since most riders want service that balances convenience and speed, the number and location of stops is a key component of determining that balance.

Bus stops

Fixed bus stops provide a number of benefits for both passengers and the local transit provider. The following highlight some of the major benefits.

- **Passenger Safety.** The use of bus stops informs passengers as to where they should board. This can be critical along busy and/or dangerous streets.
- **Transit Travel Time.** To reduce delays related to passenger boardings, stops should be spaced appropriately considering walking distances, local terrain, popular destinations etc. Fixed bus stops can avoid excessive stopping for passenger boardings and their associated dwell time delays.
- **Passenger amenities.** Having a limited number of bus stops allows for the provision of passenger amenities at key stops. Shelters, benches, lighting, heaters etc can be expensive capital improvements and should be deployed only at key stops based on expected boarding levels and the stop's function in the transit system (e.g. if the stop serves as a transfer location between routes or is associated with long wait times, etc.).
- **Rider Information and Marketing.** Stops are often the visible presence for a transit system within the community for both current and prospective riders. Signage at a stop can inform the public about the existence of local service, what services are available at the stop, and how to use the service.

A system does not necessarily have to be either a fixed-stop or a flag-stop system. A hybrid approach where productivity-based routes on busy streets use fixed stops while coverage-based routes in residential neighborhoods use flag stops may be appropriate. Special signage highlighting the routing of a flag-stop route (see example to the right) can provide the rider information and marketing benefits while at the same time highlighting the need to flag buses down in that part of the service area.

In South East Queensland, Australia, TransLink has flag stop areas where passengers must hail the driver. The bus stop sign is an indication that a bus route exists in this area.

Source: WikiCats (http://commons.wikimedia.org)

Service to Schools

Special care should be taken to assure deviations for schools do not violate the Federal Transit Administration prohibition of exclusive school transportation when using federal transit funding. The North Dakota Department of Transportation summarizes[2] the prohibitions on FTA grantees, highlighting that federally funded equipment or facilities cannot be used to provide exclusive school bus service. School tripper service that operates and looks like all other regular service is allowed if they meet the following criteria.

- Regularly scheduled mass transportation service
- Buses are clearly marked as open to the public
- Service has been modified to meet needs of students/school personnel
- Service uses various fare collection systems or subsidies
- Buses have no special designations (e.g., school bus, school special.)
- Buses use regular bus stops
- Service is noted on published schedules.
- Service operates and looks like all other regular service.

The bottom line is that all service has to look like a public transit service, easily recognized and usable by the general public. The FTA has offered some guidance on the topic[3] but the agency tends to examine individual systems as part of periodic reviews or in response to complaints. As a sub-recipient to the state, the City of Minot does not currently undergo FTA reviews, but this will likely change once the region reaches MPO status (population of 50,000) at which time the City will be a direct recipient of FTA operational assistance grants and subject to periodic reviews. Complaints regarding school operation could come from members of the general public who feel service to the general public is not per FTA guidelines but often originate from contracted school transportation providers or organizations representing them who are seeking new markets. Appendix B presents some information on recent FTA findings regarding school transportation.

[2] NDOT *Transit Policy and Procedure Manual* November 2010

[3] http://www.fta.dot.gov/legislation_law/12923.html

3 SHORT-TERM SERVICE PLAN

This chapter describes the proposed Short-Term service plan for the City of Minot. The proposed services meet existing needs using existing resources and those expected over the next one to three years. The following goals informed the development of this proposed system:

- Use existing financial resources (i.e. cost-neutral)
- Provide productivity-based service in the primary north-south corridor (Broadway) connecting major employment locations in the City
- Maintain coverage-based service in the outlying neighborhoods currently relying on transit
- Provide a longer service span as compare to the current services
- Maintain timed transfers at the downtown transfer location (to remain at Town & County Mall for the short term)
- Strive to service the middle and high schools along logical transit alignments with the School District assuming responsibility for student transport to elementary schools not served by the core transit system

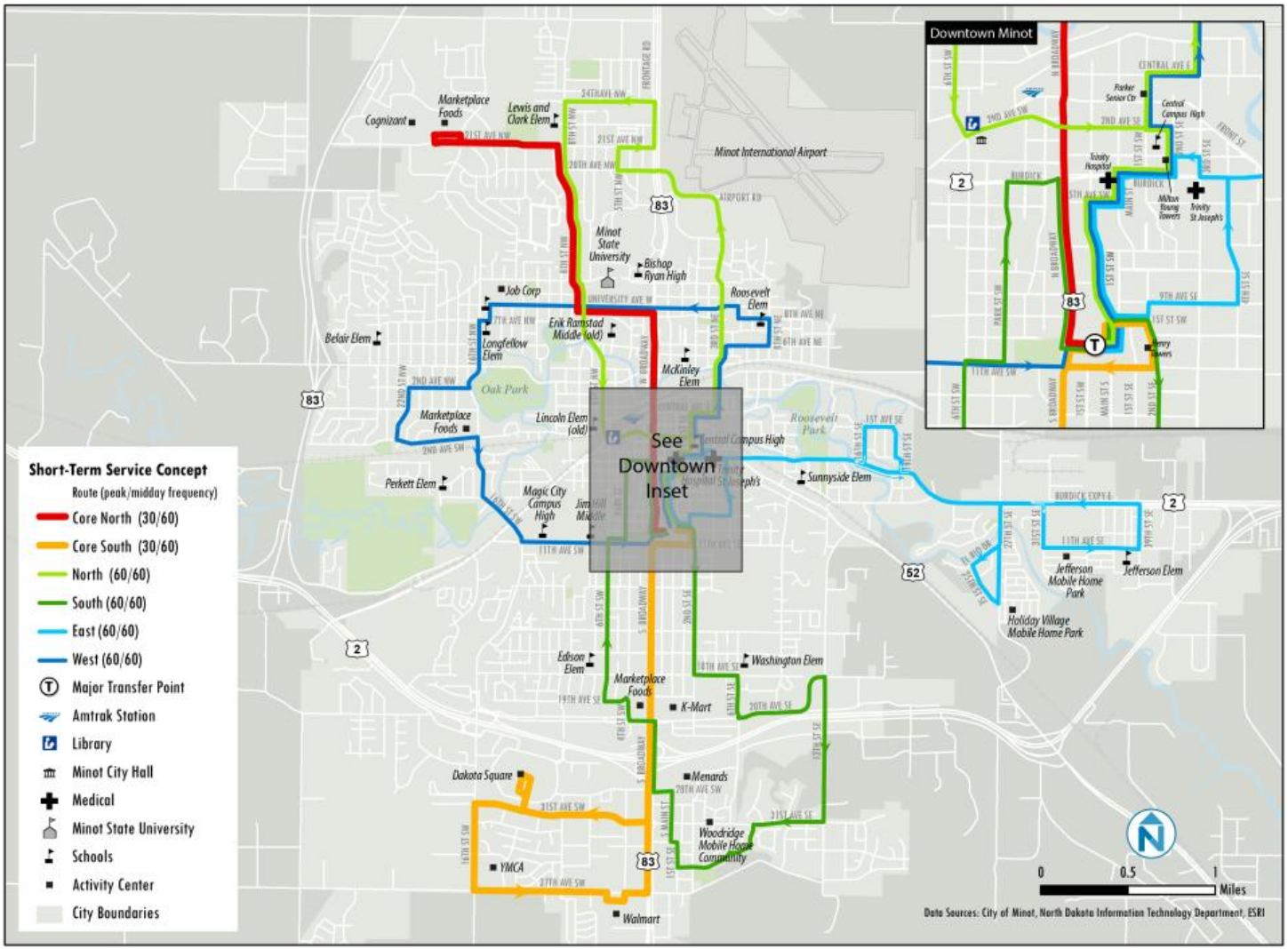
Based on the Volume I: Existing Conditions report, a series of key findings were identified that shaped the development of the short-, mid- and long-term service plan. Using the community and stakeholder outreach throughout this study, the following primary transit service needs were identified and prioritized:

- **Later evening service.** This is the top service need among existing passengers as well as community survey respondents. Currently, service ends at 5:00 p.m. but survey respondents would like service to end at least at 7:00 p.m., and preferably as late as 10:00 p.m. All of the peer agencies operate service at least until 6:30 p.m. and some as late as 8:00 p.m.
- **Weekend service.** Saturday service is the second most requested improvement among survey respondents. While respondents were not specific about the level of service or how long service should operate on Saturday, peer agencies generally start service between 8:00 and 9:00 a.m. and end service between 5:00 and 6:30 p.m. Some existing passengers viewed Sunday service just as important as Saturday service.
- **Earlier morning service.** While not as much of a need among survey respondents, early morning service – perhaps as early as 6:00 a.m. – was the third most important service improvement.
- **More direct service.** A number of survey respondents noted that more direct service would encourage them to try transit (or use it more often), especially if it were more direct to key destinations (e.g., Dakota Square Mall, Minot State University, Walmart, downtown, etc.).

- **Service to new and emerging areas of town.** Many survey respondents, as well as key stakeholders, said that service to new and emerging areas of town was an important need. In particular, stakeholders noted the new development occurring on NW 21st Avenue (Marketplace Foods) and Cognizant. There have also been discussions of significant new developments in nearly all quadrants of the city, but especially in the northwest and southwest.

Figure 3-1 presents the proposed Short-Term system design and the following provides a verbal description of changes proposed on each route. Figure 3-2 provides a summary of key service parameters for each route. The system is designed around two productivity-based routes serving the primary north-south corridors out of downtown. Both of these routes provide quick and convenient trips between the Town & Country transfer locations and many of the major employment and retail destinations as well as the MSU campus. In addition, four coverage-based routes serve neighborhoods to the north, east, south and west of downtown. The four coverage routes are similar to the existing midday routes that connect with each other at Town and Country. The difference with the proposed Short-Term system design is the addition of the two core routes that operate every 30 minutes during peak periods, thus facilitating timed transfers between the core routes and the four other routes. Similar to the existing system, buses on the coverage routes complete their loop in less than 30 minutes but operate on hourly headways allowing a single bus to alternate between two of the loop routes each half-hour. Conceptual scheduling of all routes is discussed in the following section.

Figure 3-1 Short-Term (1-3 Year) Service Plan System Map



ROUTE DESCRIPTIONS

Core North

The Core North route provides a major north-south connection between downtown and the fast growing North Hill area. This productivity-based route has a direct, bi-directional alignment along North Broadway, University Ave., 8th St NW, and terminating at the Marketplace Foods on NW 21st Avenue. This new route will be an attractive to "choice" riders (those people who have options for how they travel) while providing major employment and university commute trips to a number of transit dependent riders. Current financial resources support 30-minute headways (frequency of service) during a.m. and p.m. peak times, but not during the midday.

Attributes

- Headways: 30 minute peak, 60 minute midday
- Span of Service: 7:oo a.m. to 7:00 p.m.
- Major Activity Centers Served: Downtown, MSU, Marketplace at North Hill, Cognizant

Core South

The Core South route provides a major north-south connection between downtown and Dakota Square Mall. This productivity-based route has a direct, bi-directional alignment providing quick and convenient employment and shopping trips to the major retail locations on the south side of the City via South Broadway. Current financial resources support 30-minute headways (frequency of service) during a.m. and p.m. peak times, but not during the midday.

Attributes

- Headways: 30 minute peak, 60 minute midday
- Span of Service: 7:oo a.m. to 7:00 p.m.
- Major Activity Centers Served: Downtown, Marketplace on South Broadway, Walmart, YMCA, Dakota Square Mall

North Loop

The North Loop route provides coverage service to neighborhoods northeast of downtown, west of the airport, and MSU. It operates on a counter-clockwise loop, returning via 8th Street NW.

Attributes

- Headways: 60 minute all day
- Span of Service: 7:oo a.m. to 6:30 p.m.
- Major Activity Centers Served: Downtown, Trinity Health, Minot H.S.-Central Campus, Parker Senior Center, Lewis & Clark E.S., MSU

East Loop

The East Loop provides coverage service to neighborhoods on the eastside of the City. It operates mainly along Burdick Expressway with deviations to the Holiday Village mobile home park, the Jefferson mobile home Park, and the neighborhood west of the Zoo.

Attributes

- Headways: 60 minute all day
- Span of Service: 7:oo a.m. to 6:30 p.m.
- Major Activity Centers Served: Downtown, Trinity Hospital, Minot H.S.-Central Campus, Milton Young Towers, and Jefferson E.S.

South Loop

The South Loop provides coverage service south of downtown, primarily east of South Broadway. The southern extent of the route is the Woodridge mobile home park in the southeast quadrant of the city. The route operates on a clockwise loop serving 2nd St SE and 13th St SE east of South Broadway before returning via South Broadway, 6th St SW and Park St SW.

- Headways: 60 minute all day
- Span of Service: 7:3o a.m. to 7:00 p.m.
- Major Locations Served: Henry Towers, Washington E.S., Woodridge Mobile Home Park, Menards, Marketplace on South Broadway, Edison E.S., and Jim Hill M.S

West Loop

The West Loop provides coverage service to neighborhoods northeast, northwest, and west of downtown. The route serves the Magic City and Central campuses of the high school as well as Jim Hill Middle School. To better serve these locations, the route could change its direction of travel (from counterclockwise to clockwise or vice versa) to reduce travel times for specific student travel markets (i.e. go one direction in the morning and another in the evening). The route's northern extent on University Avenue provides another connection to MSU, and it deviates to the west of 16th St NW to better service communities on the west side of the City.

- Headways: 60 minute all day
- Span of Service: 7:3o a.m. to 7:00 p.m.
- Major Locations Served: Downtown, Trinity Hospital, Milton Young Towers, Minot High School-Central Campus, Parker Senior Center, Roosevelt E.S., MSU, Job Corp, Longfellow E.S., Marketplace on 16th St NW, Minot High School-Magic City Campus, and Jim Hill M.S.

Figure 3-2 Short Term Service Parameters

Route	Peak Headway (minutes)	Midday Headway (minutes)	Span of Service (hours)	Major Destinations
Core North	30	60	12	▪ Downtown ▪ MSU ▪ Marketplace at North Hill ▪ Cognizant
Core South	30	60	12	▪ Downtown ▪ Marketplace on South Broadway ▪ Walmart ▪ YMCA ▪ Dakota Square Mall
North Loop	60	60	11.5	▪ Downtown ▪ Trinity Hospital ▪ Minot H.S.-Central Campus ▪ Parker Senior Center ▪ Lewis & Clark E.S. ▪ MSU
East Loop	60	60	11.5	▪ Downtown ▪ Trinity Hospital ▪ Minot H.S.-Central Campus ▪ Milton Young Towers ▪ Jefferson E.S
South Loop	60	60	11.5	▪ Henry Towers ▪ Washington E.S. ▪ Woodridge Mobile Home Park ▪ Menards ▪ Marketplace on South Broadway ▪ Edison E.S. ▪ Jim Hill M.S
West Loop	60	60	11.5	▪ Downtown ▪ Trinity Hospital ▪ Milton Young Tower ▪ Minot High School-Central Campus ▪ Parker Senior Center ▪ Roosevelt E.S. ▪ MSU ▪ Job Corp ▪ Longfellow E.S. ▪ Marketplace on 16th St NW ▪ Minot High School-Magic City Campus ▪ Jim Hill M.S.

CONCEPTUAL SCHEDULES

Appendix C provides a set of conceptual schedules highlighting suggested start and stop times as well as running times between major timepoints (major attractions and/or stops serving multiple routes). The schedules also demonstrate how the different routes can interline (transfers between routes using the same vehicle) to minimize transfer wait times at Town & Country for popular connections. The schedules are built on the following interlines (see the Glossary in Appendix A for a description of what this means), primarily to reduce wait times for middle and high school students:

- Mornings: North Loop to South Loop and East Loop to West Loop
- Afternoons: West Loop to North Loop and South Loop to East Loop

In all cases, the North and South Core routes interline with each other given their increased frequency of service in the peak periods. The Block numbers in the schedules represent individual bus pull outs or blocks of work. Three buses are needed throughout the day and an additional vehicle is needed during the peak periods to provide the additional frequency on the two core routes.

ANALYSIS OF SHORT-TERM SERVICE PLAN

This section provides an evaluation of the proposed Short-Term service plan relative to the existing Minot City Transit system. The limited hours on the current midday service for the general public makes a direct comparison difficult. The analysis focuses on three primary attributes and highlights the degree to which the proposed system serves existing riders, especially the midday non-school-based passengers:

- The percent of existing passengers (a.m. and midday) served within ¼ mile of proposed routes
- The percent of population and employment within a ¼ mile of the proposed routes
- The ability and time to complete travel between popular origin and destination locations

In addition to the quantifiable findings from the identified analyses, the proposed system offers incremental benefits to the community. Chief among these benefits is the extended hours of operation. While the current system only provides primary general public services from 9:00 a.m. until 4:30 or 5:00 p.m., the proposed system operates from 7:00 a.m. until 7:00 p.m., which greatly increases the opportunities for employment and university commute trips and late afternoon/early evening social/retail trips.

Existing Passengers Served

Figure 3-3 through Figure 3-6 highlight the number of existing passengers that are within walking distance[4] of the proposed routes. The first two graphics show that more than 70% of the a.m. school pickups and 85% of the p.m. school drop offs can access the new system. The third graphic shows that the percent covered increases to over 99% for the general public riders during the midday. This can be expected given the ultra-coverage nature of the existing Early Morning and Late Afternoon services which circulate throughout a number of residential communities to pick up and drop off passengers. The imbalance between the morning and afternoon trips can be explained by the incidence of parents dropping off students in the morning, especially from nearby neighborhoods.

Figure 3-3 Percent of Existing Riders within ¼ Mile of Short-Term System

	Existing Passengers	Percent Served by Short-Term System
Early Morning Boardings	152	74%
Late Afternoon Alightings	267	86%
Midday Boardings	133	99%

Source: Feb 2013 Data Collection

[4] Transit industry norms consider ¼ mile (or about a 5 minute walk) as an easy walking distance to a bus stop.

Figure 3-4 Existing Early Morning Passengers Served by Proposed Short-Term System

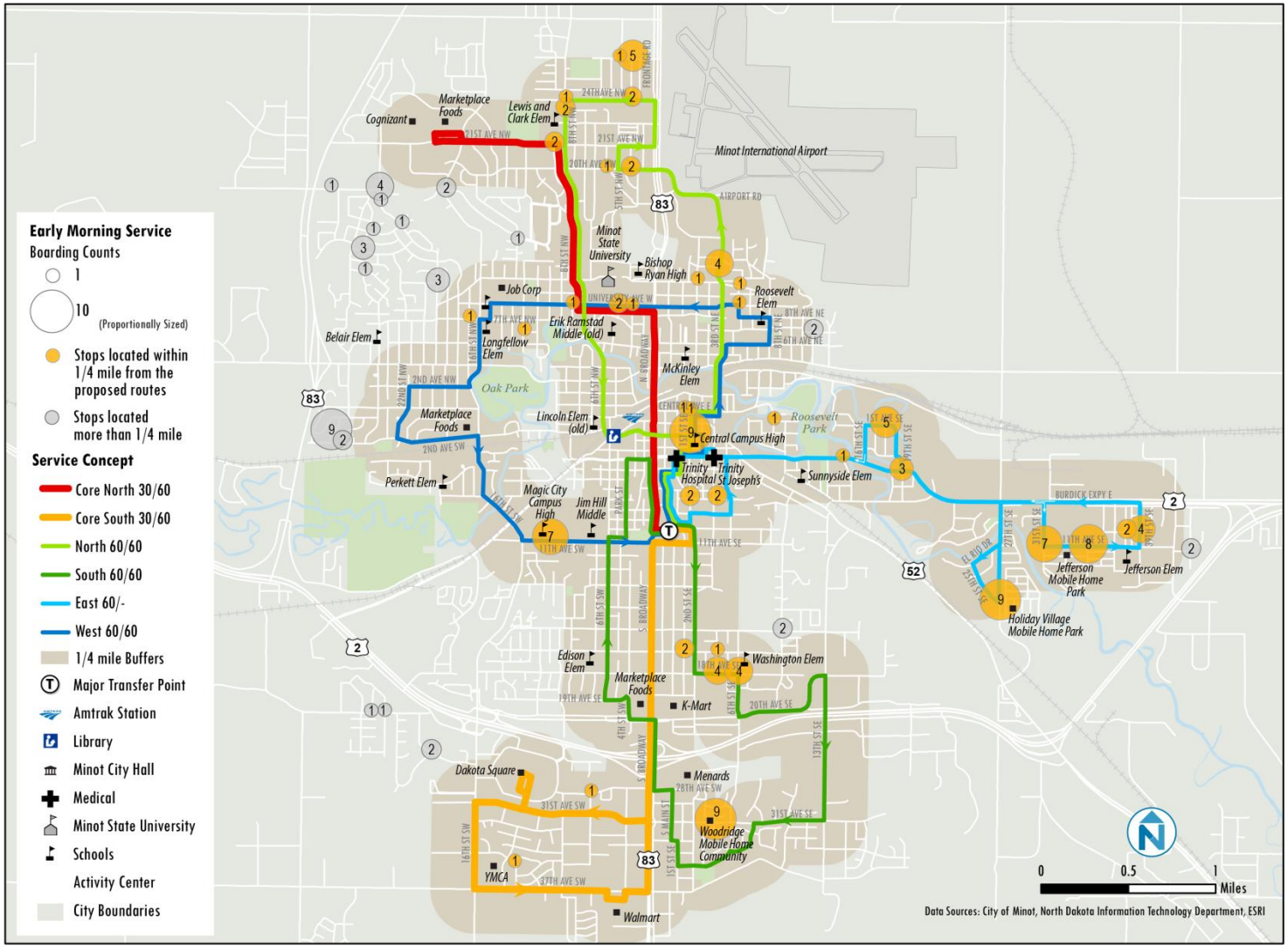


Figure 3-5 Existing Late Afternoon Passengers Served by Proposed Short-Term System

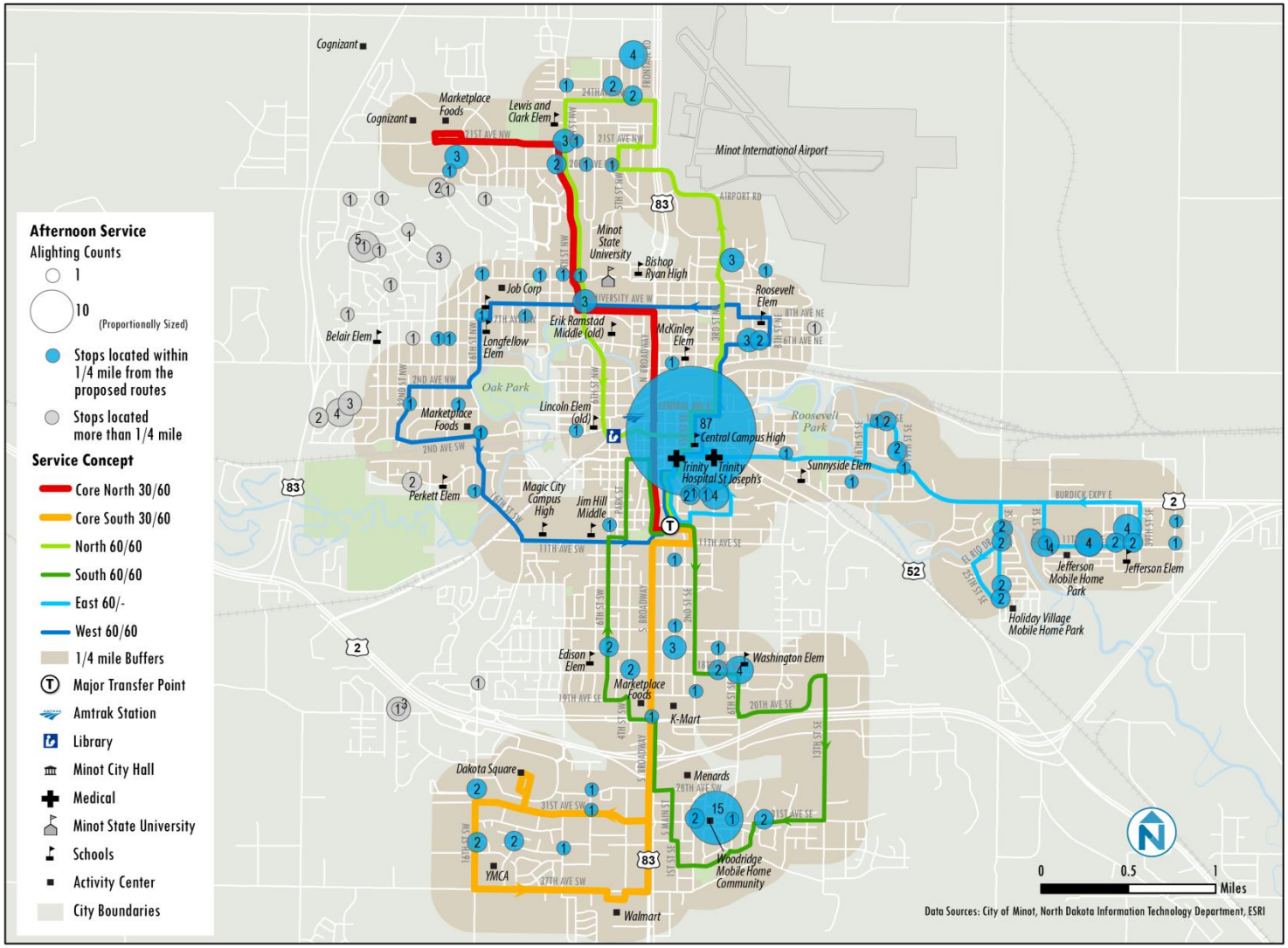
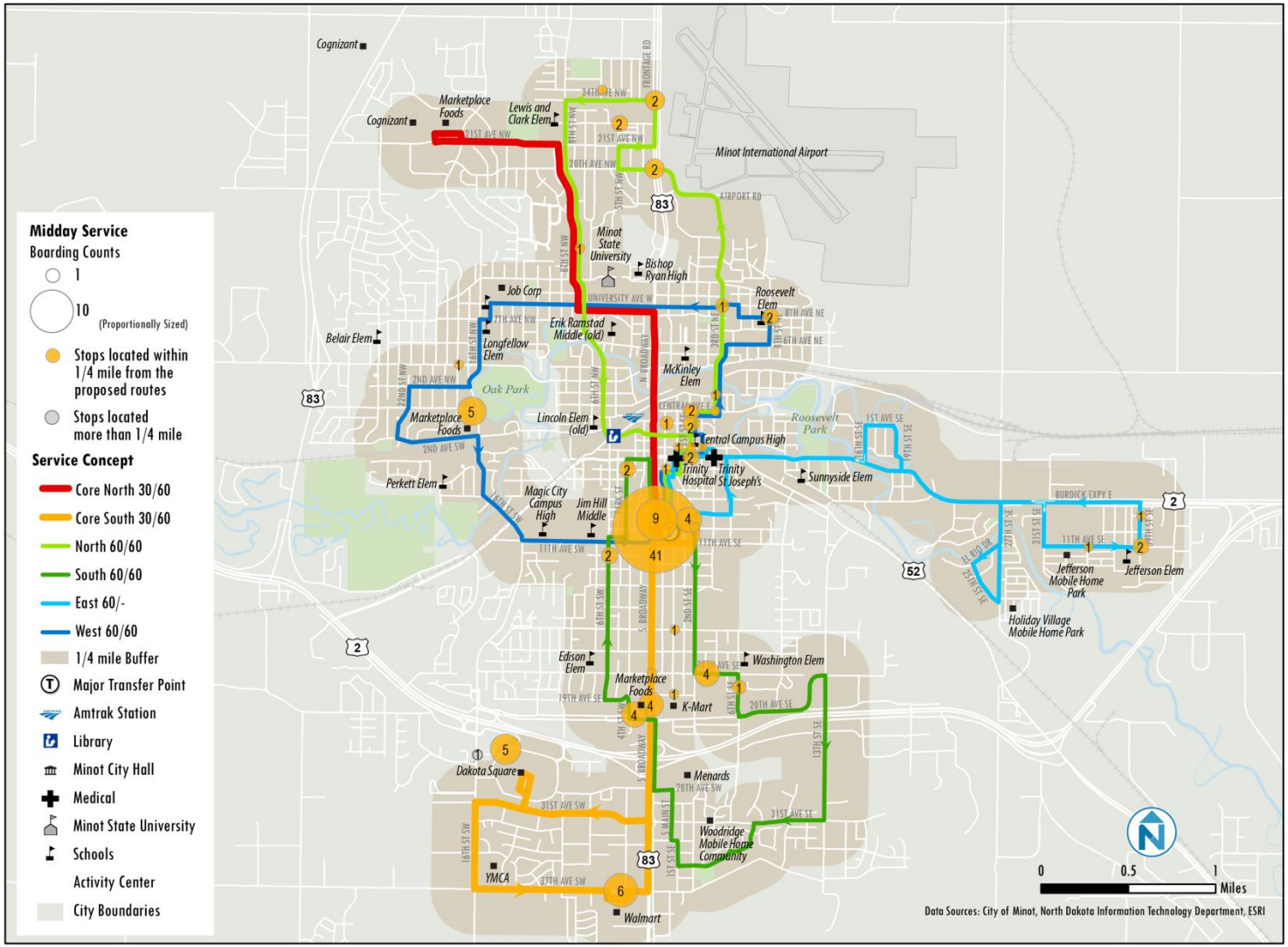


Figure 3-6 Existing Midday Passengers Served by Proposed Short-Term System



Population and Employment Served

Figure 3-7 highlights the degree to which the proposed system retains service the community. This analysis is based on the number of residents and employees that are within a ¼ mile of the Short-Term System. All population and employment data used for the analysis is from the US Census (2010 for population and 2011 for employment). The proposed system retains the coverage aspects of the existing system and serves over 65%of the population and 80% of the employment. In addition, the two core routes are focused along the primary employment corridors and these productivity-based routes alone serve 50% of the workers. While the proposed system serves the large number of employees at the Cognizant call center, it lacks coverage to some employees in the southwest part of the city (north and south of US 2 near 16th St SW) that are current served by parts of the existing South #2 and South #3 routes.

