MANAGEMENT & OPERATIONS

This chapter discusses Access and Mobility Management and Congestion Management components of this Plan that are utilized in the St. Cloud metropolitan area. Access and mobility management provides guidance to member jurisdictions regarding Access Management Best Practices throughout the St. Cloud Metro Area while Congestion Management discusses the three primary strategies utilized to improve management & operations of the existing transportation system in the metro area. The three strategies include Travel Demand Management (TDM), Intelligent Transportation System (ITS) and Transportation System Management (TSM).

Below is a brief description of how Plan policies and SAFETEA-LU planning factors are being addressed in this chapter through current activities and how in the future the APO will continue to be vigilant toward policies and planning factors. The policies and planning factors addressed in this chapter are also illustrated to the right.

The APO is working to better improve access and mobility of the entire transportation system by encouraging APO access management guidelines for new, expansion and redevelopment projects. Use of the APO's guidelines will ensure safe, secure, convenient access and mobility beyond the roadway itself while strengthening the economic vitality of businesses and communities.

Better access management through promotion of complete street initiatives will also result in reduced system congestion while promoting multimodal solutions that provide the most benefit. This will further enhance the safety and livability of the transportation network in the St. Cloud Metropolitan Area. As a result, more investments in management and operations solutions now means less social, economic and environmental impacts long term.

Congestion management strategies (i.e. TDM, ITS, TSM) work together to reduce traffic volumes by maximizing the people moving capabilities of the transportation network, improve network efficiency and safety, and increase the safety and carrying capacity of the network through low-cost (safety) system improvements.

In the future, APO staff will assess and incorporate "Management & Operations" action items listed in Chapter 13: Implementation as appropriate into the Unified Planning Work Program (UPWP) to continue to work toward addressing Plan policies and focus on SAFETEA-LU planning factors.

Addressing Plan Policies & SAFETEA-LU Planning Factors	
Policy 1: Improving Access & Mobility of Entire Transportation System	**Planning Factor:** Metropolitan Vitality
Policy 2: Maximize Transportation Investments for Movement of People & Freight	**Planning Factor:** Safety
Policy 3: Promote & Support Multi-Modal Solutions	**Planning Factor:** Security
Policy 4: Improve the Safety of All Transportation Modes & Users	**Planning Factor:** Accessibility & Mobility
Policy 5: Minimize Social, Economic & Environmental Impacts	**Planning Factor:** System Management

Background

Operations and Management principles aim to outline strategies that will increase the efficiency of the transportation system through Access Management and incorporation of Congestion Management strategies such as Transportation System Management (TSM), Travel Demand Management (TDM), and integration of Intelligent Transportation Systems (ITS).

Over the last several years the St. Cloud Metropolitan Area has continued to experience growth and development, in spite of ongoing economic uncertainty. While the region continues to grow in the years ahead, recognizing the value in implementing sound access management policies is increasingly important. Additionally, incorporation of ITS capabilities and congestion management programs may be effective measures for reducing the anticipated strain placed on the transportation network. The APO travel demand modeling forecasts indicate an eighty (80) percent increase in daily vehicle trips over the next twenty years along with a ninety-eight (98) percent increase in vehicle miles traveled.

However, it is not simply growth rates that lead to congestion and crashes on our roadways; congestion and safety issues are increasingly related to the pattern of growth and our inability to fully address these cumulative impacts on our transportation system within the surrounding counties, cities, and townships.

Access and Mobility Management

The quality of life in our communities is dependent upon several factors, including the functionality of the region's transportation network; access and mobility are vital components to a successful transportation network and they can contribute significantly to a positive quality of life.

Access refers to how a vehicle may approach a particular parcel of land via ingress and egress, while *mobility* reflects the ability to travel from one place to another, encompassing travel time and freedom of movement.

The St. Cloud Area Planning Organization (APO) addresses the unique relationship between transportation and land use, in part, through access management. Changes in travel patterns affect the entire transportation network; therefore, access management is best addressed within the scope of the entire St. Cloud Metropolitan Area. One of the objectives of the St. Cloud APO is to provide access management guidelines that can be incorporated by all jurisdictions within the APO's Planning Area.

