



# TRANSPORTATION POLICY PLAN

Appendices

2040





## 2040 Transportation Policy Plan Appendices

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## Appendix A: Glossary

<b>A-minor arterials</b>	Roadway designation developed by and used only within the seven metropolitan counties to identify the most important minor arterials in the region. Principal and A-minor arterials are eligible for federal highway funding through the Transportation Advisory Board Regional Solicitation. A-minor arterials are more significant to the region than other minor arterials and are owned and operated by MnDOT, counties, and cities. A-minor arterials are further classified into one of four types: Reliever, Augmentor, Expander, or Connector. See expanded definitions in Appendix D.
<b>Above mean sea-level (AMSL)</b>	Method of defining elevation of a particular site, usually in relation to other sites, all using the similar base elevation.
<b>Access to destinations/opportunities</b>	Generally, the ease with which an area can be reached. Technically, it is the relative time that is required to get from an origin to a destination.
<b>ADA accessible</b>	A facility that provides access to people with disabilities using design requirements of the Americans with Disabilities Act (ADA).
<b>Active traffic management (ATM)</b>	A group of existing and future infrastructure technologies used to monitor and respond to freeway traffic in real time. Includes existing equipment such as cameras, ramp meters, loop detectors, and variable message signs, as well as more state-of-the-art technology such as queue detection and warning systems, speed harmonization, and dynamic re-routing systems.
<b>Air access</b>	Refers to provision of open competition for air service to an airport.
<b>Air cargo</b>	Freight, parcels and mail carried in the belly-hold of passenger aircraft, on an all-freight airline or express carrier.
<b>Air carrier</b>	A scheduled, certificated airline operation that provides commercial passenger and cargo services.
<b>Air operation</b>	Either a landing or take off movement.
<b>Air traffic control (ATC)</b>	Control of aircraft flight activities through human or automated direction using electronic aids to maintain safety and efficient movement of aircraft.
<b>Air traffic control tower (ATCT)</b>	A facility at an airport used by ATC to control arriving and departing air traffic to/from a specific airport and associated airspace.
<b>Aircraft fleet</b>	All the aircraft operated by a particular airline or otherwise delineated by type, geographical location, etc.
<b>Aircraft mix</b>	Generally denotes type of aircraft in a fleet, aircraft operating at an airport, etc.
<b>Airfield</b>	That part of the airport containing the runways, taxiways, and safety areas associated with aircraft operations; also called “airside” area.

<b>Airport</b>	Identifies a defined property area for land based aircraft operations with turf or paved runways, as distinct from seaplane bases with water lanes, or heliports.
<b>Airport capacity</b>	The number of aircraft movements the runways of an airport can process within a specified period of time with the average delay to aircraft kept to an acceptable limit. Usually defined on an annual or peak period basis.
<b>Airport functional classification</b>	Methodology used to categorize an airport for purposes of determining its role and functions in a system.
<b>Airport influence area (AIA)</b>	The general geographic area around an airport that encompasses the major arena of aircraft operational and development interaction between an airport and its surrounding land uses. The area is defined as a radius area 3 nautical miles off the physical ends of existing and planned runways of the nearest system airport to the affected community. Size of an AIA varies according to the airport's role and function.
<b>Airport layout plan (ALP)</b>	A specific packet of drawings depicting the airport facility in sufficient detail for FAA approval of project level decision making.
<b>Airport sponsor</b>	Defines airport owner, airport operator, or other legal entity authorized as eligible by the Federal Aviation Administration (FAA) to enter into agreements for federal funding of projects.
<b>Airports system plan</b>	A plan, normally multi-county in scope, that identifies the functional roles of all existing and proposed aviation facilities through time. A system plan includes a policy package, forecasts and capacity analysis, and a generalized development program. Used to set and coordinate overall planning, funding and implementation priorities for system facilities.
<b>Airspace</b>	That portion of the nation's air resource available for air navigation and landing and takeoff of aircraft. Usually defined by imaginary surfaces in height control ordinances/maps, air traffic control and navigational fixes.
<b>Airstrip</b>	Describes a single runway, usually a turf runway, usually a privately-owned property, with operating restrictions, most often without services and allowed under a conditional use permit from the local governmental unit.
<b>Airway</b>	Generally defined as an imaginary low or high altitude flight track established along defined compass headings and altitudes.

<b>Alternatives analysis (AA)</b>	A study of a corridor or travel shed to determine viable transit alternatives. These studies examine potential alignments and modes, including enhanced bus service. All alternative analyses include both bus and rail options. Bus options include improvements to highways and roads that would provide transit advantages, such as bus-only shoulders, signal priority or preemption, dynamic shoulder lanes, dynamic parking lanes, ramp meter bypass lanes, high-occupancy vehicle or high-occupancy toll lanes, or other advantages. Land use and zoning needs are also evaluated. While alternatives analyses are no longer a federal requirement, they are still a valuable planning tool and informative for environmental review processes.
<b>Airport improvement program (AIP)</b>	Federal funding program administered by FAA for airport development and planning.
<b>Airport service volume (ASV)</b>	The theoretical number of aircraft operations that can be handled by an airport in a year. This measurement depends upon runway layout (number, type, direction), instrument landing capability, average weather conditions, the presence of an air traffic control tower and related factors.
<b>Americans with Disabilities Act (ADA)</b>	Civil rights legislation passed in 1990. The ADA sets design guidelines for accessibility to public facilities, including sidewalks, trails, and public transit vehicles by individuals with disabilities.
<b>Apron</b>	A paved or hard surface area available for temporary aircraft parking or servicing activity. Usually found at an FBO or a hangar area.
<b>Areas of Concentrated Poverty (ACP)</b>	Contiguous census tracts where at least 40 percent of the residents live below 185% of the federal poverty line. This federal income threshold for a typical family of four in 2012 was \$43,460.
<b>Auto occupancy</b>	The number of persons per automobile, including the driver.
<b>Aviation</b>	All elements of air transportation besides airports, to include aircraft industry, airspace resources, aircraft, pilots, users, air traffic control and navigation system, airlines, air service, airport facilities, etc.
<b>Aviation easement</b>	An airspace easement over a particular area usually for purposes of aircraft overflight or safety enhancement.
<b>Based aircraft</b>	Aircraft that are stored, hangared or tied-down at one particular airport, usually for at least a continuous 6-month period, and use the airport as their primary base of operations.
<b>Bike lane</b>	A portion of a roadway or shoulder designed for exclusive or preferential use by bicyclists. Bicycle lanes are distinguished from the portion of the roadway or shoulder used for motor vehicle traffic by physical barrier, striping, marking, or other similar device.

<b>Bike-walk streets (or “bicycle boulevard”)</b>	A shared roadway, typically a local residential street, which has been optimized for bicycle traffic. Bike/walk streets accommodate auto travel but literally give priority to cyclists and pedestrians. These streets use traffic calming techniques, signage, lighting, and other amenities to provide a safe, quiet, and direct route for bicyclists and pedestrians.
<b>Bus lanes</b>	Lanes designated solely for buses. These lanes are typically provided in downtowns and allow buses to travel with reduced impacts from automobiles.
<b>Bus-only shoulders</b>	A system of highway shoulder lanes that MnDOT has identified and signed as being available for bus use to avoid congestion. Speeds are limited to 35 mph for safety.
<b>Bus and Support System</b>	The Bus and Support System is the phrase used to describe the elements of the transit system that are not specific only to transitways. The Bus and Support System includes most of the supporting infrastructure for the transit system and all of the components of the regular route system and alternatives to the regular route system, including any facilities shared with the transitway system such as bus garages supporting the bus rapid transit system.
<b>Bus rapid transit (BRT)</b>	A transitway mode that uses bus vehicles but incorporates characteristics of light rail or commuter rail to improve bus speed, reliability, and identity. These characteristics can include specialized vehicles, unique and improved stations, signal preemption or priority, off-board fare collection, improved signage and other features that allow vehicles to operate faster and more reliably than local or express buses. BRT can be run on a dedicated right-of-way or in mixed traffic. Typically, service frequencies are every 15 minutes or better on the core portions of the line.
<b>Busways</b>	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 roadways. Variations include grade-separated, at-grade, and median busways.
<b>Carbon monoxide maintenance area</b>	Most of the Twin Cities area is part of a maintenance area designated by the U.S. Environmental Protection Area (EPA) for carbon monoxide emissions from transportation sources. This designation and area affected is based on national air quality standards. A portion of this area extends into eastern Wright County.
<b>Carpool</b>	When two or more people share a private vehicle. At times, vehicle-sharing is facilitated by government.
<b>Code sharing</b>	A practice where airlines use the same computer reservation codes to provide “seamless” ticket/price services, usually to take advantage of economies in hub airport connections.

<b>Collector streets</b>	A class of roadways in the federal functional classification system. These are streets that connect neighborhoods and connect neighborhoods to regional business concentrations. (See Appendix D for functional classification criteria and characteristics.)
<b>Commuter rail</b>	A passenger railroad that carries riders within a metropolitan area, typically between urban areas and their suburbs. They typically operate on freight rails or dedicated tracks. Propulsion is provided either by diesel locomotives or by self-propelled Diesel Multiple Units, which combines the engine function into one or more of the passenger railcars. Typically there are a small number of stations and multiple departure times primarily in mornings and evenings. Stops are typically five miles or more apart and route lengths extend more than 20 miles.
<b>Complete Streets</b>	The planning, scoping, design, implementation, operation, and maintenance of roads in order to reasonably address the safety and accessibility needs of users of all ages and abilities. Complete streets considers the needs of motorists, pedestrians, transit users and vehicles, bicyclists, and commercial and emergency vehicles moving along and across roads, intersections, and crossings in a manner that is sensitive to the local context and recognizes that the needs vary in urban, suburban, and rural settings.
<b>Congestion</b>	Overloading of roadway with vehicles. (See “Level of Service.”)
<b>Congestion Management Plan</b>	A systematic process for evaluating and developing transportation strategies and plans for addressing existing and future traffic congestion.
<b>Congestion Management and Safety Plan</b>	A study of potential roadway project solutions under development by the Minnesota Department of Transportation (MnDOT) that will address congestion and/or safety hot spots through lower-cost/high-benefit improvements.
<b>Congestion Mitigation and Air Quality improvement program</b>	CMAQ is a categorical funding program created under MAP-21. It directs funding to projects that contribute to meeting national air quality standards and further reducing transportation-related air pollution.
<b>Congestion pricing</b>	User fees that are charged to manage traffic and reduce congestion, also called “value pricing.” Typically higher prices reduce the use of priced lanes. This technique can be used to ensure free-flow conditions in priced lanes.
<b>Context sensitive design</b>	Roadway standards and community design practices that are flexible and sensitive to community values, balancing economic, social, aesthetic and environmental objectives; includes appropriate design, size, and scale.



<b>Corridor studies (highway)</b>	Typically, highway corridor studies focus on a segment of a particular travel corridor or travel shed. Land use, access issues, capacity, level of service, geometrics and safety concerns are studied; alternatives analyzed and recommendations made. Corridor studies are usually prepared with the participation and cooperation of the affected communities and governmental agencies. Recommendations for improvements are often incorporated into the local comprehensive plans of the participating cities and continue to be used by implementing agencies as improvements in the corridor are made.
<b>Corridor studies (transit)</b>	Focus on transit alternatives within a travel corridor or travel shed. Studies typically examine all potential alignments and modes (light rail, commuter rail, bus rapid transit, express bus or other alternatives). Studies examine these alternatives against a set of criteria, typically (but not restricted to) factors such as mobility improvements, operating efficiency and effectiveness, environmental impacts, economic development impacts, readiness and cost-effectiveness.
<b>Cost-sharing</b>	A contractual arrangement whereby a local unit of government or other governmental body enters into an agreement to pay for part of a physical facility or a service; includes subscription transit service.
<b>Counties Transit Improvement Board (CTIB)</b>	The joint powers board created to oversee the distribution of the ¼ cent sales tax imposed by certain counties in the region for transitway expansion.
<b>Cross-wind runways</b>	Runways constructed to allow an airport to be used when the wind is blowing across the main-wind runway.
<b>Current revenue scenario</b>	One of two funding scenarios (see “Increased revenue scenario”) in this plan that assumes revenues that can reasonably be expected to be available based on past years. Under federal guidelines this scenario is called “fiscally constrained.” Under this scenario no new funding or funding sources are assumed and the preservation, maintenance and operations of the regional highway system will not be met over time. Under this scenario, the preservation, maintenance, and operation of the transit system will be met, but the regional goal of expanding, modernizing, and improving regional transit cannot be achieved.
<b>Cyclopath</b>	A web-based application developed by the University of Minnesota that allows bicyclists to create, edit, and rate their own bike routes on a regional base map.
<b>Cycloplan</b>	An extension of Cyclopath for use by cities, counties, and planning departments to: Establish and/or enhance their bikeways data, Have access to user data and region-wide data, Respond to issues raised by users of Cyclopath
<b>Deadhead</b>	The portion of trip that does not carry passengers. This can be the portion of a trip when a transit vehicle travels between the garage and the start or end point of a route or when a vehicle travels between routes.



<b>Decibel (dB)</b>	A unit of sound measurement measured on the “A” scale.
<b>Demand-responsive service</b>	See Dial-a-Ride.
<b>Dial-a-Ride (also demand-responsive service)</b>	A public transit service using passenger cars, vans or small buses operating in response to calls from passengers or their agents to the transit operator, who then dispatches a vehicle to pick up the passengers and transport them to their destinations. Typically, the vehicle may be dispatched to pick up several passengers at different pick-up points before taking them to their respective destinations and may even be interrupted en route to these destinations to pick up other passengers. These vehicles do not operate on a fixed schedule or route.
<b>Dynamic parking lane</b>	A parking lane on a street that is used for regular traffic during peak periods. In non-peak periods, it reverts back to a parking lane.
<b>Dynamic shoulder lanes</b>	Highway shoulder lanes used for vehicle traffic during peak periods. In non-peak periods, lanes are not available for travel but are used for break-downs; dynamic shoulder lanes can be priced at a flat fee, dynamically priced based on real-time congestion, or toll free.
<b>Enplanements</b>	The total number of passengers at a specific airport boarding an aircraft. This includes passengers originating at that airport, and those making connections by changing planes at that airport; it does not include passengers that stay on their plane for through flights. Passengers that originate at a particular airport usually return to their starting point, thus doubling the annual enplanements approximates the total number of passengers handled at the facility.
<b>Environmental Impact Statement (EIS) and Draft Environmental Impact Statement (DEIS)</b>	A document that must be filed with the federal government when a “major Federal action significantly affecting the quality of the human environment” is taken. These studies typically include a statement of the purpose and need for the project, a description of the affected environment, a range of alternatives to the proposed action and an analysis of the environmental impacts of each of the possible alternatives. The law requiring this is the National Environmental Policy Act. (NEPA) Major highway and transit projects are required to develop these studies and follow these processes.
<b>Environmental Quality Board (EQB)</b>	A state board that defines which projects require what level of environmental review and coordinates what agencies, groups, citizens need be involved in the particular review.
<b>Essential air service (EAS)</b>	Federal program to subsidize air service to small communities where local demand is usually not sufficient to attract sustainable and reliable service.