Figure 3-7 Percent of Existing Riders within Walking Distance of Short-Term System Routes

	Existing Midday System	Short-Term System	Core Routes
2010 Population (40,888)	67%	66%	-
2011 Employment (24,140)	83%	81%	50%

Source: US Census

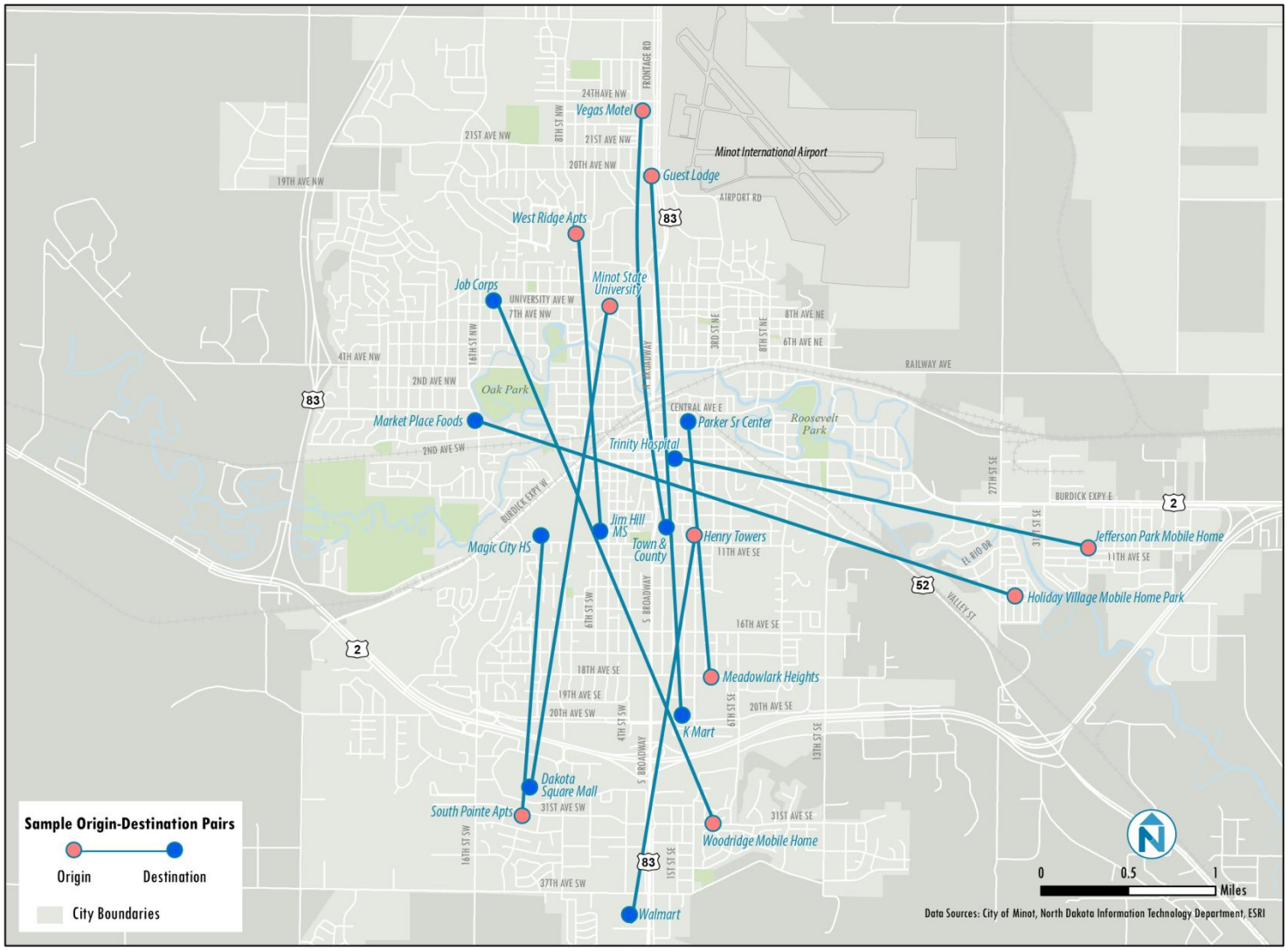
Sample Trip Analysis

The sample trip analysis highlights the degree to which the proposed Short-Term system improves travel time and convenience when completing various transit trips across Minot. Ten sample origins (typically representing residential locations) and ten destinations (typically representing local activity centers) were identified to represent a mix of trip types and local neighborhoods. The 10 origin-destination pairs, along with the analysis, are summarized in Figure 3-8.

The analysis examined the total travel time (including wait, walking and in-vehicle travel times) to travel between the paired origins and destinations. It did so by comparing a set of trips planned using the existing system and the proposed Short-Term system based on the conceptual schedules (shown in Appendix C). The following conventions were employed to provide consistency in the analysis:

- All trips were modeled based on a 3:00 p.m. start time so that the existing midday schedules could be used and to demonstrate any benefits from the core routes operating at the lower peak-period headways.
- Both outbound and inbound trips were analyzed to account for the out-of-direction travel likely to incur on the loop routes when making a trip to or from a desired destination.
- The outbound direction refers to travel from the origin to the destination and the inbound direction refers to travel from the destination back to the origin.
- Initial wait time is considered zero for all outbound trips assuming riders will leave their homes based the schedules. For inbound trips, initial wait time is based on the time between 3:00 p.m. and boarding of the first bus to account for the randomness involved in making a return trip after completing an errand, doctor's appointment, work/school shift, etc.

Figure 3-8 Sample Trip Origin and Destination Pairs



- Transfer wait time is all wait time at T&C.
- In vehicle travel time includes both legs of the trip (in one direction) if there is a transfer.
- Walk time is combined at beginning and end of each one-way trip (bus access and bus egress).

Findings

Trips completed on the proposed Short-Term system tend to be quicker for this sample set of origin-destination pairs. Appendix D provides the detailed results for each sample trip and highlights that the total travel time for all trips is 20% less under the proposed system design based on the suggested set of conceptual schedules. Half of the sample trips involved travel on one of the core routes contributing to the overall time savings in terms of reduced wait times at T&C and/or reduced in-vehicle travel times due to the route's directness. The other half of the trips involved travel on the coverage-based loop trips yielding similar results between the existing and proposed systems. While these findings show a net decrease in travel time, in reality, the impact will likely be amplified since the core routes will carry a higher share of system ridership given the concentration of major attractions along their routes.

Other findings of interest include:

- The proposed Short-Term system requires 15% more transfers, but there is 52% less wait time at T&C
- The initial wait time and transfer time are reduced due to increased frequency of the core routes during peak.
- Only two out of 10 roundtrips exhibited an increase in travel time under the proposed system.
- Trips that were previously served by large loops (e.g. Meadowlark to Senior Center on South #1) will be longer in the outbound direction due to the need to transfer, but travel time is recouped in the inbound direction due to decreased wait time and vehicle time provided by bi-directional routes that do not require waiting the full half hour for a route to travel around the loop.
- Service to Holiday Village does not exist currently, and based on an assumed maximum walk distance of 0.25 miles, this trip could not take place (at least not on the fixed route service). The majority of the walk time savings for the proposed system is due to the distance required to walk more than a half mile for that trip.
- The advantage of interlining the East and West loops can be seen in the Holiday village – Marketplace foods trip, where there is no forced 30 minute wait.
- In the existing system, transfers between South #1 and North had a forced 30 minute wait at the transfer center (Guest Lodge – K Mart; West Ridge Apts – Jim Hill MS). Interlining between the North Loop and West Loop and peak 30 minute service on South Core removes these wait times.

OPERATING COST ESTIMATES

The proposed Short-Term plan redeploys the roughly 10,000 annual service hours currently used in Minot City Transit system (which includes the Early Morning/Afternoon and Midday services). Figure 3-9 details the route-level and total operating costs for the proposed Short-Term system.

Figure 3-9 Proposed Short-Term Operating Cost Estimate

Route	Daily Service Hours	Annual Service Hours (at 254 weekdays)	Annual Operating Cost (at $82.00 per hr)
Core North	8.5	2,160	$177,000
Core South	8.5	2,160	$177,000
North Loop	5.75	1,460	$120,000
East Loop	5.75	1,460	$120,000
South Loop	5.75	1,460	$120,000
West Loop	5.75	1,460	$120,000
System Total	40.0	10,160	**$833,000**

Note: Hourly operating cost of $82 is based on MCT FY 2014 budget.

FLEET AND CAPITAL NEEDS

As with the existing system, the four loop routes will share two buses over the entire day. The added span of service will require these vehicles to be in operation for 12 hours a day. During peak periods each core route will require a single vehicle as they will be operating on 30-minute cycle times and offering 30-minute headways. During the midday period, the two core routes will operate on hourly headways and can share a single vehicle. Therefore the total fleet requirement for the proposed Short-Term plan (not including spares) will be four during the five hours of peak-period operation and three during remaining seven hours of midday, base-period operation.

OPERATIONAL CONSIDERATIONS AND OTHER IMPACTS

Bus Stops

To fully realize the travel time benefits of the core routes and to promote passenger safety on busy streets, it is recommended that Minot City Transit move to the use of fixed stops on the north and south core routes. As the system grows, it will become more important to minimize the time needed to board passengers so controlling the number of stops on these productive lines will be beneficial. In addition, to serve the major attractions along these routes they will be on Broadway and other busy streets raising concerns of where passengers will board and/or cross the street. Their presence on these high volume streets allows these routes to self-market to the public via stop signage.

The loop routes are focused on neighborhood streets with lower boarding volumes so the use of flag stops on these routes remains a viable option. Any shared segments with the core routes should utilize common fixed stops. Some additional segments of the loop routes may merit fixed stops if traffic or roadway conditions merit. The final Comprehensive System Analysis Plan will document suggested stop implementation action items to consider when implementing a comprehensive stop plan.

School Service

Based on the final agreements between the City and Minot Public Schools, MCT may be the primary transportation service for some schools. It is assumed that the high schools and Jim Hill M.S. will be primarily served by city buses. Meeting this objective will impact public bus operations in a couple of ways. First schedules could be shifted to better align with school bell times, possibly moving the T&C timed transfers off the top and bottom of the hour if appropriate. And based on the final schedule and bus capacity, the city may want to add school trippers operating on one or more of the scheduled Short-Term system routes. The tripper could be at a special time to match bell times, or immediately following a schedule trip to add seat capacity. In either case, these trippers will add additional operating costs, will require additional vehicles and may impact bus capacity at Town & Country. Further details on school service and transit center considerations will be explored in the final Comprehensive System Analysis Plan.

Administrative Staffing

The final Comprehensive System Analysis Plan will also provide an organizational plan detailing staffing needs to implement the agreed upon service plans and provide supporting programs such as marketing, expanded fare collection systems etc. But it is worth noting that MCT will likely require additional staff in the form of a full- or part-time transit administrative assistant, to assist with the implementation and support of the proposed Short-Term service plan.

The roles of an administrative assistant typically include:

- Performs performing payroll and human resource functions
- Managing accounts payables
- Providing customer service,
- Maintaining transit website and implementing marketing promotions
- Administering bus pass sales
- Supporting grant application and reporting

Many of these activities will increase in scope and significance when the City officially ascertains MPO status and becomes a direct FTA recipient. More information on this transition will be provided in the final Comprehensive System Analysis Plan.

4 MID-TERM SERVICE OPTIONS

The Mid-Term service options presented in this chapter represent priority transit improvements that could be implemented in the next 3 to 10 years. All Mid-Term service options start with the proposed Short-Term service plan presented in Chapter 4 and add services that are designed to enhance the usability and attractiveness of transit service over the next 10 years. Unlike the proposed Short-Term service plan, which assumes no cost increases, the Mid-Term service options will require additional operating costs, which are estimated in this chapter. Additional discussion on additional funding options will be provided in the final phase of the project.

The Mid-Term service options below are listed roughly in order of priority based on input from existing riders (from the on-board passenger survey), the community at large (from the community survey), and key stakeholders. Each of the service options are summarized in Figure 4-1 presented at the end of this chapter.

OPTION 1: EXTEND WEEKDAY SERVICE BY TWO HOURS

This option would extend weekday service hours on all routes by two hours until roughly 9:00 p.m. Later evening service was the top priority for existing riders and one of the highest priorities among the larger community (from the community survey). Later evening service makes transit service more attractive for all riders but especially service and retail workers that often work later than traditional work hours. Similarly, later service hours will be welcomed by MSU students, who noted at the open house meeting in April that they would like to make later evening trips to Walmart and the Dakota Square Mall.

Operating Cost Estimates

It is estimated that this service improvement, if implemented for all six fixed routes, would require an additional 1,500 annual revenue hours. Assuming the existing operating cost is $82.00 per revenue hour, the annual operating cost increase for this improvement would be approximately $123,000.

Fleet and Capital Needs

No additional vehicles or other capital improvements would be required to implement later service hours, though it would require some additional one-time costs to update schedules, the website, etc. From a maintenance standpoint, vehicles will be on the road longer, but those additional costs would be included in the operating cost estimates.

Operational Considerations and Other Impacts

From a personnel standpoint, longer service hours could require additional part-time drivers to cover the longer shifts. On the other hand, this improvement would result in a 14-hour service day, which could then be broken into two 8-hour shifts (including time before and after the shift).

Assuming all routes are operating hourly, which requires three buses, all service could be scheduled into six eight-hour shifts, with additional part-time drivers covering breaks and peak periods on the core routes. An additional consideration of longer service hours is the need for longer hours for an operations supervisor. Staffing needs and costs will be explored in more detail at a later phase of study.

OPTION 2: SATURDAY SERVICE

This option would provide service on all routes on Saturday from 8:00 a.m. until 6:00 p.m. All of the agencies evaluated in the Peer Review have Saturday service, and Saturday service was the second highest priority among existing riders and from the community survey. While many people do not have the same travel needs for work or school on Saturday, people still have travel needs. Saturday service is especially important for service/retail workers, recreational and shopping trips. As with later weekday service, a number of MSU students expressed the desire for Saturday service for shopping and recreational purposes.

Operating Cost Estimates

Assuming Saturday service is implemented on all six fixed routes from 8:00 a.m. until 6:00 p.m., and service is provided hourly, this improvement would require an additional 1,500 annual revenue hours (or about 250 annual revenue hours per route). Assuming the existing operating cost is $82.00 per revenue hour, the annual operating cost increase for this improvement would be approximately $123,000.

Fleet and Capital Needs

No additional vehicles or other capital improvements would be required to implement service on Saturday, though like other improvements, it would require some additional one-time costs to update schedules, the website, etc. Similarly, from a maintenance standpoint, vehicles will be on the road longer, but additional costs are included in the operating cost estimates provided above.

Operational Considerations and Other Impacts

While the details of how driver shifts are structured is beyond the scope of this study, it is important to note that Saturday service would likely require additional part-time drivers. This is especially true if weekday service is provided later in the evening and there are fewer part-time drivers on staff. Still, it is likely that shifts could be structured in a way that allows for a mix of full- and part-time drivers. Staffing needs and costs will be explored in more detail at a later phase of study.

OPTION 3: EARLIER MORNING WEEKDAY SERVICE HOURS

This option would provide one additional hour of service in the morning on all routes on weekdays. Earlier morning service was a top priority for the community (from the community survey), as well as for existing passengers. Also, the Peer Review found that all of the peer agencies start service between 6:00 a.m. and 6:30 a.m. Early morning service is important largely for workers and students getting to school.

Operating Cost Estimates

Assuming weekday service starts one hour earlier on all six fixed routes (approximately around 6:00 a.m.), this improvement would require an additional 1,000 annual revenue hours. Assuming the existing operating cost is $82.00 per revenue hour, the annual operating cost increase for this improvement would be approximately $82,000.

Fleet and Capital Needs

No additional vehicles or other capital improvements would be required to implement earlier service. Similarly, from a maintenance standpoint, vehicles will be on the road longer, but additional maintenance costs are included in the operating cost estimates provided above.

Operational Considerations and Other Impacts

As with other improvements that extend the service day, it is important to note that service one hour earlier in the morning could require additional drivers or at least a modification in how driver shifts are structured. This is especially true if service hours had already been extended later in the evening. Still, it is likely that shifts could be scheduled through a combination of full- and part-time drivers. And as with longer service hours in the evening, earlier service would require earlier operations management time. Staffing needs and costs will be explored in more detail at a later phase of study.

OPTION 4: ADDITIONAL MIDDAY FREQUENCY ON CORE ROUTES

In the proposed Short-Term plan, the two Core routes operate on 30 minute headways only during the a.m. and p.m. peak periods on weekdays. This option would extend 30 minute service all day. Extending 30 minute service throughout the day has the benefit of timed transfers between the other four routes throughout the day (instead of just during peak periods). This improvement also means the headways on the two primary routes are consistent and predictable, which makes it easier for passengers to remember and to plan their day around.

Operating Cost Estimates

Assuming the two Core routes operate every 30 minutes from 7:00 a.m. until 7:00 p.m. (12 hours), this improvement would require an additional 1,800 annual revenue hours. Assuming the existing operating cost is $82.00 per revenue hour, the annual operating cost increase for this improvement would be approximately $147,600.

Fleet and Capital Needs

Because the vehicles are already available for peak service, no additional vehicles or other capital improvements would be required to implement 30 minute service on the Core routes. Similarly, from a maintenance standpoint, vehicles will be on the road longer, but additional maintenance costs are included in the operating cost estimates provided above.

Operational Considerations and Other Impacts

During off periods, only one bus is required to provide hourly service on the core routes. However, this option would require an additional vehicle (and driver) to provide 30 minute

service on both routes (as is the case in the proposed Short-Term service plan during peak periods). This additional driver shift could be filled by a part-time driver, or a new full-time driver could be hired.

SUMMARY OF MID-TERM SERVICE OPTIONS

Figure 4-1 provides a summary of the four Mid-Term service options presented above. If all of the service options were implemented within the 3-10 year timeframe, the system would be expanded by about 60% and require additional operating revenues of approximately $400,000.

Figure 4-1 Summary of Mid-Term Service Options

Service Options	Additional Annual Revenue Hours	Estimated Additional Annual Operating Cost *
Option 1: Extend Weekday Service by 2 Hours	1,500	$123,000
Option 2: Saturday Service	1,500	$123,000
Option 3: Earlier Morning Weekday Service Hours	1,000	$82,000
Option 4: Additional Midday Frequency on Core Routes	1,800	$147,600
Total (All Options)	**5,800**	**$475,600**
% Increase Over Existing (All Options)	*57%*	

* Assumes $68.00 per revenue hour, based on existing service

5 LONG-TERM SERVICE OPTIONS

In support of the long-term vision for transit in Minot, a series of service expansion options are provided that are designed to reinforce transit's role in the transportation system and further expand the role transit provides. All of the options outlined below are conceptually shown as part of the longer-term vision for transit (10+ years) and require additional operating or capital revenues. However, any of these options could be implemented earlier depending on community development patterns, demand for new service, or availability of additional revenues.

LONG-TERM OPTION 1: SOUTHWEST ROUTE

Based on the Minot Comprehensive Plan, significant development is planned on the south and southwest sectors of the city. In addition, the most significant "abandoned" segment of the existing route network is along 16th Street SW, which has the lowest ridership of any segment in the system. While the proposed Short-Term service plan covers the areas that are already developed in the southwest part of the city (including the Dakota Square Mall, Walmart, and YMCA), it will not be possible to easily expand those services beyond the current extent and new development is planned in this area (including a new Trinity Hospital campus). Because the current road network is not fully developed at this time, and the timing of future development in this area is uncertain, a conceptual new route is described below for when this area justifies additional service.

Operating Characteristics and Operating Costs

The conceptual Southwest Route would operate from the central transfer location (currently Town & Country) and travel west on 11th Avenue SW serving Jim Hill Middle School and Magic City High School. Providing service on this segment would have the added benefit of providing additional service by the high school and middle school (the West route would serve this segment in only one direction). The route would then turn south on 16th Street SW to 31st Avenue SW, providing service to the largest segment of the existing system that would be abandoned in the proposed Short-Term service plan. The route would then continue east on 31st Avenue SW to 13th Street SW and travel north to the Dakota Square Mall south entrance. The estimated round trip travel time to and from the Dakota Square Mall, including driver layover, is 30 minutes. From here, the route would provide additional coverage south of the 2/52 Bypass on yet to be determined roads. Conceptually, the route would serve the areas west of 16th Street SW, south of 37th Avenue SW, and potentially east of Broadway. It is estimated that this segment of the route would take 30 minutes, including driver layover. Thus, the round trip travel time on this route would be 60 minutes, including time for layover and recovery.

It is assumed that any new route added to the system will provide the same level of service as other comparable routes. In this case, this new route would operate every 60 minutes, Monday through Friday, from 7:00 a.m. – 7:00 p.m. If service hours are extended on other routes (i.e., starting at 6:00 a.m. and/or ending at 9:00 p.m.), this route should also have extended service

hours. Assuming hourly weekday headways and a 12-hour service span, this route would require 3,000 annual revenue hours and cost approximately $246,000 annually (based on $82.00 per revenue hour). Each additional hour of weekday service would require about 300 annual revenue hours, or an additional $24,600 in annual operating costs.

Fleet and Capital Needs

One additional vehicle would be required to operate this route. Whereas existing stops along 11th Avenue SW could be utilized for this route, new stop locations (or bus stop signs along the streets where flag stops are allowed) would be required. In addition, new marketing and promotional information would be required prior to implementation.

Operational Considerations and Other Impacts

This route would also likely require new full- or part-time drivers, as a new 12 hour shift would be added. In addition, a new route connecting to the central transfer location would require additional space for layover and transfers to/from other routes. One additional bus at the current transfer location at Town & Country would likely exceed the available capacity. In the final study document, there will be a discussion of the likely need for a new transfer location and facility – perhaps in the mid-term timeframe.

LONG-TERM OPTION 2: NORTHWEST ROUTE

Similar to the southwest part of the city, significant development is planned on the north and northwest sectors of the city. Like the proposed south core route, it will not be possible to easily expand service on the proposed north core route to serve new developments that are planned in this area (including the new Ramstad Middle School or potential retail at 21st Avenue NW and Highway 83). As with the south side of town, the current road network is not fully developed at this time north of 21st Avenue NW, and the timing of future development in this area is uncertain. Thus, a conceptual new route is described below for when this area justifies additional service.

Operating Characteristics and Operating Costs

The conceptual Northwest Route would operate from the central transfer location (currently Town & Country) and travel north on Broadway to 3rd Avenue NW, where the route would turn west to 16th Street NW. Providing service on this segment would have the benefit of providing additional service through a neighborhood that is only peripherally served by the North and West routes. The route would then turn north on 16th Street NW to 21st Avenue NW where a connection would be made to the north core route at Marketplace Foods. The estimated round trip travel time to and from the Marketplace Foods, including driver layover, is 30 minutes. From here, the route would operate for 30 additional minutes north of 21st Avenue NW on yet to be determined roads. Conceptually, the route would travel north to 30th Avenue NW, east to Broadway, and serve the apartments east of Broadway between 36th and 40th Avenue NE. This route would then return to the Marketplace Foods via as yet to be developed roads, perhaps as far north as 42nd Avenue NW. Including this additional 30 minute coverage loop, the round trip travel time on the conceptual Northwest would be 60 minutes, including time for layover and recovery.

As with the conceptual Southwest route, it is assumed that this new route would have the same level of service as other comparable routes. Thus, this new route would operate every 60 minutes, Monday through Friday, from 7:00 a.m. – 7:00 p.m. If service hours are extended on other routes

(i.e., starting at 6:00 a.m. and/or ending at 9:00 p.m.), this route should also have extended service hours. Assuming hourly weekday headways and a 12-hour service span, this route would require 3,000 annual revenue hours and cost approximately $246,000 annually (based on $82.00 per revenue hour). Each additional hour of weekday service would require about 300 annual revenue hours, or an additional $24,600 in annual operating costs.

Fleet and Capital Needs

Like the conceptual Southwest route, one additional vehicle would be required to operate this route. While existing stops along portions of Broadway and 16th Street NW could be utilized for this route, new stop locations (or bus stop signs along the streets where flag stops are allowed) would be required along most segments of the route. In addition, new marketing and promotional information would be required prior to implementation.

Operational Considerations and Other Impacts

As with the conceptual Southwest route, this route would likely require new full- or part-time drivers and would likely introduce capacity issues at Town & Country for layover and transfers to/from other routes. In the final study document, there will be a discussion of the likely need for a new transfer location and facility – perhaps in the mid-term timeframe.

LONG-TERM OPTION 3: SUNDAY SERVICE

While none of the peer agencies evaluated in the Existing Conditions report offer Sunday service, it is becoming more common for agencies across the country to provide service seven days a week. Based on the National Household Travel Survey[5], the number of trips made per person is slightly less on weekends, but that work trips represent a smaller portion of trips and non-work trips (shopping, recreation, etc.) make up a larger portion. To support this data, a significant number of existing passenger said that Saturday *and* Sunday service is an important need.

Assuming Sunday service is implemented on all six fixed routes from 9:00 a.m. until 5:00 p.m. (a shorter service span than Saturday), and service is provided hourly on all routes, this improvement would require an additional 1,200 annual revenue hours (or about 200 annual revenue hours per route). Assuming the existing operating cost is $82.00 per revenue hour, the annual operating cost increase for this improvement would be approximately $98,400.

Fleet and Capital Needs

Like Saturday service, no additional vehicles would be required to operate service on Sunday.

Operational Considerations and Other Impacts

Like Saturday service, Sunday service would likely require additional part-time drivers. This is especially true if weekday service is provided later in the evening and there are fewer part-time drivers on staff. Staffing needs and costs will be explored in more detail in the final Comprehensive System Analysis report.

[5]Summary of Travel Trends, 2009 (http://nhts.ornl.gov/2009/pub/stt.pdf)

6 DOWNTOWN TRANSIT CENTER

The existing Minot City Transit system, as well as the Short-Term Service Plan proposed in this study, heavily relies on transfers between routes to ensure everyone can travel to any point in the system. While many trips on MCT can be made without making a transfer to other routes, perhaps as many as half of trips require a single transfer. Therefore, in a "hub and spoke" system such as this, it is critical that the central transfer facility be as accommodating as possible for passengers. Similarly, it is important that transit vehicles can safely and easily access this facility, and that vehicles can layover between runs and there are adequate driver break facilities.

The primary transfer location (the "hub" of the system) is Town & Country Center. While this location is functioning as a transfer location, and remains an important destination for some passengers, it is less than ideal as a central transit center for a number of reasons:

- **Conflicts with other uses.** Currently, MCT buses utilize curb space on the southwest corner of the center. This location restricts vehicular parking but is open to delivery vehicles. This often creates conflict for transit vehicles, which must double park to load and disembark passengers.
- **Privately owned and maintained.** While the owners of Town & Country Center have agreed to permit MCT on their property, use of this facility or the ability to traverse their property is not within the control of MCT.
- **Difficult access.** Because the transfer location is adjacent to the building and requires buses to traverse the parking lot, access is slow – especially during busy times. Also, the Town & Country Center recently added speed bumps on the back side of the parking lot to slow vehicular traffic, which also slows buses and increases the time it takes to travel through the parking lot. Finally, southbound access Broadway is difficult. Buses must exit the back parking lot, travel south on 1st Street SE and west on 11th Avenue SE before turning south on Broadway. An entrance to Town & Country from Broadway makes it easier to access in the northbound direction, but buses must still travel slowly due to heavy vehicular traffic.

POTENTIAL TRANSIT CENTER SITES

While this study does not include a detailed program for a new transit center, several potential sites for a new transit center were identified and evaluated throughout the downtown area. It was also assumed that any future transit center would not occur in the short-term and that future analysis and study is required to identify a preferred site and develop a detailed facility program.

To identify a list of candidate sites, several basic criteria were used:

- **Need to accommodate between six and eight vehicles at the same time.** In the short-term, four buses will meet at the same time to facilitate transfers between routes. Over the mid- to long-term, however, it is possible that up to six transit vehicles could be

at this facility at the same time to facilitate transfers. Two additional bus bays would allow for future expansion of the system and potentially accommodate other providers such as Souris Basin Transit or Jefferson Lines.

- **Central location.** As noted above, Minot has a "hub and spoke" transit system that relies heavily on transfers between routes. As such, the transfer center must be as geographically centered in the community as possible. The downtown area is very centrally located, and is also an important destination, and so was clearly the best location.
- **Good access.** Because transit vehicles and passengers would need to access the transit center from all directions, it is important that the new transit center have good transit and pedestrian access. The site should be accessible via a signalized intersection so that transit vehicles can make both left and right turns, and so that passengers can safely access the location. Locations on the east side of the railroad tracks were avoided since this could expose transit to unpredictable delays.

The City of Minot is currently in the process of developing a new vision for downtown Minot following the devastating floods of 2011. The **RiverFront and Center** project (http://riverfront.minotnd.org) has formulated a vision that enhances the quality of built environment in downtown Minot and better incorporates green space and the riverfront into downtown. One of the features of this vision is a new transit facility at the corner of 2nd Avenue Southwest and Broadway (southeast corner). While this is still a visionary planning exercise, the transit center at this location would include as many as 250 parking stalls, a new transit facility, 93 housing units, and 13,500 square feet of retail. One concept is that this new facility would be connected to the retail core via a park between 1st Street SW and Main Street.

- **Amenities.** Any new transit center must have adequate space for transit vehicle access and egress, but also for other amenities. This includes passenger waiting areas, restrooms, customer service kiosk, and driver break room. It would be ideal if these amenities were climate controlled.

Based on these basic criteria, a total of nine potential sites were identified throughout the downtown area, as shown below in Figure 6-1. Some of the potential sites consist of multiple, adjacent parcels. A high-level analysis of each site and parcel was conducted, including how well they fulfilled the criteria listed above as well as ownership (assuming publicly owned sites would be easier to acquire), square footage and zoning of the site. All of the sites had some pros associated with them, such as being publicly owned or good controlled access. However, all but one site (Site D) also had cons associated with the site – mostly related to poor access or being privately owned.

Figure 6-1 Potential Downtown Transit Center Sites

Site ID	Property Address	Description	Pros/Cons	Owner	Sq Ft	Zoning
A	1 7TH ST SW	Old Lincoln Elementary School site	↑ Publically owned ↑ Low redevelopment potential (in floodplain) ↓ Not near activity centers ↓ Just north of downtown, lengthening trips for southern routes.	MINOT PUBLIC SCHOOL DISTRICT 1	109795	P
B	100 3RD ST SW	Improved lots behind Wells Fargo bank	↑ Controlled access to Broadway at SW 2nd Ave ↑ Currently underutilized ↓ Privately owned	CMTM PROPERTIES, LLC	9500	C-3
	300 2ND AVE SW			CMTM PROPERTIES LLC	15500	C-3
C	100 BROADWAY S	"Vacated" segment of SW 2nd Ave	↑ Controlled access to Broadway at SW 2nd Ave ↑ Possible right-in/right-out access to/from Broadway ↓ Privately owned but underutilized small fraction of larger parcels	WELLS FARGO BANK ND NATIONAL ASSOC.	58070	C-3
	200 BROADWAY S			BACK HOME ENTERPRISES, INC	13619	C-3
	201 3RD ST SW			CITY OF MINOT	1244	C-3
D	125 2ND AVE SW	Trinity Health surface parking	↑ Located on east side of Broadway providing better access to downtown ↑ Controlled southern access at 2nd Ave SW ↑ Privately owned, but hospital sounds interested in redevelopment option provided they maintain current number of parking spaces	TRINITY HEALTH	16200	C-3
	200 1ST ST SW			TRINITY HEALTH	22500	C-3
	216 1ST ST SW			TRINITY HEALTH	7500	C-3
	218 1ST ST SW			TRINITY HEALTH	15000	C-3
	221 BROADWAY S			TRINITY HEALTH	22275	C-3
E	225 4TH ST SW	Unimproved lot east of Auditorium	↑ City Owned ↓ Away from activity centers ↓ Difficult access to/from Broadway	CITY OF MINOT	2500	C-3
	227 4TH ST SW			CITY OF MINOT	5000	C-3
	229 4TH ST SW			CITY OF MINOT	2500	C-3
	XX 4TH ST SW			CITY OF MINOT	2500	C-3
	320 3RD AVE SW			CITY OF MINOT	5000	C-3
F	314 PARK ST	Improved lot south of Auditorium	↑ City Owned ↑ Away from activity centers ↓ Difficult access to/from Broadway	CITY OF MINOT	48800	C-3
	316 4TH ST SW			CITY OF MINOT	23113	C-3
G	310 5TH ST SW	Unimproved lot southwest of Auditorium	↑ City Owned ↓ Away from activity centers ↓ Difficult access to/from Broadway ↓ Possible City Hall redevelopment site	CITY OF MINOT	50000	M-1
H	1015 BROADWAY S	Town & County Center	↑ Shorter distance for southern access ↓ Privately owned ↓ Possible conflicts with passenger vehicles and commercial trucks ↓ Limited expansion opportunities	MINOT TOWN & COUNTRY INVESTORS, LLP	501512	C-2
I	1001 2ND ST SE	Redevelopment site	↑ Shorter distance for southern access ↓ Located on far outskirts of downtown ↓ Competitive uses of site likely ↓ On edge of residential neighborhood	SANDPOINT DEVELOPMENT, LLC	101937	R-3

Conclusions and Next Steps

Based on the evaluation of potential sites, only one site had the least number of cons: Site D on the southeast corner of 2nd Avenue Southwest and South Broadway. This evaluation confirms that the preferred site for a new transit center is the same as that identified in the RiverFront and Center project.