In order to fully appreciate the nature of the access management guidelines, it is helpful to understand the context in which roads are classified and described. A nomenclature has been developed, referred to as Functional Class, that divides roadways into a variety of categories (or classes) based on their *intended* purpose. An important distinction to make is that roadways may in actuality provide a function other than the intended function. In addition to defining the relative importance of a road, classification defines how a road functions within the overall

Access Management Best Practices

- Improve existing roadway segments when possible
- Apply access management and spacing guidelines for new projects
- Consider access management program for specific roadway segments

transportation network. The federal functional classification system consists of principal arterials, minor arterials, and collectors. Local streets and township roads also provide critical services of the transportation network; however, they are not officially included in the federal functional classification definitions. Table 5-1 below describes each of the various roadway classes in greater detail.

In an efficient roadway network, the various roadway facilities work together to serve the needs of the traveling public; the proportion of arterials, collectors and local streets is balanced to provide system continuity and connectivity. For example, a system comprised of all local streets would not allow for efficient movement of through traffic that travels at higher speeds. Conversely, a system of too many arterials would not provide adequate land access for commercial and residential developments.

Table 5-1
General APO Access Management Guidelines

Functional Class	Intended Service Role	Primary Function	Trip Length/ Intersection Control	Example Roads
Principal Arterial	Emphasizes mobility and employs very strict access control	Serves major activity centers High traffic volumes	Through traffic Longest trips Interchanges	I-94 TH 10 TH 15 TH 23
Minor Arterial	More access than a Principal Arterial; however access is still limited to allow for strong mobility	Serves smaller activity centers Moderate traffic volumes	Short to Medium trip length Signalized Intersections and/or Roundabouts	10th Ave. (Waite Park) University Drive (St. Cloud) Pinecone Road (Sartell)
Collector Street	Emphasizes a balance between mobility and access needs	Move traffic from local streets to arterials Moderate traffic volumes	Short trips Controlled Intersections (Stop Signs)	Centennial Dr. (St. Cloud) Summit Ave. (Sauk Rapids)
Local Street	Emphasizes access	Serve local, neighborhood level, trips	Controlled and uncontrolled intersections	Neighbor-hood Streets
*Township Roads	Both local and through traffic, typically rural in nature. Balance of access and mobility is more subjective.	Movement of rural traffic. Typically lower traffic, volumes, however some facilities carry moderate volumes	Trips may be limited to neighborhood traffic or may serve as collectors and minor arterials Controlled and uncontrolled intersections	30th St. N. (Le Sauk Twp.) 45th Ave. SE (Haven Twp.)

Land use and transportation are mutually dependent systems. Ensuring safe, convenient access and mobility has ramifications well beyond the roadway itself; access and mobility are critical to the economic vitality of businesses and communities. Highways and streets provide access to land enabling its development. Land development generates demands on the transportation system in the form of both motorized and non-motorized transportation trips. As a result, a community's long-term development prospects can be stymied by inadequate transportation connections. On the other hand, inadequate community planning and insensitive site development can severely reduce the effectiveness of an otherwise adequate transportation system.

Along with the functional classification, each segment of a roadway is assigned to a subcategory based on the existing and planned land use of the area surrounding the facility. Urban areas are fully developed locations that have a tightly woven network of public streets. An "urbanizing" area describes the inner ring of development, adjacent to the urban core, which is expected to become urban by the year 2035. Rural areas typically included low density development with agricultural and forestry activity, where urban services are not anticipated to be extended over during the course of the planning horizon.

Access management encompasses the planning, design and implementation of land use and transportation strategies in an effort to maintain the safe flow of traffic, while accommodating the access needs of adjacent land development. Proper location and spacing of access along roadways, a well-designed local street network, and implementation of quality control guidelines within a community will support desired development, expand the local business community, and sustain tax base and land values. Additionally, principles of access management, when applied properly, have the potential to enhance community design by allocating more space for landscaping and streetscaping improvements. Promotion of complete street networks that provide for the safe movement of both motorized and non-motorized transportation will further enhance the safety and livability of the transportation network in the St. Cloud Metropolitan Area.

Figure 5-1 at the end of this chapter provides comprehensive guidance to member jurisdictions regarding Access Management Best Practices throughout the St. Cloud Metro Area.