**Expansion**

Expansion is the addition of new or added capacity to the transportation system and can occur in different forms and different modes.

- For highway capacity, expansion is defined in this plan and for air quality conformity purposes as adding a multi-use or managed lane of a mile or more in length. Construction of two or more consecutive interchanges is also capacity expansion.
- For transit, expansion includes added capacity on existing routes, the addition of new routes, expanded or new transit facilities, and new transitways.

<b>Extended MPO Area</b>	Those portions of Wright, Sherburne and St. Croix (Wis.) counties that are within the MPO planning area boundary as required by federal law, but outside the Metropolitan Council boundaries as defined in Minnesota Statutes.
<b>Fare</b>	The amount paid for a transit trip. Fares vary by the type of trip and service.
<b>Federal Air Regulation (FAR)</b>	<p>Rules and regulations issued by the FAA in administration of its regulatory functions, these regulations carry the force of law and are binding on all aviation activities within FAA purview.</p> <ul style="list-style-type: none"> <li>• FAR Part 77 – establishes criteria and defines “objects affecting navigable airspace,” serving as a means to protect airport area airspace needed for safe flights.</li> <li>• FAR Part 150 – defines noise control and compatibility planning for airports in accordance with FAA criteria and funding requirements.</li> </ul>
<b>Federal Aviation Administration (FAA)</b>	Federal part of DOT that deals with the air transportation mode and all aspects of pilot licensing, airport certification, aircraft certification, aviation rules and regulations, safety, operation, air traffic control, navigational system, fees and taxes, security, airline operations, etc.
<b>Federal Communications Commission (FCC)</b>	Controls communications facilities, frequencies and power output of electronic transmissions for radio, TV and microwave services. These facilities/activities share the airspace with aviation and FAA review is required prior to implementation.
<b>Federal inspection facility (FIS)</b>	Portions of international airports are designated for international arrivals and departures; the inspection facilities allow for federal services in processing of passengers and goods.
<b>Fixed Base Operator (FBO)</b>	Usually a private leasehold business providing facilities and services on the airport (e.g. fuel, maintenance, hangaring, etc.) for aircraft based at the airport and transient users.

<b>Functional classification</b>	Federal taxonomy for roadways based on their primary function – mobility for through trips or access to adjacent lands. In the Twin Cities, a four-class system (described in Appendix D) is used to designate roads (principal arterials, minor arterials, collectors and local streets). The major arterials are classified as either “A” minor arterials or “B” (or “other”) minor arterials.
<b>General aviation (GA)</b>	All aviation activity other than that of the scheduled air carriers and the military. G.A. includes single- and twin-engine aircraft with gross weights ranging from 2,000 to 60,000 pounds.
<b>Global alliance</b>	Groupings of airlines providing connectivity on a global scale; current groupings include Star, Oneworld, and SkyTeam.
<b>Global positioning system (GPS)</b>	A government sponsored and operated, satellite based, navigation system providing real-time geographical referencing for all modes of transportation on a global basis.
<b>Goal</b>	Broad statements of aspiration that describe a desired future.
<b>Grade separation</b>	Separation of vehicle, pedestrian, or bicycle traffic at different levels with crossing structures like underpasses or overpasses; interchanges are also an example.
<b>Ground access</b>	Term for describing pathways, typically road and rail, for all rubber or steel-wheel vehicles providing service to the airport.
<b>Heliport</b>	An identifiable area including facilities on land or on a structure used or intended for the exclusive use of helicopter landings or takeoffs. The facilities may include services, can be freestanding or located within an airport.
<b>High-Frequency Transit Routes</b>	High-frequency routes have the highest levels of all-day service with least 15-minute frequencies from 6 a.m. to 7 p.m. on weekdays, and 9 a.m. to 7 p.m. on Saturdays. The high-frequency status applies to bus routes but can also apply to light rail and bus rapid transit.
<b>High-occupancy toll (HOT) lanes</b>	Lanes that allow high-occupancy vehicles and public transit vehicles to travel free and allows single-occupant vehicles to use these lanes through paying a toll. Tolls can be fixed or dynamically based on real-time traffic congestion.
<b>High-occupancy vehicle (HOV) lanes</b>	Highway lanes reserved for vehicles carrying more than one person. These lanes are officially denoted with a diamond marking and are sometimes called “diamond lanes.” Public transit is also allowed to use these lanes, providing it a time advantage over congested conditions.
<b>High speed passenger rail</b>	A type of intercity passenger rail that operates at speeds significantly faster than current passenger rail. Speeds are in excess of 90 mph in the United States and in excess of 125 mph in the European Union.

**Hub** A geographical area – the Standard Metropolitan Statistical Area (SMSA) – that may have more than one airport in it. (This definition of hub should not be confused with the definition being used by the airlines in describing their “hub and spoke” route structure.) The classification scheme used for hubs by the FAA is defined below:

Hub Classification - Percent of National Total Enplaned Passengers

Large - 1.00 or more  
 Medium - 0.25 to 0.9999  
 Small - 0.05 to 0.249  
 Non-hub - Less than 0.05

<b>Hybrid electric bus</b>	A bus that operates at times on electrical power and at times on diesel fuel. Typically the electrical engine is powered by the energy created through braking or from power generated from the diesel engine.
<b>In-Service Hour</b>	The time from when the transit vehicle begins its first trip at the first time point to the time the transit vehicle completes its last trip at the last time point excluding recovery time and any double-back between trips.
<b>Increased Revenue Scenario</b>	One of two funding scenarios (see also Current Revenue Scenario) explored in this plan that assumes revenues that can realistically be attained through local, state, and federal sources. Under federal guidelines this scenario is called “non-fiscally constrained.” Under this scenario, more of the regional transportation goals beyond system maintenance and operations for both transit and highways would be achieved.
<b>Infrastructure</b>	Fixed facilities, such as roadways or railroad tracks; permanent structures or improvements.
<b>Instrument approach</b>	An electronically aided landing approach to a runway, often used under marginal or poor weather conditions. The approach to an airport’s runway is flown primarily by reference to instruments to a prescribed “decision height.” At this height, the pilot makes positive visual reference to the airport, or its approach lights, or terminates the approach and begins climbing back to a higher altitude (missed approach).
<b>Instrument flight rules (IFR)</b>	Rules as prescribed by Federal Air Regulations for flying by instruments. Often used when weather conditions, visibility or ceiling fall below those prescribed for Visual Flight Rules. Pilots must be instrument rated to fly in IFR conditions and aircraft must have required on-board equipment to be able to perform operations under IFR rules.
<b>Instrument landing system (ILS)</b>	A non-visual, precision approach to a runway utilizing electronic equipment at the airport to provide lateral guidance to the runway centerline and to give positive vertical reference to the glide path to the runway end.

<b>Integrated noise model (INM)</b>	A computer software program specifically designed for calculating and displaying acoustic information on individual aircraft operations or entire annual operations of a large airport; the FAA designated model for use in its Part 150 noise compatibility program.
<b>Intelligent Transportation System (ITS)</b>	The development or application of technology (electronics, communications, or information processing) to improve the efficiency and safety of surface transportation systems. ITS is divided into five categories that reflect the major emphasis of application: Advanced Traffic Management Systems, Advance Traveler Information Systems, Advanced Public Transportation Systems, Automatic Vehicle Control Systems, Commercial Vehicle Operations
<b>Intermediate airport</b>	An airport whose system role is to provide facilities and services primary to corporate-business users of aircraft usually weighing less than 75,000 lbs.
<b>Intermodal (freight)</b>	“Seamless” delivery of freight from one mode to another. Modes may include truck, rail, air or barge.
<b>Intermodal (transit)</b>	A location where different transportation modes come together, typically locations where persons can transfer among light rail, commuter rail, buses, bicycles, pedestrians, and/or automobiles.
<b>Itinerant aircraft</b>	Aircraft that is not based at a particular airport but is visiting or passing through from another facility usually more than 20 nautical miles away.
<b>Joint zoning board (JZB)</b>	Terminology used in Minnesota statutes that allows an airport authority in an urban setting to form a board between the authority and airport-affected communities to address height control and land use type/density off-airport for safety of persons flying and persons on the ground within prescribed areas around an airport.
<b>Job concentration</b>	Job concentrations are contiguous areas that have at least 7,000 jobs at a net density of at least 10 jobs per acre.
<b>Level-day-night (LDN)</b>	A method of measuring and plotting the amount of noise in a community, and includes an additional penalty for nighttime noise. The LDN is normally averaged over a one-year period.
<b>Level of service</b>	As related to each mode, the different operating conditions that occur on a facility when accommodating various traffic volumes. It is a measure of quality of service provided by a facility. It is expressed as levels of service “A” through “F.” Level “A” represents the best operating conditions and Level “F” the worst.
<b>Light rail transit (LRT)</b>	Electrically powered trains primarily operating in an exclusive right-of-way, with frequent, all-day service and stops approximately one mile apart.
<b>Linear right-of-way</b>	A narrow, well-defined corridor of contiguous land dedicated to or preserved for transportation purposes.

**Livable Communities Act (LCA)**

The Minnesota Legislature created the Livable Communities Act (LCA) in 1995. The LCA is a voluntary, incentive-based approach to help the metropolitan area address affordable and lifecycle housing needs while providing funds to communities to assist them in carrying out their development plans. The Council awards LCA grants to participating communities in the seven-county area to help them: (1) clean up polluted land for redevelopment, new jobs and affordable housing; (2) create development or redevelopment that demonstrates efficient use of land and infrastructure through connected development patterns; and (3) create affordable housing opportunities.

**Local flight operations**

Refers to those activities by aircraft that: Operate in the local traffic pattern or within sight of the airport; Execute simulated instrument approaches or low passes at the airport (i.e., “touch and goes”); Arrive from or depart to a local practice area located within a 20-mile radius of the airport. Most instructional/training operations are local.

**Local streets**

A class of roadways in the federal functional classification system that provide land access. (See Appendix D for functional classification criteria and characteristics.)

<p><b>Local transit routes</b></p>	<p>These routes operate primarily on city streets in both the urban core and suburban areas and stop frequently, typically every one to two blocks. Local routes provide people with the highest level of access but often come with the trade-off of potentially slower, less reliable trips.</p> <p><b>Core Local Routes</b> – These routes generally serve urban areas along dense corridors. They comprise the basic framework of the all-day bus network, providing people with essential connections to major activity centers and transitways.</p> <p><b>High-Frequency Arterial Routes</b> – These are the highest-demand Core Local routes. These routes serve a significant portion of the total ridership across the transit network. High-frequency arterial routes will receive the highest level of local bus service – generally every 15 minutes or better during peak periods and every 20 minutes or better during the midday, with service seven days a week and up to 24 hours a day. These routes often have highly visible passenger facilities at major stops.</p> <p><b>Supporting Local Routes</b> – These routes serve urban areas on crosstown corridors that typically do not connect to a metropolitan regional job or activity center, such as a downtown. They are designed to complete the grid of urban bus routes and facilitate connections to Core Local Routes and transitways.</p> <p><b>Suburban Local Routes</b> – These routes provide access to the transit network across large portions of the lower density portions of the transit service area, mostly in Transit Market Areas II and III. These routes tend to operate with less frequent trips and fewer hours of service.</p>
<p><b>Long-term comprehensive airport plan (LTCP)</b></p>	<p>Overall plan for an individual airport. It integrates information pertinent to planning, environmental considerations, developing and operating an airport. Also includes forecasts of aviation demands, facility requirements, and general recommendations for development over a 20-year period.</p>
<p><b>Low-cost carrier (LCC)</b></p>	<p>Recent popular term describing primarily new entry airlines since deregulation that have cost structures and airfares lower than the legacy air carriers, thereby spurring competition and often lower fares.</p>
<p><b>Main-wind runway</b></p>	<p>A runway that is aligned with the prevailing winds and often designated as a primary runway for operations when multiple runways exist at the airport.</p>
<p><b>Major airport</b></p>	<p>An airport whose primary air service access area is international and national in scope. Its role in the airport system is to provide facilities and services primary to air carrier and regional commuter users. Also called a commercial-service airport.</p>



<b>Major heliport</b>	A full-service facility complete with landing and navigational aids, refueling capabilities and hangar, maintenance and passenger terminal facilities. This heliport is designed for all forms of helicopter services.
<b>MAP-21</b>	P.L. 112-141, the Moving Ahead for Progress in the 21st Century Act (MAP-21) is the first multi-year transportation authorization enacted since 2005 and signed by President Obama on July 6, 2012. MAP-21 funds surface transportation and infrastructure programs at over \$105 billion for fiscal years (FY) 2013 and 2014.
<b>Metro Mobility</b>	A service of the Metropolitan Council that provides door-to-door dial-a-ride transit service for persons with disabilities that prevent them from using the fixed-route bus and rail system.
<b>Metro Transit</b>	A service of the Metropolitan Council that provides rail transit and the largest amount of regular route bus service in the region.
<b>Metropass</b>	A program where employers provide discounted transit passes to employees. Employers get tax breaks for participating in the program.
<b>Metropolitan Airports Commission (MAC)</b>	An airport authority established for the Twin Cities area by the state legislature in 1943 to promote aviation in and through the area, operate a system of public airports and ensure provision of air passenger and cargo services.
<b>Metropolitan Highway System</b>	The system of highways intended to serve the region. Only principal arterials, which include interstate freeways, are part of the Metropolitan Highway System. The plan defines the Metropolitan Highway System to include the interstate freeways and other, non-freeway principal arterials.
<b>Metropolitan Highway System Investment Strategy (MHSIS)</b>	A major study of the Metropolitan Highway System that explored ways to best address long range regional transportation needs with reasonable forecasts of available state and federal funding sources.
<b>Metropolitan Land Planning Act (MLPA)</b>	The sections of Minnesota Statutes directing the Council to adopt long-range, comprehensive policy plans for transportation, airports, wastewater services, and parks and open space. It authorizes the Council to review the comprehensive plans of local governments, which they are to review and update at least once every 10 years.
<b>Metropolitan Planning Area</b>	The geographic area for which a Metropolitan Planning Organization plans and provides services. (Also see “MUSA.”)
<b>Metropolitan Urban Service Area (MUSA)</b>	The geographic area in which the Metropolitan Council ensures regional services and facilities under its jurisdiction.
<b>Minneapolis-Saint Paul International Airport (MSP)</b>	A three-letter designator used on a national basis to identify a particular airport, for example, DFW = Dallas-Fort Worth
<b>Minor airport</b>	An airport whose system role is to provide facilities and services primarily to personal, business and instructional users.