Because a new transit center will require additional planning, this study suggests the following next steps:

- **Initiate discussions with Trinity Hospital.** As the owner of the preferred site, the City should begin discussions with Trinity Hospital to determine their willingness to develop the property. In particular, the discussions should focus on what would happen to the existing surface parking lot that has room for approximately 200-250 vehicles, and how a transit center could be integrated with this and other potential uses (such as retail, housing and office).
- **Develop initial capital and operating costs.** This study has not developed costs associated with a new transit center, but developing high level estimates would be a logical next step. This would allow the City to better understand what would be required locally to fund the project, and to identify what private and public funding options are available and feasible.
- **Continue project development.** Once it is determined that this is indeed the preferred site for a new transit center, and initial costs have been identified, the City should continue to explore the following:
  - **Project management.** As a major capital investment, a project manager that will move the project forward needs to be identified. The City would obviously play a key role in managing the project, but large capital investments are more typically managed by private consulting firms that specialize in project development and construction management. An initial step would be to develop conceptual designs, refine initial capital and operating costs, and then identify funding opportunities and mechanisms, such as public/private partnerships, federal grants, etc.
  - **Design/engineering.** Once a funding strategy has been secured, and initial design concepts have been vetted in the community, the project would then move into final design and construction.

Timeline

Based on the next steps summarized above, it is estimated that the earliest a new transit center could be operational would be in the 3-5 year timeframe. This assumes that the City moves quickly to identify a preferred site and initiates project development.

7 MARKETING AND BRANDING CONSIDERATIONS

This chapter provides a high-level assessment of Minot City Transit's marketing and branding initiatives and offers recommendations for improvement where appropriate. Marketing for transit generally refers to information and collateral that lets transit customers know how to use – and remember how to use – transit services. Branding relates to a name or logo that identifies the transit services offered in the community. If transit were treated like a commodity, effective branding ensures that the community not only recognizes what the brand represents, but that individuals have positive and memorable experiences with that brand. Marketing then refers to reinforcing the brand and ensuring that information on how to use transit is readily accessible, understandable, and easy to remember.

Marketing and branding is only one feature of a successful transit system. However, good information and strong system legibility is critical for people who may be learning how to use transit for the first time, as well as for long-time users. And because many people in the Minot may never have used transit, the branding and marketing of the system might be the only impression they have of transit services available.

BRANDING OF THE SYSTEM

Transit services in Minot are officially branded as Minot City Transit (MCT). Minot City Transit does not have an official logo other than the name of the system and the white and maroon color scheme, which is used on all buses in the fleet. Minot City Transit's color scheme is associated with the City of Minot's brand, indicating that transit is a City-sponsored service.

Minot City Transit's brand on the side of a bus.

While the MCT name is used primarily on all marketing materials, it is not done so exclusively. In some cases, the historic name of the transit system – City Bus – is also used to refer to Minot City Transit. Although the name of the system, when used consistently, conveys the function of the program, the name is fairly generic. Developing a brand and logo that demonstrates to the community that transit is an *integral* part of the public infrastructure could help to build greater recognition and excitement in MCT services. Several examples of other transit systems (of comparable size to MTS) are discussed below that have a brand and color scheme that relates to

the community as a whole and consistently uses the brand on vehicles, stops, and in marketing materials.

MATBUS (Fargo, North Dakota)

Metropolitan Area Transit, or MATBUS, is the primary transit provider in the Fargo/Moorhead region. While MATBUS operates in a larger region, the MATBUS name and logo is simple, well incorporated into marketing materials, and on the front and side of all buses. The white, blue and green color scheme is easy to read and the bus icon in place of the "a" in the name of the system further identifies this as a public transit system. The large "M" makes it easier for people to recognize a bus or bus stop from longer distances.

Unitrans (Davis, California)

The Associated Students of UC Davis and the City of Davis jointly operate Unitrans. The logo and brand are based on the London double-decker buses that were used when the student-run transit service was implemented (several of the old buses are still in operation). Building on this theme, the logo clearly identifies Unitrans as a service of the ASUCD and City of Davis, and highlights it as a unique feature of the city (even though few double-decker buses are still in service). The bright red color scheme is also easily recognizable throughout the city.

Mountain Line (Missoula, MT)

Mountain Line is the name of the Missoula Urban Transportation District (MUTD). The logo incorporates an image of a mountain lion (common in this part of Montana) and is used on all marketing materials as well as at bus stops and on vehicles. Mountain Line also has a turquoise, magenta, and yellow color scheme that is consistent on all marketing materials, brochures, website, and buses.

SYSTEM INFORMATION

Perhaps the most visible aspect of the MCT system - besides the buses themselves - is the printed and electronic information that describes how to use the system. This includes all printed materials such as brochures, maps, flyers, bus tickets, etc. This also includes all information that is available electronically through the City website.

Printed Materials

A brochure that includes maps and schedules are posted around the Minot area and are available on all buses. The bi-fold brochure also includes general information about the service, such as fares, FAQs about ADA (Americans with Disabilities Act) paratransit service, service hours and days, and official policies. The phone number and main city website are also displayed prominently on the front of each brochure.

While all of the basic information on existing services is included in the brochure, improvements to the maps (especially for those that have difficulty reading small type) and schedule information would make the information easier to understand. In addition, a comprehensive systemwide map would dramatically enhance the quality of information tools available to the general public. Finally, the website on the front of the brochure should point directly to the MCT website and not the main City website (see next section).

The Minot City Bus brochure provides general information (fares, polices, etc.), schedules and maps of all fixed route transit services. Information about Souris Basin Transit is also provided.

Electronic Information

All of the same information available in the brochure is available on the City's website (www.minotnd.org). The website provides all of the relevant information about transit services, including schedules, maps, FAQs about Souris Basin Transit, and fares. The brochure links to the main City of Minot website, where the user must find the system.

While not impossible to find (from the main City page, users must navigate to City Government > City Departments > City Bus), it is not intuitive and requires several steps and may be confusing to some people. However, given the current structure of the City's website, it is hard to provide

this link on printed materials (http://www.minotnd.org/index.php?option=com_content&view=category&layout=blog&id=26&Itemid=32). For a nominal annual fee, it would be possible to purchase a simple domain name (e.g., www.minotcitybus.com) and redirect users to the City's website.

As with the printed materials, there are several drawbacks of the existing website:

- Lack of a single system map and set of schedules that displays all services together
- Somewhat cumbersome to find the desired route, especially if you are not familiar with the system
- Lack of web-based schedules (they are only available as PDFs)

Trip Planning with Google Transit

Using Google Transit to facilitate trip planning has become a popular service in the transit industry. This feature allows the agency to show its routes and schedules via Google Maps on internet-connected computers, tablets, and smart phones. This helps promote transit to new audiences and allows users to employ Google's trip planning feature for transit. Google Transit is built around the General Transit Feed Specification (GTFS) which defines a common format for public transportation schedules and associated geographic information. This requires the transit agency to export it route and schedule information to Google in this common format and to update this central database when changes are made. Getting the information in the appropriate formats and exporting the data can be difficult for agency staff that have not worked with the system. A number of companies specialize in assisting agencies with the preparation and maintenance of their GTFS data. For a small system these service may cost on the order of $2,000 to prepare and export the data and around $1,000 a year to maintain changes to the system.

Real-Time Arrival Information

The information discussed to this point is static in nature, conveying fixed bus routes and schedule arrival times. Real-time arrival system use Automated Vehicle Location (AVL) technology to track vehicle location and inform passenger when buses will arrive at their stop. This real-time information is made available via web portals including desktop computers, tablets and smart phones. In addition the information could be displayed on video terminal at major bus stops. The GTFS standard used on Google Transit has been expanded to handle real-time bus location information derived from an agency's AVL system. The integration of these systems can be complicated and a number of transit agencies and university shuttle systems have instead contracted firms that provide a managed real-time bus arrival system.

Error! Reference source not found. illustrates the costs related to contracting for a managed real-time bus arrival system. These costs are for a turnkey system that provides all the related AVL and system hardware, software, and support to deliver bus arrival information at all fixed stops. It is based on equipping six vehicles operating on four routes (all the necessary in-vehicle equipment may be transferable to spare vehicles when in operation). The information can be delivered to the MCT website, customer mobile units, or public display boards. The first year cost for the services is about $41,800 and subsequent years cost about $10,600. Transit agencies have been able to contract for multi-year service packages and capitalize the project costs. The cost estimate does not include the public display which varies based on the size and nature of the display. The annual cost to display arrival information on a LCD TV display is about $2,400 per year not including any hardware costs.

Figure 7-1 Next Bus Arrival Information System Cost Estimate

One-time Costs	Unit Cost	Units	Extended Price
Tracker Suite with Mobile Data Terminal (MDT)[1]	$2,150	6	$12,900
Route Configuration	$3,000	4	$12,000
Telephone Information System[2]	$1,000	1	$1,000
SMS Text Messaging System[2]	$1,000	1	$1,000
Project Management			$2,000
Travel and Expenses			$3,000
Training Webinar			$500
Total one-time costs			$32,400
Recurring Costs	**Per Month**	**Hardware Units**	**Per Year**
Cellular service (3 second reporting rate)[3]	$35	6	$2,520
ASP (Software) service – trackers	$55	6	$3,960
Telephone Information System (4 routes @ $30/route/month)[2]	$120		$1,440
SMS Text messaging (4 routes @ $30/route/month)[2]	$120		$1,440
Tracker Suite hardware warranty (after Year 1)			$1,270
Five-Year Project Year Breakdown[4]	**One-time**	**Recurring**	**Total**
Year 1 Costs	$32,400	$9,360	$41,760
Year 2 Costs[5]	$0	$10,630	$10,630
Year 3 Costs[5]	$0	$10,630	$10,630
Year 4 Costs[5]	$0	$10,630	$10,630
Year 5 Costs[5]	$0	$10,630	$10,630
Total Project Cost for 5 Years			$84,280

Notes:
[1]Can be portable unit or installed in vehicle. Cost includes installation
[2] Optional but highly recommended
[3]Can be 10 seconds or more for a cost of $25/unit/month
[4]Total multi-year project costs may be capitalized
[5]Includes optional extended warranty

Fare Information

Fare information is prominently displayed in the MTS brochures as well as on the website, and both are clearly presented and easy to understand. While a minor point, the fare category for "Children under 6" could make some people wonder whether this *includes* six year olds or is only for passengers under the age of six. To help make this clearer, this fare category could be labeled as "Children age 5 and under."

ADA Paratransit and Accessibility Information

MTS provides good information about the services operated by Souris Basin Transit (SBT) on their website and in the transit brochure. Here, potential users that are eligible for ADA service can find out about service hours, how to schedule a ride, and whether passengers are eligible for the service. There are several improvements that would make this information more usable:

- Publish the fares, which according to the SBT website are $2.50 per trip within Minot.
- Provide link to the SBT website, rather than just the phone number.
- The introductory phrase "Complementary service for those requiring specially equipped vehicles…" could be confusing to some people. While the term "complementary paratransit" is common in the transit industry, some people could mistake this as *complimentary* – as in the service is free. This should be phrased in a way that makes it clear that paratransit service is for people who are eligible to use the service, has a premium cost associated with it (twice the fixed route fare), and *complements* the fixed route service.

VEHICLES AND BUS STOPS

Transit Vehicles

MCT's current bus fleet ranges from modern low-floor buses to older high-floor coaches. In all, there are about five different vehicle types from different manufacturers in the fleet (e.g., Eldorado, Amtran, Startrans and International). Whereas all buses are branded with the white and maroon color scheme, and all have "Minot City Transit" on the side of the bus, the newer low-floor vehicles have been wrapped with paid advertising, which obscures the Minot City Transit name and most of the color along the side of the bus.

Although all vehicles have some branding associated with them, ideally the logo should be much larger and the buses could incorporate the maroon color or other colors to be more visually appealing and recognizable as Minot's public transportation service. If the sides of vehicles are used for advertising, it is recommended to

While this is an older bus in the MCT fleet, it is clearly branded and has the City's website displayed on the side.

The two newest buses in the fleet (2010 Eldorado low-floor buses) are branded as Minot City Transit but are also wrapped in advertising, which obscures the brand.

use the front and rear of the bus could be better utilized.

Another important feature of marketing transit services is ensuring that information found on websites and printed materials matches that presented on the vehicles and at bus stops. Although head signs on buses appear to match printed and online information, the electronic headsigns on the new vehicles make it easier to provide more information about the route. For example, the route name and major destinations or corridors served could also be displayed.

Bus Stops

Most stops in the MCT system are not identified by a sign or shelter but are rather flag stops (i.e., the bus can stop at any safe intersection or at fire hydrants in the middle of the block). There are some historic City Bus stop signs around the city, which should be removed and updated with current information. As noted in the Service Plan chapter, it is recommended that the two Core routes (North and South) transition from flag stops to a system fixed bus stops, while other routes will remain mostly flagstop. In both cases, the bus stop signs should prominently display the Minot City Transit name (and logo if developed), phone number and website.

Transfer Center

Minot City Transit has one primary transfer location at the Town & Country Center. As a privately owned shopping center, transit vehicles must share curb space with other uses, such as delivery vehicles. The waiting area for passengers is also very utilitarian and does not make use of the space to market the system. In fact, when no buses are laying over here, it may not even be distinguishable as Minot's main transit hub. A more detailed discussion about evaluating the potential for a new facility is provided in Chapter 7.

Town & Country Center is the primary transfer location for Minot City Transit. Because it is not exclusive to transit vehicles, deliver vehicles share the same curb space as transit vehicles at certain times of the day.

BRANDING AND MARKETING CONSIDERATIONS

Based on an independent evaluation of MCT's branding and marketing materials, as well as feedback received from the community survey, the following considerations are made for improving the legibility of the system. Because not everything can be done at once, the considerations are listed roughly in priority order.

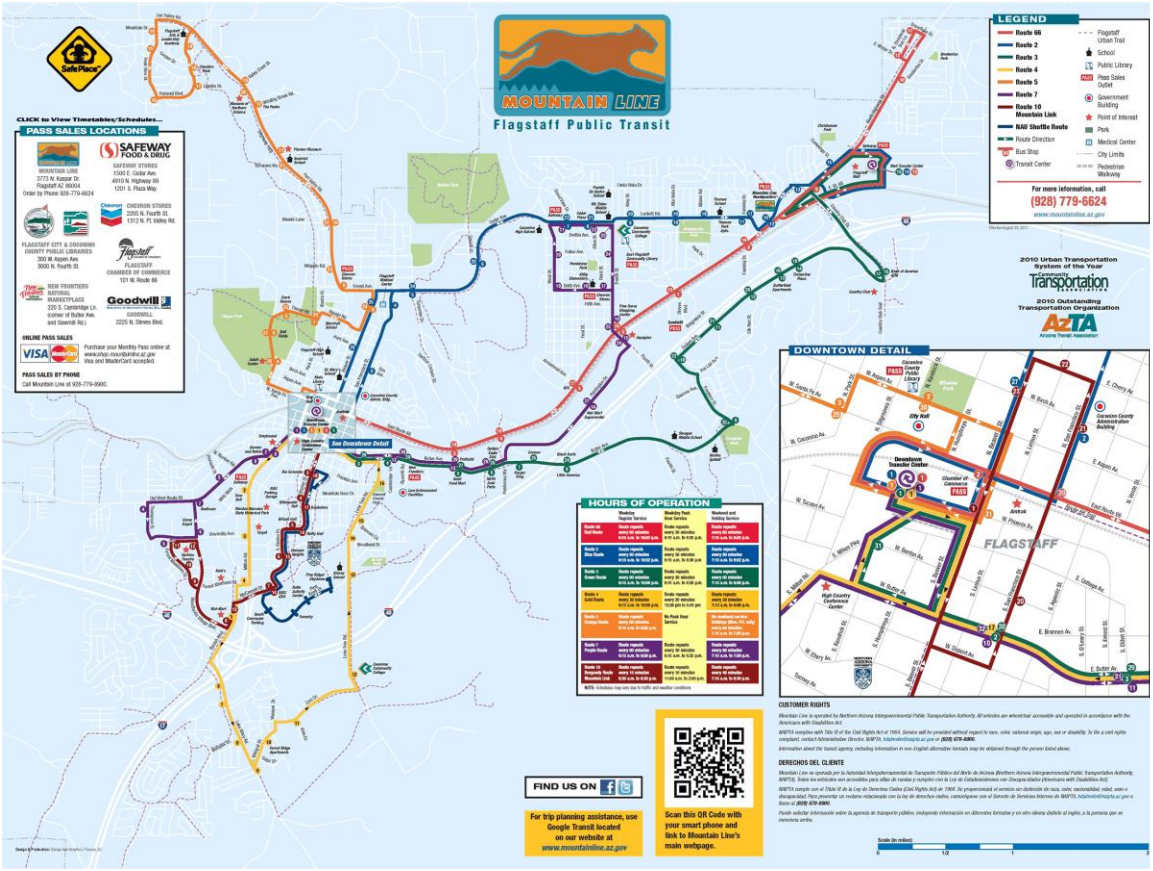
- **Develop a Refreshed Brand and Logo.** Although Minot City Transit is generally recognized as the fixed route transit provider in Minot, there is also some confusion between MCT and City Bus (the historic name of the system). To help promote the redesigned system presented in the Short-Term Service Plan (Chapter 4), the City should consider developing a new logo and name that would better portray the importance of transit in the community and help generate excitement in the system. Suggestions for a new logo and color scheme for MCT include:
    - Portray the unique geographic features of the Minot area, such as the Souris River, rolling hills, or rapid growth of the community (i.e., the Magic City).
    - Use elements of the City of Minot logo, such as the shooting star, to convey the connection between the City and the transit system.
    - Use colors from the City of Minot logo (white and maroon)
    - Ensure that the logo incorporates the phone number and website (see below for recommendations related to electronic information)

A new brand for the transit system could incorporate The Magic City motto.

  Once a new logo and color scheme is developed, a branding and style guide should also be produced. This would be a simple guidebook that states when, where and how the new logo and name (if applicable) should be displayed on marketing materials, on the website, on buses and on bus stop signs.
- **Develop a Single Transit System Map and Brochure.** All transit passengers, even those that use the service regularly, need to be able to easily navigate MCT's transit services. For a system the size of MCT, it is very appropriate to build on the existing brochure to provide more comprehensive information. At a minimum, the brochure should include the following information:
    - **System map.** A map should be the main visual element of the services offered by MCT. The map should be drawn to scale, include all routes in the MCT system, and include key landmarks and destinations in the Minot area. Some transit agencies even promote their map as the official city map, which could also be done by MCT. The map should be designed in a way that is easily downloadable on the internet and can be printed out at a standard size (e.g., 8 ½ x 11).
    - **Route schedules.** Full schedules for every route should also be included in the brochure. Timepoints listed on the schedule should visually connect back to the map to improve legibility (i.e., color coded).

- **Fare information.** The fares and policies for all services should be clearly described on the brochure, as well as policies for using different fare media (i.e., senior citizen reduced fare and children under 6 ride free).
- **Contact information.** A phone number and website should be prominently displayed on the brochure, as well as policies for submitting feedback (positive or negative) about MCT services.
- **Other information.** This might include a "Rider's Guide" that provides basic information about MCT and information about Souris Basin Transit and other private regional transportation providers. Other possible additions could include a QR code (which allows smart phone users to quickly access MCT information) that would take people directly to the system website.

This brochure and system map could easily be modeled after the MountainLine system in Flagstaff, Arizona (below) that clearly shows what routes are available and basic characteristics for each route (the schedules are on the back side of the brochure).



A new system map, like this one in Flagstaff, Arizona, would effectively display all of the fixed route services offered by MCT. Note that schedules are on the back of this map, which folds up into an easy-to-use brochure and city map.

- **Brand All Marketing and Branding Information Consistently.** It is important for transit services to be branded in a way that indicates a unified service. While some services are designed for specific markets, passengers and the public appreciate the legibility of a transit system that is unified and consistently branded. As such, all bus stops, shelters, buses, marketing materials, fare media, and advertising information

should be presented to the community in a consistent and unified way. A good example, albeit from a much larger transit agency (TriMet in Portland, Oregon), is shown below.

Another consideration is to develop policies related to advertising on vehicles and/or at bus stops. While advertising is a good (though relatively small) source of revenue for many transit providers, MCT should ensure that advertising is done in a consistent way to maintain and reinforce the brand. If allowing full bus wraps, as MCT does with the newer buses, space should be reserved to display at least the name of the system. Likewise, advertising at shelters could be considered, but they should not detract from passenger information available at the stop.

- **Develop a New, Free-Standing Website.** Websites for transit systems have become ubiquitous around the country, and most people interested in using transit will find the transit information they desire on the internet. While MCT make good use of its website within the City's site, the primary drawback is the inability to provide an easy-to-remember web address to this site. The transit information is also buried within the City's website. This consideration relates to the need for a system-wide map that shows all information in one location. The website should include all of the same information as the brochure (system map, schedules, fare information, etc.), but could also include some additional features, such as:
  - Links to a Facebook page and/or Twitter feed
  - Trip planner (using Google Transit)
  - Links to other transportation providers, such as Souris Basin Transit and Jefferson Lines
  - Information on news, events and rider alerts
  - Ability for users to provide input about the system

  The City should also consider making the website separate from the City of Minot's website, or at least brand the MCT portion of website differently than the host website. While a separate website may be less cost effective, it would more clearly distinguish MCT from other city services and allow more flexibility in how the website is designed and what information is presented.

- **Continue Marketing Existing System.** In addition to developing a refreshed brand and system brochure and distributing this information as widely as possible on buses and at the Town & Country Center, it is important to continue marketing of the system throughout the community. There are a number of suggested considerations for doing this (some of which are already occurring):
  - **Partner with local retailers and other organizations to sell bus tokens and monthly passes and distribute information.** Currently, MCT is pursuing a partnership with Cash Wise to sell tokens and passes. MCT should expand this program to partner with other retail establishments and other organizations to sell fare media, distribute information, etc. Possible retail outlets include Marketplace Foods, Town & Country Center, Dakota Square Mall, or Walmart (all of which are the primary ridership generators of the existing system). Partnerships could also be formed with other organizations or institutions, such as North Central Human Service Center, Minot State University, Trinity Hospital, or the Minot Chamber of Commerce. One suggestion would be to ensure that all new students at Minot State University are given a new transit brochure and perhaps one or two free tokens to try using transit. Finally, transit brochures should be prominently displayed at all City-operated facilities, such as City Hall and the Library.
  - **Continue engaging the media.** The local media – particularly KMOT and the Minot Daily News – have been very helpful at generating interest and involvement in this study. The City should periodically engage these media outlets to garner support and interest in the transit system.

8 PARATRANSIT SERVCIES

The ADA, civil rights legislation for persons with disabilities, was signed into law in 1990. Regulations specific to public transportation provisions of the ADA were issued by the federal Department of Transportation (DOT) in 1992, including the requirement that any entity operating fixed-route transit services is also required to provide complementary paratransit for persons whose disabilities prevent their independent use of fixed-route transit. The regulations also specified required service criteria for provision of these paratransit services, as well as eligibility criteria to define which persons are entitled to receive ADA paratransit. These requirements stipulate that fixed-route transit providers[6] must provide corresponding demand response service to eligible riders that is equivalent to the fixed-route service in terms of:

- Service area
- Fares
- Hours and days of service
- Access to service (including no trip purpose screening, no capacity constraints and reasonable scheduling requirements

Existing Conditions

In practice, the Souris Basin Transit (SBT) general public dial-a-ride system meets the City's requirements for complementary ADA paratransit service. The City contracts with SBT for the provision of the ADA service and to provide additional capacity in terms of accessible vans and a financial contribution towards the service and support functions. The agreement does not specifically detail the aspects of the ADA service (including those required by ADA law and/or FTA regulation) nor does it specify performance goals or objectives for the delivery of the ADA service.

While the City has an eligibility process to qualify passengers for the ADA paratransit service it is not utilized by riders and all customers are treated as members of the general public. Therefore the use of the ADA service cannot be tracked, and the ADA services compliance to FTA regulations cannot be evaluated separately from the overall general public system's performance. The eligibility process is publicized via the MCT website and in an unreleased *Riders Guide*, but riders either do not understand their rights under the ADA law or do not perceive benefits of becoming qualified as ADA eligible resulting in the lack of registration for the ADA service.

[6] The FTA complementary ADA paratransit requirements do not apply to commuter bus services which do not provide local bus service (i.e. predominately longer distance, direct service with limited stops and serving commuters). The requirements are also not applicable to route deviation services that comply with the general characteristics of demand response service (i.e. open to the general public, take reservations in advance etc) over the entire route.

ADA Plan

The ADA regulations required the provisions be fully implemented by January 1997, and that the entity prepare an ADA Complementary Paratransit Plan to indicate how it intended to come into compliance, and that it regularly update the plan. Appendix E highlights and required elements of an ADA Plan. In addition, the NDDOT Fixed Route Compliance Questionnaire[7] references the submission of a plan to the state and the need to show compliance to ADA paratransit requirements. A key aspect of an ADA Plan is to show the paratransit service's performance to a set of six equivalent (to fixed-route) service criteria and a description of the agency's eligibility process.

MCT PARATRANSIT SERVICE RIDERS GUIDE

The Minot City Transit *Paratransit Service Riders Guide* (Adopted: March 5, 2012) is essentially an ADA Plan for the City. This document contains the required elements of an ADA Plan plus further specification of conformance to industry practices, noting the potential discrepancies identified in Figure 8-1. Although a few sections are written for an audience of transit users, it is primarily a policy document, often citing required ADA law.

Figure 8-1 Items for Consideration in Paratransit Service Riders Guide

Rider's Guide Section	Element Requiring Review
Section 1 General Background	Section 1.3 Describes the current Midday Operation. All fixed-route services that require ADA complementary paratransit service should be described in the plan.
Section 3.2 Service Hours	Update to reflect short-term service plan span of operation
Section 4.1 ADA Paratransit Eligibility Criteria	Category 2 Eligibility is defined for cases where passengers need to board an inaccessible fixed-route vehicle. As all MCT vehicles are accessible, this category may not be required.
Section 4.2 Fixed Route Fares	Subsection seems out of place for eligibility section. It may be more appropriate under Section 3 Transportation Services
Section 4.4 Temporary Disabilities	Subsection does not specifically say that passengers can be granted temporary (limited duration) eligibility nor the conditions/limitations of such a certification.
Section 5.4 Office Hours	FTA requirements call for the taking of reservations during "normal business hours" on the day before a trip request. The 2:00 p.m. cutoff may be seen as something short of the 4:30 p.m. end of office hours. The requirement to make reservations for Monday travel on Friday is also contrary to ADA requirement for next day trip requests (noting that voice mail/answering machines can be used to accept reservation requests when the office is closed).

[7] The State's Fixed Route Compliance Questions are similar in nature to the questions contained in the FTA's Triennial Review used to demonstrate adherence to federal transit regulations. Questions 7 through 11 of the NDDOT questionnaire focus on the provision of ADA complementary paratransit service, including whether the transit provider has a current ADA complementary paratransit plan and whether the plan has been submitted to the state. The questionnaire is part of the *Transit Policy and Procedure Manual* (http://www.dot.nd.gov/manuals/localgov/policy-procedure-manual.pdf)

Rider's Guide Section	Element Requiring Review
Section 5.7 Subscription Service	As "non-subscription" capacity constraints are not permitted, the 50% limit on subscription trips is not a viable consideration these days. The introductory language can be left it, but the example is probably not required.
Section 6.6 Capacity Constraints	Subsection states that pick up times offered outside of one-hour window AND deemed unacceptable by the riders will be considered trip denials. While true, any trip offered outside the window should be tracked as a denial, even if accepted by the customer. And the used of fixed times to determine excessively long trips has been called into question by the FTA. Current practices are to equate paratransit travel times to equivalent ones make on fixed-route (see Chapter 10 for a discussion of an in-vehicle travel time performance metric)

Note: This table does not reflect a comprehensive review of the Riders Guide in terms of compliance with FTA regulations but highlights areas findings from an organizational prospective along with issues commonly found with ADA complementary paratransit services.

Implementation Action Items

Minot City Transit should consider the following action items for implementation.

- **Eligibility process improvements.** To better track use of the City's ADA paratransit service, MCT should formally implement the eligibility process and encourage its use. This will entail
  - The review and update of the application material
  - The establishment of a tracking database
  - The update of customer information on the benefits of registering for ADA paratransit service and documenting the application process and how-to-ride guides
  - The definition of roles for City and SBT staff

  Per the Rider's Guide and the questions on the application form MCT desires to review applicants based on their ability to use fixed-route services, not just having a documented disability. This is a good goal given the growing demand for paratransit services, but even a review based on application forms (and not involving observations of applicant limitations) will require additional staff time. These changes should be considered for year of the plan allowing staff to focus on short-term service plan changes and the marketing of these changes in year one.

- **Codify the City's ADA Complementary Paratransit Plan.** MCT should consider establishing a separate policy document for City approval and submission to the state to document the ADA paratransit services and associated policies and procures. As described in this chapter, the Riders Guide functions as an ADA plan, but both the plan and there riders would benefit from the separation of the how to apply and ride information from the policy language. This could be done in conjunction with the eligibility process improvements, making sure any changes to the eligibility process are

documented in the two new documents. Similarly, the updated documents should reflect changes resulting from implementation of the short-term service plan. The riders guide should also avoid industry jargon where feasible. The riders guide should be made available in both printed and web-based forms.

- **Update agreement with SBT.** The City (and ultimately the State) need to verify that the MCT paratransit service meets the FTA requirements. This implies that SBT, as the City's contracted provider, need to perform in accordance with City polity and to assist in the documentation of system performance. The City should consider adding the following elements to the agreement for paratransit services.
  - Clearly require compliance with the MCT ADA Complementary Paratransit Plan. Although service appears to meet the requirements today, SBT is not under any formal requirement to do so.
  - Define data collection and reporting requirements to satisfy state and federal reviews (see Chapter 10 for suggested performance monitoring measures and standards)

  This should be completed after updating the ADA Complementary Paratransit Plan and establishing ADA paratransit performance measures and standards – tentatively planed for year 2 of the plan.

9 FARE POLICY AND COLLECTION

INTRODUCTION

This chapter examines fare collection options for MCT. It primarily focuses on the potential for process and/or technology improvements to improve efficiencies and operator safety. The following sections introduce aspects that are generally considered when reviewing an agency's fare collection system. An in-depth review and analysis of fare systems typically involves a dedicate study but a cursory examination of the MCT fare system as part of this Comprehensive System Analysis will address some concerns of the agency and inform the City's strategic planning for transit services.