Over the course of the upcoming planning cycle, the St. Cloud APO has identified a short-term goal of coordinating complete streets efforts with local jurisdictions and refining local policies to better serve all modes of transportation. A long term priority for the region continues to focus on the delicate balance of land use and transportation needs.

It is critical to implement land use and roadway development policies that maximize land use and economic growth while incorporating the need for safe and convenient means of travel within and through our region.

Access Management Strategies

- Greatest access control is needed for roads that serve through-traffic trips
- Identify land use and transportation issues *prior* to approving zoning and subdivision requests
- Support economic growth by planning for and investing in an adequate local road network
- Plan for a complete hierarchy of roads; arterials, collectors, and local streets
- Promote commercial nodes rather than strip-commercial development
- Promote residential development that utilizes interconnected local streets
- Provide well spaced access for neighborhood connections to collector streets

Congestion Management

Three primary strategies employed for congestion management include Travel Demand Management (TDM), Intelligent Transportation Systems (ITS), and Transportation System Management (TSM). Ideally, each of these strategies work in concert with each other to reduce traffic volumes by maximizing the people moving capabilities of the transportation network, increase network efficiency and safety through the implementation of technological advances, and increase the safety and carrying capacity of the network through low-cost system improvements.

Travel Demand Management (TDM) focuses on reducing volumes through promotion of non-motorized transportation modes, public transit services, carpooling, and innovative employment options such as telecommuting and flexible work schedules. Each of these measures aids in reducing the number of vehicles on the roadway network, thereby allowing the network load to travel more efficiently.

A key component to widely utilized TDM principles is effective education and marketing regarding the numerous and varied benefits that can result for system users, employees and employers, and communities. System users need to be assured that their mobility will not be impaired if they sacrifice a personal vehicle for another mode of transportation. Employees and employers can realize mutually beneficial outcomes by providing transit passes, car and vanpool incentives, and accommodation of non-traditional work hours. Community-wide benefits include reduced congestion, improved air quality, and ease of travel factors.

In concert with Mn/DOT, the APO is looking forward to opportunities to expand and implement a Greater Minnesota Rideshare initiative to Central Minnesota, which would serve as an excellent complement to transportation choices currently available. Rideshare programs have a variety of organizational structures and the APO is actively committed to participating in research and outreach activities to promote such a program in the St. Cloud Area.

Intelligent Transportation Systems (ITS) is a designation given to numerous applications that use smart processes and technologies to improve the safety and efficiency of the transportation system through the implementation of technological advances. Ultimately, ITS applications have the potential to improve safety conditions while bolstering both the people moving capabilities and the carrying capacities of a multimodal transportation network.

ITS applications can be generally grouped into four sub-categories including: Advanced Traveler Information Systems (ATIS), Advanced Traffic Management Systems, Emergency Response Systems (ERS), and Advanced Public Transportation Systems (APTS).

Advanced Traveler Information Systems strive to assist with planning, perception, analysis, and decision making while utilizing the transportation network. This includes both telephone, radio, and web based services that provide details on issues such as traffic congestion, construction, critical incidents, road conditions, weather, and estimated travel times.

Intelligent Transportation Systems

- **Advanced Traveler Information Systems**
  - 511mn.org
  - 511 (phone)
  - Radio Notice
- **Advanced Traffic Management Systems**
  - Surveillance Cameras
  - Variable Message Boards
  - Railroad Warning Systems
- **Emergency Response Systems**
  - Signal Pre-Emption Technology
  - Automatic Vehicle Location
- **Advanced Public Transportation Systems**
  - Transit Signal Priority
  - Electronic Fare Boxes
  - Computer Assisted Dispatching
  - Automatic Vehicle Location

Advanced Traffic Management Systems refers to an array of institutional, human, hardware, and software components that monitor, control, and manage traffic on the transportation network. In the St. Cloud Area, there is a Traffic Operations Control Center (TOCC) that is jointly operated by the Minnesota Department of Transportation and the Minnesota State Patrol. The TOCC oversees numerous surveillance cameras, variable message boards, railroad, transit and emergency services notification systems throughout the Metro Area. From this centralized office, staff are able to assist the public by providing real-time information on variable message boards, view critical incidents on surveillance cameras, and direct traffic flow through coordinated signal systems and programming.