<b>Minor arterials</b>	A class of roadways in the federal functional classification system. The minor arterials are further divided into regional classes as either “A” minor arterials or “B” or “other” minor arterials. (See “A” minor arterials.)
<b>Minor heliport</b>	Small-scale facility with minimal amenities that do not include refueling capabilities, navigational aids or tie down spaces.
<b>Mixed use</b>	A single building containing more than one type of land use or a single development of more than one building and use, where the different land uses are in close proximity. Mixed-use is common in local land use planning designations and zoning regulations.
<b>MnPASS lanes</b>	Highway express lanes that are priced for single-occupant users with prices varying by levels of congestion throughout the day. Drivers must subscribe and use a transponder in their car. Transit buses, carpoolers and motorcycles can use the lanes any time for free.
<b>Mobility</b>	The ability of a person or people to travel from one place to another.
<b>Mode</b>	Type of transportation, for example car, bus, bicycle.
<b>Mode share</b>	The share of one of the types of transportation as a percentage of all transportation types. Driving continues to have the largest mode share of all transportation types in the region.
<b>Modernization</b>	Modernization is an improvement to existing infrastructure or services that improves the functionality (for example the user experience, energy efficiency, or cost-effectiveness).
<b>Motor Vehicle Sales Tax (MVST)</b>	MVST is the 6.5 percent sales tax applied to the sale of new and used motor vehicles. Under a constitutional amendment passed in 2006, MVST revenues must be dedicated exclusively to highway and transit purposes.
<b>Multi-use paths</b>	A bikeway that is physically separated by a roadway or shoulder by the use of an open space buffer or physical barrier. A shared-use path can also be used by a variety of non-motorized users such as pedestrians, joggers, skaters and wheelchair users.
<b>Multimodal</b>	Including or pertaining to multiple modes of transportation, This can be used to describe a transportation system, transportation project, or a travel trip.
<b>National Highway System (NHS)</b>	A transportation system consisting of approximately 155,000 miles of highway that provide an interconnected system of principal arterial routes serving major population centers, major transportation facilities, major travel destinations, interstate and interregional travel and meeting national defense requirements.
<b>National plan of integrated airports (NPIAS)</b>	Airports classified by the Federal Aviation Administration (FAA) that are in the national airport system.

<b>Nautical mile</b>	Distances for air or sea travel are usually defined in terms of nautical miles rather than statute miles. One nautical mile is 6,070.097 feet; one statute mile is 5,280 feet.
<b>New or restructured transit service</b>	Significant change in service, including establishment of a new mass transportation service, addition of new route or routes to mass transportation system, a significant increase or decrease in service on or realignment of an existing route, or a change in the type or mode of service provided on specific, regularly scheduled route.
<b>New Starts</b>	A federal transit funding program for major capital expansion projects, typically commuter rail, light rail or dedicated busways. The program pays up to 50% of a project's cost.
<b>NextGen (next generation)</b>	Term used by FAA for its next generation of air traffic control.
<b>Nice Ride Minnesota</b>	A bike-sharing program in the Twin Cities. Users rent bikes from established stations and pay subscriptions or hourly fees for use.
<b>Nighttime</b>	Usually a defined period for noise modeling and/or noise mitigation, curfews and enforcement purposes.
<b>Noise abatement</b>	The attempt to reduce the amount and level of noise on and around airports, especially during takeoffs and landings, partly through special operational restrictions and proper land-use planning for areas affected by aircraft noise.
<b>Objective</b>	Represents achievable outcomes that together help to realize a goal within the timeframe of the plan.
<b>Off-board fare collection</b>	Collection of transit fares before a rider gets on a transit vehicle, generally by paying the fare to a ticket agent or an automated fare validator. Off-board fare collection speeds up loading time.
<b>Off-peak period</b>	Time of day outside the peak period. (See peak period.)
<b>Operational improvement</b>	A capital improvement consisting of installation of traffic surveillance and control equipment, computerized signal systems, motorist information systems, integrated traffic control systems, incident management programs, and transportation demand and system management facilities, strategies and programs.
<b>Other minor arterials</b>	Part of the regional roadway taxonomy of the federal minor arterial roadways class. Sometimes called "B" minor arterials, these roads are not as significant as the "A" minor arterials but fulfill an important mobility role within the region. (See "A" minor arterials.)

**Paratransit services**

Transit service that provides generally more flexible service than regular-route transit, using a variety of vehicles, such as large and small buses, vans, cars and taxis. Paratransit can serve a particular population, such as people with disabilities, or can be assigned to serve the general population. Paratransit is frequently provided in less densely populated areas, and used at times and in areas where trip demands are less concentrated, such as during weekends and evenings in suburban settings. Paratransit services are of several types:

- Car and van pooling intended primarily to serve the work trip.
- Demand-Response: Any type of public transportation involving flexibly scheduled service that is deployed upon a person’s request for a trip. There are two types of demand response:
  - Dial-a-ride service: The most common type of paratransit, service is provided by advance request pickup and drop off at desired or designated destinations. Dial-a-ride may deploy vans, small buses or shared-ride taxis.
  - Flexible fixed-route or deviation service. Either point deviation or route deviation where vehicles stop at specific locations on a regular schedule but do not have to follow a set route between the stops. Vehicles can deviate from the route to pick up or drop off passengers upon request.

<b>Park-and-ride</b>	A place where passengers park their cars and board some form of transit. There may be a transit station or transit center attached to a park-and-ride.
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<b>Passenger facility charge (PFC)</b>	A domestic charge allowed by the U.S. at commercial service airports; funds are used primarily for capital projects at the specific airport.
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<b>Peak hour</b>	The hour during the peak period when travel demand is highest. In the Twin Cities, peak hours are generally 7 to 8 a.m. and 4:30 to 5:30 p.m.
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<b>Peak period</b>	The time between 6:30 and 9 a.m. and between 3 and 6 p.m. on weekdays when traffic is usually the heaviest.
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<b>Peer Regions</b>	Peer regions used for highway system comparisons are: Baltimore, Cincinnati, Cleveland, Dallas-Fort Worth, Denver-Aurora, Milwaukee, Pittsburgh, Portland, Seattle, and St. Louis (see 2012 Transportation System Performance Evaluation). Peer regions used for transit system comparisons are: Baltimore, Cleveland, Dallas-Fort Worth, Denver-Aurora, Houston, Milwaukee, Phoenix, Pittsburgh, Portland, San Diego, Seattle, and St. Louis (see 2012 Transportation System Performance Evaluation).
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<b>Performance measure</b>	An accountability tool that measures progress toward achieving goals and objectives. Performance measures also are used as a form of feedback.
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<b>Person throughput</b>	The number of persons that pass a point on a roadway in a specified period of time. Person throughput includes all passengers in vehicles and is a key performance measure for the highway system.
<b>Platform hour</b>	The time from when the transit vehicle pulls out (leaves from the vehicle storage facility) to the time the transit vehicle pulls in (returns to the vehicle storage facility), i.e., in-service plus recovery plus deadhead time.
<b>Preservation</b>	Preservation activities are directed toward the elimination of deficiencies and major cost replacement of existing facilities. Preservation is not meant to include work that will increase the level of service by the addition of traffic lanes.
<b>Principal arterials</b>	A class of roadways in the federal functional classification system. These high-capacity highways make up the Metropolitan Highway System. (See Appendix D for functional classification criteria and characteristics.)
<b>Privately owned, publicuse airports</b>	These airports are privately owned, but available for public use without needing prior permission to land.
<b>Project Development and Pre-Project Development</b>	Project Development is a specific term used in the federal New Starts process to describe the initial phase in which a project has become eligible for federal New Starts funding. Project Development includes the completion of the environmental review process and combines previous steps of Preliminary Engineering and Final Design under SAFETEA-LU. Since the Project Development phase has a two-year time limit in the federal process, a phase called “Pre-Project Development” describes work that may be completed in anticipation of, but prior to, entering Project Development.
<b>Queue jump (also queue jump lane)</b>	A lane on a street that lets transit vehicles bypass a congested intersection.
<b>Racially Concentrated Areas of Poverty (RCAP)</b>	Contiguous census tracts where at least 40 percent of the households earn incomes that are less than 185% of the federal poverty level and at least 50 percent of the residents are people of color. This federal income threshold for a typical family of four in 2012 was \$43,460.
<b>Ramp meters</b>	Signals on freeway ramps that smooth traffic flow to increase road capacity and safety. Many metered ramps within the region have bypasses for buses and carpools.
<b>Ramp meter bypass</b>	A lane at ramp meters that let certain vehicles like transit vehicles or high-occupancy vehicles bypass the ramp meter.
<b>Real-time information</b>	Transit service information that reflects actual operating conditions and is provided as actual time as compared to the scheduled time. Often, on-time arrival information available at bus stops or via the web.
<b>Record of decision (ROD)</b>	Final federal determination documentation on environmental impact statement and related analysis needed prior to funding and implementation of a project.

<b>Regional airport system plan (RASP)</b>	A system plan where geographical or operational scope includes large urban areas that are multi-county or multi-state in size and interaction.
<b>Regional balance</b>	Balancing projects geographically throughout the region.
<b>Regional Highway System</b>	All highways serving the region, including principal arterials and “A” minor arterials.
<b>Regional jet (RJ)</b>	Term associated with aircraft usually with 50 seats or less; since de-regulation this definition is blurring, as new aircraft (e.g. EMB 195) are coming into service with up to 110 seats, the current bottom-end of airlines’ “mainline” sized aircraft.
<b>Regional railroad authority</b>	Each county in the region has a regional railroad authority to preserve rail corridors, preserve right-of-way if rail lines are abandoned, and develop rail transportation options. The county board sits as the regional railroad authority.
<b>Regional Traffic Management Center (RTMC)</b>	MnDOT’s freeway management center fully-equipped with electronic surveillance technology such as cameras, loop detectors, and freeway ramp meters used to monitor current traffic congestions, adjust ramp meters in real time, and dispatch incident response vehicles to crash or vehicle breakdown sites.
<b>Regional transportation partners</b>	Broadly include all public entities within the region with responsibility for planning, implementing or maintaining the transportation system including the Council, MnDOT, counties, cities, townships, transit providers, airport sponsors and others.
<b>Regionally significant project</b>	Regionally significant project means a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, etc., or transportation terminals as well as most terminals themselves) and would normally be included in the modeling of a metropolitan area’s transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel. Junction improvements and upgraded segments less than one mile in length outside the principal arterial system are not considered to be regionally significant, although they are otherwise not exempt.
<b>Regular-route transit</b>	Services provided on a repetitive, fixed schedule basis along a specific route with vehicles stopping to pick up and deliver passengers to specific locations; each trip serves the same origins and destinations. Both rail and buses can provide regular-route transit. Also referred to as fixed-route transit. (See commuter and express or local transit routes for more detail.)



<b>Rehabilitation</b>	Roadway improvements intended to correct conditions identified as deficient without major changes to the cross section. These projects consist of removal and replacement of base and pavement, shouldering and widening and drainage correction as needed without changing the basic boundaries of the roadway.
<b>Reliever airport</b>	An airport whose primary purpose is to serve general aviation and at the same time relieve congestion at a major airport having a high density of scheduled certificated airline traffic. It performs this function by providing services that attract and divert general aviation activity away from the major airport.
<b>Revenue hour</b>	The time from when the transit vehicle begins its route at the first time point to the time the transit vehicle completes its route at the last time point including the time the transit vehicle is in recovery (laying over).
<b>Reverse commute</b>	Transit service from the core cities to an employment location in suburban locations, typically in a direction opposite to the heaviest flow of traffic.
<b>Ridesharing</b>	A paratransit service with two or more riders in the vehicle, consisting usually of a prearranged car pool, van pool or subscription bus.
<b>Right-of-Way Acquisition Loan Fund (RALF)</b>	This program grants interest-free loans to communities within officially mapped highway corridors to purchase property threatened by development. The loan is repaid when the property is purchased by the highway construction authority. The Minnesota Legislature established the RALF program in 1982. It is funded by a property tax levied by the Metropolitan Council and funds are loaned out on a revolving basis.
<b>Routes: Commuter and express transit routes</b>	Commuter and express routes are designed primarily to bring people from urban and suburban residential areas to jobs in the region's major employment centers. These routes generally operate to serve the most common work start and end times. Express routes generally operate on the highway system with limited or no stops between park-and-rides and major employment centers.
<b>Route deviation</b>	A transit service operating on a fixed route from which vehicles may deviate to pick up or drop off passengers. Requests for route deviation may come by phone via radio contact with the driver or may be requested by a passenger upon boarding. Generally, this strategy utilizes a small vehicle.
<b>Routine maintenance</b>	Roadway maintenance consisting of snow and ice control, mowing, sweeping, periodic applications of bituminous overlays, seal treatments, milling, crack routing and filling and base repair. These treatments are intended to help ensure the roadway can be used to the end of its design life.