Fare Policy

Fare policies set the direction for the fare strategy and structure. Fare policy goals typically address financial matters, equity, customer relations, simplicity, and cost control (administrative /management issues). Key policies should codify the agencies fare revenue expectations, provisions for maintaining affordable fares, strategies for partnerships with local institutions and employers, and fare validation and enforcement procedures. Developing and prioritizing fare policy goals are important first steps in establishing a fare structure and determining appropriate fare collection technologies.

Fare Strategy and Structure

Fare structure refers to the general type of fare collection and payment structure. Possible approaches include flat or distance-based fares, zonal system, peak/off peak and express or other special surcharges. It also specifies the discounts available to monthly pass users and identified customers (e.g. seniors, youth, students).

Payment Type

Payment type refers the physical media used to transact fare payments. Popular options include: cash, tokens, paper tickets and (flash) passes (including weekly, monthly and multi-ride), magnetic stripe cards, and smart cards.

Fare Validation/Collection

Fare validation and collection refers to the manner in which fares are enforced or inspected, and processed. Basic fare validation options are: collecting of cash, token, or tickets in a farebox, flashing of a current pass to the operator, or the electronic processing of a magnetic strip card or smart card. Fare inspectors are required on systems that do not involve operator or farebox

validation at a single door, such as on rail or Bus Rapid Bus (BRT) systems involving Proof of Payment (POP) on the vehicle.

EXISTING MCT FARE COLLECTION SYSTEM

Minot City Transit's fare collection system is typical for an operation of its size. This section provides a brief overview of the fare system.

Fare Policy

The City does not have specific policies in place for the fare collection aspect of MCT. The following section on fare structure discusses some aspects of MCT's fare system that may benefit from documenting in policy language. This chapter concludes with a set of suggested actions for the fare system and outlines possible fare policy strategies.

Fare Structure

Figure 9-1 summarizes the MCT fare structure. The City's base fare level and availability of discounts are in line with similar sized peer systems. Discounts are currently available for purchasers of multi-trip fare media, whether a member of the general public or a student, senior citizen, or disabled rider. In the future when Minot becomes a direct recipient of FTA 5307 grant funding[8] it will be required to offer a 50% discount off of the cash base fare for senior riders. The current discount levels can be considered high and should be reviewed in light of the goals for the discount. For example, the purchase of 10 tokens at a dollar a piece represents a 20% discount. This may be appropriate if the City wants to provide an incentive to avoid paying with changes, or to increase the affordability of fare. Similarly, the monthly passes are often expressed in terms of a multiplier factor relative to the base fare. The current pass costs 27.2 times the base fare. This is an effective 32% discount assuming riders make 40 one-way trips per month. A multiplier in the 30s is more typical. Transfers between routes are free. This is common where transfers are required to complete cross-region trips and the potential for abuse (e.g. re-selling of unused transfers) is not great.

Figure 9-1 MCT Fare Structure

Fare Type	Fare Cost
Adult Cash Fare	$1.25
Adult Tokens (10 tokens per envelope)	$10.00
Adult Monthly Pass	$34.00
Student/Senior Citizens/Disabled (10 tokens per envelope)	$8.00
Student/Senior Citizen/Disabled Monthly Pass	$26.00
Children under 6	Free
Transfers	Free

[8] The City of Minot would become a direct recipient of urbanized area grants (Section 5307) after its population is certified above 50,000 and no longer receive Section 5311 funding through the state.

Payment Type

MCT provides only a few physical fare instruments making it a relatively simple system. One-time-use paper transfers are provided to customers needing to make a transfer at the T&C shopping center. Monthly "flash" passes are made available on a calendar monthly basis. And multiple-use tokens are sold and recycled through the system for future use. The tokens and passes are sold at the Public Works Office (1025 31st St. SE) and the Water Billing Office (515 2nd Ave. SW). In addition tokens are sold on the bus, requiring drivers to handle large sums of money and make change when needed (creating delays in boarding and possible targets for theft).

Fare Validation/Collection

MCT operators provide basic fare collection and validation at the time passengers board the bus. They either acknowledge acceptance of a monthly pass (and record the number of boardings with this fare type), or they verify that the appropriate cash fare, a token, or valid transfer are dropped in the fare box when required – again recording the boarding and associated fare type.

FARE SYSTEM TECHNOLOGY CONSIDERATIONS

The transit industry is trending toward a broader use of electronic fare media. These methods for collecting fares can realize a number of benefits but can also raise issues that require addressing when planning for or implementing the new technology. The following sections summarize the differences between the magnetic stripe card and the smart card, the two primary electronic fare collection technologies.

Currency Acceptance and Validation Fareboxes

Both technologies are typically employed along with the acceptance of cash fares. The elimination of cash fares by all transit riders is not likely to happen in the foreseeable future due to passenger financial capabilities and behaviors. While convenience factors and financial incentives can be used to reduce the use of cash, MCT will have to process cash fares with any new fare collection system. To minimize the impacts of accepting cash fares, modern fareboxes include features to validate currency and to deposited coins and bills. In addition to providing drivers with an indication of the amount deposited, these fare boxes collecting of fare data (i.e. counting the number and type of fare media used)

Magnetic Stripe Cards

Magnetic strip cards (or tickets) have been the mainstay of automated fare collections systems for some time. Cards can be made from paper or plastic stock and store data on a thin magnetic tape stripe on the back of the card. The ability to read and write data onto these cards has provided a number of benefits including:

- Provision of broad range of fare media including day passes, multi-ride passes, stored-value cards, and time-period passes
- Encoding of fare media at Ticket Vending Machines (TVMs), at card stock vendors, and/or at fareboxes onboard buses

- Issuance and validation of transfers
- Lowered fare evasion levels and reduced level of operator / passenger conflicts (including misuse of transfers)
- Capturing of improved ridership data
- Production using low-cost paper stock
- Production of custom cards printed with agency developed designs and pre-encoded for specific fare instruments

While magnetic strip cards are fairly reliable in the transit industry, the reading of magnetic stripe cards is a highly mechanical process, requiring the card to be physically inserted into the reader unit where the card is passed by magnetic heads. The tracks storing data can be corrupted by long-term exposure to high magnetic fields, or more often physical damage, especially when involving thin paper stock cards.

Smart Cards

Smart cards can be considered as the next generation transit fare collection instrument. These store data on a memory chip embedded in the card instead of the magnetic tracks on the surface of magnetic stripe cards. For most transit applications, radio frequency identification (RFID) technology is employed to allow the reading and writing of data without requiring the card to be in physical contact with TVMs or farebox equipment. Smart cards realize similar benefits to those associated with magnetic stripe card as well as the following:

- Greater data storing capability
- Contact-less operation eliminates the need to physically insert or swipe card at the farebox, speeding up boarding time
- Support for institutional/corporate pass programs including tracking of use and enabling/disabling of users
- Card registration to individual riders facilitating the replacement of lost cards, enabling the on-line recharging of cards; and the management of individual passenger's participation in university or corporate pass programs
- Interoperability allowing the use of common cards across multiple transit agencies as well as opportunities to use credit/debit cards, or existing identification cards for transit fare collection

Smart cards are available on thinner plastic card stock for limited use passes or on thicker cards for long-term pass/card holders. Costs for smart cards are higher than those associated with magnetic strip cards, but the costs are coming down, especially for the limited-use cards. Card costs are often mitigated by the charging of customers for cards or replacement cards. The enhanced features associated with a smart card system often present new or increased complexities. As a result, both agency staff and the riding public will need education on how to use smart cards at the time the technology is implemented.

Figure 9-2 lists the major advantages and disadvantages of smart cards relative to magnetic stripe cards.

Figure 9-2 Smart Card Advantages and Disadvantages

Enhanced Data Collection	+	Embedded memory chips have higher capacities and data is transferred quickly. In addition to tracking data on pass types, smart card application typically track data on rider groups such as students participating in a university pass program.
Reduced Dwell Time	+	Contact-less operation reduces the customer transaction time at the farebox
Durability	+	The embedded memory chip is protected from minor physical damage and not impacted by magnetic fields
Card Cost	-	The per-unit cost of smart cards is high relative to paper magnetic stripe tickets. Thin, limited use smart cards are less expensive and available for transfers, day passes etc.
Point of sale complexities	-	Smart cards are typically encoded for specific uses requiring the registration of a card to a user or the loading with a requested number of trips or dollar amount – typically done at Ticket Vending Machines or at agency encoding devices. Magnetic stripe cards are often used when doing mass distribution of pre-encoded cards to retail locations or via mailings from the transit agency.
Agency Staff Learning Curve	-	Taking full advantage of the smart card feature set will require staff training on fare collection system software as well as on the farebox and TVM equipment.
Passenger Learning Curve	-	Customers will require training on how to procure and maintain (adding trips or value) smart card instruments, and how to use them when boarding a bus.

Smart card impact relative magnetic stripe: - Negative Impact ---------O Neutral---------- + Positive Impact

Smart Card Aspects

The following sections detail some considerations when entertaining the use of smart cards.

Stored Value versus Stored Ride

Many smart card systems make cards available as stored-value "debit" cards. Customers in these systems load their cards with a dollar amount of their choice and the fare collection system deducts the appropriate fare amount from their balance for each ride taken. Transit agencies find this approach attractive as it eliminates the need to administer a number of multiple-ride fare instruments – simplifying the overall fare structure. Allowing customers to load cards in small dollar amount increments addresses affordability concerns. And frequent-use incentives can be achieved by offering cash discounts when loading cards (e.g. only charging the customer 90% of the value added).

Alternatively, smart cards could be used as stored-ride cards where customers load the card with a specific number of trips. This may be easier to understand for customers used to purchasing multiple ride tickets or a set of tokens. In addition, smart cards can be configured as unlimited-use, time period passes (i.e. monthly passes). The GFI system considered by MCT can operate with stored-value cards, or with stored-ride cards, as well as unlimited ride time period passed (e.g. a 31 day rolling pass or a monthly pass). Therefore, MCT may have to decide on an approach

before implementing smart cards. It should be noted that magnetic stripe cards function in a similar manner allow the pre-encoding of monthly passes, multi-ride tickets or an initial stored value. The use of magnetic stripe cards as stored value cards can create a similar need to recharge cards as seen with smart cards. Fareboxes could be used to recharge cards but this often slows down boarding time and many systems do not enable this feature.

Card Registration

Smart cards can be registered to individual riders or left as anonymous fare media. Registration is often an essential part of university or employee pass programs to make sure participant cards on only valid while the individual is enrolled in class or working at the partner company/organization. The registration of non-pass program smart cards can benefit customers by allowing them to report cards as lost or stolen and have the agency disable them ahead of issuing a replacement card. Some systems allow on-line uploading of value via a web-based e-store. This feature can only work when cards are registered to users of the on-line system. Yet, some customers have privacy concerns and do not want to have their card registered in their name. Agencies often support unregistered cards in these situations but do not disable/replace cards for this individual and these cards can only have value added at TVMs.

Point of Sale and Adding of Value

TVMs are the primary means for adding value to smart cards. These units can also sell unregistered smart cards. TVM's accept cash and can process credit/debit cards transactions, communicating directly with a clearinghouse gateway for transaction authorization and acceptance – reducing an agency's back-office administrative requirements. TVMs should be installed at locations where a high number of riders board buses and will benefit from the ability to buy or recharge cards. These can either be at major transfer locations, high-volume bus stops, or park-and-ride facilities. In MCT's case the T&C transfer location is an obvious choice for a TVM. Under the short-term service plan, MSU's location near multiple routes and source of a ridership base may make it a good choice for a second TVM as the system grows. In addition TVMs may be appropriate at major retail locations, even if they are not immediately adjacent to a bus stop as long as they service large numbers of bus riders. When possible, the physical location of the TVM should be in area that has a lot of all-day foot traffic and/or where support personal are present to minimize the potential for vandalism.

Although the technology can also support the sale and recharging of smart cards at fareboxes, such transactions should not be supported or should be discouraged (e.g. charging a premium at the farebox) in order to speed up boarding times. System administrators (transit agency staff or administrative staff at academic / employer partners) can also issue and update smart cards via desktop encoding devices. While magnetic stripe cards are often pre-encoded (and pre-printed with agency logos and branding) for distribution to retail outlets, smart cards require retailers to house recharging equipment if a broad fare sales network is desired. TVMs and recharging at retail locations are popular with cash-paying customers. Riders with credit cards tend to use on-line tools to recharge smart cards as they offer the convenience of 24-hour access and the ability for users to set up personal accounts.

Peer Smart Card Startup Issues

Peer experiences with smart cards primarily point to the need for staff and customer training along with adequate testing of equipment, software and processes. When asked about customer training, peer agencies point to the need for a comprehensive public information campaign.

RTD in Denver has been in the process of rolling out a smart card program but has faced several delays in terms of implementation. As a result, there are no "lessons learned" at this time. However, an emphasis was placed on the importance of having a range of staff at the table as part of an implementation task force. This included staff from finance, IT, human resources, fare collection, and service planning. After initial deployment of smart cards, RTD's goal is to move towards an open payment system[9]. Staff noted that some of their initial challenges were related to the complexity of their system and fare structure.

The Utah Transit Authority highlighted the retaining and expansion of its Operations and IT staff during the rollout of its new fare collection system, but they were also an early implementer of an open payment system, accepting credit and debit cards as fare instruments. UTA staff said a mistake they made was that they did not include IT in the process at the outset, which resulted in delays and unanticipated operational issues. They also said they could have benefited from more testing and user acceptance before going live with new features. UTA also noted that an increase in overall revenue collection costs due to implementation, although staff expects there to be some cost savings when smart cards are fully integrated.

Promoting Smart Cards with the Public

The use of smart cards can bring additional benefits to a transit agency and should encourage their use by customers when and where available. In all cases customers will need education on new fare media (smart cards and magnetic stripe cards to a lesser degree), collection equipment, and fare payment procedures. This will reduce any anxiety on the customer's behalf when using something new and increase the use of the new technology, especially if cash fares and/or magnetic stripe or paper instruments are available as options. The following elements should be considered as part of a customer promotion program:

- Updated "How to Ride" documentation in print and on line (with how-to videos)
- Promotional pieces describing customer benefits (particularly in terms of: greater flexibility when purchasing fares; greater protection against lost or stolen passes; and better planning to meet customer needs) and new procedures at fare media point of sale locations, on vehicles and in regular customer communications
- Customer service or travel training staff in the at major boarding locations during implementation of smart cards
- Increased or additional discounts during initial rollout of smart cards
- Training of vehicle operators to respond to new users

Capital and Operating Costs Associated with Electronic Fare Payment

Introduction of an electronic fare collection system involves numerous up-front and ongoing costs to establish and maintain fare collection equipment, as well as internal and external processes to print and distribute tickets and passes, collect and reconcile fares, and conduct other customer relations and financial transactions. This section presents a detailed review of all equipment that

[9] Traditional closed payment systems are associated with smart cards issued by transit agencies and the agency is responsible processing and reconciling all the financial transactions. Open payment systems are becoming attractive to large agencies looking to reduce their "back-office" activities. These system accept bank cards for fare payments making the boarding a traditional credit card transaction and eliminating the need for the agency to process the financial transaction.

would be necessary to begin electronic fare collection at MCT and a range of corresponding costs. It also estimates ongoing operating costs that reflect new administrative responsibilities for MCT.

Initial Capital Investments

Figure 9-3 presents ranges for the one-time capital investments required to implement an electronic fare collection system. Roughly $390,000 would be required to equip the current fleet with new fare boxes and to add the required equipment and software to support at the operations center. In addition, if a broad network of retailers is set up to charge smart cards, each retailer will need to be equipped with a $2,000 card encoding set up. The cost for an on-line smart card recharging and management system (allowing users to manage cards from a computer or mobile device) can exceed $200,000 and is not included in the estimate. The table also includes marketing costs to educate the public on the new fare system and to encourage the use of the new fare media, as well as costs to construct a dedicated room for processing cash fares and repairing fareboxes. The new room is suggested to provide a secure are where the mobile vault can be emptied and a clean environment for maintaining the electronic equipment. The total start up costs are in the name are of a half-million dollars for a basic system.

Figure 9-3 One-Time Capital Investments for Electronic Fare Collection System

One-Time Capital Investments	Qty	Unit Cost[1]	Total Cost
Fixed Route Fareboxes	13	$15,000	$195,000
Farebox Installation	13	$400	$5,000
Data Processing Software and Hardware[2]	1	$55,000	$55,000
Ticket Vending Machines (TVMs)[3]	1	$54,000	$54,000
Attended Card Encoders[4]	1	$17,000	$17,000
Fare Media[5]	1	$6,860	$7,000
Portable Key	1	$1,000	$1,000
Vault (on wheels)	1	$39,000	$39,000
Spares Parts	1	$17,000	$17,000
Equipment and Software Costs			**$390,000**
Money Room and Clean Room Build Out[6]	360	$200	$72,000
Initial Marketing and Education	1	$45,000	$45,000
Total Capital Costs			**$507,000**

Notes:
[1]Equipment costs include sales tax
[2]Operations center system includes probes for data collection from vehicles)
[3]One TVM assumed at T&C transfer facility
[4]One Printer/Encoder Machine (PEM) to program (encode) blank fare media (magnetic stripe or smart cards) assumed at MCT administrative center
[5]Fare media covers the initial purchase of smart card or magnetic strip media.
[6]Small (360 sq ft) room assumed for cash counting and farebox maintenance.

Ongoing Operating Costs

The direct costs associated with an electronic fare collection system are minimal and associated with the purchase of fare media. The costs for blank or pre-encoded cards stock have decreased over the years and blank magnetic strip cards cost less than a nickel per card. Smart Cards can cost around $1.50 each but will not require regular replacement by repeat users.

One the other hand, the labor costs to manage the fare system can be appreciable for a small agency. Additional staff time will be required process the dumping of fare revenues and fare data, reconcile non-cash fares, maintain hardware and system software, educate customers on new fare options, and distribute fare media to point of sale locations. It is envisioned that MCT's admin support will need to be increased (incremental .25 FTE) to support the fare system. In addition it is assumed that some time will be required from the operations staff (which is planned to expand to support current and short-term service plan needs) as well as some random support from the City Information Technology department to address network or software upgrades.

Implementation Action Items

Minot City Transit should consider the following action items for implementation.

- **Expand network of retailers.** Building on the initial collaboration with Cash Wise, MCT should reach out to additional retail outlets for the sale of fare instruments. In short term this will involve the sale of tokens, and in the near term the sale of magnetic strip passes and/or sale and charging of smart cards.
- **Finalize plans for fare structure and fare types.** Some planning will be required to define a migration path from the current fare system to an electronic fare system. MCT may want to consider the initial use of magnetic strip cards and the current fare structure, simply replacing the tokens and monthly passes with the cards with 10-ride cards and 30-day passes (generic multi-use passes good for thirty days from date of first use). These can be purchased/encoded in bulk and distributed at a TVM and via the network of retailers MCT is currently exploring. The use of Smart Cards should be considered in the future after considering any changes to the fare structure and potential for partnering with MSU on student passes where Smart Cards can be issued to registered pass holders from the university or other partner organizations.
- **Purchase Fare Collection Equipment.** As MCT has identified capital funds for a new fare collection system, the components should be purchased as soon as possible. This will allow for system installation and testing ahead of the initial rollout which should probably be in association with the implementation of the short-term service plan. This will allow for the coordination of marketing and training efforts.

10PERFORMANCE MONITORING

This chapter presents a set of performance standards for use when evaluating individual route design attributes and performance. These standards provide a basis for analyzing the existing system as well a framework for conducting ongoing performance monitoring and implementing service changes.

MEASURES VERSUS STANDARDS

The terms measures, standards and guidelines are often used interchangeably and their meaning confused in practice. In addition the performance standards are often presented in conjunction with design standards while they typically have discrete applications. For the purpose of this report, the following definitions apply:

- **Performance measures** are metrics that can be measured about a transit operation. A measure is a basis for comparison – to a desired goal, to peer systems, or to past performance. The most useful measures for transit planning and operations are typically ratios of one attribute to another. Productivity (ridership/revenue hour), for example, is a near-universal measure in the industry. A good set of performance measures should relay on readily available data, and focus on key aspects of operations.
- **Performance standards** are target values for specific performance measures. They set the expectations for acceptable levels of performance. Back to the productivity example, a standard of 15 boardings per hour may be the threshold at which routes performing below this standard merit attention. A single performance measure may have multiple standards based on the service type, operating period, or geographic zone being evaluated. When setting performance standards, MCT will need to balance: industry norms; the agency's own goals and objectives; and any requirements from funding or other sources. For example, farebox recovery standards are often set below those of peer system if local policy makers agree to higher subsidies to address affordability concerns. Similarly, an agency may not have the ability to lower the farebox recovery standard if their operating funding stream mandates a minimal cost recovery.
- **Design standards** are guidelines or best practices expected to be used when designing new or restructured services. Chapter 2 introduced the primary design standards when discussing service allocation and design principles. These standards are decision tools that facilitate the establishment of new or substantially modified services. They can specify attributes ranging from where to add service when resources are added, to how close stop spacing should be. Design standards are often referred to as design guidelines to avoid confusion with performance standards.

SUGGESTED MEASURES AND STANDARDS

This section offers a set of measures for MCT to consider when evaluating service. These primary measures are frequently used in the transit industry as they evaluate key performance attributes, use regularly collected data, and are easily understood by policy makers and operations staff. Where appropriate, a standard is suggested for each measure based on industry norms. In many cases, separate standards need to be set based on service type (e.g. core routes vs. loop routes), day of week (weekday/Saturday/Sunday), time of day (day/evening/night). MCT should consider these breakdowns when expanding service in the mid- or long-term planning horizon. Although the universe of potential measures is large[10], the suggested set offers a manageable suite of tools for evaluating performance.

In addition to the performance measures and standards, this section presents a set of service design standards for MCT's consideration. These guidelines are in accordance with the principles described in Chapter 2 and provide a policy basis when deciding where and how to expand or contract service and assure consistency in the way services are provided throughout the entire service area.

The FTA guidance on Title VI[11] (see Chapter **Error! Reference source not found.**) requires all transit providers to develop a set of system-wide service standards and policies. The FTA requirements specify the inclusion of:

- Service standards
  - Vehicle load
  - Vehicle headway
  - On time performance
  - Service availability
- Service policies
  - Transit Amenities
  - Vehicle Assignment

This requirement is intended to provide a basis for assuring that protected populations do not receive disparate levels of service or investment. For example, by monitoring vehicle load factors, an agency can say whether or not routes serving low-income or monitory population result in standing room only any more or less than routes serving other parts of the service area. The set of standards suggested for MCT in this Chapter include those required for a Title VI program.

Fixed Route Performance Measures and Standards

Passengers / Revenue Hour

This productivity or service effectiveness measure shows how effective each route is in terms of passengers carried relative to its cost in terms of hours served. Productivity is highly dependent on the land uses served, frequency of service offered, and distance served. Therefore separate

[10] TCRP Report 88: *A Guidebook for Developing a Transit Performance-Measurement System* identifies over 400 performance measures.

[11] FTA Circular 4702.1B TITLE VI Requirements and Guidelines for Federal Transit Administration Recipients, (Washington DC: Federal Transit Administration, 2012).

standards should be set for individual service types as well as for weekday vs. weekend service. The uniqueness of the built environment as well as a route's mission should be considered when setting a productivity standard. Productivity-orientated routes serving dense transit corridors should be held to higher standards. Conversely, coverage-based routes serving residential neighborhoods could have lower targets. Some systems also categorize routes by sub-regions to acknowledge the overall population and employment densities in parts of the service area. This makes it difficult to set an absolute standard and the average observed productivity for service type subset is often used as the target. Minimum standards are often in the 60% to 70% of average range for productivity-based routes and in the 50% to 60% range for converge-based routes.

Measure	Example Industry Standards/Norms	Current MCT Performance
Passengers / Revenue Hour	▪ 12 – 35 Peak periods ▪ 10 – 30 Off-peak periods ▪ 8 – 20 Nights	▪ Midday service ranges between 5 and 19 passengers per hour

Example industry standards are for minimally acceptable service

Suggestion: MCT should establish minimally acceptable standards for the passengers per revenue hour measure. Based on the level of service provided, and the nature of the corridors served, the two core routes should be held to a higher standard than should the four neighborhood loop routes. The following standards are suggested as initial thresholds for minimally acceptable standards. These initial standards are intentionally low triggers for remedial action based on the fact that fact that it will take some time (12 to 18 months) for new system to mature. After that point, these standards should be adjusted based on performance at that time combined with City expectations for the routes. Even if these standards are not initially used to restructure poor performing routes, MCT will benefit from early implementation of a monitoring system that regularly collects and reports out on this performance measure.

- Core Routes
  - 15 passengers/hour
- Loop Routes
  - 10 passengers/hour

Farebox Revenue / Operating Costs

Often referred to as the farebox recovery, this cost efficiency measure indicates the level to which a route is being subsidized by non-fare revenue sources. The recovery ratio for in individual route is based on the fare charged, number of passengers carried, the distance served, and frequency of service provided. Long express routes have higher expenses per passenger but often charge a higher fare. Some agencies acknowledge that less productive routes or services will require a higher subsidy and have lower targets in off hours or for routes serving low-density areas.

Measure	Example Industry Standards/Norms	Current MCT Performance
Fare Revenue / Operating Expense	▪ 20% to 30% ▪ Less than 15% for night or rural service	▪ System Avg. 10%

Suggestion: An initial threshold should be set based on recent MCT experience but lowered to reflect uncertainty with early ridership expectations. Therefore a system-wide standard of 10% should initially be used to track performance. After the system matures, the standard should be adjusted. As the MCT data collection and reporting matures, this measure should be monitored at the route level, with the core routes being held to higher standards.

On-Time Performance

Sometimes referred to as schedule adherence, this measure indicates how reliably a route maintains its scheduled running time and is the ratio of on-time timepoints relative to the total number of timepoints recorded. It is useful from both an operations evaluation and a customer service point of view. From the customer's perspective early buses are as troublesome as late buses. The definitions for early and late performance need to be well defined to remove ambiguity and provide consistency. Most agencies settle on a target in the range of 1-3 minutes for an early arrival and around 5 minutes for a late arrival. On-time performance is dependent on a number of factors including: traffic congestion; the number of controlled intersections and turning movements along the route; the dwell time to board passengers, and therefore the number of boardings; route length; and the recovery/slack times built into the schedule. Ideally the on-time data is available at multiple timepoints along the route to facilitate in the evaluation of route segments. The standard for this measure is often based on a customer level of service basis and is often targeted above 90%. The on-time performance standard is one of the required Title VI service standards.

Measure	Example Industry Standards/Norms	Current MCT Performance
On-time performance	▪ 80% to 95%	▪ 82 to 97%

Current performance based on ridecheck performed for this study. Range is for the 6 midday routes and early arrivals accounted for most of the non on-time performance

Suggestion: The initial threshold should be placed at the low end of industry experiences. A slightly lower threshold is appropriate when triggering a route for review and will put only the worst performing routes under scrutiny.

- All Service types – 80%

Passenger Load Factor

Load factor is a measure of peak passenger loading along a route and calculated as the number of passenger per available seat. Operating with standees maximizes efficiency but can create customer satisfaction issues (from un-comfort when operating at crush loads to being passed up at stops). Additionally, there are operational issues because dwell times increase significantly when boarding and alighting full buses – leading to on-time performance problems. The use of Automated Passenger Count (APC) data can provide for the continual monitoring of load factor and can trigger a route for evaluation when additional buses may be needed to alleviate overcrowding. The standard for this measure often differentiates between service types and trip lengths. Long express services requiring a premium fare often target a load factor of 1.0, guaranteeing a seat for every passenger. Local routes often have higher targets, operating with a manageable level of standees. The passenger load standard is one of the required Title VI service standards.

Measure	Example Industry Standards/Norms	Current MCT Performance
Passenger Load Factor	▪ 1.0 Premium express service ▪ 1.23 -1.35 general local service ▪ 1.6 -1.7 urban core service	▪ N/A

Suggestion: The load factor measure allows for the averaging of performance over the review period and the following minimally acceptable thresholds will trigger individual routes for review.

- All Service Types – 1.25

Operating Cost / Revenue Hour

This cost efficiency measure is often used for system-wide evaluations as the cost component is primarily a function of fuel, labor and insurance expenses and normalizing to revenue hours minimizes route to route variations. Regional differences in the cost factors also make it difficult to perform direct evaluations to peer operations. Unit cost for operations should be tracked both to a target, usually a budgeted amount, and to past trend data. Continually monitoring costs can identify future budget problems and allow MCT to get ahead of any cost cutting undertakings.

Measure	Example Industry Standards/Norms	Current MCT Performance
Operating Cost / Revenue Hour	▪ $80 to $160 based on regional labor agreements and costs	▪ System Unit Cost $68

Suggestion: A unit cost standard is not recommended but this measure should be continually tracked during system reviews and compared to budgeted amounts to identify trends that merit attention.

Additional Measures

A fully implemented performance monitoring program should include additional measures that evaluate operations from a non-service design perspective. These include:

- **Safety**. preventable accidents per 100,000 revenue miles
- **Maintenance**. road calls per 100,000 revenue miles, percent of fleet available for pull-Outs, or mean time between vehicle failures
- **Customer Complaints**. complaints per 100,000 boardings

Performance standards for these measures should be set based upon MCT current performance and the City's expectations for appropriate safety, equipment reliability and customer satisfaction levels.

ADA Paratransit Performance Measures and Standards

ADA paratransit performance standards are typically developed in response to the need to show progress to agency goals or to document compliance with regulatory requirements. The following performance measures are used in the industry to assess system productivity and ADA

compliance. Although there is general agreement on what to measure, there are few industry-accepted standards or target values, again deferring to agency goals (except those related the showing adequate capacity to avoid a pattern of trip denials). The noted indicators are among common performance measures used for demand response transportation.[12] These performance measures rely on key performance data, and often expressed as a ratio that normalize costs or benefits per unit of service delivered, for example cost per revenue hour or cost per passenger trip.

Most of these measures will require data on passengers certified as ADA eligible for complementary paratransit service. Chapter 8 discusses the steps needs for MCT to formally certify eligible passengers and track their use of the service.

The following measures are suggested for inclusion in the MCT performance monitoring activities. Performance standards for acceptable MCT performance are not offered at this time as ADA paratransit service is currently delivered as part of the larger general public dial-a-ride system and specific data are not available. MCT should develop applicable standards based on the industry norms along with local performance trends once the ADA paratransit program performance is isolated from the larger dial-a-ride system.

Operating Cost / Revenue Hour

As with the fixed-route hourly operating costs, most agencies track ADA paratransit operating costs for the system, but do not typically make short-term adjustments based on the findings. This measure highlights an agency's cost effectiveness, normalizing operating costs (primarily labor and fuel) to the number of hours the service is provided and is useful when planning budgets or service changes. It is also useful for comparing operations between agencies when evaluating system operations. The measure is defined as annual operating costs divided by annual vehicle service hours. Since MCT contracts out the ADA paratransit services, it may or may not desire to monitor SBT's cost structure but to instead track those metrics measuring system efficiency and effectiveness with respect to rides delivered.

Measure	Example Industry Standards/Norms
Operating Cost / Revenue Hour	▪ Varies based on local labor, insurance, fuel etc. costs.