Emergency Response Systems address the vehicle, dispatching, and traffic management related needs of law enforcement, fire, and emergency medical services in the St. Cloud Area. Nearly all signalized intersections in the Metro Area are equipped with emergency vehicle preemption technology that allows emergency response vehicles to override programmed signal cycles. Activation of signal preemption renders all signals red at an intersection, except for the primary direction of travel activated by emergency services personnel. This allows emergency response vehicles to move through intersections in a more safe and time efficient manner.

Advanced Public Transportation Systems employ several technologies to streamline their operations and increase the efficiency of the transit system, from dispatching and fare payment to bus movement on the roadways. Computer assisted dispatching and communication systems allow for more efficient service for dial-a-ride para-transit services. Electronic fare boxes benefit passengers, drivers, and system performance by providing an automated option for fare payment via several electronic fare media devices and automated ridership data collection. Transit signal priority (TSP) utilizes the same technology as Emergency Response Systems; however, transit protocol does not preempt the system program. Instead, TSP decreases the signal cycle length by a pre-set period of time; this decrease in wait time has several benefits including less idle bus time and increased on-time performance.

Transportation System Management (TSM) focuses on increasing the carrying capacity of existing facilities through low cost system improvements such as signal coordination, intersection improvements, and multimodal accommodations.

Historically the APO has established TSM goals that are organized into six major categories: mobility and accessibility, safety, security, environmental, cost, social and economic, and energy. These goals guide transportation planning efforts in the St. Cloud Metropolitan Area to accommodate all modes of travel in a safe and efficient manner with minimal social and economic impacts and assure the attainment of air quality and noise level standards. Goals for the TSM are developed for consistency with SAFETEA-LU planning factors.

Transportation System Management Strategies

- Traffic signal synchronization to provide efficient vehicle progression through corridors
- Intersection improvements such as turn lanes and
- Support economic growth by planning for and investing in an adequate local road network
- Plan for a complete hierarchy of roads; arterials, collectors, and local streets
- Promote commercial nodes rather than strip-commercial development
- Promote residential development that utilizes interconnected local streets
- Provide well spaced access for neighborhood connections to collector streets

It must be recognized that some TSM actions resulting from the above policy strategies will be competitive rather than complementary. As an example, promotion of carpooling through preferential employee parking can adversely affect an action to increase transit ridership. Also, transportation policymakers must be cognizant of possible conflicts between jurisdictions promoting different types of actions, e.g. a central city could address its problems with traffic restraint projects while suburbs could promote traffic expediting projects. The evaluation process serves to balance and address these inter-jurisdictional planning and transportation issues.

Moving Forward

The integrated nature of Access Management and Congestion Management provides a framework for establishing and maintaining a healthy transportation network. As the St. Cloud Metropolitan Area continues to develop, it will be critical that sound transportation planning policies are applied throughout the region to ensure that the multimodal transportation network can adequately meet the needs of the traveling public.

Consistent access management policies along with innovative implementation of congestion management techniques can alleviate travel delay, increase safety, and improve the carrying capacity of our transportation network. Success of this plan relies on collaborative and cooperative planning efforts between and among the jurisdictions within the St. Cloud APO Planning Area.