<b>Run-up</b>	Usually an engine testing procedure conducted at an engine maintenance facility or an on-aircraft test performed at a specific site on the airport to minimize effects of full engine power applications.
<b>Runningway</b>	The linear component of the transit system that is part of the right-of-way and required to operate the transit vehicles, including ancillary structures or equipment.
<b>Runway</b>	Any prepared landing and takeoff surface of an airport.
<b>Runway incursion</b>	An unauthorized physical presence on a runway surface by a person, vehicle or aircraft as a violation of rule, ordinance or air traffic control procedures/approval.
<b>Runway protection zone (RPZ)</b>	A federally defined clear area beyond the end of a runway, under control of the airport owner, in which the presence of structures or other obstructions are controlled to permit safe flight for takeoff and landing operations.
<b>Runway use system (RUS)</b>	An air traffic control method for operating an airport in a safe and efficient manner while still meeting aircraft noise operation abatement objectives.
<b>Rural area</b>	The rural area is defined in Thrive MSP 2040 and is divided into four specific geographic planning areas: Rural Centers/Rural Growth Centers, Diversified Rural Communities, Rural Residential Areas and Agricultural Areas.  A marker painted on a street, usually a bicycle, to indicate that bicyclists may use the full traffic lane and share the lane with vehicles.
<b>Shoulder</b>	The part of a highway that is contiguous to the regularly traveled portion of the highway and is on the same level as the highway, generally reserved for breakdowns and emergency vehicles. Some shoulders in the Twin Cities are designated for bus utilization called “bus-only shoulders.”
<b>Signal preemption</b>	A technology that triggers the green go-ahead on meters or traffic lights to allow transit vehicles to more quickly move through freeway ramp entrances or intersections.
<b>Small Starts</b>	A federal program for funding transit infrastructure. This program funds projects that are \$250 million or less in capital costs and is a subset of the “New Starts” program.
<b>Special-purpose aviation facility</b>	A facility open to public-use, including heliport, seaplane base or airport landing area, whose primary geographic and service focus is normally state and metropolitan in scope. Personal, business and instruction uses are accommodated at these facilities. Gliders have been mostly accommodated at private-use airports in the metropolitan area.
<b>Single-occupant vehicle (SOV)</b>	A vehicle with only one occupant, the driver.

<b>State airport system plan (SASP)</b>	A plan of each airport's role, inclusion in the NPIAS, data files, development program, funding agreements, and implementation measures required by the FAA for airports normally within the boundary of each state.
<b>Strategy</b>	Identifies how objectives will be met through specific actions, including who is responsible.
<b>Statute mile</b>	A measure of distance for ground travel defined as 5,280 feet.
<b>Suburban Transit Providers</b>	Provide regular-route and dial-a-ride service in 12 suburban communities. These providers are: Minnesota Valley Transit Authority, SouthWest Transit Authority, and the Cities of Maple Grove, Plymouth, Shakopee, and Prior Lake. The City of Minnetonka has also opted-out but has chosen to leave its service with the Metropolitan Council instead of starting its own service.
<b>Surface Transportation Program (STP)</b>	One of the core federal highway funding programs. STP provides flexible funding that may be used by states and localities for projects on any federal-aid highway, including the national highway system, bridge projects on any public road, transit capital projects, and intra-city and intercity bus terminals and facilities.
<b>System statement</b>	The system statement informs each community how it is affected by the Metropolitan Council's policy plans for four regional systems - transportation, aviation, water resources (including wastewater collection and treatment), and regional parks and open space. System statements include forecasts of population, households and employment.
<b>Telecommuting</b>	The elimination or reduction in commuter trips by routinely working part or full time at home or at a satellite work station closer to home.
<b>Thrive MSP 2040</b>	Thrive MSP 2040 is the vision and planning framework for the Twin Cities region for the next 30 years. It reflects regional concerns and aspirations, anticipates future needs, and addresses our responsibility to future generations. This long-range plan is required to be updated by the Metropolitan Council every 10 years under state law. The policies in Thrive MSP 2040 drive the systems and policy plans developed by the Council: the Transportation Policy Plan, the Water Resources Policy Plan, the Regional Parks Policy Plan, and the Council's first Housing Policy Plan update in nearly 30 years. More information can be found at: <a href="http://www.thrivemsp.org">www.thrivemsp.org</a>
<b>TIGER</b>	The Transportation Investment Generating Economic Recovery, or TIGER Discretionary Grant program, provides opportunities for investment in road, rail, transit and port projects that promise to achieve critical national objectives. Since 2009, Congress has dedicated more than \$4.1 billion in six rounds to fund projects that have a significant impact on the nation, a region or a metropolitan area.

<b>Throughput</b>	The number of vehicles/persons that pass a point on a roadway over a specified period of time. Person throughput includes passengers of vehicles while vehicle throughput only includes vehicles.
<b>Tolls</b>	A fee collected for the use of a road.
<b>Traffic calming</b>	Techniques such as speed bumps, narrow lanes and traffic circles used to slow traffic primarily in residential neighborhoods.
<b>Traffic signal control systems</b>	<p>The degree of traffic management of an arterial is grouped and defined as follows:</p> <ul style="list-style-type: none"> <li>• <b>Fixed time:</b> The traffic signals on an arterial are controlled locally through a time clock system. In general, the progression of a through band (the amount of green time available along an arterial at a given speed) along the arterial in the peak direction is determined by past experience and is not a function of immediate traffic demand.</li> <li>• <b>Semi-actuated:</b> The traffic signals along the arterial are designed to maximize the green time on the major route in the major direction. Timing and through band are based upon historical records. Use of green time on the minor leg depends on real-time demand and maximized based upon total intersection delay.</li> <li>• <b>Interconnection:</b> A traffic signal system in which data collected at individual signals is shared with a central processor or controller. Adjustments in traffic signal control can be made based upon incoming data as opposed to historical data.</li> <li>• <b>Optimization:</b> The process in which a traffic signal or system is modified to maximize the amount of vehicles passing through the intersection for all approaches or on the major road in the peak direction.</li> <li>• <b>Real-time adaptive control:</b> An advanced traffic control system that incorporates current technologies in communications, data analysis, and traffic monitoring to provide real-time traffic control of arterials, corridors or roadway networks.</li> </ul>
<b>Transit advantages</b>	Facility improvements that offer travel-time benefits to multi-occupant and transit vehicles. Examples include bus-only shoulders, bus lanes, HOV/HOT lanes, priced dynamic shoulders, ramp meter bypasses, signal preemption, transit centers, transit stations, and major park-and-ride lots.
<b>Transit centers</b>	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) or different modes (also known as a modal interchange center, intermodal transfer facility or a hub).

<b>Transit market area</b>	The Twin Cities have been divided into five areas depending on their land use and development characteristics. These characteristics determine the types and levels of transit service that are appropriate for efficient and effective services. (See Appendix G for a full description of the Twin Cities market areas.)
<b>Transit-oriented development</b>	The concentration of jobs and housing around transit corridors, hubs and daily conveniences. TOD is moderate to higher-density development located within easy walking distance of a major transit stop, generally with a mix of residential, employment and shopping opportunities designed for pedestrians without excluding the auto. (Additional information about transit-oriented development can be found in the Council’s online handbook, the Guide for Transit-Oriented Development.)
<b>Transit stations</b>	Facilities provided at light rail, commuter rail and bus rapid transit stops and in some cases for major suburban bus transit centers that serve as the central transit facility within a community.
<b>Transit system management</b>	Transit system management is the ongoing analysis, modification, and improvement of the transit system to maximize its performance and cost-effectiveness.
<b>Transit taxing district</b>	The portion of the Twin Cities metropolitan area where property is taxed to support transit services as defined in Minnesota State Statute 473.446 or who have joined the Transit Taxing District under Minnesota State Statute 473.4461.
<b>Transit trip</b>	A person trip as a passenger of a public transit vehicle.
<b>Transitways</b>	High-demand travel corridors that offer improved transit service that includes bus rapid transit, light rail or commuter rail.
<b>Transportation Advisory Board (TAB)</b>	The Transportation Advisory Board, established in accordance with Minn. Stat. 473, Sec. 146, is part of the Metropolitan Council and is a forum for deliberation on transportation-related issues among state, regional and local officials and private citizens. The TAB advises the Council in preparing transportation plans and provides coordination and direction to the agencies responsible for implementing the plans.
<b>Transportation Improvement Program (TIP)</b>	A four-year multimodal program of highway, transit, biking, walking and transportation enhancement projects and programs proposed for federal funding in the seven-county Twin Cities metropolitan area. The TIP must include capital and non-capital transportation projects proposed for funding under Title 23 United States Code (USC) (highways) and Title 49 USC (transit). The TIP must also contain all regionally significant transportation projects that require an action by the Federal Highway Administration (FHWA) or the Federal Transit Authority (FTA).

<b>Transportation Management Organization (TMO) or Association (TMA)</b>	Nonprofit organizations formed in highly congested areas to deal with common transportation concerns, particularly alleviating congestion, improving employee commutes and increasing access to customers.
<b>Transportation System Performance Evaluation</b>	A comprehensive review of the Twin Cities transportation system prepared to inform the regional 2040 Transportation Policy Plan (TPP). The Minnesota State Legislature adopted a 1996 law requiring the Metropolitan Council to produce this report (previously called the Transportation System Audit).
<b>Transportation Policy Plan (TPP)</b>	This document, which is one chapter of the Metropolitan Council's Metropolitan Development Guide, as provided for in Minn. Stat. 473, Sec. 145 and 146. Section 145 states: "The Metropolitan Council shall prepare and adopt...a comprehensive development guide for the metropolitan area." This chapter deals with the transportation needs of the seven county area.
<b>Transportation Security Administration (TSA)</b>	Transportation security unit under the U.S. Department of Homeland Security; created as a result of terrorist attacks on Sept. 11, 2001.
<b>Transportation System Plan (TSP)</b>	MnDOT's 20-year plan that identifies regional investment priority categories for the Minnesota Highway System.
<b>Travel Behavior Inventory (TBI)</b>	A set of surveys identifying travel patterns and characteristics of people and vehicles within the metropolitan area. In the Twin Cities, the first study was done in 1949 and has been repeated every 10 years since.
<b>Travel Demand Management (TDM)</b>	Consists of programmatic strategies to reduce drive-alone vehicle trips and vehicle miles traveled during peak congestion times, special events, and for construction project areas. TDM strategies provide incentives for people to reduce overall demand for roadway capacity by using alternative travel modes such as transit, biking, and walking. TDM strategies also include flexible employment arrangements that do not require peak-period travel (flexible schedules) or would allow employees to avoid the commute altogether by working from home (telecommuting). Travel demand management is also referred to as transportation demand management.
<b>Trip</b>	A one-way journey made by one person from any origin to any destination
<b>Trunk highway</b>	A highway under jurisdiction of MnDOT.
<b>UNICOM</b>	Radio communications equipment mostly used at uncontrolled general aviation airports. Allows pilots to communicate with each other in vicinity of the airport, activate airport runway lights, and provide air-to-ground communications.

<b>Urban Partnership Agreement (UPA)</b>	A program by the federal government to explore the use of priced lanes on highways. The Twin Cities received a UPA grant and is completing a set of improvements on I-35W, Cedar Avenue and in downtown Minneapolis to implement a priced lane and improve transit.
<b>Vanpool</b>	A paratransit service provided by a publicly or privately provided van on a scheduled or unscheduled basis with at least five riders.
<b>Vehicle trip</b>	A one-way journey made by an auto, truck or bus to convey people or goods.
<b>Vehicle miles traveled (VMT)</b>	The number of miles traveled by vehicles on the roadway system, regardless of the number of people in the vehicles.
<b>Very light jet (VLJ)</b>	Recent new category of personal business jet aircraft certified by FAA. Aircraft weighs less than 11,000 lbs maximum weight and seats 6 or less persons.
<b>Visual flight rules (VFR)</b>	“See-and-be-seen” flight rules. Used during good weather conditions under which an aircraft can be operated by visual reference to the ground, to other aircraft and distances from clouds.
<b>Very high frequency omni-directional radio (VOR)</b>	A ground radio station that provides a pilot of a properly equipped aircraft with his or her location in reference to that station.
<b>VOR approach</b>	A landing approach to a runway using the VOR as a reference point and directional guidance to the runway.

## Appendix B: Transportation Improvement Program for the Twin Cities Region

The federally required Transportation Improvement Program (TIP) for the Greater MSP region – as defined by the U.S. Census Bureau and the Metropolitan Council to consist of the seven counties of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington, the contiguous urbanized areas of Wright and Sherburne counties, and a portion of Houlton, Wis. – is updated each year by the Transportation Advisory Board and the Metropolitan Council. The federal transportation bill, Moving Ahead for Progress in the 21st Century (MAP-21), requires that all federally-funded transportation projects within the Greater MSP region be included in the four-year TIP. The TIP is prepared by Metropolitan Council staff with assistance from the Minnesota Department of Transportation. It is a fiscally constrained four-year program for project delivery, which means anticipated revenues and estimated project costs balance over the four year period covered by the TIP.

The current Transportation Improvement Program is available on the Metropolitan Council Web site at: <http://www.metrocouncil.org/Transportation/Planning/TIP.aspx>



## Appendix C: Long-Range Highway and Transit Capital Project List

Appendix C was developed at the request of the U.S. Department of Transportation Federal Highway and Federal Transit Administrations and consists of a list of potential major capital highway and transit projects. The projects included in this list will be planned and implemented by either the Minnesota Department of Transportation (highways) or the Metropolitan Council/Metro Transit (transit). This list does not include projects on the local highway or transit systems; those projects are identified through the local comprehensive planning process for county- and city-owned highways, and through specific facility plans for transit including the Park-and-Ride Plan and the Regional Service Improvement Plan. All known regionally significant local projects are included in Appendix B, Transportation Improvement Program, and [Appendix E](#), Additional Air Quality Information.

The 2040 Transportation Policy Plan marks the first time Appendix C is being provided. This list is intended to be changed through updates and amendments to the Transportation Policy Plan. Appendix C is not a project programming document and cannot be interpreted as a programming document. Appendix C summarizes known projects in the current revenue scenario; this is the long-range transportation planning scenario where known project costs are equal to anticipated revenues (also called the fiscally constrained plan in federal regulations). Appendix C summarizes the project's primary investment category (link to "Highway Investment Direction and Plan" and "Transit Investment Direction and Plan"), project location (called "Route"), project description, estimated cost in year of expenditure dollars, and approximate implementation timeframe.

This list is intended to be exhaustive for Highway MnPASS, Strategic Capacity Enhancements, Regional Highway Access, and Transitways only. When new projects are identified for funding in these four categories, they must be amended into the Transportation Policy Plan, this appendix, and any other applicable sections of the plan. The projects listed in the other categories are examples of the types of projects to be funded in these categories and in the timeframes identified. Some projects in these other categories may be regionally significant for air quality analysis and thus require plan amendments prior to funding and construction. For more information contact Metropolitan Council long-range transportation planning staff.