Operating Cost / Trip

This measure of effectiveness is defined as annual operating costs divided by the number of trips provided. For ADA paratransit services, it is common to include rider companions and attendants in the number of trips (i.e. total boardings). For contracted service, the cost of the contracted service plus any administrative support for ADA operations should be used as the basis. This measure allocates operating costs on a per passenger basis which is often useful when analyzing growth trends or when comparing modes and should be reviewed on an annual basis when setting budgets and reviewing service delivery options.

[12] Transit Cooperative Research Program (TCRP) Report 124, *Guidebook for Measuring, Assessing, and Improving Performance of Demand-Response Transportation*, (Washington DC: Transportation Research Board, 2008).

Measure	Example Industry Standards/Norms
Operating Cost / Trip	▪ Varies based on local labor, insurance, fuel etc. costs.

Trips / Revenue Hour

The measure of effectiveness is defined as annual boardings (again including attendants and companions) divided by annual vehicle service hours. This productivity measure is a key performance indicator highlighting the number of passengers carried for a unit of service delivered. For demand-response services, it reflects the level of shared rides and amount of slack time in a route. Many agencies with contracted providers, especially those paying for actual service hours delivered, monitor productivity on a regular basis to assure an effective use of agency resources and to address any inefficiencies in short order. In these cases, agencies frequently build penalties and incentives into contract language to reward productivity improvements. Given the nature of the MCT-SBT agreement, the ongoing monitoring of productivity probably does not make sense at this time.

Measure	Example Industry Standards/Norms
Trips / Revenue Hour	▪ Between 1.8 and 3.8for small urban systems[13]

On-Time Performance

This system reliability measure is defined as the percent of all trips where the passenger is picked up within the allotted appointment time window. This key measure gauges customer satisfaction levels as well as pointing to possible system capacity constraints or scheduling limitations. MCT should track on-time performance given the possible impacts on customer service and ADA compliance.

Measure	Example Industry Standards/Norms
Percent of Trips On-Time	▪ Between 92% and 96% for small urban systems[14]

No-Show/Late Cancellation Rate

This measure is defined as the percent of scheduled trips where the passenger is a no-show or failed to provide adequate notice that they cannot complete their trip. It shows how much unproductive vehicle and driver time is expended making unnecessary trips and not being available to transport other passengers.

Measure	Example Industry Standards/Norms
No-Show/Late Cancellation Rate	▪ No Show/Late Cancellation rates greater than 5% are often a point of concern

[13] TCRP Report 124, 53

[14] TCRP Report 124, 55

Advance Cancellation Rate

This measure is defined as the percent of scheduled trips that were cancelled more than two hours prior to the scheduled pick up time (and therefore not considered a no-show). This measure shows the degree to which the scheduling system has to respond to day-of-ride customer changes, also negatively impacting an agency's ability to efficiently schedule vehicle utilization.

Measure	Example Industry Standards/Norms
Advance Cancellation Rate	▪ Typically seen as informal goals ranging from 5 to 10% with the lower values associated with agencies limiting the advanced reservation window to less than the allowable 14 days.

Trip Denials

Measure	Example Industry Standards/Norms
Trip Denials	▪ Any pattern of denied service is not allowed per the ADA

Trip denials are tracked to show that an agency has the capacity to provide requested rides. Ongoing data on denials is required to show that the agency does not have a continued patter of denying trip requests. Denials should include any trip that could not be completed per the customer's original request, even if he/she agrees to a negotiated time outside of their original request window. It is important track all conditions that can be considered of capacity constraints are properly considered as denials including missed trips and excessively long trips.

Missed-Trip Rate

This measure is defined as the percent of scheduled trips that were not completed within the scheduled time because the agency vehicle failed to arrive within a scheduled pickup time window. It is a key indicator of system capacity, on-time performance, and customer satisfaction. The MCT ADA Plan (see Chapter 8) identifies *Untimely Pickups* as cases where the vehicle arrived outside of the pick-up window, but the customer waited and completed the trip. For reporting purposes, these should be counted as missed trips or MCT should make sure that they are reported in addition to missed trips as the combination of the two could show a pattern of capacity constraints.

Measure	Example Industry Standards/Norms
Missed-Trip Rate	▪ No industry standard; FTA suggests that agencies develop one

In-Vehicle Passenger Travel Time

This measure is defined the amount of time a passenger has to ride in the vehicle to complete his/her trip but is not typically monitored in the industry. The sampling of individual trips is often used to make sure a customer does not spend an excessive amount of time in a vehicle (especially compared to the equivalent trip time for a fixed-route trip).

Measure	Example Industry Standards/Norms
In-Vehicle Passenger Travel Time	▪ Comparable to fixed route travel plus time to and from bus stops. Typically a single system-wide standard expressed in minutes is not appropriate but should be trip specific and standard should reflect methodology for comparing paratransit trip time to fixed-route equivalent time.

Reservation Call Hold Time

This measure is defined as the percent of calls answered with a maximum allowable hold time when waiting for a reservationist. It provides a reflection of the call center's capacity to handle calls and of customer satisfaction. Other associated measures such as the time to answer a call or the time before abandonment also provide indicators of the capacity of a call center.

Measure	Example Industry Standards/Norms
Reservation Call Hold Time	▪ Industry standards suggest that 91% of calls should be answered within 3 minutes[15]

Additional Measures

A comprehensive set of ADA paratransit performance monitoring measures and standards should include safety, maintenance, and customer satisfaction measures similar to those identified for a fixed-route performance monitoring program.

Service Design Standards/Guidelines

The following design standards are often used to codify the planning principles introduced in Chapter 2. This section suggests specific standards for MCT consideration where appropriate.

Service Allocation

Determining where to focus service expansion or reduction is essential as these decisions will impact future system performance, customer satisfaction and public perception. Having good service allocation standards will help staff make objective decisions that are consistent with MCT goals and objectives. Without such standards, a variety of stakeholders, interest groups and passengers may exert undue influence and result in services that are not in accordance with MCT's vision and goals or be unproductive or costly. Service allocation standards can provide guidance using the following criteria.

- **Adherence to set policy.** The Minot City Council could put forth policy directives that can directly or indirectly guide where service should be allocated. In other regions local policy boards have dictated service splits between ridership/productivity-based and coverage-based markets (initially recommend at 60% coverage for MCT – see Chapter 2), allocated new service to specific geographic areas, or mandated the use of performance-

[15] APTA Accessibility Paratransit Call Center Working Group, *Recommended Practice for Reservation Hold Times for ADA Complementary Paratransit Call Centers* (Washington DC: American Public Transportation Association, 2009)

based criteria such as requiring transit supportive land uses in conjunction with new transit service.

- **Supporting land uses.** Service can be allocated along corridors specifically targeted for future transit if previously highlighted in regional plans, or in transit supportive corridors that meet requirements for:
  - Minimum number of households with ¼ mile of route
  - Minimum number of jobs with ¼ mile of route
  - Minimum number of attractions along route
  - High percent of sidewalk coverage with ¼ mile of route
  - Minimum number of regulated intersections per mile of route
  - Based on policy goals and regional conditions/plans

  Many agencies use scorecards to assign relative values to these and other criteria when judging a corridor's readiness for new or increased service. The scoring thresholds are based on current and planned land uses in the region. The expansion of core services should consider such land use-based standards.
- **Social equity.** As a small transit provider (less than 50 vehicle in peak operation and serving a population of less than 200,000) MCT is not required to conduct formal service changes analyses for Title VI compliance (see Chapter **Error! Reference source not found.**), but the City should still be cognizant of potential impacts on Title VI protected populations and/or low-income populations when adjusting service. Similarly to the scorecards for land use based allocations, some agencies assign positive scores for potential routes that serve minority or low-income census tracts. Route-miles or service hours in targeted tracts could be used as a metric.
- **Level of Service.** MCT may choose to provide adequate levels of service on existing routes before developing new ones. Many agencies set targets for frequency of service and hours/days of operation, especially in core corridors, and guarantee existing route are at level of service consistent with their service types before allocating service elsewhere. A frequency of service (headways) is one of the required Title VI service standards.

Percent of Population Served. Although this is not a robust criterion and does not address the level of service provided or potential city goals for investments in transit, it is easy to conceptualize and measure. The service availability standard is one the required Title VI service standards and one based on the percent of population service is often cited as an example by the FTA. The current MTC midday system serves two-thirds of the City's population.

Design Standard	Example Guidelines	
Service Allocation	Regional Goals and Objectives	▪ In accordance with any formal policy directives
	Land Use	▪ In transit supportive corridors that provide minimum densities of households, jobs and/or attractions
	Social Equity	▪ In low income or minority-based subareas that may have disproportionately low levels of service
	Level of Service	▪ In existing services that do not comply with LOS goals for their service type
	Percent of Population Served	▪ The City will distribute transit service so that 90% of all residents in the service area are within a ¼ mile walk of bus service

Suggestion: The following checklist should be used to allocate service expansions or reductions barring any specific policy language. These are based on the recommend goals for maintaining coverage in traditional neighborhoods while adding productive service in transit supportive corridors.

- Fill in level-of-service gaps (frequency and span of service) for core routes based on route design standards.
- Allocate new service in transit supportive corridors based on current and evolving land uses.
- Make changes that are consistent to the Title VI program

Route Design

Route design directly impacts a route's ability to attract ridership, operate reliably in terms of on-time performance, and meet cost efficiency goals. The following standards help assure route designs are consistent and that the routes will perform well:

- **Directness.** A route that operates directly between a passenger's origin and destination will attract more riders than one that deviates off a primary path of travel and/or circulates through adjoining communities. In addition, riders and potential users typically find direct routes easier to understand, helping promote transit use. Two measures can evaluate how competitive a route will be when compared to other modes of travel
  - Speed. When designing a route, its effective speed over the entire route can be calculated and compared to the posted speed limit. Target values close to the posted speed limit make transit a competitive option. Some guidelines compare transit travel speed to automobile speeds, but investments in transit speed and reliability measures

(signal priority, bus lanes etc) can allow transit to bypass congestion and approach posted speed, making it a more viable option.

  - Time spent deviating. If deviations away from a route's primary path are required to serve specific markets, the impact on passengers traveling through the deviation should be analyzed. One potential measure evaluates the passenger travel time for those riding through the deviation divided by the number of boardings and alightings in the deviation.

- **Route Spacing.** Routes should serve major corridors but yet avoid competing with other routes for the same riders. Guidelines for a route spacing of a ½ mile provide access to everyone within a ¼ mile of a route and avoid overlapping services. These standards can be applied over long segments of a route, and should acknowledge the need for convergence of routes at major destinations or transfer facilities. Implementing routes on regularly spaced corridors tend to increase the simplicity of the overall system design.
- **Stop Spacing.** While customers may perceive frequently spaced bus stops as an indication of convenience, the time spent serving the increased number of stops along a route will add running time and make the overall transit trip longer and less competitive with other modes. A ¼ mile walk is considered as the maximum that passengers will typical walk to reach transit (1/2 mile is often used for high-quality transit service such are Light Rail or Bus Rapid Transit). Service design standards frequently specify stop spacing around ¼ mile to balance passenger access with transit travel speed. MCT should consider a stop spacing standard for the core route using fixed bus stops.
- **Layover /Recovery Time.** Layover is time available between trips for operator breaks as well as for allowing late buses time to recover and get back on schedule. In some systems, a minimum required break-time is specified in operator contracts. Excessive layover is often an indication of inefficient scheduling as the extra time is not required and is essentially wasted. An ideal range is 10-15% of revenue hours.
- **Service to Total Hours Ratio (Deadhead).** This ratio measures the percentage of bus operating time (vehicle hours) that is available to passengers in the form of scheduled service (revenue hours). The non-revenue time can be in the form of: deadheading to to/from any piece of work; deadheading to/from a peak one-direction express trip; or laying over between trips. Scheduling very short pieces of work lowers the deadhead ratios as the time to/from the garage becomes a large percentage of the overall pull-out. Similarly extremely long one-way peak services can result in large amounts of non-revenue hours. Deadhead should not be of great concern for MCT in the short term as all of the routes run all day and the distances between the operation center and the start/end of service are not great.
- **Schedule Consistency.** Scheduled departure times should result in a consistent pattern. While headways may vary during the day in response to changes in demand, the frequency of service should not vary with apparent randomness from one trip to the next. Whenever possible, routes should also have frequencies that divide evenly into an hour, such as every 5, 10, 15, 30, or 60 minutes. The consistent patterns help passenger remember scheduled departure times and they facilitate timed transfers where appropriate. Scheduled departures from T&C provide for consistent schedules and should be maintained.

Design Standard	Example Guidelines
Directness	▪ Speed – 30% to 50% of posted speeds in urban areas without transit priority or 50% to 70% of posted speeds in suburban and rural areas. ▪ Time deviating –passenger time traveling through deviation per deviation boarding and alighting <- 10 minutes
Route Spacing	▪ Not less than ½ mile
Stop Spacing	▪ 1/5 to 1/3 mile for typical local service
Layover/Recovery Time	▪ 10% to 15% of Revenue Hours
Service to Total Hours Ratio	▪ 85% to 95% for local service, > 50% for express service
Schedule Consistency	▪ Consistent headways over long periods

Suggestion: The following table presents a set of suggested service design standards based on industry practices and MCT needs.

Design Standard	Suggested Service Design Standard
Directness	▪ Transit speeds no lower than 40% of posted speeds on Core routes.
Route Spacing	▪ Not less than ½ mile
Stop Spacing	▪ 1/4 mile for Core routes where traffic and safety conditions allow
Layover/Recovery Time	▪ Not greater than 15% of Revenue Hours
Schedule Consistency	▪ Minimal base period frequencies of 60 minutes at consistent intervals ▪ Minimal peak period frequencies of 30 minutes for core routes

Passenger Amenities

Passenger amenities should be implemented per a set of objective standards. Bus shelters and benches are typically installed at high ridership stops. Additional amenities, such as lighting can be based on ridership as well, or associated with other criteria such as the presence of streetlights. Specifying the conditions that merit passenger amenities will help MCT monitor and plan capital investments. Implementing improvements per such guidelines may help address any claims of inequitable allocation of resources. The transit amenity deployment standard is one the required Title VI service policies.

Design Standard	Example Guidelines	Suggested Standards
Benches	▪ 25 to 50 daily boardings	▪ Stops with at least 10 daily boardings
Shelters	▪ 50 to 100 daily boardings	▪ Stops with at least 20 daily boardings

Vehicle Assignment

The vehicle assignment policy is one the required Title VI service standards. MCT should consider policy language to specify how vehicles will be deployed in the system to highlight the considerations being used (age of vehicles, expected passenger capacities, rotations to balance wear and tear, etc.) thereby avoiding any perception that newer or better vehicles are steered to preferential neighborhoods.

Summary of Recommended Standards

The following table summarizes the individual standards recommended for MCT's consideration as part of performance monitoring and service design programs. These are initial thresholds set based on industry expectations and need to be adjusted based on expected performance levels once the system and data reporting processes mature. Where appropriate, the standards are initially set low to focus on the poorest performing services. Over time, higher thresholds can be used to address marginally performing services.

Standard	Minimally Accepted Threshold
Fixed-Route Performance Standards	
Passengers / Revenue Hour	▪ Core Routes – 15 passengers/hour ▪ Loop Routes – 10 passengers/hour
Fare Revenue / Operating Expense	▪ System-wide standard 10%
On-Time Performance	▪ All Service types – 80%
Passenger Load Factor	▪ All Service types – 1.25
Safety	▪ TBD based on available data and baseline conditions
Maintenance	▪ TBD based on available data and baseline conditions
Customer Complaints	▪ TBD based on available data and baseline conditions
ADA Paratransit Performance Standards	
On-Time Performance	▪ 90%
No-Show/Late Cancellation Rate	▪ No Show/Late Cancellation rates greater than 5% are often a point of concern
Advance Cancellation Rate	▪ Typically seen as informal goals ranging from 5 to 10% with the lower values associated with agencies limiting the advanced reservation window to less than the allowable 14 days.
Trip Denials	▪ Any pattern of denied service is not allowed per the ADA
Missed-Trip Rate	▪ No industry standard; FTA suggests that agencies develop one

Standard	Minimally Accepted Threshold
In-Vehicle Passenger Travel Time	▪ Comparable to fixed route travel plus time to and from bus stops. Typically a single system-wide standard expressed in minutes is not appropriate but should be trip specific and standard should reflect methodology for comparing paratransit trip time to fixed-route equivalent time.
Reservation Call Hold Time	▪ Industry standards suggest that 91% of calls should be answered within 3 minutes[16]
Safety	▪ TBD based on available data and baseline conditions
Maintenance	▪ TBD based on available data and baseline conditions
Customer Complaints	▪ TBD based on available data and baseline conditions
Design Standards	
Service Allocation	Priorities for service changes: ▪ Fill in level-of-service gaps (frequency and span of service) for core routes based on route design standards. ▪ Allocate new service in transit supportive corridors based on current and evolving land uses. ▪ Make changes that are consistent to the Title VI program
Directness	▪ Transit speeds no lower than 40% of posted speeds on Core routes.
Route Spacing	▪ Not less than ½ mile
Stop Spacing	▪ 1/4 mile for Core routes where traffic and safety conditions allow
Layover/Recovery Time	▪ Not greater than 15% of Revenue Hours
Schedule Consistency	▪ Minimal base period frequencies of 60 minutes at consistent intervals ▪ Minimal peak period frequencies of 30 minutes for core routes
Bench installations	▪ Stops with at least 10 daily boardings
Shelter installations	▪ Stops with at least 20 daily boardings

ONGOING MONITORING AND SERVICE CHANGES

To help better track and assess performance of the service it operates, MCT should codify performance and service design standards in official policy documents. This will remove any

[16] APTA Accessibility Paratransit Call Center Working Group, *Recommended Practice for Reservation Hold Times for ADA Complementary Paratransit Call Centers* (Washington DC: American Public Transportation Association, 2009)

ambiguity and promote their consistent use. This chapter could constitute the official listing of performance measures and standards, but a separate policy documents will help focus attention on the standards, and a standalone document will also facilitate updates to the program. MCT should develop the initial policies and standards for its fixed-route operations and expand the policy framework to include ADA paratransit services when the paratransit program is updated (see Chapter 8).

The performance standards should be part of a formal performance monitoring plan that specifies the regular reporting and reviewing for the performance measures. At a minimum, MCT should consider the quarterly review of performance data along with semi-annual reporting to City Council and other City departments. The plan should also detail the agency's methodologies for collecting and reporting performance data, and for monitoring or changing routes that merit remedial action when falling below the standards. It should be noted that the performance standards should not be applied until a new or dramatically revised service has been in place for at least one year. Ridership takes time to build in response to any change, and an entire cycle of seasons must be observed to determine whether a service is attracting riders as expected. And even after the system stabilizes, remedial actions should be considered for routes or route segments that show repeated performance problems over consecutive reporting periods. If this is the case, remedial actions should initially include alignment and/or schedule changes to better attract new riders. If remedial actions have been taken and ridership still does not respond, and these changes have been in place for at least one year, then the City could consider eliminating or significantly modifying the service and/or allocating resources elsewhere in the system.

Similarly, MCT should detail its methods for responding to changing financial conditions, changes in demand, and/or stakeholder/community requests when planning for service expansion or contraction. This plan should be based on the chosen set of service design guidelines.

As suggested earlier, MCT should not wait for the system to mature before embarking on the data collection and reporting aspects of a performance monitoring system. While it may be premature to think about using the results for taking remedial action during the first 12 to 18 months after making significant changes, this would be a good time to validate sources of data and to refine reporting procedures.

11 IMPLEMENTATION PLAN

This chapter provides an implementation timeline and summarizes suggested action items to implement the service plan. The timeline summarizes major Minot City Transit system changes per the Short- and Mid-Term Service Plans as well from the suggested enhancements to supporting programs. In addition to the timeline, an organization plan is provided to highlight impacts to MCTs staff, and a financial plan to summarize the capital and operating expense changes during the planning period.

IMPLEMENTATION TIMELINE

This plan suggests a series of system enhancements over time, aligning improvements with community needs, as well as to MCT staffing and financial capacities. The major anticipated system changes are detailed below and summarized in Figure 11-1.

- **2014:** Ahead of implementing The Short-Term Service Plan, MCT should undertake two immediate system changes. MCT is considering minor service changes to address schedule adherence problems and other immediate operational problems. These minor changes to existing route designs will not greatly impact customer understanding of the system, and should be implemented as soon as possible. It will take some time for the Short-Term Service Plan to be refined and implemented, so these minor service changes can address the immediate problems in the meantime. MCT has also identified capital funding for an electronic fare collection system. This equipment should be procured during 2014, which would allow MCT time to install and test the system prior to more significant changes proposed for 2015. MCT should consider rolling out the new fare system in 2015 in conjunction with the Short-Term Service Plan and prepare a coordinated marketing/training campaign for the combined changes (see Chapter 7).
- **2015:** The Short-Term Service Plan is proposed for implementation in 2015 allowing MCT time to finalize agreements with Minot Public Schools, optimize schedules, develop operator schedules, and develop a marketing plan to promote the changes. In addition to service changes outlined in the Short-Term Service Plan, MCT will need to consider the potential deployment of school trippers to add capacity near middle and/or high school bell times. As detailed in Chapter 7 the promotion of the new services will involve a marketing program including a dedicated website and new transit brochure. As part of The Short-Term Service Plan implementation, MCT should develop a bus stop program for the North and South Core routes.
- **2016:** After the Short-Term Service Plan changes are implemented and stabilized, MCT should have the staffing capacity to implement some of the supporting programs detailed in this plan. It is suggested that MCT implement the changes to the ADA paratransit program as detailed in Chapter 8 and develop a performance monitoring as described in Chapter 10. These steps ensure that ADA eligible riders register for the program, which in turn allows MCT to better track the use of the ADA paratransit system. This new

procedure will also provide MCT staff with a means for measuring system performance and taking remedial actions to address poor performance, if observed.

- **Mid-Term:** The mid-term planning period covers years 3 through 9 of the plan. It is difficult to specify specific implementation years for the suggested system changes in this period. Uncertainties with respect to available funding, responses to The Short-Term Service Plan, population and employment growth rates and patterns, all contribute to the lack of specificity when suggesting mid-term system improvements. Therefore, the suggested implementation timeline and associated staffing plan and financial plan aggregate this mid-term period into a single window on the timeline.
  The suggested improvements during the mid-term period include
  - The addition of later evening (2 additional hours per weekday) and Saturday (8:00 a.m. to 6:00 p.m.) service (see Chapter 4 for details)
  - The design and development of a new downtown transit center (Chapter **Error! Reference source not found.**)
  - The enhancement of rider information to include web- and mobile-based schedules and route information (Chapter 7)
  - The addition of real-time vehicle arrival information via the MCT website and mobile devices Chapter 7)

Figure 11-1 Summary of Suggested Service Changes and Other Action Items by Year

Year	Service Changes	Suggested MCT Action Items
2014	▪ Implement minor service changes	▪ Procure and install electronic fare system in all buses ▪ Finalize agreements (including cost sharing) with Minot Public Schools related to transportation to/from schools
2015	▪ Implement Short-Term Service Plan	▪ Develop and distribute new marketing and advertising materials in support of Short-Term Service Plan (including new bus stop signage and information at stops) ▪ Develop a new stand-alone transit website ▪ Approach Trinity Hospital about public/private partnerships related to developing preferred transit center site (see Chapter **Error! Reference source not found.**) ▪ Work with other City departments to promote the "Complete Transit System" (see Chapter 2) ▪ Continue partnering with Minot State University to improve targeted marketing of transit services and discuss potential new funding arrangements
2016		▪ Develop and implement a more formalized data collection and performance monitoring process ▪ Implement ADA paratransit eligibility process
Mid-Term (2017-2023)	▪ Implement later evening service (2 additional hours) ▪ Implement Saturday service (8:00 a.m. – 6:00 p.m.)	▪ Improve online and mobile passenger information ▪ Implement real-time vehicle arrival information ▪ Plan, fund and construct a new downtown transit center

ORGANIZATIONAL PLAN

This section summarizes the current City of Minot staffing dedicated to transit and suggests future staffing needs based on the implementation items listed in Figure 11-1. It also presents information on staff roles supporting transit as observed elsewhere in the industry, which served as a benchmark for making staffing recommendations in Minot.

Current Minot City Transit Staffing

The City's transit operations are staffed within the Public Works Department. Figure 11-2 presents the current positions allocating time to transit. MCT is under the direction of the Bus Services/Shop Maintenance Superintendent who is assisted by a Bus Services/Shop Maintenance Foreman and a mechanic. Additionally, nine part-time operators work approximately five hours per day, so are listed as 4.5 FTEs.

Six part-time employees start work at 6:40 a.m. to operate the six early morning routes. At 9:00 a.m. the midday routes begin operation. Five part-time operators are needed. At 2:30 p.m. the mechanic/back-up driver and six part-time bus drivers return for additional routes.

In addition, MCT relies on other City departments for support functions including human resources, legal counsel, Civil Rights programs, and general administration.

Figure 11-2 Current MCT Staffing

Position Supporting Transit	FTEs
Bus Services/Shop Maintenance Superintendent	0.75
Bus Services/Shop Maintenance Foreman	0.50
Mechanic	1.00
Public Works Director	0.15
Assistant Public Works Director	0.05
Administrative Clerk, Principal	0.50
Office & Administrative Specialist, Senior	0.25
Project Engineer	0.15
Part-time Operators	4.5

NOTE: For non-operators, the Full Time Equivalent (FTE) staffing levels are sourced from the FY 2014 City Budget. The operator staffing level is based on currently scheduled operations.

Typical Transit Industry Staff Roles

Organizational structures vary across the transit industry. The number of staff positions in a transit agency or department depends on a number of factors including:

- System size
- Whether service is contracted or provided in-house
- The level of transit planning activities
- Range of non-transit services provided (including rideshare and other Transportation Demand Management (TDM) programs)

- Available budget
- Availability of resources in other departments

While the job titles and staff headcount may vary from provider to provider, the duties of staff involved are relatively constant from agency to agency. This is especially true for the management, administrative and support functions involved whether service is contracted out or not. And for smaller agencies, support staff tend to wear many hats fulfilling functions that specialized staff perform in larger organizations where certain functions require one or more full-time employees. Figure 11-3 on the following pages highlights the job classifications typically employed in transit agencies. More importantly, the table calls out the major roles for these staff positions noting that while having someone fulfill a job title may not be mandatory, someone in the organization or at a contracted provider must be performing the specified duties. For each position, the degree to which rural and small urban providers maintain staff under these titles[17] is noted, as well as whether the specific titles are associated with an agency's charter authority, organizational history, and/or local and regional norms.

[17] Typical job classifications and their prevailing use is based on experiences within the industry and data collected on research into compensation levels (*TCRP Report 127: Employee Compensation Guidelines for Transit Providers in Rural and Small Urban Areas*)

Figure 11-3 Typical Transit Industry Job Classifications

Titles & Alternate Names	Duties	Prevalence
Transit Director (Executive Director, General Manager, Transit Administrator, Transit Systems Manager, Transit Superintendent)	▪ Manage financial activities to support transit operations, quality, productivity, and goal attainment. ▪ Provide fiscal and management control, including budget development and administration. ▪ Manage transit system procurements, cash, and investments. ▪ Transit system staff oversight ▪ Develop policies and procedures in support of operations and administration. ▪ Assure regulatory compliance. ▪ Guide agency's strategic planning.	High
Administrative Assistant (Office Manager, Assistant to the Director, Deputy Director)	▪ Manage communications to/from Director's office. ▪ Respond to requests for information. ▪ Organize Director's activities.	Medium
Transit Planner	▪ Conduct analysis of local transit services. ▪ Identify opportunities for new services and service changes. ▪ Prepare planning documents for public and governmental review. ▪ •Conduct community outreach forums for discussion of transit issues.	Low
Finance Manager (Administration Manager, Chief Financial Officer, Finance Clerk Bookkeeper, Transit Clerk, Payroll Clerk, Accounting Clerk/Assistant, Grants Manager)	▪ Process payroll for all employees, including garnishments, taxes, and relevant fare deductions on bi-weekly basis to ensure that all employees are paid accurately for their working hours. ▪ Complete daily and weekly reports for Operations/General Manager review to ensure that hours and payroll are within budgeted amounts for service provided. ▪ Maintain accurate fare accounting records and relevant payroll deductions for affected employees. ▪ Update and maintain vendor and supplier files. ▪ Ensure ample stores of necessary items, including office supplies and computer equipment. ▪ Administration of grants (application, data reporting). ▪ Manage Human Resources functions.	Medium

Titles & Alternate Names	Duties	Prevalence
Marketing Specialist (Communications Specialist)	▪ Conduct public outreach in conjunction with planners and managers. ▪ Develop new marketing concepts to encourage transit ridership. ▪ Prepare press releases and maintain media relations. ▪ Conduct community education. ▪ Develop and maintain agency website and social media.	Low
Computer Operations Analyst (Information Technology. Technical Services Manager)	▪ Maintain and update databases for scheduling programs. ▪ Provide training to staff on new programs/applications. ▪ Maintain computer aided dispatch/scheduling, fare collection, automated passenger count, automated vehicle location etc systems ▪ Conduct special projects and advise on technology solutions.	Low
Safety and Training Manager	▪ Manage new hire and veteran operator training programs to ensure that all operators receive the minimum initial training and that all employees receive required annual and ongoing training. ▪ Provide and/or manage classroom and behind-the-wheel instruction according to corporate and client specifications in all aspects of vehicle operation in the course of passenger transportation, including defensive driving; service area familiarization; passenger loading, unloading, and securement; proper manifest documentation; use of on-board equipment; accident and emergency procedures; dispatch and radio communications; and passenger sensitivity. ▪ Review all vehicular, passenger, and employee accidents/incidents for determination of cause and preventability. Identify potential trends to be addressed in future training efforts as well as ensuring that retraining and safety points are assessed according to company policy.	Low
Trainer	▪ Assist in initial screening of new hire candidates to ensure that client and corporate qualifications are met and that training efforts meet the staffing needs of the project. ▪ Provide classroom instruction according to corporate and client specifications in all aspects of vehicle operation in the course of passenger transportation, including defensive driving; service area familiarization; passenger loading, unloading and securement; proper manifest documentation; use of on-board equipment; accident and emergency procedures; dispatch and radio communications; and passenger sensitivity. ▪ Provide monthly or annual ongoing/refresher training in topics relevant to the service and service area and in a timely manner.	Low

Titles & Alternate Names	Duties	Prevalence
Administrative/Clerical Support (Clerk)	▪ Maintain computer and paper records. ▪ Support customer relations and marketing activities ▪ Support data collection and reporting activities ▪ Support fare collection activities ▪ Support fare sales activities	Medium
Operations Supervisor (Operations Administrator, route coordinator)	▪ Maintain or manage attendance records for vehicle operators and back-up drivers; ensure that the attendance policy is enforced and monitored daily. ▪ Develop staff and operator schedules fairly, in consideration of seniority, according to client demands/requirements and adhering to budget. ▪ Responsible for positive employee morale and quality customer service. ▪ Prepare, verify, and review staff schedules and work records for payroll purposes. ▪ Assign work duties to qualified employees to ensure adequate coverage of all supervisory shifts and assigned routes. ▪ Ensure that individual customer/passenger concerns are responded to in a manner that includes investigation and follow-up as concerns apply to specific employees. ▪ Assist in recruiting, selecting, and training new operator and staff employees. ▪ Conduct performance reviews for all operations staff at least annually; monitor vehicle operator performance by spot-checking routes and times of various routes. ▪ Assure that fare revenue is properly accounted for and currency/fare media is securely processed.	Medium
Road Supervisor	▪ Conduct site checks and road observations according to local policies and procedures. Document findings accordingly and provide necessary reports to project staff. ▪ Monitor street operations for on-time performance and schedule and route adherence. ▪ Accompany operators to medical facilities as required after accident or injury; ensure proper administration of post-accident drug and alcohol testing. ▪ Identify potential rerouting required as a result of traffic, construction, or accident situations. ▪ Assist operators with service or passenger problems.	Low