Figure 5-1
Comprehensive APO Access Management Guidelines

	Urbanized				Urbanizing				Rural			
	Principal Arterial		Minor Arterial	Collector	Principal Arterial		Minor Arterial	Collector	Principal Arterial		Minor Arterial	Collector
Typical Facility Characteristics	Interstate / Freeway	Non-Freeways	4-Lane Divided, 4-Lane Undivided	4-Lane Undivided, 3-Lane, 2-Lane	Interstate / Freeway	Non-Freeways	4-Lane Divided, 4-Lane Undivided	4-Lane, 2-Lane	Interstate/ Freeway	Non-Freeway	4-Lane, 2-Lane	2- Lane
Example of Facility	I-94	T.H. 10, 15 & 23, CSAH 75	3rd St. N, 10th St So, Pinecone Rd, & Benton Dr	Lincoln Ave, 6th Ave No, Rolling Ridge Rd (SC), 18th St N (SR), & C.R. 119 (Sartell)	I-94	T.H.10, T.H. 15 & 23, CSAH 75	C.R. 1 (Benton), Golden Spike Rd, C.R. .137, C.R. 2 (St. Joseph)	65th Ave Sartell, C.R. 6 (Stearns), C.R. 121 (Stearns)	I-94	T.H. 10, 15 & 23, CSAH 75	C.R. 3 (Benton), C.R. 4 (Stearns), C.R. 8 (Sherburne)	C.R. 8 (Benton), C.R. 115 (Stearns), C.R. 3 (Sherburne)
Facility Spacing (Miles)	4 + Miles	1-4 Miles	1/3 - 1 Mile	1/4- 1/2 Mile	2-5 Miles	2-3 Miles	2/3 - 1.5 Miles	1/3 to 1 Mile	5 + Miles	3-5 Miles	2-3 Miles	2/3 - 1.5 Miles
Trip Lengths (Miles)	>10 Miles	5-10 Miles	1-5 Miles	<1 Mile	10-20 Miles	4+ Miles	2-4 Miles	1-2 Miles	20-100 Miles	15-30 Miles	10-20 Miles	5-10 Miles
Roadway ADT	20,000-70,000	15,000-50,000	10,000-30,000	<10,000	20,000-70,000	10,000-25,000	5,000-10,000	1000-5000	20,000-60,000	5,000-15,000	3,000-5,000	500-1,000
Mobility Hierarchy	Highest	Higher	High	Moderate	Highest	Higher	High	Moderate	Highest	Higher	High	Moderate
Posted Speed Limit (MPH)	60	35-50	30-40	30	70	55-65	35-45	30	70	55-65	35-55	35-55
Large Trucks	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Unrestricted
Accessibility Hierarchy	Severely Restricted	Highly Restricted	Restricted	Permitted	Severely Restricted	Highly Restricted	Restricted	Permitted	Severely Restricted	Highly Restricted	Restricted	Permitted
Arterial Street Access Allowance	All Arterials	All Arterials	All Arterials	Non-Freeways & Minor Arterials	All Arterials	All Arterials	All Arterials	Non-Freeways & Minor Arterials	Principal Arterials & Non-Freeways	All Arterials	All Arterials	Non-Freeways & Minor Arterials
Collector Street Access Allowance	None	Non-Freeway & Minor Arterials	Restricted	Unrestricted	None	Restricted	Restricted	Unrestricted	None	Restricted	Unrestricted	Unrestricted
Local Street Access Allowance	None	Highly Restricted	Restricted	Unrestricted	None	None	Restricted	Unrestricted	None	None	Restricted	Unrestricted
Driveway Access Allowance	None	Highly Restricted	Restricted	Unrestricted	None	None	Restricted	Permitted	None	None	Restricted	Unrestricted
Intersection Design/Control	Interchanges Only	Interchanges / Traffic Signals	Traffic Signals	Traffic Signals, 4-Way Stop	Interchanges Only	Interchange/ Traffic Signals	Traffic Signals	4-Way Stop, X-St Stops	Interchanges Only	Interchange Traffic Signals	Traffic Signals	4-Way Stop, X- Street Stops
Signal Locations	NA	Arterials, Collectors, & Major Generators	Arterials, Collectors, & Major Generators	Non-Freeway, Minor Arterials & Other Collectors	NA	Arterials, Collectors, & Major Generators	Arterials, Collectors, & Major Generators	Arterials & Other Collectors	NA	Other Arterials, Collectors	Arterials & Collectors	Minor Arterials & Other Collectors
Signal Spacing (Feet)	NA	2310-4400'	1760-2930'	1760'	NA	4840'	2310-3665'	1760 '	NA	4840'	2310-4840'	2310-4840'
Interchange Spacing (Miles)	1 Mile Minimum	1 Mile Minimum	NA	NA	1-4 Miles	1-4 Miles	NA	NA	4+ Miles	2-4 Miles	NA	NA
Right-Of-Way (Feet)	300'	200'	100-120'	80'	300' +	200' +	100-150'	80'	300' +	200' +	80-120'	80'
Parking	None	None	None	Restricted	None	None	None	Restricted	None	None	None	None

NOTES
1) These guidelines are intended to reflect "Best Practices" in Access Management (IDEAL)
2) When addressing State owned and operated facilities, please refer to MnDOT Guidelines