## Long-Range Highway Capital Projects 2015-2024

The Minnesota Department of Transportation provided the list of projects to be included in the Current Revenue Scenario for the 2040 Transportation Policy Plan. The list was based on work done initially for the Minnesota State Highway Investment Plan 2014-2033 (MnSHIP) published in December 2013, and updated with more current project information when it was available. Projects are assigned to timeframes: 2015-2018 (the Transportation Improvement Program adopted in 2014), 2019-2024, 2015-2024. To date, MnDOT has not identified any projects beyond 2024 to be included in the Current Revenue Scenario because all anticipated funding will be dedicated to operating, maintaining, and rebuilding the Interstate and state highway system and these kinds of projects are not identified more than eight years in advance of construction. This list is not intended to be exhaustive for all categories except MnPASS, Strategic Capacity Enhancements, and Regional Highway Access. For all other categories, the 2040 Transportation Policy Plan Highway Investment Direction and Plan anticipates funding that exceeds anticipated project costs identified here. Unallocated revenue does not apply for Regional Mobility Improvements; based on current revenue estimates, MnDOT anticipates no Highway Regional Mobility Improvements in the metropolitan area after 2024.

**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
3. Rebuild and Replace Highway Assets	US169	OVER US212/MN62 IN EDEN PRAIRIE/EDINA-REDECK BRIDGES 27079 AND 27080, NEW APPROACH PANELS	\$2,320,000	2015-2018
3. Rebuild and Replace Highway Assets	I-94	I-94 NB ON RAMP OVER GLENWOOD AVE IN MPLS-REPAIR BRIDGE 27728	\$11,385,000	2015-2018
3. Rebuild and Replace Highway Assets	I-94	AT HENNEPIN/LYNDALE TUNNEL (BRIDGE 27832) AND EB I-94 UNDER I-35W TUNNEL (BRIDGE 27834) IN MPLS-TILE REPAIR	\$4,655,000	2015-2018
3. Rebuild and Replace Highway Assets	I-35W	FROM 46TH ST TO I-94 IN MPLS - MANAGED LANE COMPLETION, PAVEMENT RECONSTRUCTION AND REPAIR, NOISEWALLS, TMS, DRAINAGE, LIGHTING, REPLACE BRIDGES 9731, 9733, 27842, 27843, 27867, 27868, 27869, 27870, 27871, 27872	\$121,000,000	2015-2018
3. Rebuild and Replace Highway Assets	I-35W	FROM HENNEPIN AVE TO JOHNSON ST IN MINNEAPOLIS - REDECK BRIDGES 27885, 27886, 27985, 27989, 27994, GUARDRAIL	\$2,045,000	2015-2018
3. Rebuild and Replace Highway Assets	MN100	FROM 36TH ST TO CEDAR LAKE RD IN ST. LOUIS PARK - REPLACE BRIDGES 5308(27303), 5309 (NEW PED BRIDGE 27304), 5462(27305), 5598(27306), OVERLAY AND JOINT REPLACEMENT BRIDGE 27109, RECONSTRUCT MAIN LINE PAVEMENT AND INTERCHANGES, AUX LANES AND NOISE WALLS	\$62,570,000	2015-2018
3. Rebuild and Replace Highway Assets	MN36	OVER LEXINGTON AVENUE IN ROSEVILLE-REPLACE BRIDGE 5723 AND APPROACHES, SIGNALS, TMS, ADA, GUARDRAIL, STORM SEWER AND PONDS	\$13,600,000	2015-2018

**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
3. Rebuild and Replace Highway Assets	MN149	OVER MISSISSIPPI RIVER IN ST PAUL - REDECK & APPROACH WORK ON BRIDGE #62090	\$14,180,000	2015-2018
3. Rebuild and Replace Highway Assets	I-94	FROM JUST E OF DALE ST TO JUST W OF PELHAM BLVD IN ST PAUL - REPAIR BRIDGES 9379, 9381, 9452, 9457, 9663, REDECK BRIDGES 9383, 62813, 62845 AND MILL AND OVERLAY BRIDGE 9387	\$6,685,000	2015-2018
3. Rebuild and Replace Highway Assets	I-35E	OVER GOOSE LAKE RD AND BNSF RR IN VADNAIS HEIGHTS-REPLACE BRIDGES 9567 (NEW 62729) AND 9568 (NEW 62730) INCLUDING REPLACEMENT AND PROFILE ADJUSTMENTS OF PAVEMENT ON BOTH SIDES OF BRIDGE, GUARDRAIL, DRAINAGE, TMS	\$9,475,000	2015-2018
3. Rebuild and Replace Highway Assets	I-35W	FROM JUST S OF I-694 IN NEW BRIGHTON TO JUST S OF RAMSEY CR E2 IN ARDEN HILLS - REPLACE BRIDGES 9570 & 9599 AND APPROACHES, GUARDRAIL, RETAINING WALL AND PONDING	\$10,705,000	2015-2018
3. Rebuild and Replace Highway Assets	I-35W	AT RAMSEY COUNTY RD H (T.C. ARSENAL ENTRANCE) IN ARDEN HILLS - REPLACE BRIDGE #9582 AND RAMP RECONSTRUCTION	\$6,470,000	2015-2018
3. Rebuild and Replace Highway Assets	I-94	FROM JUST E OF DALE ST TO JUST W OF PELHAM BLVD IN ST PAUL - REPAIR BRIDGES 9379, 9381, 9452, 9457, 9663, REDECK BRIDGES 9383, 62813, 62845 AND MILL AND OVERLAY BRIDGE 9387	\$6,685,000	2015-2018
3. Rebuild and Replace Highway Assets	I-35W	REPAIR/REPLACE BRIDGE #02804 OVER I-35E SOUTHBOUND	\$2,500,000	2015-2018

**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
3. Rebuild and Replace Highway Assets	MN62	REPAIR/REPLACE BRIDGE #7263 FRANCE AVE OVER MN 62	\$1,000,000	2015-2018
3. Rebuild and Replace Highway Assets	MN62	REPAIR/REPLACE BRIDGE #7264 OVER VALLEY VIEW RD	\$1,000,000	2015-2018
3. Rebuild and Replace Highway Assets	MN55	REPAIR/REPLACE BRIDGE #94277 OVER BASSETT CREEK	\$2,000,000	2015-2018
3. Rebuild and Replace Highway Assets	MN100	REPAIR/REPLACE BRIDGE #9500 OVER MN 62	\$6,000,000	2015-2018
3. Rebuild and Replace Highway Assets	MN36	REPAIR/REPLACE BRIDGES #62853, 6277, 6276 OVER CLEVELAND AVE AND ON-RAMP FROM I-35W	\$5,200,000	2015-2018
3. Rebuild and Replace Highway Assets	MN 19	ON MN 19 OVER STREAM, REPLACE BRIDGE 8844	\$231,150	2015-2018
3. Rebuild and Replace Highway Assets	US10	REPLACE BRIDGE #5955 2.7 MILES WEST OF TH169 OVER ELK RIVER/LAKE ORONO	\$8,320,000	2015-2018
3. Rebuild and Replace Highway Assets	US8	REPAIR/REPLACE BRIDGE #82815 OVER I-35	\$2,500,000	2015-2018
3. Rebuild and Replace Highway Assets	I-94	OVERLAY AND REHAB BRIDGE #86817 OVER WRIGHT CSAH 19 IN ALBERTVILLE	\$2,684,000	2019-2024

**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
3. Rebuild and Replace Highway Assets	I-94	OVERLAY AND REHAB BRIDGE #86818 OVER WRIGHT CSAH 19 IN ALBERTVILLE	\$2,684,000	2019-2024
3. Rebuild and Replace Highway Assets	MN55	REDECK/REPAIR BRIDGE #5891 OVER CO RAILROAD EAST OF HWY 100	\$4,000,000	2019-2024
3. Rebuild and Replace Highway Assets	MN55	REDECK/REPAIR BRIDGE #6721 OVER UP RAILROAD EAST OF COUNTY ROAD 6	\$1,000,000	2019-2024
3. Rebuild and Replace Highway Assets	MN62	REDECK AND REPAIR SUBSTRUCTURE BRIDGE 27083 OVER MN 62	\$2,000,000	2019-2024
3. Rebuild and Replace Highway Assets	MN55	REHABILITATE RAILING ON BRIDGE 4190	\$3,100,000	2019-2024
3. Rebuild and Replace Highway Assets	MN610	REOVERLAY BRIDGE 27239 OVER THE MISS. RIVER	\$1,800,000	2019-2024
3. Rebuild and Replace Highway Assets	MN21	REDECK/REPAIR BRIDGES #9124 AND #9123	\$3,200,000	2019-2024
3. Rebuild and Replace Highway Assets	US10	REPAIR BRIDGE #82010 OVER ST CROIX RIVER	\$1,000,000	2019-2024
3. Rebuild and Replace Highway Assets	MN77	REPLACE BRIDGE #9195, E 66TH STREET OVER MN 77	\$2,900,000	2019-2024

**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
3. Rebuild and Replace Highway Assets	I-94	REPAIR/REDECK BRIDGE #27945 OVER I-94	\$2,600,000	2019-2024
3. Rebuild and Replace Highway Assets	I-35W	REPLACE BRIDGE #5983 OVER MINNESOTA RIVER (YEAR 1 OF 3)	\$30,000,000	2019-2024
3. Rebuild and Replace Highway Assets	I-694	REPAIR SUBSTRUCTURE AND REDECK BRIDGE #6580 OVER I-694	\$3,000,000	2019-2024
3. Rebuild and Replace Highway Assets	US169	REPLACE BRIDGES #6890, #6891, OVER ELM CREEK	\$1,000,000	2019-2024
3. Rebuild and Replace Highway Assets	I-35E	REDECK BRIDGE 62865 OVER JEFFERSON AVE	\$3,500,000	2019-2024
3. Rebuild and Replace Highway Assets	MN65	REPAIR/REPLACE BRIDGES #6817, #9417 OVER COON CREEK	\$1,600,000	2019-2024
3. Rebuild and Replace Highway Assets	MN5	REPAIR BRIDGE #10009 EAST BOUND OVER RAILROAD WEST OF MN 101	\$2,000,000	2019-2024
3. Rebuild and Replace Highway Assets	US169	REPAIR/REDECK BRIDGE #27551 OVER US 169	\$1,600,000	2019-2024
3. Rebuild and Replace Highway Assets	I-35W	REPLACE BRIDGE #5983 OVER MINNESOTA RIVER (YEAR 3 OF 3)	\$20,000,000	2019-2024



**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
3. Rebuild and Replace Highway Assets	US169	REPLACE BRIDGE 27568 OVER NINE MILE CREEK, AND REPAIR SEVEN OTHER CORRIDOR BRIDGES	\$47,600,000	2019-2024
3. Rebuild and Replace Highway Assets	MN65	REPAIR BRIDGES #9263, #9264 CSAH 10 OVER MN 65	\$2,600,000	2019-2024
3. Rebuild and Replace Highway Assets	MN51	REDECK/REPAIR BRIDGE #'S 9012 AND 9013 OVER TH36	\$5,600,000	2019-2024
3. Rebuild and Replace Highway Assets	I-494	REDECK BRIDGE #27654 CARLSON PKWY OVER I-494	\$1,000,000	2019-2024
3. Rebuild and Replace Highway Assets	MN65	REHAB BRIDGE # 2440 OVER MISSISSIPPI RIVER IN MPLS	\$33,000,000	2019-2024
3. Rebuild and Replace Highway Assets	MN97	REPLACE BRIDGE 02806 OVER I-35	\$2,200,000	2019-2024
3. Rebuild and Replace Highway Assets	I-94	REDECK/REPAIR BRIDGE #27796 OVER I-94	\$3,000,000	2019-2024
3. Rebuild and Replace Highway Assets	I-35W	REPLACE BRIDGE #5983 OVER MINNESOTA RIVER (YEAR 2 OF 3)	\$30,000,000	2019-2024
3. Rebuild and Replace Highway Assets	MN100	FROM JUST N I-494 IN EDINA TO 36TH ST IN ST LOUIS PARK-CPR AND DIAMOND GRINDING	\$10,000,000	2015-2018

**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
3. Rebuild and Replace Highway Assets	MN13	FROM E OF US 169 IN SAVAGE TO JUST E OF WASHBURN AVE IN BURNSVILLE-MILL AND OVERLAY	\$5,000,000	2015-2018
3. Rebuild and Replace Highway Assets	I-94	WRIGHT CO. CSAH 75 AT MONTICELLO TO THE CROW RIVER BRIDGE (EB ONLY), MILL AND OVERLAY	\$3,960,000	2015-2018
3. Rebuild and Replace Highway Assets	I-494	FROM I-394 IN MINNETONKA TO I-94/I-494/I-694 INTERCHANGE IN MAPLE GROVE - UNBONDED CONCRETE OVERLAY, CPR, RIGHT SIDE DYNAMIC SHOULDER, SIGNING, STRIPING, DRAINAGE, TMS, NOISE WALLS, REDECK AND WIDEN BRIDGES 27973, 27974, 27975, 27976, 27977, 27978, REDECK #2	\$48,000,000	2015-2018
3. Rebuild and Replace Highway Assets	MN110	JUST E I-35E IN MENDOTA HTS TO I-494 IN INVER GROVE HTS-RECLAMATION/WHITE TOPPING	\$6,000,000	2015-2018
3. Rebuild and Replace Highway Assets	I-94	FROM MOUNDS BLVD IN ST PAUL TO E OF MN120 IN WOODBURY AND ON US61 FROM JUST N BURNS AVE TO W JCT MN5 IN ST PAUL- UNBONDED CONCRETE OVERLAY, REPAIR BRIDGES 62706, 62861, 62862, 62838 AND 62870, DRAINAGE, SIGNALS, LIGHTING, SIGNING, GUARDRAIL, TMS AND ADA	\$32,520,000	2015-2018
3. Rebuild and Replace Highway Assets	I-94	FROM NICOLLET AVE IN MPLS TO W SHINGLE CREEK BRIDGE 27909 IN BROOKLYN CENTER-MAJOR CPR AND DIAMOND GRINDING, DRAINAGE	\$23,355,000	2015-2018