Titles & Alternate Names	Duties	Prevalence
Dispatcher	▪ Assign work, vehicles, and on-board equipment to operators and maintain check-out logs. ▪ Assign stand-by or extra board operators in the event of operator absences or increased service volumes, or to minimize service disruptions as a result of traffic, vehicle malfunctions, operator problems, and/or emergency situations. ▪ Monitor operators and trip status, making adjustments and reassignments as necessary to ensure on-time performance. ▪ Reschedule trips as necessary in the event of vehicle malfunction, traffic, or emergency situations. ▪ Open and/or close facility depending on work shift.	Medium
Fleet Maintenance Manager	▪ Coordinate and direct the repair and maintenance of company-operated equipment and vehicles. ▪ Determine work procedures, prepare work schedules, and expedite workflow accordingly. ▪ Train and/or assist maintenance staff on vehicle repairs to ensure maximum fleet availability and maximum cost benefit. ▪ Ensure all Occupational Safety and Health Administration (OSHA) rules and regulations are at all times adhered to, including the "Employee's Right to Know" program.	Low
Maintenance Clerk	▪ Maintain records of parts purchases and uses. ▪ Maintain vehicle maintenance files. ▪ Prepare regular mileage reports.	Low
Mechanic	▪ Ensure that all vehicle condition reports are accurate and properly addressed. ▪ Maintain all maintenance records, i.e., work orders, in an "inspection ready" status at all times; ensure repair orders are neat and accurate. ▪ Track all repairs in progress to ensure the timely and correct repair of vehicles for return to operations; know the maintenance status of all assigned vehicles at all times. ▪ Perform regular preventive maintenance on company vehicles. ▪ Work with operations staff on resolving road calls.	Medium

Titles & Alternate Names	Duties	Prevalence
Maintenance Utility Worker	▪ Ensure that all vehicles are cleaned and fueled, with fluids topped, and ready for service at various times of day. ▪ Maintain accurate and up-to-date fuel logs for each vehicle and type of fuel/fluid. ▪ Clean vehicle interiors and exteriors according to standard. ▪ Assist shop staff as necessary in keeping parts inventories accounted for as well as in procuring necessary parts for fleet and facility maintenance. ▪ Keep the lot maintained and clean, including removal of trash and debris, sweeping, snow shoveling, grass cutting and weeding, and trimming when necessary. ▪ Perform minor vehicle repairs requiring small articulate hand movements (such as light bulb replacement and adding fluids).	Low
Customer Service Agent (Community Relations Coordinator, Community Outreach Coordinator)	▪ Communicate regularly with client staff to ensure customer service efforts meet the demands of the contract and the client. ▪ Establish relationships with key consumer agencies to facilitate direct communication and feedback as well as a proactive customer focus. ▪ Respond to individual customer/passenger concerns in a manner that includes investigation and follow-up as concerns apply to specific employees. ▪ Provide findings and resolution information to operations management for follow-up and possible reward and/or disciplinary action. ▪ Maintain database or log of customer complaints/compliments that can readily identify trends that may require additional training or management consideration. ▪ Supply system information, including eligibility, service area, fares, and system use to all interested parties. ▪ Attend various public events as a representative of the program to provide information and feedback on general concerns/items of discussion. ▪ Process consumer applications to determine eligibility according to client guidelines and maintain database of eligible passengers. ▪ Provide resource information as necessary for interested parties on the transportation system as a whole, and referrals to appropriate agencies for transportation assistance. ▪ Manage lost and found articles and attempt to locate appropriate owners of items left on board vehicles. ▪ Support marketing campaigns. ▪ Fare media sales and customer ID processing	Medium

Titles & Alternate Names	Duties	Prevalence
ADA Coordinator (Paratransit Planner)	▪ Assure ADA compliance (fleet, public infrastructure, polices & practices) ▪ Administer ADA paratransit eligibility program ▪ Maintain database of eligible riders ▪ Support training activities and maintenance of ADA paratransit rider information	Low

MCT Recommended Staffing Changes

Changes to the transit system will have an impact on staff levels and needs, especially as new or additional services are provided. The increased staff levels address both the increase in service proposed in the Short- and Mid-Term Service Plans, and to add capacity to the existing staff which is currently straining to perform the required roles identified in Figure 11-2. The major anticipated staffing changes are detailed below and summarized in Figure 11-4 and Figure 11-5. It is important to note that these staffing changes only refer to operations and administrative staffing and not drivers, which are accounted for through operating cost estimates.

- **2014:** With the implementation of new electronic fareboxes, there is a need for additional operations, administrative, and Information Technology (IT) support. Along with current supervision/operations staff, these staff will be responsible for vehicle-related aspects of managing the fare collection system. In addition, incremental time will be needed from the administrative support staff. It assumes that .25 FTE will be needed this first year to assist with the set up and promotion of the new system and to continue work with potential fare instruments retailers. It is also assumed that the IT support could be available from an existing position within the City.
- **2015:** When the Short-Term Service Plan is implemented, the hours of service will expand to 12 hours of service per weekday, requiring additional operations staff time. In addition, it will be important to promote and market the new service, so additional administrative time is assumed. It is estimated that 1.0 to 1.5 FTE will be required for operations support (primarily to support the longer service day, address existing staffing shortages) and an additional 0.25 FTE will be required for administrative (marketing and customer service) support.
- **2016:** When a new ADA eligibility process is implemented, and collection and monitoring of performance data processes become formalized, it is assumed that an additional 0.25 to 0.5 FTEs will be required for additional administrative support. The level of support by MCT will depend on the degree to which the managing of ADA eligibility is contracted to SBT as part of maintaining the rider database.
- **Mid-Term:** When new service is added, especially later evening and Saturday service, additional operations support and driver staff are assumed. When implemented, the Mid-Term Service plan will require an additional FTE for operations support (additional increases in the foreman and mechanic/operator classifications). In addition, a new transit center, if staffed, could require additional staff (exact number cannot not be determined at this time).

Figure 11-4 Staffing Changes by Year

Year	System Changes	Staffing Changes
2014	▪ Implement minor service changes ▪ Electronic fare system	▪ IT and administrative support – 0.25 FTE
2015	▪ Implement Short-Term Service Plan ▪ Develop and distribute new marketing and advertising materials in support of Short-Term Service Plan (including new bus stop signage and information at stops) ▪ Develop a new transit website ▪ Promote Short-Term Service Plan	▪ Increased operations support staff – 1.0 to 1.5 FTE ▪ Admin for marketing support – 0.25 FTE
2016	▪ Implement ADA paratransit eligibility process ▪ Data collection and performance monitoring processes	▪ Administrative support – 0.25 to 0.5 FTE
Mid-Term (2017-2023)	▪ Improved online and mobile passenger information Implement later evening service (2 additional hours) ▪ Implement Saturday service (8:00 a.m. – 6:00 p.m.) ▪ New downtown transit center ▪ Real-time vehicle arrival information	▪ Increased operations and support staff for extended hours – 1.0 FTE ▪ Potential staffing of downtown transit center – TBD

Figure 11-5 Operations and Administrative Staffing by Year

Staffing	Current	2014	2015	2016	Mid-Term
Operations Staff					
Bus Services/Shop Maintenance Superintendent	0.75	0.75	0.75	0.75	0.75
Bus Services/Shop Maintenance Foreman	0.5	0.5	1.5	1.5	2
Mechanic	1	1	1	1	1
Mechanic/Operator			0.5	0.5	1
Total FTE	2.25	2.25	3.75	3.75	4.75
Incremental FTE		0	1.5	0	1
Increased Responsibilities			ST Service Plan, Fare System Execution		Eve and Sat Service
Administrative Staff					
Total FTE	0.75	1	1.25	1.5	1.5
Incremental FTE		.25	.25	.25	0
Increased Responsibilities		Fare System Implementation, ST Service Plan preparation support	Marketing Program Support	Performance monitoring and ADA Eligibility support	

FINANCIAL PLAN

This section presents a multi-year financial plan detailing the required capital and operating expenses and the funding streams needed to cover these costs. The first part of the financial plan discusses capital improvements and fleet replacement needs. The second part presents the operating costs associated with the short- and mid-term service plans, and the suggested MCT program improvements. All costs in this plan are in current-year dollars reflecting the unknown factors driving transit costs and revenues and are to highlight budget impacts relative to MCT's current budget.

Capital Expenses

Vehicle Replacement Plan

The retirement of older vehicles at the end of their useful life and the addition of new buses and vans to support additional hours of service create the need to plan for the procurement of vehicles at various times during the planning period. The proposed service changes in the Short- and Mid-Term Service Plans do not increase the number of vehicles required. Therefore only vehicle replacements are included in the financial plan and based on the following:

- Fleet replacement needs are based on the retirement of existing fixed-route vehicles after 13 years of service and paratransit vans after 3 years
- Costs of replacement fixed-route vehicles at $450,000 and vans at $40,000
- Assuming a fourth ElDorado bus is purchase in 2014 with awarded grant funds, fixed-route vehicles will require replacement in 2015, 2021, and 2023 (2 vehicles).
- Paratransit vehicles will require replacements in 2014 (2 vehicles), 2015, 2017 (2 vehicles), 2018, 2020 (2 vehicles) and 2021.

Stop Signage and Amenity Program

Implementation of the Short-Term Service Plan includes the introduction of fixed bus stops along the two core routes. As discussed in Chapter 7 the physical stop should be an element of MCT's marketing program and may require some custom design and printing. Shelters at busy stop should also carry the MCT brand. This plan estimates the cost for signage and bus stop amenities at $15,000 noting that MCT may be able to obtain shelters from FEMA and just need to repaint them to incorporate the MCT brand.

Fare Collection Equipment

As detailed in Chapter 9 the upgrade to an electronic fare collection system will cost $388,000. This amount is programmed into the financial plan for the equipment and software as grant funding for roughly this amount is currently available to MCT. It does not include the estimated $72,000 for a money/clean room which may be needed to if adequate space is not available to handle cash fares and electronic farebox maintenance. In addition, the marketing of the new system is not included as it is assumed MCT will market the new fare system in conjunction with the Short-Term Service Plan rollout.

Marketing Program

The implementation of the marketing program discussed in Chapter 7 will incur some expenses for graphics design, printed material, web design, and website hosting. If elements of these are packaged together with an external provider, the costs may be capitalized. An estimate of $15,000 for the marketing program is included in the financial plan, though this is a starting cost for a basic marketing program.

Miscellaneous Capital Expenses

This plan recommends $20,000 per year (adjusted for inflation) to be used for miscellaneous office and maintenance capital equipment purchase and replacement. Such reserves are often overlooked in capital plans, but prove to be valuable to anticipate office and maintenance equipment needs.

Capital Expenditure Summary

The capital plan in Figure 11-6 reveals that MCT will require between $90,000 and $500,000 per year to support its capital improvement projects over the planning period. Federal grants funds can cover approximately 80 percent of applicable costs reducing the City's contribution toward these investments. This summary does not include costs for the downtown transit center envisioned for development during the mid-term time period.

Figure 11-6 Capital Expenditures Summary

Capital Expense[1]	2014	2015	2016	Mid-Term (2017-2023)[1]
Fixed-Route Vehicle Replacement			$450,000	$1,350,000
Paratransit Vehicle Replacement	$80,000	$40,000		$240,000
Stop Improvements		$15,000		
Fare Collection Equipment	$390,000			
Marketing		$15,000		
Miscellaneous Capital Expenses		$20,000	$20,000	$140,000
Total	$470,000	$90,000	$470,000	$1,730,000

Notes:
[1]Cost estimates are in current year dollars
[2]Mid-Term costs are for the total 7-year period

Operating Expenses

This section provides a series of cost projections for the City of Minot fixed-route and paratransit operations. The following projections are based on estimated 2013 MCT cost structures and focus on the incremental cost resulting from system improvements. The following parameters and assumptions are used to estimate future operating costs:

- Routes are costed out based on 2014 estimated hourly cost of $82 per hour[18]
- Benefits estimated at 41% of salary per 2014 budget
- Administrative staff starting salary of $32,414
- Additional operations staff salaries of $48,118 for a bus services/shop maintenance foreman and $18,795 for a mechanic/operator
- Mid-Term Service Plan adds 2 hours of evening service on weekdays and 10 hours of service on Saturdays
- Operating and maintenance costs of $30,000 are assumed for the Downtown Transit Center to cover utilities, security, janitorial etc. This expense is dependent on the facilities final design.

Figure 11-7 details the expected increases in operating costs, above those currently budgeted for MCT fixed-route operations. A full implementation of the Short-Term Service Plan with increased staff support will increase the operating budget by over $160,000, requiring an associated increase in local funding. In addition to covering these increased costs, local transit revenues will also have to provide a local match for the capital investments identified in Figure 11-6. Implementation of all Mid-Term Service Plan changes will require an additional $354,000 in operating revenue to cover costs above and beyond those incurred in the short term.

Revenue Sources

Funding for transit primarily comes from federal grants, state aid for transit, local property tax levies, and fares collected from riders. Appendix F provides some background on these sources. The federal and state programs that support operations tend to be formula based, focusing on populations served. Therefore the increased operating expenses highlighted in this plan will likely need to be covered by local sources including the tax levy, fares, and advertising revenues. Capital investments may be able to utilize competitive grant programs, combined with local matches constructed from state aid and local sources. Large scale projects like the downtown transit center can also involve debt financing and partnerships with other firms or organizations sharing the space.

[18] The $82 per hour cost is based on FY2014 fixed-route operating budget of $829,000 and provision of 10,079 service hours

Figure 11-7 Projected Increases to Operating Costs

Incremental Operating Expense[1]	2014	2015	2016	Mid-Term[2]
Short-Term Service Plan		$6,500	$6,500	$6,500
School Trippers		$29,000	$29,000	$29,000
Mid-Term Service Plan (late evenings)				$123,000
Mid-Term Service Plan (Saturdays)				$123,000
Operations Staff Salary		$67,000	$67,000	$110,000
Administrative Support Salary	$8,100	$16,200	$24,300	$24,300
Benefits	$3,300	$34,100	$37,400	$55,100
Real-Time Vehicle Arrival Information System[3]				$16,900
Downtown Transit Center Operations/Maintenance				$30,000
Total	$11,400	$152,800	$164,200	$517,800

Notes:
[1]Costs are in current year dollars. Incremental costs are relative to FY2104 budget
[2]Mid-term costs reflect an annual amount each year the system change is present.
[3]Cost for real-time arrival information represent an annual average for contracted service assuming cost is not capitalized.

APPENDIX A

Acronyms and Glossary of Terms

Common Transit Acronyms and Terms

ADA	Americans with Disabilities Act
APC	Automatic Passenger Counter
APTA	American Public Transit Association
APTS	Advanced Public Transportation Systems
AoA	Administration on Aging
AT	Assistive Technology
ATP	Accessible Transportation Program
AVL	Automatic Vehicle Location
BRT	Bus Rapid Transit
CAD	Computer Aided Dispatch
CASD	Computer Aided Scheduling and Dispatch
CMAQ	Congestion Mitigation and Air Quality
DMU	Diesel Multiple-Unit Car
DOT	Department of Transportation
DR/DRT	Demand Response Transportation (paratransit)
E&D	Elderly and Disabled
EMS	Emergency Medical Services
FHWA	Federal Highway Administration (also FHA)
FR	Fixed Route
FTA	Federal Transit Administration
GIS	Geographic Information System
GP	General Public (related to FTA 5311 Funds)
GPS	Global Position Systems (typically satellites)
HCT	High Capacity Transit
HOV	High-Occupancy Vehicle
ITP	Individual Trip Planner
ITS	Intelligent Transportation Systems
JARC	Job Access Reverse Commute
LOS	Level of Service
MAAP	Mobility Awareness and Assistance Program

MAP-21	Moving Ahead for Progress in the 21st Century (federal transportation funding)
MDT/MDC	Mobile Data Terminal/Mobile Data Computer
NTD	National Transit Database
OCS	Overhead Contact System
O-D	Origin-Destination
PDA	Personal Data Assistant
POP	Proof-of-Payment
ROW	Right-of-Way
RTAP	Regional Transportation Assistance Program Rural Transportation Assistance Program (state and federal programs)
RTP	Regional Transportation Plan
SOV	Single Occupant Vehicle
SPD	Seniors and People with Disabilities (formerly SDSD)
STP	Surface Transportation Programs
STIP	Surface Transportation Improvement Projects
TAC	Technical Advisory Committee
TDD	Telecommunications Device for the Deaf
TDM	Transportation Demand Management
TMA	Transportation Management Association
TMC	Traffic Management Center
TMV	Transit Maintenance Vehicle
TOD	Transit-Oriented Development
TSM	Transportation System Management
TSP	Transit Signal Priority
TSP	Transportation System Plans
TTY	Text Telephone
TVM	Ticket Vending Machine
VMT	Vehicle Miles of Travel

Accessibility	The extent to which facilities, including transit vehicles, are barrier-free and can be used by people who have disabilities, including wheelchair users.
Accessible Vehicle	Public transportation revenue vehicles which do not restrict access, are usable, and provide allocated space and/or priority seating for individuals who use wheelchairs.
Administrative assistance	Funding that supports the administrative costs related to a program activity, such as office expenses, insurance, legal expenses, bookkeeping, and administrative staff expenses.
ADA	Americans with Disabilities Act: Passed by the Congress in 1990, this act mandates equal opportunities for persons with disabilities in the areas of employment, transportation, communications and public accommodations. Under this Act, most transportation providers are obliged to purchase lift-equipped vehicles for their fixed-route services and must assure system-wide accessibility of their demand-responsive services to persons with disabilities. Public transit providers also must supplement their fixed-route services with paratransit services for those persons unable to use fixed-route service because of their disability.
ADA Eligible	ADA Eligible refers to eligibility for complementary fixed route paratransit. Individuals who qualify must be unable to used fixed route due to a disability.
AoA	Administration on Aging. The agency within the U.S. Department of Health and Human Services that oversees the implementation of the Older Americans Act, including senior nutrition programs, senior centers and supportive services for elders.
Ad-hoc Trips	The total number of trip requests received by an organization that go beyond the organization's normal transportation program design and fulfilled by a different agency, company, or organization (i.e., by a private taxi service).
Advanced Public Transportation Systems	Collection of technologies to increase efficiency of public transportation systems and offer users greater access to information on system operation. This is a subset of Intelligent Transportation Systems.
Advanced Traveler Information Systems	Technologies that provide travelers and transportation professionals with the information they need to make decisions, from daily individual travel decisions to larger-scale decisions that affect the entire system, such as those concerning incident management.
Alight	To get off or out of a transportation vehicle.
Alternative Fuel	A non-petroleum fuel with lower pollution than traditional diesel; includes electricity, alcohol fuels, mineral fuels, biofuels, methanol, propane, hydrogen, compressed and liquefied natural gas.

Annual Average Daily Traffic (AADT)	Daily traffic that is averaged over a calendar or fiscal year.
Articulated Bus	An extra-long, high-capacity bus that has the rear body section or sections flexibly but permanently connected to the forward section. The arrangement allows the vehicle to bend in curves and yet have no interior barrier to movement between the two parts. The *puller* type features a powered center axle while the *pusher type* features a powered rear axle. Articulated buses with powered center and rear axles exist but are not common. Typically, an articulated bus is 54-60 ft (16-18 m) long with a passenger seating capacity of 60 to 80 and a total capacity of 100 to 140.
Automatic Passenger Counter	An automated system that counts the number of passengers boarding and alighting a transit vehicle. The information may be used for later data analysis, or for real-time activities, such as providing signal priority only to buses that are at least half full.
Automatic Vehicle Location System	A system that determines the location of vehicles carrying special electronic equipment that communicates a signal back to a central control facility. AVLs are used for detecting irregularity in service and are often combined with a computer-aided dispatch system.
Average Daily Traffic (ADT)	The average number of vehicles that pass a specified point during a 24-hour period.
Average Fare	The arithmetic average of all fares paid by all revenue passengers, including those who received special or reduced fares. It is usually derived by or generally equivalent to dividing total fare revenue by total origin-to-destination trips, although it may be based on unlinked trips.
Average Trip Length	The average distance ridden for an unlinked passenger trip by time period (weekday, Saturday, Sunday) computed as passenger miles divided by unlinked passenger trips.
Base Fare	The price charged to one adult for one transit ride; excludes transfer charges, zone charges, express service charges, peak period surcharges, and reduced fares
Base Period	In transit, the time of day during which vehicle requirements and schedules are not influenced by peak-period passenger volume demands (e.g., between morning and afternoon peak periods). At this time, transit riding is fairly constant and usually moderate in volume when compared with peak-period travel. Also known as *off peak.*
Bicycle-Friendly	Characterized by features and elements that makes bicycling safe and convenient. A bicycle-friendly environment at a transit stop might include bicycle parking that is well-lit, sheltered, secure, and easily accessed.
Bicycle Locker	A lockable, enclosed container used for storing a bicycle. Typically provided at major transit stops and stations and rented on a monthly basis.

Bicycle Rack	A fixed post or framework to which bicycles may be secured and locked, typically provided on a first-come, first-served basis. It is also a device mounted to a transit vehicle that allows bicycles to be transported outside the passenger compartment.
Boarding Rides	Boarding rides are counted each time a person enters a vehicle. Boardings and rides all refer to boarding rides.
Boarding Rides per Vehicle Hour	The number of boardings divided by the vehicle hours of service. Describes a route's productivity.
Brokerage	A method of providing transportation where riders are matched with appropriate transportation providers through a central trip-request and administrative facility. The transportation broker may centralize vehicle dispatch, record keeping, vehicle maintenance and other functions under contractual arrangements with agencies, municipalities and other organizations. Actual trips are provided by a number of different vendors.
Bus Bay	A specially designed or designated location at a transit stop, station, terminal, or transfer center at which a bus stops to allow passengers to board and alight
Bus Bulb	An extension of the sidewalk into the roadway for passenger loading without the bus pulling into the curb gives priority to buses and eases reentry into traffic, often landscaped and fitted with bus shelter and other passenger amenities. Also known as a *bulb out* or *curb extension*.
Bus Lane	Also known as a bus priority lane or transit only lane. A highway or street lane reserved primarily for buses, either all day or during specified periods. It may be used by other traffic under certain circumstances, such as making a right or left turn, or by taxis, motorcycles, or carpools that meet specific requirements described in the traffic laws of the specific jurisdiction.
Bus Priority System	An intelligent transportation system feature consisting of traffic controls in which buses are given special treatment over general vehicular traffic (e.g., bus priority lanes, preemption of traffic signals, or adjustment of green times for buses.)
Bus Rapid Transit (BRT)	An inexact term describing a bus operation providing service similar to rail transit, at a potentially lower cost depending on the level of investment in individual infrastructure elements. BRT systems are characterized by several of the following components: exclusive transitways or busways, enhanced stations, easily identified vehicles, high-frequency all-day service, simple route structures, simplified fare collection, and ITS technologies. Integrating these components is intended to improve bus speed, reliability, and identity.
Bus Shelter	A building or other structure constructed at a transit stop. A transit shelter provides protection from the weather and may provide seating or schedule information or both for the convenience of waiting passengers.

Bus Stop	An area where passengers wait for, board, alight, and transfer between transit units (vehicles or trains). It is usually indicated by distinctive signs and by curb or pavement markings and may provide service information, shelter, seating, or any combination of these. Stops are often designated by the mode offering service, for example, bus stop, car stop.
Busway	A special roadway designed for exclusive use by buses. It may be constructed at, above, or below grade and may be located in separate rights-of-way or within highway corridors. Variations include grade-separated, at-grade, and median busways. Sometimes called a *transitway* or *bus rapid transit.*
Capital Cost	Nonrecurring or infrequently recurring costs of long-term assets, such as land, guideways, stations, buildings, and vehicles. These costs often include related expenses: for example, depreciation and property taxes.
Casual Carpool	an informal carpool where commuters gather at a location to be picked up at random by motorists who do not have sufficient passengers to use an HOV facility or to share the cost of parking and/or tolls.
Charter Service	A vehicle hired for exclusive use that does not operate over a regular route, on a regular schedule, and is not available to the general public.
Choice Rider	A person who has at least two modes of travel available and selects one to use. Often used to describe a traveler who is not *transit dependent* or solely reliant on public transportation to meet their mobility needs.
Circulator Bus	A bus that makes frequent trips around a small geographic area with numerous stops along the route. It is typically operated in a downtown area or an area that attracts tourists or large crowds and has limited parking and congested roads. It may be operated all day or only at times of peak demand, such as rush hour or lunch time.
Circulator Service	Transit service confined to a specific locale, such as a downtown area or a suburban neighborhood, with connections to major traffic corridors.
Community Transportation	The family of transportation services in a community, including public and private sources, that are available to respond to the mobility needs of all community members.
Commute	Regular travel between home and a fixed location (e.g., work, school). The term is often applied only to travel in the direction of the main flow of traffic, to distinguish from reverse commute.

Commuter Rail	The portion of passenger railroad operations that carries passengers within urban areas, or between urban areas and their suburbs, but differs from rail rapid transit in that the passenger cars generally are heavier, the average trip lengths are usually longer, there are few standing passengers, and the operations are carried out over tracks that are part of the railroad system in the area. In some areas it is called regional rail.
Complementary Paratransit	Paratransit service that is required as part of the Americans with Disabilities Act (ADA) which complements, or is in addition to, already available fixed-route transit service. ADA complementary paratransit services must meet a series of criteria designed to ensure they are indeed complementary.
Congestion Mitigation and Air Quality Project (CMAQ)	A flexible funding program administered by the Federal Highway Administration that funds projects and programs to reduce harmful vehicle emissions and improve traffic conditions. CMAQ funds may be used for transit projects, rideshare projects, high-occupancy vehicle lanes or other similar purposes.
Contraflow	Movement in a direction opposite to the normal flow of traffic. The term usually refers to flow opposite to the heavier flow of traffic.
Contraflow Lane	A highway or street lane on which vehicles operate in a direction opposite to what would be the normal flow of traffic in that lane. Such lanes may be permanently designated contraflow lanes, or, more usually, they may be used as contraflow lanes only during certain hours of the day. Frequently, the use of a contraflow lane is restricted to public transit and (possibly) other specially designated vehicles.
Coordinated Public Transit-Human Services Transportation Plan	A locally developed plan for coordinating local public transportation and human service agency transportation services that aims to maximize the programs' collective coverage by minimizing duplication of services.
Coordination	A cooperative arrangement between transportation providers and organizations needing transportation services. Coordination models can range in scope from shared use of facilities, training or maintenance to integrated brokerages or consolidated transportation service providers.
Cost Effectiveness	Cost effectiveness is the cost per passenger trip. More precisely, it is the amount of money a transit agency spends to provide its service (either as a system or a particular mode of travel, such as bus or rail) divided by the total number of passenger trips. This only takes into account what it costs to provide the service, and does not deduct fare revenues from the cost of providing the service.

Crosstown Service	Non-radial transit service that does not enter the central business district.
Crush Capacity	Also know as crush load, it is the maximum feasible passenger capacity of a vehicle, that is, the capacity at which one more passenger cannot enter without causing serious discomfort to the others.
Curb-to-Curb Service	A common designation for paratransit services. The transit vehicle picks up and discharges passengers at the curb or driveway in front of their home or destination. In curb-to-curb service the driver does not assist the passenger along walks or steps to the door of the home or other destination.
Deadhead	Term to describe of a transit vehicle while not generating fare revenue or without passengers aboard, often to and from a garage, or from one route to another.
Deficit	A deficiency in funding where expenses exceed revenues.
Demand-Response Service	The type of transit service where individual passengers can request transportation from a specific location to another specific location at a certain time. Transit vehicles providing demand-response service do not follow a fixed route, but travel throughout the community transporting passengers according to their specific requests. Can also be called dial-a-ride. These services usually, but not always, require advance reservations.
Deviated Fixed Route	This type of transit is a hybrid of fixed-route and demand-response services. While a bus or van passes along fixed stops and keeps to a timetable, the bus or van can deviate its course between two stops to go to a specific location for a pre-scheduled request. Often used to provide accessibility to persons with disabilities.
Dial-a-Ride Service	Another term for demand-response service (see above) where the rider telephones (or “dials”) to request service.
Diesel Multiple-Unit Car (DMU)	A diesel powered rail car arranged either for independent operation or for simultaneous operation with other similar cars, when connected to form a train of such cars.
Disability	The limitation of normal physical, mental, social activity of an individual. There are varying types (functional, occupational, learning), degrees (partial, total) and durations (temporary, permanent) of disability.
Door-to-Door Service	A form of paratransit service which includes passenger assistance between the vehicle and the door of his or her home or other destination. A higher level of service than curb-to-curb, yet not as specialized as door-through-door service (where the driver actually provides assistance within the origin or destination).
Dwell Time	The time a transit unit (vehicle or train) spends at a station or stop, measured as the interval between its stopping and starting.

Elasticity	The percentage change in demand for service (demand) for each 1% change in another factor. Often used to characterize sensitivities to changes in fares or level of service (i.e. frequency, service span).
Exclusive Right-of-Way	Roadway or other right-of-way reserved at all times for transit use and/or other high occupancy vehicles.
Express Bus Service	Bus service with a limited number of stops, either from a collector area directly to a specific destination or in a particular corridor with stops en route at major transfer points or activity centers. Express bus service usually uses freeways or busways where they are available.
Express Service	Service that has fewer stops and a higher operating speed than regular service. Often used an alternative term for limited-stop service; when agencies provide both types of service, the express service tends to have much longer sections of non-stop running.
Farebox	A device that accepts coins, bills, tickets, tokens, or other fare media given by passengers as payment for rides.
Farebox Recovery Ratio	The ratio of fare revenue to direct operating expenses.
Farebox Revenue	A public transportation term for the monies or tickets collected as payments for rides. Can be cash, tickets, tokens, transfers and pass receipts. Fare box revenues rarely cover even half of a transit system's operating expenses.
Far-side Stop	A transit stop located beyond an intersection. It requires that transit units (vehicles or trains) cross the intersection before stopping to serve passengers.
Federal Highway Administration (FHWA)	A component of the U.S. Department of Transportation that is responsible for ensuring that America's roads and highways are safe and technologically up-to-date. Although State, local, and tribal governments own most of the Nation's highways, the FHWA provides financial and technical support to them for constructing, improving, and preserving America's highway system. The FHWA's annual budget of more than $30 billion is funded by fuel and motor vehicle excise taxes. FWHA is the lead agency in federal intelligent transportation (ITS) activities and regulated interstate transportation. In addition to ITS, funds under FHWA's Congestion Mitigation and Air Quality Improvement (CMAQ) Program, Surface Transportation Program (STP), and Federal Lands Highways Program can be used for a variety of transit activities.