**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
3. Rebuild and Replace Highway Assets	I-35E	FROM RAMSEY CR E IN VADNAIS HTS TO JUST S OF RAMSEY CSAH 96 IN WHITE BEAR LAKE-MILL & OVERLAY, MILL & CONCRETE UNBONDED OVERLAY, DRAINAGE, LOOP DETECTORS, GUARDRAIL, CONSTRUCT SLOPE, MILL & OVERLAY, CABLE MEDIAN BARRIER, TEMP BYPASS, & RR AGREEMENT	\$4,940,000	2015-2018
3. Rebuild and Replace Highway Assets	MN5	FROM JUST E OF SCANDIA RD IN LAKETOWN TWP TO ROLLING ACRES RD/BAVARIA RD IN VICTORIA - MILL & OVERLAY, DRAINAGE, GUARDRAIL	\$5,490,000	2015-2018
3. Rebuild and Replace Highway Assets	MN25	LITTLE ROCK TO SOUTH OF GENOLA, MILL AND OVERLAY	\$3,100,000	2015-2018
3. Rebuild and Replace Highway Assets	MN5	FROM JUST E OF JCT MN25 IN CAMDEN TWP TO JUST EAST OF BIRCH ST IN WACONIA- MILL & OVERLAY, GUARDRAIL, ACCESS MANAGEMENT, DRAINAGE	\$3,325,000	2015-2018
3. Rebuild and Replace Highway Assets	US169	JUST NORTH OF MN62 IN EDINA TO MN55 IN GOLDEN VALLEY -CPR WITH DIAMOND GRINDING AND MILL AND OVERLAY, DRAINAGE	\$16,515,000	2015-2018
3. Rebuild and Replace Highway Assets	MN7	MILL AND OVERLAY, EAST OF I-494 TO WEST OF LOUISIANA AVE	\$4,500,000	2015-2018
3. Rebuild and Replace Highway Assets	MN62	MAJOR CONCRETE PAVEMENT REPAIR, DIAMOND GRIND, AND MEDIUM MILL AND OVERLAY, BEACH ROAD TO TRACY AVE	\$6,000,000	2015-2018
3. Rebuild and Replace Highway Assets	I-35	UNBONDED CONCRETE OVERLAY, SOUTH OF 35E/W SPLIT TO US 8	\$27,000,000	2015-2018

**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
3. Rebuild and Replace Highway Assets	I-694	MEDIUM MILL AND OVERLAY, WEST OF LEXINGTON AVE TO EAST OF RICE ST	\$4,000,000	2015-2018
3. Rebuild and Replace Highway Assets	US10	RECONSTRUCTION, JOPLIN ST. TO NORFOLK AVE. IN ELK RIVER	\$14,800,000	2019-2024
3. Rebuild and Replace Highway Assets	I-94	MEDIUM MILL AND OVERLAY, NICOLLET AVE TO MN 280	\$8,020,213	2019-2024
3. Rebuild and Replace Highway Assets	MN25	MEDIUM MILL AND OVERLAY, CSAH 30 TO CARVER/WRIGHT CO LINE	\$4,000,000	2019-2024
3. Rebuild and Replace Highway Assets	MN5	UNBONDED OVERLAY. EAST OF JAMACA TO CSAH 15	\$6,750,000	2019-2024
3. Rebuild and Replace Highway Assets	US952A	MEDIUM MILL AND OVERLAY, MN 65 TO JCT I-35W	\$1,500,000	2019-2024
3. Rebuild and Replace Highway Assets	I-494	REPAIR/REPLACE BRIDGES #9217E, #9217W OVER MN RIVER	\$5,700,000	2019-2024
3. Rebuild and Replace Highway Assets	I-35W	UNBONDED OVERLAY, CR J TO SUNSET AVENUE	\$13,837,303	2019-2024
3. Rebuild and Replace Highway Assets	US10	REPLACE BRIDGE #9700 AND REPAIR SIX ADDITIONAL BRIDGES BETWEEN MIN STREET AND EAST OF 7TH AVE	\$15,000,000	2019-2024

**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
3. Rebuild and Replace Highway Assets	MN95	MEDIUM MILL AND OVERLAY, W OF JCT TH 94 AND OLD CSAH 15 TO BAILEY ROAD	\$2,500,000	2019-2024
3. Rebuild and Replace Highway Assets	I-494	CONCRETE PAVEMENT REPAIR AND MEDIUM MILL AND OVERLAY FROM HARDMAN AVE TO MN RIVER	\$22,000,000	2019-2024
3. Rebuild and Replace Highway Assets	MN5	UNBONDED OVERLAY, EAST OF POST ROAD TO HENNEPIN COUNTY/RAMSEY COUNTY LINE	\$7,500,000	2019-2024
3. Rebuild and Replace Highway Assets	I-94	THICK OVERLAY FROM MN 120 TO WISCONSIN BORDER	\$34,548,030	2019-2024
3. Rebuild and Replace Highway Assets	MN120	MEDIUM MILL AND OVERLAY, 4TH ST TO MN 244	\$5,000,000	2019-2024
3. Rebuild and Replace Highway Assets	MN5	THIN MILL AND OVERLAY, FROM MUNSTER AVE TO US 52	\$4,000,000	2019-2024
3. Rebuild and Replace Highway Assets	I-94	MAJOR CONCRETE PAVEMENT REPAIR AND DIAMOND GRIND, WESTERN AVE TO MOUNDS BLVD	\$6,069,946	2019-2024
3. Rebuild and Replace Highway Assets	US52	MEDIUM MILL AND OVERLAY, NORTH OF COUNTY ROAD 86 TO CSAH 42	\$10,837,393	2019-2024
3. Rebuild and Replace Highway Assets	US952A	THIN MILL AND OVERLAY, ROBERT ST FROM ANNAPOLIS TO I-35E	\$3,000,000	2019-2024

**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
3. Rebuild and Replace Highway Assets	US52	UNBONDED OVERLAY, GOODHUE/DAKOTA COUNTY LINE TO NORTH OF COUNTY ROAD 86	\$8,653,433	2019-2024
3. Rebuild and Replace Highway Assets	US212	MEDIUM MILL AND OVERLAY, MN 5 TO CSAH 34	\$4,871,928	2019-2024
3. Rebuild and Replace Highway Assets	I-94	MEDIUM MILL AND OVERLAY, MN 280 TO WESTERN AVE	\$9,003,642	2019-2024
3. Rebuild and Replace Highway Assets	MN282	RECLAMATION, TH 21 TO TH 13	\$7,000,000	2019-2024
3. Rebuild and Replace Highway Assets	MN13	RECLAMATION AND MILL AND OVERLAY, TH 282 TO EAGLE CREEK AVE	\$5,000,000	2019-2024
3. Rebuild and Replace Highway Assets	MN5	MEDIUM MILL AND OVERLAY, JCT 120/CENTURY AVE TO EAST OF JAMACA	\$4,250,000	2019-2024
3. Rebuild and Replace Highway Assets	MN284	MEDIUM MILL AND OVERLAY, TH 212 TO SIERRA PARKWAY	\$2,750,000	2019-2024
3. Rebuild and Replace Highway Assets	I-35W	THIN MILL AND OVERLAY, PORTLAND AVENUE TO WASHINGTON AVENUE	\$2,274,232	2019-2024
3. Rebuild and Replace Highway Assets	MN65	MEDIUM MILL AND OVERLAY, CSAH 10 TO 153RD AVE	\$12,000,000	2019-2024

**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
3. Rebuild and Replace Highway Assets	MN41	MEDIUM MILL AND OVERLAY, HUNDERTMARK RD TO TH 5	\$2,500,000	2019-2024
3. Rebuild and Replace Highway Assets	MN5	MEDIUM MILL AND OVERLAY, SIBLEY/CARVER COUNTY LINE TO US 212	\$2,250,000	2019-2024
3. Rebuild and Replace Highway Assets	MN13	MEDIUM MILL AND OVERLAY, TH 19 TO MN 282	\$6,500,000	2019-2024
3. Rebuild and Replace Highway Assets	MN316	MEDIUM MILL AND OVERLAY, NORTH OF MICHAEL AVE TO US 61	\$1,182,129	2019-2024
3. Rebuild and Replace Highway Assets	US52	MEDIUM MILL AND OVERLAY AND CONCRETE PAVEMENT REPAIR, I-494 TO LAFAYETTE BRIDGE	\$6,053,103	2019-2024
3. Rebuild and Replace Highway Assets	MN41	SOUTH OF 2ND STREET TO CSAH 61 (OLD 212)	\$1,353,902	2019-2024
3. Rebuild and Replace Highway Assets	MN244	MEDIUM MILL AND OVERLAY, JCT TH 120/TH 244 TO MN 96	\$3,000,000	2019-2024
3. Rebuild and Replace Highway Assets	I-394	PAINT BRIDGES IN CORRIDOR FROM US 100 TO I-94	\$8,500,000	2019-2024
3. Rebuild and Replace Highway Assets	MN95	MEDIUM MILL AND OVERLAY, I-94 TO SOUTH OF TH 36	\$3,750,000	2019-2024



**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
3. Rebuild and Replace Highway Assets	MN5	MEDIUM MILL AND OVERLAY, US 52 TO MN 120	\$4,000,000	2019-2024
3. Rebuild and Replace Highway Assets	I-35W	MAJOR CONCRETE PAVEMENT REPAIR AND DIAMOND GRIND, 4TH STREET TO NEW BRIGHTON AVE	\$5,319,882	2019-2024
3. Rebuild and Replace Highway Assets	US169	CONCRETE PAVEMENT REPAIR AND MEDIUM MILL AND OVERLAY FROM 101ST AVE TO US 10	\$9,119,197	2019-2024
3. Rebuild and Replace Highway Assets	I-35W	THICK OVERLAY, NEW BRIGHTON AVE TO MN 36	\$9,281,109	2019-2024
3. Rebuild and Replace Highway Assets	I-35W	MED/THICK MILL AND OVERLAY, I-694 TO NORTH OF COUNTY RD J	\$9,765,645	2019-2024
3. Rebuild and Replace Highway Assets	MN65	WHITETOPPING, 153RD AVE TO 217TH AVE	\$15,897,928	2019-2024
3. Rebuild and Replace Highway Assets	US169	REDECK/REPAIR BRIDGES #27550, #27523 OVER US 169	\$2,500,000	2019-2024
3. Rebuild and Replace Highway Assets	MN7	REPAIR BRIDGES #27033, #27193, #27068	\$1,000,000	2019-2024
3. Rebuild and Replace Highway Assets	MN13	MEDIUM MILL AND OVERLAY, TH 13 TO MN 149	\$3,000,000	2019-2024

**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
3. Rebuild and Replace Highway Assets	US61	MEDIUM MILL AND OVERLAY, WEST OF TH 5 TO PARKWAY DRIVE	\$2,250,000	2019-2024
3. Rebuild and Replace Highway Assets	I-94	MANNING AVE IN WOODBURY TO ST. CROIX RIVER IN LAKELAND TWP- REPAIR, REPLACE & LINE LARGE PIPES	\$4,560,000	2015-2018
		<b>MnDOT Subtotal for Rebuild and Replace</b>	<b>\$1,041,548,165</b>	
4. Highway Safety Improvements	US169	BETWEEN MN 282 AND MN 21 IN JORDAN - RECONSTRUCT MAINLINE INCLUDING MEDIUM J-BARRIER AND REPLACE MEDIUM DRAINAGE STRUCTURES AND PIPES	\$6,430,000	2015-2018
		MnDOT Subtotal for Special Safety Projects	\$6,430,000	
8. MnPASS	I-35E	Construct MnPASS lanes between Little Canada Road and Ramsey County Road J	\$16,000,000	2015-2018
8. MnPASS	I-94	Construct MnPASS lanes in both directions between Cedar Ave in Mpls and Marion in St. Paul	\$100,000,000	2019-2024
8. MnPASS	I-35W	Construct MnPASS lanes in both directions between MN 36/280 and US 10	\$100,000,000	2019-2024
		<b>MnDOT Subtotal for MnPASS</b>	<b>\$216,000,000</b>	
9. Strategic Capacity Enhancements	I-494	In addition to pavement, bridge, and roadside infrastructure investments, construct one general purpose lane in each direction between Trunk Highway 55 and I-94/694, and operational improvements in other locations between I-394 and I-94/694	\$86,000,000	2015-2018

**Table C-1: Long-Range Highway Capital Projects 2015-2024**

Highway Investment Category	Route	Project Description	Estimated Cost to MnDOT (Year of Expenditure)	Timeframe
9. Strategic Capacity Enhancements	MN610	Construct two lanes in each direction, including connections to I-94	\$131,000,000	2015-2018
9. Strategic Capacity Enhancements	I-694	In addition to pavement, bridge, and roadside infrastructure investments, construct one general purpose lanes in each direction between Lexington Avenue and east of Rice Street	\$42,000,000	2015-2018
9. Strategic Capacity Enhancements	I-94	Construct an eastbound auxiliary lane between MN241 in St. Michael and MN101 in Rogers; extend the third westbound lane from east of MN101 to MN241	\$46,000,000	2015-2018
9. Strategic Capacity Enhancements	I-94	Construct and eastbound auxiliary lane between East 7th Street and Mounds Boulevard in St. Paul	\$3,000,000	2015-2018
9. Strategic Capacity Enhancements	US10	Construct interchange at Armstrong Boulevard, including grade-separation from railroad tracks	\$34,400,000	2015-2018
9. Strategic Capacity Enhancements	US169	Construct additional southbound lane in Shakopee between Scott County 69/Canterbury Road and Scott CSAH 21	\$0 (no capital cost to MnDOT)	2015-2018
		<b>MnDOT Subtotal for Strategic Capacity Enhancements</b>	<b>\$342,400,000</b>	
10. Regional Highway Access	I-94	Remove 5th Street ramp to downtown Minneapolis and replace with access to 7th Street	\$6,790,000	2015-2018
10. Regional Highway Access	US212	Improve Shady Oak Road Interchange in Eden Prairie	\$7,000,000	2015-2018
		<b>MnDOT Subtotal for Regional Highway Access</b>	<b>\$13,790,000</b>	
		<b>MnDOT Total for Identified Projects 2015-2024</b>	<b>\$1,620,168,165</b>	

## Long-Range Transit Capital Projects 2015-2024

The Metropolitan Council (including Metro Transit), Counties Transit Improvement Board, and the suburban transit providers worked together to develop the list of transit projects included in the current revenue scenario. The list of projects includes only those projects for which potential funding sources, transit mode, and route alignment are identified in the plan. The plan anticipates funding that exceeds anticipated project costs identified in the Transitway System Investments category. Transitway projects will be added to this list through future plan updates and amendments. For multi-year projects with expenditures outside the 2015-2024 timeframe, this appendix lists the total estimated project cost, including already spent funds.

Bus and Support System capital preservation and Transitway System capital preservation costs are included as broad project categories. Specific project estimates will be developed through Capital Improvement Programs for regional transit providers.

**Table C-2: Long -Range Transit Capital Projects 2015-1024**

Transit Investment Category	Route	Project Description	Estimated Cost (Year of Expenditure)	Timeframe
Bus and Support System	System-wide	Bus and Support System capital maintenance and preservation estimates including fleet replacement and overhauls, facility capital preservation, and other capital preservation.	\$964,000,000	2015-2024
Bus and Support System	System-wide	Bus and Support System modernization and expansion projects to be determined through competitive regional process approximately every two years. Transitway improvements are also eligible through this process.	\$214,000,000	2015-2024
Transitway System	System-wide	Transitway System capital maintenance and preservation estimates including fleet replacement and overhauls, facility capital preservation, rail system preservation, and other capital preservation.	\$107,000,000	2015-2024
Transitway Improvements	System-wide	Transitway System improvements include expanded existing facilities or interim improvements to future transitways that are incremental and identified on an as-needed basis.	\$144,000,000	2015-2024
Transitway System	METRO Orange Line	16-mile highway bus rapid transit improvement (six new stations planned, buses, technology) on I-35W south from Minneapolis to Burnsville.	\$150,000,000	2015-2024
Transitway System	METRO Green Line Extension	16-mile light rail extension of the Green Line with plans to include 16 new stations from Minneapolis to Eden Prairie.	\$1,653,000,000	2015-2024
Transitway System	METRO Blue Line Extension	13-mile light rail extension of the Blue Line with plans to include 11 new stations from Minneapolis to Brooklyn Park.	\$999,000,000	2015-2024
Transitway System	METRO Gold Line	12-mile dedicated bus rapid transit line with plans to include 11 new stations from Saint Paul to Woodbury.	\$469,000,000	2015-2024

Table C-2: Long -Range Transit Capital Projects 2015-1024				
Transit Investment Category	Route	Project Description	Estimated Cost (Year of Expenditure)	Timeframe
Transitway System	METRO Red Line Extension	3-mile extension of the Red Line with plans to include 3 new stations from Apple Valley to Lakeville.	\$74,000,000	2015-2024
Transitway System	Snelling Avenue Arterial Bus Rapid Transit	Bus rapid transit improvements in an arterial bus corridor running primarily along Snelling Avenue in Saint Paul from 46th Street Station on METRO Blue Line to Roseville.	\$25,000,000	2015-2024
Transitway System	Penn Avenue Arterial Bus Rapid Transit	Bus rapid transit improvements in an arterial bus corridor running primarily along Penn Avenue and Highway 55 in Minneapolis from downtown Minneapolis to Brooklyn Center Transit Center.	\$36,000,000	2015-2024
Transitway System	Chicago Emerson-Fremont Arterial Bus Rapid Transit	Bus rapid transit improvements in an arterial bus corridor running primarily along Chicago/Portland Avenues, American Boulevard and Emerson and Fremont Avenues from Mall of America Transit Station in Bloomington to Brooklyn Center Transit Center.	\$77,200,000	2015-2024
<b>Total for Identified Transit Projects 2015-2024</b>			<b>\$4,912,200,000</b>	<b>2015-2024</b>





## Appendix D: Functional Classification Criteria and Characteristics, and MnDOT Access Guidance

Functional classification identifies the role a highway or street plays in the transportation system. Some highways are intended to emphasize mobility for longer distance trips, while other roads are intended to primarily provide access to land. Planners and engineers have developed functional classification categories based on the number and types of trips that roads carry, the surrounding land uses, and the stage of urban or rural development. Functional classification informs roadway design decisions that affect the road's function like roadway speed, width, and intersection spacing and control. Functional classification can also be considered when identifying the multimodal role of a road, including truck, bus transit, bicycle, and pedestrian use and accommodation. Highway and street projects should implement designs including multimodal accommodations that are compatible with a road's functional classification and surrounding land uses.

The main functional classes used in the metropolitan area are used nationwide and described in the Federal Highway Administration's (FHWA) *Highway Functional Classification Concepts, Criteria and Procedures, 2013 Edition*. They consist of urban and rural designations for four main classes of roads: principal arterials (which include all freeways), minor arterials, collector roads, and local roads. The FHWA definitions of urban and rural are different from those used in Thrive MSP 2040. The FHWA definitions are based on population density from the US Census; Thrive MSP 2040 definitions are based on the availability of regional sanitary sewer service. For the purpose of this appendix, the Thrive MSP 2040 definitions are used. Statewide functional classification analysis and reporting must use the FHWA urban and rural definitions.

In addition to the FHWA classifications, the region has identified the most important minor arterials in Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington counties. These A-minor arterials supplement the principal arterial system and support access to regional job concentrations and freight terminals. Within these seven counties, principal and A-minor arterials are eligible to compete for federal funds through the Transportation Advisory Board's Regional Solicitation.

This appendix to the Transportation Policy Plan identifies criteria and characteristics for use in assigning roadway functional classification. Criteria are the primary tool for identifying roadway function. Characteristics are intended to be supplementary information. When a decision about the functional classification of a road is not clear based on the criteria provided, characteristics may be used as supplementary decision factors. Functional classification system criteria are presented in Tables D-1, D-3, D-4 and D-6. Functional classification system characteristics are shown in Tables D-2, D-5, and D-7.

This appendix also includes a summary of Minnesota Department of Transportation (MnDOT) intersection spacing and control guidelines for federal, state and interstate highways in the metropolitan area. The MnDOT access management guidelines were developed for the entire state; MnDOT's functional classification category for the metropolitan area is summarized in Table D-8 and at <http://www.dot.state.mn.us/accessmanagement/index.html>.

## Principal Arterials

The emphasis of principal arterials is on moving large volumes of traffic over long distances rather than providing direct access to land. They connect the region with other areas in the state, the nation, and the world. Principal arterials also connect regional concentrations and freight terminals within the metropolitan area. Principal arterials should support the longest trips in the region, including intercity bus, express bus, and highway bus rapid transit services.

Principal arterials consist primarily of interstate freeways and other freeways or highways. Most are owned and operated by MnDOT, but some are under the jurisdiction of Anoka, Dakota, Ramsey, and Scott counties or the City of Saint Paul. The Metropolitan Highway System, as defined in the Transportation Policy Plan, is composed of all principal arterials in Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington counties.

Principal arterial spacing and access spacing vary based on the density of surrounding development. Table D-1 shows principal arterial spacing varies from two to three miles in the most densely developed parts of the region to six to 12 miles in rural areas. Where an urban or suburban level of development is planned, spacing of principal arterials or future principal arterials may be two to three miles. Table D-1 also shows access spacing to principal arterials; non-interstate freeways provide land access somewhat more frequently than interstate freeways. At present, principal arterials connect with other principal and minor arterials, and select collectors and local streets. In the future, new connections to principal arterials should be limited to other principal and A-minor arterials, or to select minor arterials in Wright and Sherburne counties where A-minors are not identified.

Principal arterials are not intended to serve pedestrian and bicycle travel directly and they often act as barriers to bicycle and pedestrian travel in the centers and neighborhoods through which they pass. Adequate pedestrian and bicycle crossings separate from general traffic lanes are an important consideration along principal arterials.

## Minor Arterials

The minor arterial system supplements the principal arterial system and provides connections to the principal arterial system. Minor arterials also support access to major traffic generators, including regional job concentrations and freight terminals, and between rural centers within and just outside the region. Minor arterials should serve medium-to-short trips, including arterial bus rapid transit, limited-stop bus, and local bus service.

In the urban service area the emphasis of minor arterials is on supplementing principal arterial mobility as opposed to providing direct access to land, and only concentrations of commercial, industrial, or residential land uses should have direct access to them. Minor arterials should connect to principal arterials, other minor arterials and collectors. Connections to some local streets are acceptable.

The spacing of minor arterials and access along them vary based on the density of surrounding development. Table D-3 shows minor arterial spacing varies from one-fourth mile to three-fourths

mile in the most densely developed parts of the region, to every one to two miles in the emerging suburban areas. Where an urban or suburban level of development is planned, minor arterials should be spaced every one-half mile to two miles. The criteria and characteristics in Table D-3 and Table D-5 apply to all minor arterials. The A-minor arterials are grouped into four categories – Augmentors, Relievers, Expanders, and Connectors – and are described in Table C-4.

Minor arterials are designed to carry higher volumes of general traffic than other local roads and these design characteristics often create a barrier for bicycle and pedestrian travel. Priority should be placed on addressing these barriers in areas with pedestrian traffic, such as within regional job concentrations, within local centers, and along major transit routes.

## Collector Roads

Mobility and land access are equally important on the collector road system. The collector system provides connections between neighborhoods and from neighborhoods to regional job concentrations and local centers. It also provides supplementary connections between major traffic generators within regional job concentrations. Direct land access should primarily be to development concentrations. Connectors typically serve short trips of one to four miles. Collectors connect primarily to minor arterials, other collectors, and local streets.

Major and minor collectors should be identified in the urban and rural areas. Major collectors serve higher density residential areas (often penetrating residential neighborhoods for significant distances), job and activity centers and freight terminals that are not on the arterial system, and they serve longer local trips, including local bus service. Minor collectors serve shorter local trips and lower density land uses (often penetrating residential neighborhoods only for a short distance). Spacing in regional job concentrations and local centers may vary from one-eighth to one-half mile. In urban center and urban communities, collectors are needed one-fourth to three-fourths mile apart. In communities with suburban designations, spacing may range from one-half to one mile and may service existing development, but one-fourth to three-fourth mile spacing may be required in the future. Major collectors should be spaced farther apart than minor collectors.

Collector roads can be good candidates for bicycle routes because they serve shorter trips that bicyclists make and generally have more compatible traffic speeds and volumes as compared to arterials. Collectors in the urban service area should include pedestrian accommodations and may be candidates for traffic calming, especially where pedestrian traffic is greatest, such as within regional job concentrations and local centers and along transit routes. For more information on bicycle and pedestrian accommodations, refer to the Strategies and Bicycle and Pedestrian Investment Direction discussions. [Insert links.]

## Local Roads

Local roads connect blocks and land parcels, and the primary emphasis is on land access. In most cases, local roads connect to other local roads and collectors. In some cases, they connect to minor arterials. Local roads serve short trips at low speeds. In the urban center, local roads could be spaced as close as 300 feet, while in the rural area, one-mile spacing may be adequate.

Local roads serve local travel for pedestrians and bicyclists. Transit is occasionally a consideration for local roads, depending on the surrounding land uses.

**Table D-1: Functional Classification System Criteria for Principal Arterials**

Criterion	Interstate and Freeway Principal Arterial		Other Principal Arterial	
	Urban Service Area	Rural	Urban Service Area	Rural
Place Connections	Connect regional job concentrations and freight terminals within the urban service area.	Connect the urban service area with urban areas and major cities in Minnesota and other states.	Connect regional job concentrations and freight terminals within the urban service area.	Connect the urban service area with major cities in Minnesota and other states.
Spacing	<p>Within urban community designations: 2-3 miles</p> <p>Within suburban community designations: Spacing should vary in relation to development density of land uses served, 2-6 miles</p>	<p>6-12 miles</p> <p>Closer spacing may be required to connect portions of the urban service area to each other or to Rural Centers.</p>	<p>Urban community designations: 2-3 miles.</p> <p>Suburban community designations: Spacing should vary in relation to development density of land uses served, 2-6 miles</p>	<p>6-12 miles</p> <p>Closer spacing may be required to connect portions of Rural community designations to each other or to Rural Centers.</p>
Operations	Designed for speeds of 45 miles per hour or more			
System Connections and Access Spacing*	<p>To other Interstate freeways, other principal arterials and selected A-minor arterials. Connections between principal arterials should be of a design type that does not require vehicles to stop. Access at distances of 1-2 miles.</p>	<p>To other Interstate freeways, principal arterials, and selected A-minor arterials. Access at distances of 2-6 miles.</p>	<p>To Interstate freeways, other principal arterials, and selected A-minor arterials. Connections between principal arterials should be of a design type that does not require vehicles to stop. Intersections should be limited to 1-2 miles.</p>	<p>To Interstate freeways, other principal arterials, and selected A-minor arterials. Intersections should be limited to 2 miles or more.</p>

**Table D-1: Functional Classification System Criteria for Principal Arterials**

Criterion	Interstate and Freeway Principal Arterial		Other Principal Arterial	
	Urban Service Area	Rural	Urban Service Area	Rural
Trip-Making Service	Trips greater than 8 miles with at least 5 continuous miles on principal arterials. Express and highway bus rapid transit trips		Trips greater than 8 miles with at least 5 continuous miles on principal arterials. Express and highway bus rapid transit trips	
Mobility vs. Land Access*	Emphasis is on mobility for longer trips rather than direct land access. No direct land access should be allowed.	Emphasis is on mobility rather than land access. No direct land access should be allowed.	Emphasis is on mobility for longer trips rather than direct land access. Little or no direct land access within the urbanized area.	Emphasis is on mobility rather than land access. Little or no direct land access.

\*The key objective is stated under “Operations” heading in this table.

**Table D-2: Functional Classification System Characteristics for Principal Arterials**

Characteristic	Interstate and Freeway Principal Arterial		Other Principal Arterial	
	Urban Service Area	Rural	Urban Service Area	Rural
System Mileage	FHWA suggests statewide mileage for Interstate and other freeway principal arterials at 1 – 5% of system	FHWA suggests statewide mileage for Interstate and other freeway principal arterials at 1-5% of system	FHWA suggests statewide mileage for other principal arterials at 4-9% of system	FHWA suggests statewide mileage for other principal arterials at 2-6% of system
Percent of Vehicle Miles Traveled	FHWA suggests 17-43% of statewide VMT	FHWA suggests 18-45% of statewide VMT	FHWA suggests 16-33% of statewide VMT	FHWA suggests 15-31% of statewide VMT
Intersections	Grade separated	Grade separated	Grade separated desirable where appropriate. At a minimum, high-capacity controlled at-grade intersections	High-capacity controlled at-grade intersections
Parking	None	None	None	None
Large Trucks	No restrictions	No restrictions	No restrictions	No restrictions
Management Tools	Ramp metering, preferential treatment for transit, interchange spacing	Interchange spacing	Ramp metering, preferential treatment for transit, access control, median barriers, traffic signal progression, staging of reconstruction, intersection spacing	Access control, intersection spacing
Typical Average Daily Traffic Volumes	25,000-200,000+	5,000-50,000+	15,000-100,000+	2,500 - 25,000+
Posted Speed Limit	45-70 mph	55-70 mph	40-65 mph	Legal limit
Right-of-Way	300 feet	300 feet	100 - 300 feet	100 - 300 Feet



**Table D-2: Functional Classification System Characteristics for Principal Arterials**

Characteristic	Interstate and Freeway Principal Arterial		Other Principal Arterial	
	Urban Service Area	Rural	Urban Service Area	Rural
Transit Accommodations	Transit advantages that provide priority access and reliable movement for transit in peak periods where needed	None	Transit advantages that provide priority access and reliable movement for transit in peak periods where possible and needed	None
Bicycle and Pedestrian Accommodations	On facilities that cross or are parallel to the principal arterial, with greater emphasis along transit routes and in activity centers. Crossings should be spaced to allow for adequate crossing opportunities	On facilities that cross or are parallel to the principal arterial	On facilities that cross or are parallel to the principal arterial, with greater emphasis along transit routes and in activity centers. Crossings should be spaced to allow for adequate crossing opportunities	On facilities that cross or are parallel to the principal arterial

This table summarizes characteristics for existing roadways to be used in evaluating functional classification and should not be used as design guidelines.