Federal Transit Administration	A component of the U.S. Department of Transportation that administers federal funding to support a variety of locally planned, constructed, and operated public transportation systems throughout the U.S., including buses, subways, light rail, commuter rail, streetcars, monorail, passenger ferry boats, inclined railways, and people movers. FTA provides financial assistance for capital, operating and planning costs of these public transportation systems. It also sponsors research, training, technical assistance and demonstration programs. Up to 1991 the FTA was known as the Urban Mass Transportation Administration.
Feeder Service	Local transit service that provides passengers with connections to main-line arterial service; an express transit service station; a rail rapid transit, commuter rail, or intercity rail station; or an express bus stop or terminal.
Fixed-Guideway Transit System	A transportation system composed of vehicles that can operate only on their own guideways, which were constructed for that purpose. Examples are heavy rail, light rail, and monorail. Federal usage of the term in funding legislation also includes bus priority lanes, exclusive right-of-way bus operations, trolley coaches, and ferryboats as fixed guideway transit.
Fixed-route	Transit services where vehicles run on regular, pre-designated, pre-scheduled routes, with no deviation. Typically, fixed-route service is characterized by printed schedules or timetables, designated bus stops where passengers board and alight and the use of larger transit vehicles.
Fixed Stop	A posted stop on a fixed transit route.
Flag Stop	A stop where transit vehicles stop on an as-needed basis (i.e. flagged down by a waiting passenger).
Flexible Routing	Flexible route service follows a direction of travel but allows for deviation or rerouting along the way to accommodate specific trip requests. Examples of flexible route systems are route deviation and point deviation. The schedule may be fixed or flexible.
Frequency of Service	The number of transit units (vehicles or trains) on a given route or line, moving in the same direction, that pass a given point within a specified interval of time, usually 1 hour; also known as *headway.*
Frequent Service	Service that operates every fifteen minutes or better, every day.
Guaranteed Ride Home	Program that encourages employees to carpool, use transit, bike or walk to work by guaranteeing them a ride home in case they cannot take the same mode home (e.g., if they need to work late or if an emergency occurs).
Headway	The scheduled time interval between any two revenue vehicles (buses, LRVs, trolleys, etc.) operating in the same direction on a route. See also *frequency of service*.

High Capacity Transit (HCT)	High capacity transit includes any form of public transit that has an exclusive right of way, a non-exclusive right of way or a possible combination of both. High capacity transit vehicles make fewer stops, travel at higher speeds, have more frequent service and carry more people than local service transit such as typical bus lines. High capacity transit includes options such as light rail, commuter rail and bus rapid transit.
High-Occupancy Vehicle (HOV)	Any passenger vehicle that meets or exceeds a certain predetermined minimum number of passengers, for example, more than two or three people per automobile. Buses, carpools, and vanpools are HOV vehicles.
HOV Lane	A highway or street lane reserved for the use of high-occupancy vehicles (HOVs).
Homebound	Those unable to leave home without exceptional effort and support. One of the requirements to qualify for Medicare home health care.
Hours of Service	The number of hours during the day between the start and end of service on a transit route, also known as the *service span*.
HOV Lane Management	National ITS Architecture Market Package that manages HOV lanes by coordinating freeway ramp meters and connector signals with HOV lane usage signals. Preferential treatment is given to HOV lanes using special bypasses, reserved lanes, and exclusive rights-of-way that may vary by time of day.
Hub-and Spoke System	Type of route structure based on timed connections that increases connectivity and productivity. Usually consists of a central transfer node with routes that radiate from it. See also *Timed Transfer System*.
Human Services Transportation	Transportation for clients of a specific human or social service agency that is usually limited to a specific trip purpose. Human service agency trips are often provided under contract to a human service agency and may be provided exclusively or rideshared with other human service agencies or general public service.
Independent Living Facility	Rental units in which services are not included as part of the rent, although services may available on site and purchased by residents for a fee.
Inspector	See *Route Supervisor*.
Intelligent Transportation Systems (ITS)	Technology, information management and communications systems that improve the efficiency or safety of a surface transportation system.
Intercity Bus	A large bus with luggage space, used primarily for transportation between cities. It usually has reclining seats and restroom facilities.

Intercity Transportation	Long distance service provided between cities, often as part of a large network of intercity bus operators. Both express and local bus service may be provided.
Interline	Transfer of transit vehicles or trains between routes during a day to improve staff or vehicle assignment efficiency.
Intermodal	The ability to connect, and make connections between, modes of transportation.
Intermodal Transfer Facility	A transit stop or station at the meeting point of several routes or lines or of different modes of transportation. It is located on or off the street and is designed to handle the movement of transit units (vehicles or trains) and the boarding, alighting, and transferring of passengers between different modes (also known as a *modal interchange center*).
JARC (Jobs Access Reverse Commute)	Federal formula funds available to provide transportation to assist low income individuals get to work. See *Section 5316*.
Jitney	A transit mode comprising passenger cars or vans operating on fixed routes (sometimes with minor deviations) as demand warrants without fixed schedules or fixed stops.
Jitney Service	A route deviation service in which small or medium-sized vehicles, such as large automobiles, vans, or minibuses, are used. The vehicles are usually owned by the drivers and the service is often independently operated.
Kiss-and-Ride	An access mode to transit whereby passengers (usually commuters) are driven to a transit stop and left to board a transit unit and then met after their return trip. Transit stations, usually rail, often provide a designated area for dropping off and picking up such passengers.
Layover	Time built into a schedule between arrivals and departures, used for the recovery of delays and preparation for the return trip. The term may refer to transit units (also known as *vehicle layover)* or operators.
Level of Assistance	Level of assistance given to passengers who need help boarding or exiting transit or agency vehicles, especially paratransit vehicles. Assistance can be curb-to-curb, meaning the passenger is not given assistance to and from the door of their destination; door-to-door, meaning the passenger is assisted from the door of their residence to the door of their destination; or door-through-door, meaning the passenger is assisted out of their home to the vehicle, and from the vehicle into their destination.
Level of Service (LOS)	A designated range of values for a particular transit service measure (e.g., “A” through “F” or “1” through “8”), based on users’ perceptions of the quality and amount of service.
Light Rail (LRT)	A metropolitan electric railway system characterized by its ability to operate single cars or short trains along exclusive rights-of-way at ground level, on aerial structures, in subways, or occasionally, in streets, and to board and discharge passengers at track or car floor level.

Linked Trip	A trip from the point of origin to the final destination, regardless of the number of modes or vehicles (transfers) used.
Load Factor	The ratio of passengers actually carried versus the total passenger capacity of a vehicle; also known as a utilization coefficient.
Loading Island	A protected spot for the loading and unloading of passengers. It may be located within a rail transit or bus station.
Local Bus Service	Transit service that involves frequent stops and consequent low average speeds, the purpose of which is to deliver and pick up transit passengers close to their destinations or origins.
Low-Floor Bus	A bus without steps at entrances and exit. The low floor may extend throughout the bus or may use a ramp or steps to access the raised rear portion over a conventional axle and drive train. Wheelchair access is provided by a retracting ramp.
MAP-21	Federal transportation funding legislation reauthorized in 2012. Each reauthorization amends the federal transit laws codified in 49 USC Chapter 53 (see Section 53XX funding programs).
Match	State or local funds required by various federal or state programs to complement funds for a project. A match may also be required by states in funding projects, which are joint state/local efforts. Some funding sources allow services, such as the work of volunteers, to be counted as an in-kind funding match. Federal programs normally require that match funds come from other than federal sources.
Medicaid	Also known as Medical Assistance, this is a health care program for low-income and other medically needy persons. It is jointly funded by state and federal governments. The Medicaid program pays for transportation to non-emergency medical appointments if the recipient has no other means to travel to the appointment.
Missed Trip	A missed trip occurs when a paratransit driver fails to pick up a scheduled trip at the assigned pick-up location and time.
Mode	A transport category characterized by specific right-of-way, technological and operational features. A particular form of travel, for example, walking, traveling by automobile, traveling by bus, traveling by train.
Mode Split	The proportion of total person trips that uses each of various specified modes of transportation.
Multi-modal	The availability of transportation options using different modes within a system or corridor.
Near-side Stop	A transit stop located on the approach side of an intersection. The transit units (vehicles or trains) stop to serve passengers before crossing the intersection.
New Freedom	The federal formula program to fund new services for people with disabilities that are above and beyond what the ADA requires. See *Section 5317*.
Non-home Based Trip	A trip that has neither its origin nor its destination at a residence.

On-time Performance	For fixed-route service, the percentage of on-time arrivals at stops along the route. For demand response service, the percentage of scheduled trips that are picked-up within the assigned on-time window (typically 30 minutes).
Operating Characteristics	The type of service provided, the size and geographical location of the service area, the miles and hours of service provided, etc.
Operating Cost	The sum of all recurring costs (e.g., labor, fuel) that can be associated with the operation and maintenance of the system during the period under consideration. Operating costs usually exclude such fixed costs as depreciation on plant and equipment, interest paid for loans on capital equipment, and property taxes on capital items.
Operating Expense	The total of all expenses associated with operation of an individual mode by a given operator.
Operator	An employee of a transit system whose workday is spent in the operation of a transit unit (vehicle or train), such as a bus driver or train operator. Also refers to the organization that runs a transportation system on a day-to-day basis.
Owl Service	Transit service provided late at night, usually from midnight to between 3:00 AM and start of service the next day.
Paratransit	Types of passenger transportation that are more flexible than conventional fixed-route transit but more structured than the use of private automobiles. Paratransit includes demand-response transportation services, subscription bus services, shared-ride taxis, car pooling and vanpooling, jitney services and so on. Most often refers to wheelchair-accessible, demand-response van service.
Park-and-Ride	An access mode to transit in which patrons drive private automobiles or ride bicycles to a transit station, stop, or carpool/vanpool waiting area and park the vehicle in the area provided for that purpose (park-and-ride lot, park-and-pool lot, commuter parking lot, bicycle rack or locker). They then ride the transit system or take a car or vanpool to their destinations.
Parking Facility	An area, which may be enclosed or open, attended or unattended, in which automobiles may be left, with or without payment of a fee, while the occupants of the automobiles are using other facilities or services.
Passenger Miles	The total number of passengers carried by a transit system for a unit of time multiplied by the number of miles (kilometers) they travel. The ratio of passenger miles (kilometers) and seat or place miles (kilometers) provides a measure of efficiency.
Passenger Platform	That portion of a transit facility directly adjacent to the tracks or roadway at which transit units (vehicles or trains) stop to load and unload passengers. Within stations, it is often called a *station platform.*
Peak/Base Ratio	The ratio between the number of passengers carried or transit vehicles deployed during the peak hours and during the base period. Also known as *peak/off-peak ratio*.

Peak Period	The period during which demand for transportation service is heaviest. It may be specified as the morning (AM) or afternoon or evening (PM) peak.
Pedestrian-Friendly	Characterized by features and elements that make walking safe and convenient. A pedestrian-friendly environment near a transit stop might have pedestrian pushbuttons at street crossings and direct, paved access to adjacent development.
Productivity	The ratio of units of transportation output to units of input (consumed resource); for example, vehicle miles per operator hour, or passenger miles per unit cost of operation.
Propulsion System	The motors, driving mechanism, controls, and other devices that propel a vehicle; frequently assumes electric operation.
Proof-of-Payment	An open fare collection system that has no turnstiles or fare gates. It requires that the passenger display proof of payment (e.g., validated ticket, prepaid pass, valid transfer) while on board the transit vehicle or in other designated *fare paid* areas. Enforced through random checking by specific transit employees, security staff or police with the power to collect premium "on-board" fares (more common in Europe) or issue tickets or citations, typically resulting in revenue loss below 2-3%. Erroneously called an "honor" system, a name that applies only to systems without enforcement.
Public Transit	Passenger transportation service, usually local in scope, that is available to any person who pays a prescribed fare. It operates on established schedules along designated routes or lines with specific stops and is designed to move relatively large numbers of people at one time. Examples include bus, light rail, rapid transit.
Public Transportation	Transportation service to the public on a regular basis using vehicles that transport more than one person for compensation, usually but not exclusively over a set route or routes from one fixed point to another. Routes and schedules of this service may be predetermined by the operator or may be determined through a cooperative arrangement. Subcategories include public transit service and paratransit services that are available to the general public.
Pulsed Hub	A transit hub serving two or more services, where service is timed to allow efficient timed transfers. These are typically used for transit systems that have relatively low service frequency. See also *timed transfer system*.
Quality of Service	The overall measured or perceived quality of transportation service from the user's or passenger's point of view, rather than from the operating agency's point of view. Defined for transit systems, route segments, and stops by *level of service*.

Queue	A line of vehicles or people waiting to be served by the system in which the rate of flow from the front of the line determines the average speed within the line. Slowly moving vehicles or people joining the rear of the queue are usually considered a part of the queue.
Queue Jump	A short section of exclusive or preferential lane that enables specified vehicles to bypass an automobile queue or a congested section of traffic. A queue jump is often used at signal-controlled freeway on-ramps in congested urban areas to allow high-occupancy vehicles preference. It is also known as a *bypass lane* or *queue bypass.*
Rapid Transit System	Transit service which is operated completely separate from all other modes of transportation.
Reduced Fare	A special fare for children, students, senior citizens, or others that is less than the regular fare.
Reliability	How often transit service is provided as promised; affects waiting time, consistency of passenger arrivals from day to day, total trip time, and loading levels. See also *schedule adherence*.
Replica Streetcar	A rubber-tired bus with an exterior (and usually an interior) designed to look like a vintage streetcar. Also known as a *trolley replica*.
Revenue Miles	Miles operated by vehicles available for passenger service.
Revenue Service	Transit service excluding deadheading or layovers or any service scheduled for passenger trips. Also known as *service hours*.
Revenue Vehicle	A vehicle used to provide passenger transit service for which remuneration is normally required. It is distinct from non-revenue equipment, which is used to build or maintain facilities, provide supervision, and so on.
Reverse Commute	A commute in the direction opposite to the main flow of traffic, for example, from the central city to a suburb during the morning peak. Increasingly common with growth in suburban employment. Valuable to operator as provides additional passengers and revenue at little or no marginal cost.
Rider	A passenger on any revenue service vehicle or making an unlinked trip; also known as a *patron.*
Rideshare/Ridematch Program	A program that facilitates the formation of carpools and vanpools, usually for work trips. A database is maintained for the ride times, origins, destinations and driver/rider preferences of users and potential users. Those requesting to join an existing pool or looking for riders are matched by program staff with other appropriate people.
Ridesharing	A form of transportation, other than public transit, in which more than one person shares in the use of the vehicle, such as a bus, van, or automobile, to make a trip.

Right-of-Way (ROW)	A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes. For transit, rights-of-way may be categorized by degree of their separation: fully controlled without grade crossings, also known as *grade-separated, exclusive,* or *private ROW;* longitudinally physically separated from other traffic (by curbs, barriers, grade separation, etc.) but with grade crossings; or surface streets with mixed traffic, although transit may have preferential treatment.
Route Deviation	A type of transit service that operates as conventional fixed route bus service along a fixed alignment or path with scheduled time, points at each terminal point, and key intermediate locations. Route deviation service is different from conventional fixed route bus service in that the bus may deviate from the route alignment to service destinations within a prescribed distance of the route. Following an off-route deviation, the bus must return to the point on the route it left.
Round Trip	The movement of a person or a vehicle from a point of origin to a destination and then back to the same point of origin.
Route Structure	A network or pattern of transit routes, such as grid or radial networks.
Route Supervisor	A transit employee who evaluates performance, enforces safety and work rules, and attempts to solve problems; an inspector may be mobile (covering several districts in a radio-equipped vehicle) or fixed (assigned to a post at a designated intersection).
Run	The movement of a transit unit (vehicle or train) in one direction from the beginning of a route to the end of it; also known as a *trip.*
Run Cutting	The process of organizing all scheduled trips operated by the transit system into runs for the assignment of operating personnel and vehicles.
Run Number	A two- or three-digit number displayed on a hand set or flip-dot display in the lower windscreen displaying the run or schedule slot the vehicle is in; primarily used as information to inspectors, street supervisors, or checkers.
Running Hot	Running ahead of schedule. Unacceptable practice on most systems. Also known as *running sharp*.
Running Time	The actual, expected, or scheduled time required for a transit unit (vehicle or train) to move from one point to another, excluding time for stops.
Section 5307	The section of the Federal Transit Act that authorizes grants to public transit systems in all urban areas. Funds authorized through Section 5307 are awarded to states to provide capital and operating assistance to transit systems in urban areas with populations between 50,000 and 200,000. Transit systems in urban areas with populations greater than 200,000 receive their funds directly from the Federal Transit Administration.

Section 5309	The section of the Federal Transit Act that authorizes discretionary grants to public transit agencies for capital projects such as buses, bus facilities and rail projects.
Section 5310	A formula program that provides capital assistance to states for transportation programs that serve the elderly and people with disabilities. States distribute Section 5310 funds to local operators in rural and urban settings who are either nonprofit organizations or the lead agencies in coordinated transportation programs. Allocation of funding to states is made on the basis of the number of elderly and persons with disabilities in that state.
Section 5311	The formula program that provides capital and operating assistance grants to public transit systems in rural and small urban areas with populations of less than 50,000. Funding is apportioned by a statutory formula that is based on the latest U.S. Census figures of areas with a population less than 50,000.
Segregated Right-of-Way (ROW)	Roadway or right-of-way reserved for transit use, but which permits other modes to cross the right-of-way at defined locations such as grade crossings.
Service Route	Another hybrid between fixed-route and demand-response service. Service routes are established between targeted neighborhoods and service areas riders want to reach. Similar to deviated fixed routes, service routes are characterized by flexibility and deviation from fixed-route intervals. However, while deviated fixed routes require advanced reservations, service routes do not. A service route can include both regular, predetermined bus stops and/or allow riders to hail the vehicle and request a drop-off anywhere along the route.
Service Span	See *Hours of Service*.
Shared Right-of-Way (ROW)	Roadway or right-of-way which permits other traffic to mix with transit vehicles, as is the case with most streetcar and bus lines.
Schedule	A listing or diagrammatic presentation in time sequence of every trip and every time point of each trip, from start to finish of service, on a transit line or route.
Schedule Adherence	The ability of a route or transit vehicle to maintain its schedule. See *Reliability*.
Scheduling	In transit operations, the process of preparing the operating plan (schedule) for a transit line or network on the basis of passenger demand, policy or level of service, and operating elements (travel times, etc.).
Scratch Ticket	A ticket on which the user can scratch overprinting off to indicate, zone, and/or month, day (and time) of validity. Commonly used on day passes.
Seating Capacity	The number of passenger seats in a vehicle.

Service Area	A measure of access to transit service in terms of population served and area coverage (square miles). For fixed-route service, service areas are typically arranged in corridors. Complementary ADA paratransit services are required by ADA law to extend ¾ mile beyond the fixed-route corridors. As demand response serves a broad area and does not operate over a fixed route, the "service area" encompasses the origin to destination points wherever people can be picked up and dropped off.
Shared Ride	A trip, other than by conventional public transit, on which the passengers enter at one or more points of origin and disembark at one or more destinations and for which each passenger is charged an individual fare. Shared ride taxi service is a way of using taxicabs for paratransit.
Signal Preemption	In highway operations, an automatic or manual device for altering the normal signal phasing or the sequence of a traffic signal to provide preferential treatment for specific types of vehicles, such as buses or trains. This is a type of *Advanced Public Transportation System*.
Single-Occupant Vehicle (SOV)	A vehicle occupied by the driver only.
Slack	The amount of time that a train can run behind schedule without interfering with following trains. Also known as *operating margin*.
Smart Card	A stored-value ticket with built-in semiconductor chip, often used to improve boarding efficiency. The card can be loaded with a monetary value which is decremented for each ride or can be valid for unlimited rides during over a specified period. Early variants required insertion or contact with farebox or fare gate and were time consuming. Most versions in transit are proximity cards and require only to be held close to the farebox or fare gate inductive detector plate.
Standard Urban Bus	A bus for use in frequent-stop service with front and (usually) center doors, normally with a rear-mounted engine and low-back seating. Typically 35-40 ft (10-12 m) long. Buses that are less than 20 ft long are typically considered small buses.
Standing Capacity	The number of standing passengers that can be accommodated in a vehicle under specified comfort standards, expressed in area per standee.
Station	An off-street facility (typically) where passengers wait for, board, alight, or transfer between transit units (vehicles or trains). A station usually provides information and a waiting area and may have boarding and alighting platforms, ticket or farecard sales, fare collection, and other related facilities; also known as a *passenger station.*
Streetcar	An electrically powered rail car that is operated singly or in short trains in mixed traffic on track in city streets. In some areas, it is also known as a *trolley car*.

Subscription Bus Service	A bus service in which routes and schedules are prearranged to meet the travel needs of riders who sign up for the service in advance. The level of service is generally higher than that of regular passenger service (fewer stops, shorter travel time, and greater comfort), and the buses are usually obtained through charter or contractual arrangements.
Subscription Van Service	Service similar to that provided by a subscription bus, except that the van may be privately owned, leased from a public or private company, or provided by the employer. The driver is usually a member of the group.
Subsidized Taxi Service	A taxicab service in which the fares are lower than actual taxi fares and the taxi company is reimbursed the difference. The service may be provided to the general public or to special groups, such as elderly people. Funds for the subsidy can come from a variety of sources, including local taxes or social service agency program funds. Often an economical way to provide better off-peak service in low-density areas that cannot support fixed routes.
Telecommuting	A *transportation demand management* strategy that substitutes, either partially or completely, transportation to a conventional office through the use of computer and telecommunications technologies (e.g., telephones, personal computers, modems, facsimile machines, electronic mail).
Termini	The "terminating" or end nodes of a line, link, or route.
Through Routing	The efficient practice of joining the ends of radial transit routes, with similar demand, to travel through downtown instead of having each route turn back in the downtown and return to its origin.
Ticket Vending Machine	A fare collection device that dispenses tickets for entry onto transit vehicles. Often used to increase boarding efficiency.
Time-of-Day Fare	A fare that varies by time of day. It is usually higher during peak travel periods (peak fare) and lower during non-peak travel periods (off-peak fare).
Timed Transfer	The scheduling of intersecting transit routes so that they are due to arrive at a transfer point simultaneously, eliminating waiting time for transfer passengers.
Timed Transfer System	A transit network consisting of one or more nodes (transit centers) and routes or lines radiating from them. The system is designed so that transit vehicles on all or most of the routes or lines are scheduled to arrive at a transit center simultaneously and "pulse" a few minutes later; thus transfers among all the routes and lines involve virtually no waiting. Typically used in suburban areas and for night service where headways are long. See also *hub-and-spoke system* and *pulsed hub*.
Transfer	A passenger's change from one transit unit (vehicle or train) or mode to another transit unit or mode.

Transfer Cluster	A group of stoppoints within an agency-designated area that are used for transfers. A simple example would be a group of stoppoints at an intersection where two routes cross. A more complex example would be a transit center of bus terminal.
Transit Accessibility	In common usage, often used to mean the ability of persons with disabilities to use transit. It also is a measure of the ability of all people to get to and from the nearest transit stop or station and their actual origin or destination.
Transit Bus	A self-propelled, rubber-tired road vehicle designed to carry a substantial number of passengers (at least 16, various legal definitions may differ slightly as to minimum capacity), commonly operated on streets and highways. A bus has enough headroom to allow passengers to stand upright after entering. Propulsion may be by internal combustion engine, electric motors or hybrid.
Transit Center	A transit stop or station at the meeting point of several routes or lines or of different modes of transportation. It is located on or off the street and is designed to handle the movement of transit units (vehicles or trains) and the boarding, alighting, and transferring of passengers between routes or lines (in which case it is also known as a *transfer center)*.
Transit Corridor	Corridors located along or supportive of good quality transit lines. They include higher population and employment densities and feature a high quality pedestrian environment and convenient access to transit.
Transit Dependent	Those having to rely on transit services instead of the private automobile to meet one's travel needs; also known as a *captive rider*.
Transit District	A geographical or political division created specifically for the single purpose of providing transportation services. It is a separate legal entity and usually possesses the authority to impose a property tax. Transit agencies can directly operate transit service or contract out for all or part of the total transit service provided.
Transit Maintenance Vehicle	A vehicle that is part of a transit fleet, but whose primary function is to support maintenance, and/or supervisory functions rather than to transport transit customers.
Transit Mode	A category of transit systems characterized by common characteristics of technology, right-of-way, and type of operation. Examples of different transit modes are regular bus service, express bus service, light rail transit, rail rapid transit, and commuter rail.
Transit Orientation	An umbrella term used to define variables that make transit use more attractive. Variables that characterize transit orientation include density, mixed land uses, pedestrian design and accessibility.

Transit-Oriented Development	Transit-Oriented Development (TOD) refers to residential and commercial development designed to maximize access by transit and non-motorized transportation, and with other features to encourage transit ridership. A typical TOD has a rail or bus station at its center, surrounded by relatively high-density development, with progressively lower-density spreading outwards one-quarter to one-half mile, representing pedestrian scale distances.
Transit Shelter	A building or other structure constructed at a transit stop. It may be designated by the mode offering service, for example, *bus shelter.* A transit shelter provides protection from the weather and may provide seating or schedule information or both for the convenience of waiting passengers.
Transit Signal Priority	The preferential treatment of transit vehicles at signalized intersections.
Transit Supportive Land Use	A land use environment that encourages transit use. Typically involves some level of land use mixing and higher intensity uses.
Transit System	The facilities, equipment, personnel, and procedures needed to provide and maintain public transit service.
Transitway	A dedicated right-of-way or roadway used by transit vehicles (buses or trains).
Transportation Demand Management (TDM)	The concept of managing or reducing travel demand rather than increasing the supply of transportation facilities. It may include programs to shift demand from single-occupant vehicles to other modes such as transit and ridesharing, to shift demand to off-peak periods, or to eliminate demand for some trips.
Transportation Disadvantaged	A term used to describe those people who have little or no access to meaningful jobs, services, and recreation because a transportation system does not meet their needs. Often refers to those individuals who cannot drive a private automobile because of age, disability, or lack of resources.
Transportation Management Association (TMA)	A voluntary association of public and private agencies and firms joined to cooperatively develop transportation-enhancing programs in a given area. TMAs are appropriate organizations to better manage transportation demand in congested suburban communities.
Transportation System	A coordinated system made up of one or several modes serving a common purpose, the movement of people, goods, or both.
Transportation System Management (TSM)	That part of the urban transportation planning process undertaken to improve the efficiency of the existing transportation system. The intent is to make better use of the existing transportation system by using short-term, low-capital transportation improvements that generally cost less and can be implemented more quickly than other system development actions.

Trip	A one-way movement of a person or vehicle between two points. Many transit statistics are based on unlinked passenger trips, which refer to individual one-way trips made by individual riders in individual vehicles. A person who leaves home on one vehicle, transfers to a second vehicle to arrive at a destination, leaves the destination on a third vehicle and has to transfer to yet another vehicle to complete the journey home has made four unlinked passenger trips.
Trip Distribution	In planning, the process of estimating movement of trips between zones by using surveys or models
Trip End	A trip origin or a trip destination.
Trip Generator	A land use from which trips are produced, such as a dwelling unit, a store, a factory, or an office.
Trip Purpose	The primary reason for making a trip, for example, work, shopping, medical appointment, recreation.
Trip Request	Any request for transportation made to a paratransit service or organization providing transportation, whether taken through a centralized call center or on an ad hoc basis by staff.
Trolley	An apparatus, such as a grooved wheel or shoe, at the end of a pole, used for collecting electric current from an overhead wire and transmitting it to a motor of a streetcar, trolleybus, or similar vehicle, where it is used for traction and other purposes.
Trolleybus	An electrically propelled bus that obtains power via two trolley poles from a dual (positive and negative) overhead wire system along routes. It may be able to travel a limited distance using battery power or an auxiliary internal combustion engine. The power-collecting apparatus is designed to allow the bus to maneuver in mixed traffic over several lanes.
Trolley Replica Bus	A bus with an exterior (and usually an interior) designed to look like a vintage streetcar.
Unlinked Trip	The boarding of one transit vehicle in revenue service; also known as an unlinked passenger trip, or any segment of a *linked trip*.
Vanpool	A prearranged ridesharing service in which a number of people travel together on a regular basis in a van. Vanpools may be publicly operated, employer operated, individually owned or leased.
Vehicle Capacity	The maximum number of passengers that the vehicle is designed to accommodate comfortably, seated and standing.
Vehicle Hours	Vehicle hours include revenue hours plus the time it takes a vehicle to travel from the garage to the end of the line. Also see *platform hours*.
Vehicle Occupancy	The number of people aboard a vehicle at a given time.

Vintage Streetcar	An old streetcar or streetcar built to resemble an older vehicle, electrically operated on rail tracks, generally in downtown areas, for local distribution and tourists. Not to be confused with rubber-tired replica streetcars (also known as *trolley replicas*). Also known as a *vintage trolley.*
Volunteer Network	A volunteer network matches requests for transportation with a volunteer driver who is typically reimbursed on a per-mile basis for providing the trip. Persons requesting service call the network; the network calls the driver and schedules the trip. Volunteer networks are frequently used in rural areas where resources are scarce, persons needing transportation may live in remote areas, and a sense of community is not uncommon.
Zoned Fare	A method of transit pricing that is based on the geographical partitioning of the service area. The price is determined by the location and number of zones traversed. Zone fares are frequently used as a method of charging graduated or distance-based fares but may also be used to provide for differential fares for certain markets.

APPENDIX B

FTA Guidance and Ruling on School Transportation

FTA Guidance and Rulings on School Transportation

General Guidance and Resources
http://www.fta.dot.gov/legislation_law/12923_8724.html
FTA released a School Bus Information Brochure in 2005 providing FAQ including the definition of school tripper service:

> Public transportation vehicles can be used to transport students and school personnel to and from school if they ride regularly scheduled mass transportation service that is open to the general public. Such service may be designed or modified to accommodate the needs of school students and personnel, using various fare collection or subsidy systems. This is commonly known as "tripper service."

An introductory letter for the brochure further specifies:

> One permissible use of public transportation vehicles for school bus service involves "tripper service" – which is defined as regularly scheduled public transportation service that is open to the public and designed or modified to meet the travel needs of school students and personnel using various fare collection or subsidy systems. We understand that there has been some confusion about the short list of prohibited signage on buses providing "tripper service" that is found in FTA regulations (49 CFR Part 605). Please note that the list is illustrative only; it is not intended to be an exhaustive list of all prohibited signage. Further, in addition to signage, any other indication that the bus may not be open to the general public is prohibited. Further, the provision that "buses may stop only at a grantee's or operator's regular service stop" means that all stops must be accessible to the public and must be clearly marked as public stops (except in the case of traditionally unmarked flag stops).

September 18, 2008 FTA Policy Statement on Tripper Service

In the policy statement, the FTA interprets the definition of "tripper service," as it has historically, as "to allow a grantee to utilize various fare collections or subsidy systems, modify the frequency of service, and make de minimis route alterations from route paths in the immediate vicinity of schools to stops located at or in close proximity to the schools."

Additionally, the agency states that it will interpret the term "exclusively" in the definition of "school bus operations" to "encompass any service that a reasonable person would conclude was primarily designed to accommodate students and school personnel, and only incidentally to serve the non-student general public. Additionally, grantees may create new routes to serve school students and personnel if a reasonable person would conclude that the grantees designed the routes to serve some segment of the non-student general public."

Madison WI Triennial Review Finding April 2010

http://www.busadvocates.org/articles/madisonmetro/DOTMetroAudit2010.pdf

1. **School Bus**

Basic Requirement: Grantees are prohibited from providing exclusive school bus service unless the service qualifies and is approved by the FTA Administrator under an allowable exemption. Federally funded equipment or facilities cannot be used to provide exclusive school bus service. School tripper service that operates and looks like all other regular service is allowed.

Findings: During this Triennial Review of the City, deficiencies were found with the FTA requirements for school bus.

The City provides a number of school tripper routes. The routes are open to the public and specifically designed to serve schools. FTA generally requires such services to look and operate like regular bus service. Moreover, as the result of a court decision related to school tripper ser-vice in Rochester, New York, on September 16, 2008 FTA issued 49 CFR Part 605 [Docket No. FTA–2008–0015] Final Policy Statement on FTA's School Bus Operations Regulations. This statement states: With respect to a grantee's regularly scheduled public transportation service, FTA shall interpret the definition of ''tripper service'' under 49 CFR 605.3(b), as it historically has interpreted that definition to allow a grantee to (1) utilize ''various fare collections or subsidy systems,'' (2) modify the frequency of service, and (3) make de minimis route alterations from route paths in the immediate vicinity of schools to stops located at or in close proximity to the schools. For example, a grantee may provide more frequent service on an existing route to accommodate increased student ridership before and after school. Furthermore, a grantee may alter route paths to accommodate the needs of school students by making de minimis route alterations from route paths to drop off and pick up students at stops located on school grounds or in close proximity to the schools.
Some of the tripper routes operated by the City are not minor modifications to existing routes but are specific routes designed around school needs. Other routes are operated in conjunction with existing routes but are not shown this way in the public information. Some routes are shown as school routes with separate numbers rather than as trippers associated with existing routes.
The tripper routes do not always require passengers to be at bus stops. While some regular bus route stops are used, students can also flag down buses at locations designated on the schedules.
The City's school tripper routes do not meet FTA requirements for school tripper service.
Corrective Action(s) and Schedule: By July 25, 2010, the City must cease operating all school tripper service that does not meet FTA requirements.

Community Transportation Association of America article on Sutton Bay and Yankton

http://web1.ctaa.org/webmodules/webarticles/articlefiles/DigitalCT_Spring13_School.pdf

Another key takeaway from the Yankton and BATA tribulations: the NSTA is actively searching for cases where it can file complaints. In fact, the organization will use private investigators to test community and public transportation's services whenever and wherever it perceives that students are boarding transit buses. Good faith is not a part of this process — it does not matter to the NSTA that no private operator can provide the service in these communities in a manner that meets the budgetary constraints of local school systems.

EXCERPTS FROM FTA RULING AGAINST BATA

http://www.fta.dot.gov/documents/20130308_NationalSchoolTransportationAssociationV.BATA_BATA.pdf

NSTA averred that BATA could not rely on the sole requirement that the transportation service be "open to the public" because that would permit FTA recipients and subrecipients subject to the school bus regulations to circumvent the requirements. Moreover, according to NSTA, the Flex Routes are not "open to the public" as FTA requires because there are no marked bus stop locations informing the general public of the availability of these routes, the bus stops are inconveniently located in mostly residential neighborhoods, there are no route maps available, and the one-way direction that the routes take during the morning and the afternoon correspond to the school schedule.

NSTA also stated that, in investigating the matter, it had discovered that all of the Flex Routes had been discontinued in the summer, i.e., after the school year ended, only to resume in September when the new school year began.

APPENDIX C

Conceptual Schedules

Route: 1 Name: Core North

Block	Pullout	Town & Country	1st St & 4th Ave SW	Univ Ave & 8th St NW	21 st Ave & Landmark Cr NW	Univ Ave & 8th St NW	Town & Country	Pull In
1	6:50	7:00	7:03	7:07	7:12	7:17	7:22	
2		7:30	7:33	7:37	7:42	7:47	7:52	
1		8:00	8:03	8:07	8:12	8:17	8:22	
2		8:30	8:33	8:37	8:42	8:47	8:52	9:10
1		9:30	9:33	9:37	9:42	9:47	9:52	
1		10:30	10:33	10:37	10:42	10:47	10:52	
1		11:30	11:33	11:37	11:42	11:47	11:52	
1		12:30	12:33	12:37	12:42	12:47	12:52	
1		13:30	13:33	13:37	13:42	13:47	13:52	
1		14:30	14:33	14:37	14:42	14:47	14:52	
5	14:50	15:00	15:03	15:07	15:12	15:17	15:22	
1		15:30	15:33	15:37	15:42	15:47	15:52	
5		16:00	16:03	16:07	16:12	16:17	16:22	
1		16:30	16:33	16:37	16:42	16:47	16:52	
5		17:00	17:03	17:07	17:12	17:17	17:22	
1		17:30	17:33	17:37	17:42	17:47	17:52	18:10
5		18:00	18:03	18:07	18:12	18:17	18:22	

Route: 2 Name: Core South

Block	Pullout	Town & Country	S Broadway & 31st Ave SW	Dakota Sq Mall	Wal-Mart	Town & Country	Pull In
2	6:50	7:00	7:11	7:16	7:17	7:24	
1		7:30	7:41	7:46	7:47	7:54	
2		8:00	8:11	8:16	8:17	8:24	
1		8:30	8:41	8:46	8:47	8:54	
1		9:00	9:11	9:16	9:17	9:24	
1		10:00	10:11	10:16	10:17	10:24	
1		11:00	11:11	11:16	11:17	11:24	
1		12:00	12:11	12:16	12:17	12:24	
1		13:00	13:11	13:16	13:17	13:24	
1		14:00	14:11	14:16	14:17	14:24	
1		15:00	15:11	15:16	15:17	15:24	
5		15:30	15:41	15:46	15:47	15:54	
1		16:00	16:11	16:16	16:17	16:24	
5		16:30	16:41	16:46	16:47	16:54	
1		17:00	17:11	17:16	17:17	17:24	
5		17:30	17:41	17:46	17:47	17:54	
5		18:30	18:41	18:46	18:47	18:54	19:10

Route: 3 Name: North Loop

Block	Pullout	Town & Country	3rd St NE & 6th Ave NE	N Broadway & 20th Ave NW	8th St NW & University Ave	6th St NW & Central Ave	6th St SW & 2nd Ave	Town & Country	Pull In
3	6:50	7:00	7:06	7:09	7:16	7:18	7:18	7:25	
3		8:00	8:06	8:09	8:16	8:18	8:18	8:25	
3		9:00	9:06	9:09	9:16	9:18	9:18	9:25	
3		10:00	10:06	10:09	10:16	10:18	10:18	10:25	
3		11:00	11:06	11:09	11:16	11:18	11:18	11:25	
3		12:00	12:06	12:09	12:16	12:18	12:18	12:25	
3		13:00	13:06	13:09	13:16	13:18	13:18	13:25	
3		14:00	14:06	14:09	14:16	14:18	14:18	14:25	
4		15:00	15:06	15:09	15:16	15:18	15:18	15:25	
4		16:00	16:06	16:09	16:16	16:18	16:18	16:25	
4		17:00	17:06	17:09	17:16	17:18	17:18	17:25	
4		18:00	18:06	18:09	18:16	18:18	18:18	18:25	

Route: 4 Name: East Loop

Block	Pullout	Town & Country	5th Ave SE & 4th St SE	E Burdick & 13th St SE	E Burdick & 27th St SE	Jefferson St & 11th Ave SE	E Burdick & 27th St SE	E Burdick & 13th St SE	2nd St & 3rd Ave SE	Town & Country	Pull In
4	6:50	7:00	7:03	7:04	7:06	7:12	7:15	7:19	7:21	7:24	
4		8:00	8:03	8:04	8:06	8:12	8:15	8:19	8:21	8:24	
4		9:00	9:03	9:04	9:06	9:12	9:15	9:19	9:21	9:24	
4		10:00	10:03	10:04	10:06	10:12	10:15	10:19	10:21	10:24	
4		11:00	11:03	11:04	11:06	11:12	11:15	11:19	11:21	11:24	
4		12:00	12:03	12:04	12:06	12:12	12:15	12:19	12:21	12:24	
4		13:00	13:03	13:04	13:06	13:12	13:15	13:19	13:21	13:24	
4		14:00	14:03	14:04	14:06	14:12	14:15	14:19	14:21	14:24	
3		15:00	15:03	15:04	15:06	15:12	15:15	15:19	15:21	15:24	
3		16:00	16:03	16:04	16:06	16:12	16:15	16:19	16:21	16:24	
3		17:00	17:03	17:04	17:06	17:12	17:15	17:19	17:21	17:24	
3		18:00	18:03	18:04	18:06	18:12	18:15	18:19	18:21	18:24	

Route: 5 Name: South Loop

Block	Pullout	Town & Country	18th Ave & 6th St SE	13th St SE & 2/52 Bypass	13th St SE & 31st Ave SW	S Broadway & 28th Ave SW	6th St & 18th Ave SW	6th St & 11th Ave SW	1st St & 4th Ave SW	Town & Country	Pull In
3		7:30	7:35	7:38	7:38	7:43	7:48	7:51	7:53	7:55	
3		8:30	8:35	8:38	8:38	8:43	8:48	8:51	8:53	8:55	
3		9:30	9:35	9:38	9:38	9:43	9:48	9:51	9:53	9:55	
3		10:30	10:35	10:38	10:38	10:43	10:48	10:51	10:53	10:55	
3		11:30	11:35	11:38	11:38	11:43	11:48	11:51	11:53	11:55	
3		12:30	12:35	12:38	12:38	12:43	12:48	12:51	12:53	12:55	
3		13:30	13:35	13:38	13:38	13:43	13:48	13:51	13:53	13:55	
3		14:30	14:35	14:38	14:38	14:43	14:48	14:51	14:53	14:55	
3		15:30	15:35	15:38	15:38	15:43	15:48	15:51	15:53	15:55	
3		16:30	16:35	16:38	16:38	16:43	16:48	16:51	16:53	16:55	
3		17:30	17:35	17:38	17:38	17:43	17:48	17:51	17:53	17:55	
3		18:30	18:35	18:38	18:38	18:43	18:48	18:51	18:53	18:55	19:10

Route: 6 Name: West Loop AM

Block	Pullout	Town & Country	2nd St & 3rd Ave SE	Univ Ave & 8th St NW	16th St & 2nd Ave W	6th St & 11th Ave SW	Town & Country	Pull In
4		7:30	7:33	7:42	7:46	7:52	7:54	
4		8:30	8:33	8:42	8:46	8:52	8:54	
4		9:30	9:33	9:42	9:46	9:52	9:54	
4		10:30	10:33	10:42	10:46	10:52	10:54	
4		11:30	11:33	11:42	11:46	11:52	11:54	
4		12:30	12:33	12:42	12:46	12:52	12:54	
4		13:30	13:33	13:42	13:46	13:52	13:54	
4		14:30	14:33	14:42	14:46	14:52	14:54	

Route: 7 Name: West Loop PM

Block	Pullout	Town & Country	6th St & 11th Ave SW	16th St & 2nd Ave W	Univ Ave & 8th St NW	2nd St & 3rd Ave SE	Town & Country	Pull In
4		15:30	15:31	15:38	15:42	15:50	15:54	
4		16:30	16:31	16:38	16:42	16:50	16:54	
4		17:30	17:31	17:38	17:42	17:50	17:54	
4		18:30	18:31	18:38	18:42	18:50	18:54	19:10

APPENDIX D

Sample Trip Analysis

Appendix D Sample Trip Analysis Results

Sample Trip			Existing System							Short-Term Service Plan								
From	To	Direction	Initial Wait Time	Transfer Wait Time	In-Vehicle Travel Time	Walking Time	Total Time	Transfer Required	Routes Used	Initial Wait Time	Transfer Wait Time	In-Vehicle Travel Time	Walking Time	Total Time	Transfer Required	Routes Used	% Change	Roundtrip % Change
Vegas Motel	T&C	OB	0:00	0:00	0:11	0:00	0:11	N	North	0:00	0:00	0:13	0:00	0:13	N	North Loop	18%	0%
T&C	Vegas Motel	IB	0:00	0:00	0:14	0:00	0:14	N	North	0:00	0:00	0:12	0:00	0:12	N	North Loop	-14%	
Guest Lodge	K Mart	OB	0:00	0:05	0:23	0:03	0:31	Y	North, South #2	0:00	0:05	0:25	0:03	0:33	Y	North Loop, South Core	6%	1%
K Mart	Guest Lodge	IB	0:09	0:35	0:26	0:03	1:13	Y	South #1, North	0:39	0:06	0:24	0:03	1:12	Y	South Core, North Loop	-1%	
West Ridge Apts	Jim Hill	OB	0:00	0:05	0:28	0:02	0:35	Y	North, South #2	0:00	0:05	0:12	0:02	0:19	Y	North Loop, West PM	-46%	-17%
Jim Hill	West Ridge Apts	IB	0:16	0:35	0:27	0:02	1:20	Y	South #1, North	0:31	0:06	0:37	0:02	1:16	Y	West PM, North Loop	-5%	
South Pointe Apts	Magic City HS	OB	0:00	0:00	0:04	0:06	0:10	N	South #2	0:00	0:06	0:11	0:00	0:17	Y	South Core, West PM	70%	9%
Magic City HS	South Pointe Apts	IB	0:50	0:05	0:19	0:01	1:15	Y	South #3, South #2	0:33	0:06	0:37	0:00	1:16	Y	West PM, South Core	1%	
Minot State Univ	Mall	OB	0:00	0:05	0:32	0:00	0:37	Y	West, South #3	0:00	0:08	0:21	0:00	0:29	Y	North Core, South Core	-22%	-16%
Mall	Minot State Univ	IB	0:19	0:05	0:18	0:00	0:42	Y	South #3, West	0:16	0:06	0:15	0:00	0:37	Y	South Core, North Core	-12%	
Henry Towers	Wal-Mart	OB	0:00	0:00	0:11	0:00	0:11	N	South #2	0:00	0:00	0:16	0:00	0:16	N	South Core	45%	-29%
Wal-Mart	Henry Towers	IB	0:42	0:00	0:12	0:01	0:55	N	South #2	0:17	0:06	0:08	0:00	0:31	Y	South Core (2 trips)	-44%	
Woodridge	Job Corps	OB	0:00	0:05	0:30	0:07	0:42	Y	South #3, West	0:00	0:06	0:24	0:07	0:37	Y	South Core, West PM	-12%	-3%
Job Corps	Woodridge	IB	0:45	0:05	0:20	0:07	1:17	Y	West, South #3	0:41	0:06	0:24	0:07	1:18	Y	West PM, South Core	1%	
Meadowlark	Parker Senior Ctr	OB	0:00	0:00	0:15	0:00	0:15	N	South #1	0:00	0:05	0:24	0:00	0:29	Y	South Loop, North Loop	93%	-20%
Parker Senior Ctr	Meadowlark	IB	0:20	0:05	0:40	0:00	1:05	Y	West, South #1	0:04	0:05	0:26	0:00	0:35	Y	North Loop, South Loop	-46%	
Jefferson Park	Trinity Hosp	OB	0:00	0:00	0:13	0:00	0:13	N	East	0:00	0:00	0:10	0:00	0:10	N	East Loop	-23%	-58%
Trinity Hosp	Jefferson Park	IB	0:23	0:05	0:12	0:00	0:40	Y	South #1, East	0:00	0:00	0:09	0:03	0:12	N	East Loop	-70%	
Holiday Village	Marketplace Foods (16th)	OB	0:00	0:35	0:33	0:11	1:19	Y	East, West	0:00	0:06	0:25	0:00	0:31	Y	East Loop, West PM	-61%	-49%
Marketplace Foods (16th)	Holiday Village	IB	0:50	0:35	0:17	0:11	1:53	Y	West, East	0:38	0:06	0:23	0:00	1:07	Y	West PM, East Loop	-41%	
System Totals			**4:34**	**3:05**	**6:45**	**0:54**	**15:18**	**13**		**3:39**	**1:28**	**6:36**	**0:27**	**12:10**	**15**			**-20%**
% Change										**-20%**	**-52%**	**-2%**	**-50%**	**-20%**	**15%**			

APPENDIX E

ADA Plan Required Elements

ADA Plan Required Elements[1]

I. General Background/Contact Information
- Agency name and address
- Contact person with telephone, fax and email

II. Description of fixed route services
- Overview of population served
- Route structure, span of service, and frequency of service (including or referencing schedules and maps as appropriate
- Fare structure
- Any additional information relevant to the comparison of fixed route and paratransit serve (in Section IV)
- Identification of additional routes considered as commute bus service
- Vehicle fleet inventory including accessibility and wheelchair capacity

III. Description of current paratransit services
- Service area
- Span of service
- Fare structure
- Eligibility process (suggest reference to dated, and governing body approved document in an appendix) including the following elements
    i. Availability of application materials in accessible format
    ii. Description of determination process, including method of notifying individuals about determinations
    iii. System and timetable for processing applications and allowing presumptive eligibility
    iv. Documentation that will be provided to persons determined ADA paratransit eligible
    v. Description of the administrative appeals process
    vi. A policy for visitors

  Additional information may be included including information on Personal Care Attendants (PCAs) temporary or conditional certification

- Ride reservation process including time period that reservations are accepted (relative to date of trip).
- "Certification" that there are no capacity constraints

[1] Summarized from USDOT *ADA Paratransit Handbook* (1991)

- "Certification" that there are no trip purpose restrictions
- "Certification" on availability of door-to-door service
- Subscription Service noting
    i. Subscription service is not prohibited.
    ii. Subscription service may not absorb more than fifty percent of the number of trips available at a given time of day, unless there is non-subscription capacity.
    iii. The entity may establish waiting lists or other capacity constraints and trip purpose restrictions or priorities for participation in the subscription service only.
- Any additional information relevant to the comparison of fixed route and paratransit serve (in Section IV)
- Identification of additional services considered as general public dial-a-ride or deviated route service
- Vehicle fleet inventory including accessibility and wheelchair capacity

IV. Comparison of current paratransit with required service elements

- Provide a matrix summarizing the six service criteria using the following guidance. Include references to Sections II and III or attached documentation in support of findings.

i. Service Area

- Service is required to origins and destinations within corridors with a width of three-fourths of a mile on each side of each fixed route.
- Small areas surrounded by corridors must be served.
- Service is not required outside the boundaries of the jurisdiction(s) in which the transit agency's operates, if it does not have legal authority to operate in that area. This exception applies only when there is a legal bar to the entity providing service on the other side of a boundary.

ii. Service Hours

- Service shall be available throughout the same hours and days as the entity's fixed route service.
- Corridors do not need to be served with paratransit when the fixed route system is not running in them.

iii. Response Time

- The entity shall schedule and provide paratransit service in response to a request for service made the previous day.

- Reservations may be taken by reservation agents or by mechanical means.
- Reservations must be taken during normal business hours and comparable hours any day before service is operated.
- The entity may permit advance reservations to be made up to 14 days in advance.
- The entity may negotiate pickup times with the individual, but not more than one hour before or after the individual's desired departure time.

iv. Fares

- The fare shall not exceed twice the fare that would be charged to an individual paying full fare (i.e., without regard to discounts) for a trip of similar length, at a similar time of day, on the entity's fixed route system.
- In calculating the full fare the entity may include transfer and premium charges.
- Companions pay the same fare as the ADA eligible rider.
- An attendant rides free.
- A higher fare may be charged to a social service agency or other organization for agency trips (i.e., trips guaranteed to the organization).

v. Trip Purpose Restrictions

- The entity shall not impose restrictions or priorities based on trip purpose.

vi. Capacity Constraints

- The entity shall not limit the availability of complementary paratransit service to ADA paratransit eligible individuals by any of the following:
  - Restrictions on the number of trips an individual will be provided
  - Waiting lists for access to the service

  - Any operational pattern or practice that significantly limits the availability of service to ADA paratransit eligible persons including but not limited to substantial numbers of:
    - significantly untimely pickups for initial or return trips
    - trip denials
    - missed trips
    - trips with excessive trip lengths
- Operational problems attributable to causes beyond the control of the entity shall not be a basis for determining that a pattern or practice exists.
- Problems with telephone access would amount to trip denials or a violation of the response time requirement.

V. Coordination with other services, including:

- Identification of adjacent or overlapping service providers
- Discussion of coordination and connectivity with those providers
- Coordination goals and objectives

VI. Public Participation and Information, including:

- Description of efforts to include persons with disabilities in planning process
- Availability of the plan in accessible format
- Documentation that draft plan was subject to public review and comment
- Documentation that at least one public hearing was held
- Documentation of policy board approval
- Documentation of issues raised by the public and how they were/will be addressed

VII. Implementation Plan, where required and including:

- Steps needed to be taken to come into compliance
- Description of proposed services needed for compliance
- Timeline for implementation
- Resources needed to reach full compliance and plan to attain needed resources

VIII. Certifications and Resolutions

- Resolution authorizing this plan
- Documentation on commuter and/or deviated route services
- Annual certifications indicating presence of service changes and impact on plan

APPENDIX F

Funding Options

FUNDING OPTIONS

This appendix provides additional details about existing and potential funding sources for transit. It includes information on federal, state, and local sources as well as public-private partnerships, including whether they are based on a funding formula (e.g., population) or discretionary (grant), restrictions on use (operating and/or capital), the required local match, and an assessment of their potential applicability for the City of Minot.

Summary of Existing and Potential Funding Sources

Figure -1 Potential Funding Sources and Applicability to Minot City Transit

Program Name	Description	Applicability/Assessment/Comments
Federal Grants		
FTA 5311 (MAP-21)[1]	The MAP-21 Formula Grants Program for Rural Areas (Section 5311) provides capital, planning, and operating assistance to states to support public transportation in rural areas with populations less than 50,000. 83.15% of funds are apportioned based on land area and population in rural areas and remaining 16.85% of funds apportioned based on land area, revenue-vehicle miles, and low-income individuals in rural areas. The low income formula addresses the inclusion of Job Access and Reverse Commute (JARC) funding into section 5311 funding. Local match requirements: ▪ 20% for capital projects. ▪ 50% for operating assistance. ▪ 20% for Americans with Disabilities Act (ADA) non-fixed-route paratransit service, using up to 10% of a recipient's apportionment.	**APPLCABLE** Currently just over 40% of MCT's transit budget is comprised of 5311 funds.
FTA 5307 (MAP-21)[2]	The MAP-21Urbanized Area Formula Program (Section 5307) can be used for operating or capital purposes. It now also includes formula-based section 5340 (Growing States/High Density) and Job Access and Reverse Commute (JARC) funding. 5307 funds may be used for : ▪ Capital, Planning, and JARC projects (provide transportation to jobs and employment opportunities for welfare recipients and low-income workers). About 3% of total funds are designated for JARC, but there are no restrictions or requirements related to use of funds for JARC purposes. ▪ For areas of 50,000 to 199,999 in population, the formula is based on population and population density, and number of low-income individuals ▪ Eligible for operating costs in areas with fewer than 200,000 in population ▪ 20% local match for capital assistance ▪ 50% local match for operating assistance ▪ 20% local match for ADA paratransit service (up to 10% of a recipient's apportionment)	**APPLICABLE – FUTURE POTENTIAL** – MCT would receive FTA 5307 funding at its urban area is officially recognized as being over 50,000.

[1] FTA, MAP-21 5307/5340 Fact Sheet, http://www.fta.dot.gov/documents/MAP-21_Fact_Sheet_-_Formula_Grants_for_Rural_Areas.pdf

[2] FTA, MAP-21 5307/5340 Fact Sheet, http://www.fta.dot.gov/documents/MAP-21_Fact_Sheet_-_Urbanized_Area_Formula_Grants.pdf

Program Name	Description	Applicability/Assessment/Comments
FTA 5310 (MAP-21)[3]	The MAP-21 Enhanced Mobility for Seniors and Individuals with Disabilities Program (section 5310) is used to provide mobility for seniors and persons with disabilities, beyond traditional public transportation services and ADA paratransit. ▪ Consolidates former 5310 and New Freedom programs ▪ 55% of funds must be used on capital projects to meet the special needs of seniors and individuals with disabilities when public transportation is insufficient, inappropriate, or unavailable. ▪ 45% may be used for public transportation projects that – Exceed the requirements of the ADA. – Improve access to fixed-route service and decrease reliance by individuals with disabilities on complementary paratransit. – Alternatives to public transportation that assist seniors and individuals with disabilities. ▪ 20% local match for capital assistance; 50% local match for operating assistance ▪ Projects selected must be included in a locally developed, coordinated public transit-human services transportation plan. ▪ Acquisition of public transportation services can be treated as a capital expense. ▪ Local share may be derived from other federal (non-DOT) transportation sources	**NOT CURRENTLY APPLICABLE –** 5310 funds are generally not available to public transit providers in areas co-located with non-profit providers
FTA 5339 (MAP-21)[4]	The MAP-21 Bus and Bus Facilities Formula Grants Program (section 5339) provides capital funding to replace, rehabilitate, and purchase buses and related equipment, and to construct bus-related facilities. ▪ Replaces the Section 5309 Bus and Bus Facilities Program ▪ Funds are available for three years after the fiscal year in which the amount is apportioned. ▪ 20% local match	**APPLICABLE –** Under MAP-21 this program is formula-based providing some sustainable funding.
FTA Small Transit-Intensive Cities MAP-21)	The Small Transit-Intensive Cities formula program provides an additional funding increment per each of six criteria met ($218,747, based on illustrative MAP-21 funding).	**NOT CURRENTLY APPLICABLE –** Minot currently does not meet any of the criteria [5], but may be able to do so in the future based on increased provision and utilization of transit service.

[3] FTA, MAP-21 5310 Fact Sheet, http://fta.dot.gov/documents/MAP-21_Fact_Sheet_-_Enhanced_Mobility_of_Seniors_and_Individuals_with_Disabilities.pdf

[4] FTA, MAP-21 5339 Fact Sheet, http://www.fta.dot.gov/documents/MAP-21_Fact_Sheet_-_Bus_and_Bus_Facilities.pdf

[5] FTA, MAP-21 Illustrative Apportionments, Small Transit Intensive Cities Formula, http://fta.dot.gov/documents/STIC_tables_Final.pdf

Program Name	Description	Applicability/Assessment/Comments
State		
North Dakota State Aid for Transit	North Dakota established a formula-based fund for public transportation in the state. Derived from license plate fees, The funds must be used by transportation providers to establish and maintain public transportation, especially for the elderly and handicapped, and may be used to contract public transportation, as matching funds to procure money from other sources for public transportation, and for other expenditures authorized by the Director. State aid for public transit funds in North Dakota are not restricted and can be used by transit project recipients for all transit costs, including operating costs, capital costs, transit planning costs, and the costs of matching Federal transit funds.	**APPLCABLE** Currently just over 10% of MCT's transit budget is comprised of ND State Aid funds.
Local Taxes and Fees		
Property Tax	Property taxes that contribute to the City of Minot general fund are the primary existing source for MCT local transit funding.	**APPLICABLE.** Currently just under 30% of MCT's transit budget is comprised funds raised via local tax levy
Gasoline Tax	Gas taxes are an attractive funding mechanism because motorists already pay federal, state, and local taxes on motor fuel so the levy would not impose a new type of tax. Using a gas tax to fund transit has merit because gas taxes reduce the externalities associated with automobile travel (e.g., congestion, pollution) and induce drivers to use vehicles that are more fuel-efficient. Advantages include flexibility of revenues—it could be used for capital and operating purposes, administrative ease, and equity. However, gas tax revenues are declining due to increasing vehicle fuel efficiency and adoption of alternative vehicle fuel sources, a long-term trend that is expected to continue.	**NOT APPLICABLE.** Fuel taxes are not used for transit in North Dakota
Local Option Sales Tax	Sales taxes are a popular source of funding for transit in the County, but typically in areas without a property tax-based revenue fee.	**NOT APPLICABLE.** Sales taxes are not used for transit in North Dakota
Impact Fees	Impact fees are fees paid by land developers intended to reflect the increased capital costs incurred by a municipality or utility as a result of a development. Development charges are calculated to include the costs of impacts on adjacent areas or services, such as increased school enrollment, parks and recreation use, or transit use. The basic principle for setting a transportation Impact Fee is to charge each new development its proportional share of the cost of providing transit to the new development and to accommodate increased demand for transit. .	**NOT APPLICABLE.**

Program Name	Description	Applicability/Assessment/Comments
Public and Private Partnership Funding Programs		
Advertising	Transit systems can raise revenues by selling advertising to businesses and non-profit organizations. Opportunities for advertising on buses include: (1) ads inside the bus, (2) ads on the outside of buses and (3) ads in stations or at stops. Revenue from advertising is generally relatively small, generally accounting for less than 3% of revenues for small transit districts. Advertising revenues can be used for operations, administration, and capital expenses. Some potential issues with advertising include: (1) controlling the content of the advertising can be difficult and (2) some districts prefer to have a specific look to the outside of their bus, without advertisement.	**APPLICABLE.** Currently just about 5% of MCT's transit budget is comprised funds raised via ad sales
Employer Transit Pass Program	Employer transit pass programs are partnerships between a transit agency and private employers, and offer employers the opportunity to purchase a transit pass for all employees, often at discounted rates. The pass benefits the employees by allowing them to use the transit system free of charge. The company may be able to take a tax deduction on the cost of the transit pass. The benefit to the transit agency is an increase in ridership and in revenues from the purchase of the pass. Typically yield between 1-3% of total revenues.	**POTENTIAL APPLICABILITY**
School Transit Pass Program	Schools and transit agencies sometimes partner to provide students with a transit pass, as a way for students to get to school. Typically public school districts purchase transit passes for students in middle and/or high school. The school district or university agrees to pay the transit district a fixed amount each year. School transit passes are transit-neutral in some communities, with the cost of providing the transit service funded by the State or another source but providing no additional revenue to the transit district.	**POTENTIAL APPLICABILITY** The current fiscal conditions at many school districts may make establishing a school transit pass program difficult in the next several years, unless the transit pass is funded through a grant. MSU may be a good candidate for a pass program, but revenues may be on par with lost fare revenues from university students. But pass program may a good way to boost ridership.
Naming Rights / Sponsorships	Historically, the selling of naming rights to people or organizations that make a donation for a capital improvement was most common for large organizations, such as universities or hospitals. Selling naming rights has become more common among smaller organizations and some transit agencies sell naming rights to vehicles, stations, or transit corridors.	**POTENTIAL APPLICABILITY** Selling naming rights may provide a small amount of revenue for transit.
Public-Private Partnerships and Joint Development	A public-private partnership is a mutually beneficial agreement between both entities that seeks to increase revenues or improve the value of an asset. Public-private partnerships include: private entities that rent space for concessions, shared right-of-way with organizations such as a utility, shared fueling facilities for alternative fuel vehicles, and other opportunities. Transit funding from public-private partnerships are most likely to be for capital projects such as a mixed use development that combined a transit station or center.	**POTENTIAL APPLICABILITY** Public-Private or Public-Public partnerships may be a source of funding for the Downtown Transit Center

Notes: Estimates of local funding options are order-of-magnitude figures. Table focuses on programs most relevant to MCT, e.g.,.the Federal State of Good Repair Program (section 5337) is limited to fixed guideway investments (or "high-intensity" buses that share HOV lanes with other vehicles) and is not relevant at this time.