**Table D-3: Functional Classification System Criteria for Minor Arterials**

Criterion	Minor Arterial (A-minor or other)	
	Urban Service Area	Rural
Place Connections	Provide supplementary connections between regional job concentrations, local centers, and freight terminals within the urban service area	Connect the urban service area with cities and towns in Minnesota outside the Twin Cities region. Connect rural growth centers inside the Twin Cities region and comparable places near the Twin Cities region
Spacing	Regional job concentrations: 1/4-3/4 mile Urban community designations: 1/2-1 mile Suburban community designations: 1-2 miles	Rural Areas: As needed, in conjunction with the major collectors, provide adequate interconnection of places identified in “Place Connections” criterion
System Connections	To most Interstate freeways and other principal arterials, other minor arterials, collectors, and some local streets	To most Interstate freeways and other principal arterials, other minor arterials, collectors, and some local streets
Trip-Making Service	Medium-to-short trips (2-6 miles depending on development density) at moderate speeds. Longer trips accessing the principal arterial network. Local, limited-stop, and arterial bus rapid transit trips	
Operations	Designed for speeds less than 45 miles per hour	Designed for speeds ranging from 45 to 55 miles per hour
Mobility vs. Land Access*	Emphasis on mobility for longer trips rather than on direct land access. Direct land access limited to concentrations of activity including regional job concentrations, local centers, freight terminals, and neighborhoods.	Emphasis on mobility for longer trips rather than on direct land access

\*The key objective is stated under “Operations” heading in this table.

**Table D-4:** Additional Criteria for A-Minor Arterials

Criterion in addition to Table D-3	Relievers	Augmentors	Expanders	Connectors
Purpose	Provide supplementary capacity for congested, parallel principal arterial	Supplement the principal arterial system in more densely developed or redeveloping areas	Supplement the principal arterial system in less densely developed or redeveloping areas	Provide safe, direct connections between rural centers and to principal arterials in rural areas without adding continuous general purpose lane capacity
Location in Thrive MSP 2040 Community designations	Urban service area: Consists of urban center, urban, suburban, suburban edge, and emerging suburban edge community designations as defined in Thrive MSP 2040	Urban center and urban community designations	Urban, suburban, suburban edge, and emerging suburban edge community designations	Rural community designations. One end may be outside the seven county area or may be in the urban service area
Existing System	400 miles	200 miles	650 miles	680 miles

See the Metropolitan Council Web site for a current map of the A-minor arterial system.

**Table D-5: Functional Classification System Characteristics for Minor Arterials**

Characteristic	Minor Arterial (A-or other)	
	Urban Service Area	Rural
System Mileage	FHWA suggests statewide mileage for minor arterials in urbanized areas at 7-14% of system	FHWA suggests statewide mileage for minor arterials in rural areas at 2-6% of system
Percent of Vehicle Miles Traveled	FHWA suggests 14-27% of statewide VMT	FHWA suggests 7-14% of statewide VMT
Intersections	Traffic signals, roundabouts, and cross-street stops	Roundabouts and cross-street stops
Parking	Restricted as necessary	Restricted as necessary
Large Trucks	Candidates for local truck network, large trucks restricted as necessary	Candidates for local truck network, large trucks restricted as necessary
Management Tools	Traffic signal progression and spacing, land access management/control, preferential treatment for transit	Land access management/control
Typical Average Daily Traffic Volumes	5,000-30,000+	1,000-10,000+
Posted Speed Limit	30-45 mph	Legal limit
Right-of-Way	60-150 feet	60-150 feet
Transit Accommodations	Transit advantages for reliable movement where needed	None
Bicycle and Pedestrian Accommodations	On facilities that cross or are parallel to the minor arterial, with greater emphasis along transit routes and in activity centers. Crossings should be spaced to allow for adequate crossing opportunities	On facilities that cross the minor arterial

**Table D-6: Functional Classification System Criteria for Collectors and Local Streets**

Criterion	Collector		Local	
	Urban Service Area	Rural	Urban Service Area	Rural
Place Connections	<p>Connect neighborhoods and centers within the urban service area. Major collectors provide supplementary connections of major traffic generators within job and activity centers.</p>	<p>Provide supplementary connection between rural centers inside the Twin Cities region and comparable places near the Twin Cities region.</p>	<p>Connect blocks and land parcels within neighborhoods and within commercial or industrial developments.</p>	
Spacing	<p><b>Job concentrations:</b> 1/8 - 1/2 mile Urban community designations: 1/4 - 3/4 mile Suburban community designations: 1/2 - 1 mile Minor collectors should be spaced more closely than major collectors.</p> <p>To minor arterials, other collectors, and local streets. Major collectors may connect to principal arterials under exceptional circumstances</p>	<p><b>Rural Areas:</b> As needed in conjunction with minor arterials, to provide adequate connections for places identified in “Place Connections” criterion. In addition, minor collectors should be designated at an average spacing of not less than 4 miles.</p>	<p>As needed to access land uses.</p>	<p>As needed to access land uses.</p>
System Connections		<p>To minor arterials, other collectors, and local streets.</p>	<p>To a few minor arterials. To collectors and other local streets.</p>	<p>To a few minor arterials. To collectors and local roads.</p>

**Table D-6: Functional Classification System Criteria for Collectors and Local Streets**

Criterion	Collector		Local	
	Urban Service Area	Rural	Urban Service Area	Rural
Trip-Making Service	Short trips (1-4 miles depending on development density) at low-to-moderate speeds. Major collectors may support longer trips accessing the arterial network including local bus transit and bicycle trips.		Short trips (under 2 miles) at low speeds, including bicycle and pedestrian trips. Longer trips accessing the collector or arterial network.	
	Mobility vs. Land Access	Equal emphasis on mobility and land access. Direct land access predominantly to development concentrations.	Emphasis on land access, not on mobility. Direct land access predominantly to residential land uses.	Emphasis on land access, not on mobility. Direct land access predominantly to agricultural land uses.

**Table D-7: Functional Classification System Characteristics for Collectors and Local Streets**

Characteristic	Collector		Local	
	Urban Service Area	Rural	Urban Service Area	Rural
System Mileage	Suggested federal statewide range for major and minor collectors: 3-16%	Suggested federal statewide range: 8-19% for major collectors, 3-15% for minor collectors	Suggested federal statewide range: 62-74%	Suggested federal statewide range: 62-74%
Percent of Vehicle Miles Traveled	Suggested federal statewide range for major and minor collectors: 2-13%	Suggested federal statewide range: 10-23% for major collectors, 1-8% for minor collectors	Suggested federal statewide range: 9-25%	Suggested federal statewide range: 8-23%
Intersections	Four-way stops and some traffic signals	Local street traffic should be required to stop	As required	As required
Parking	Restricted as necessary	Unrestricted	Permitted as necessary	Permitted as necessary
Large Trucks	May be candidates for local truck network, large trucks restricted as necessary	May be candidates for local truck network, large trucks restricted as necessary	Permitted as necessary	Permitted as necessary
Management Tools	Number of lanes, traffic signal timing, land access management	Land access management	Intersection control, cul-de-sacs, diverters	
Typical Average Daily Traffic Volumes	1,000-15,000	250-2,500+	Less than 1,000	Less than 1,000
Posted Speed Limit	30-40 mph	35-45 mph	Maximum 30 mph	Maximum 30 mph
Right-of-Way	60-100 feet	60-100 feet	50-80 feet	50-80 feet



**Table D-7: Functional Classification System Characteristics for Collectors and Local Streets**

Characteristic	Collector		Local	
	Urban Service Area	Rural	Urban Service Area	Rural
Transit Accommodations	Cross-sections and geometrics designed for use by regular-route buses, transit advantages for reliable movement, where needed	None	Normally used as bus routes only in nonresidential areas	None

On, along, or crossing the collector with higher emphasis along transit routes and in activity centers. Crossings should be spaced to allow for adequate crossing opportunities

Bicycle and Pedestrian Accommodations

On, along, or crossing the collector      On, along, or crossing the local road      On, along, or crossing the local road

This table summarizes characteristics for existing roadways to be used in evaluating functional classification and should not be used as design guidelines.

**Table D-8:** Summary of MnDOT Public Street Spacing Access Guidelines for Interstate, U.S., and State Highways in the Twin Cities Metropolitan Area \*

Functional Classification	Facility Type or Community Designation**	Public Street Spacing		Signal Spacing
		Primary Full-Movement Intersection	Secondary Intersection	
Principal Arterial	Interstate Freeway	Interchange Access Only		None
	Non-Interstate Freeway	Interchange Access Only		None
	Rural	1 mile	1/2 mile	Only at Primary Intersections
	Suburban	1/2 mile	1/4 mile	Only at Primary Intersections
Minor Arterial	Urban	300-600 feet, dependent on block length		1/4 mile
	Rural	1/2 mile	1/4 mile	Only at Primary Intersections
	Suburban	1/4 mile	1/8 mile	Only at Primary Intersections
	Urban	300-600 feet, dependent on block length		
Collector	Rural	1/2 mile	1/4 mile	Only at Primary Intersections
	Suburban	1/8 mile	Not Applicable	1/4 mile
	Urban	300-600 feet, dependent on block length		1/8 mile

\* This table is a summary of MnDOT Access Guidance for the Metropolitan Area. This chart does not reflect all the MnDOT guidance. Agencies should work with MnDOT, the appropriate county highway authority, and the local land use authority when planning new or modified access.

\*\*Community Designations are from Thrive MSP 2040, they are not MnDOT designations.

## Appendix E: Additional Air Quality Information

This appendix contains additional background information supporting the Metropolitan Council's determination in Part 3, Section D that the 2040 Transportation Policy Plan conforms to the requirements of the Clean Air Act.

### Attainment History

The U.S. Environmental Protection Agency's (EPA) 40 CFR Parts 51 and 93, referred to together with all applicable amendments as the "Conformity Rule," requires the Metropolitan Council to prepare a conformity analysis of the region's Transportation Policy Plan. Based on an air quality analysis, the Council must determine whether the Transportation Policy Plan conforms to the requirements of the 1990 Clean Air Act Amendments with regard to National Ambient Air Quality Standards (NAAQS) for mobile source criteria pollutants. Under consultation procedures developed by the Minnesota Interagency and Transportation Planning Committee, the MPCA reviews the Council's conformity analysis before the Plan is approved for public review; a letter describing the MPCA's review is on page 6 of this appendix.

Specifically, the Minneapolis/Saint Paul Metropolitan Area is within an EPA-designated carbon monoxide limited maintenance area. A map of this area, which for air quality analysis purposes includes the seven-county Metropolitan Council jurisdiction plus Wright County and the City of New Prague, is shown below. The term "maintenance" reflects the fact that regional carbon monoxide emissions were unacceptably high in the 1970s when the NAAQS were introduced, but were subsequently brought under control through a metro-area Vehicle Inspection and Maintenance Program completed in the 1990s. The EPA then re-designated the area as in attainment of the NAAQS for carbon monoxide in 1999 and approved a "maintenance plan" containing a technical rationale and actions designed to keep emissions below a set region-wide budget. The maintenance plan was updated in 2005, when changes to the emissions rates approved by EPA necessitated an update of the approved carbon monoxide budget as well. A second 10-year maintenance plan was approved by EPA on Nov. 8, 2010, as a "limited maintenance plan." Every Transportation Policy Plan or Transportation Improvement Program approved by the Council must be analyzed using specific criteria and procedures defined in the Conformity Rule.

### Federal Requirements

The *2040 Transportation Policy Plan* meets the following Conformity Rule requirements:

Inter-agency consultation: The Minnesota Pollution Control Agency (MPCA), Minnesota Department of Transportation (MnDOT), Environmental Protection Agency (EPA), and Federal Highway Administration (FHWA) were consulted during the preparation of the Plan and its conformity review and documentation. The "Transportation Conformity Procedures for Minnesota" handbook provides guidelines for agreed-upon roles and responsibilities and inter-agency consultation procedures in the conformity process.

Regionally significant and exempt projects: The analysis includes all known federal and nonfederal regionally significant projects. Exempt projects not included in the regional air quality analysis were identified by the inter-agency consultation group and classified.

Donut areas: No regionally significant projects are planned or programmed for the City of New Prague. Regionally significant projects were identified for Wright County to be built within the analyses period of the Plan and incorporated into the conformity analysis.

Latest planning assumptions: The published source of socioeconomic data for this region is the Metropolitan Council's *Thrive MSP 2040*. The latest update to these forecasts was published in May 2014.

Public Participation: The Transportation Policy Plan was prepared in accordance with the Public Participation Plan for Transportation Planning, adopted by the Council on Feb. 14, 2007. This process satisfies federal requirements for public involvement and public consultation.

Fiscal Constraint: The Transportation Policy Plan addresses the fiscal constraint requirements of the Conformity Rule. Chapter II-D of the policy plan documents the consistency of proposed transportation investments with already available and projected sources of revenue.

The Council certifies that the plan does not conflict with the implementation of the State Implementation Plan, and conforms to the requirement to implement the Transportation System Management Strategies, which are the adopted Transportation Control Measures (TCMs) for the region. All of the adopted TCMs have been implemented.

The Transportation Policy Plan includes the 2015-2018 Transportation Improvement Program projects. Moreover, any Transportation Improvement Program projects that are not specifically listed in the plan are consistent with the policies and purposes of the plan and will not interfere with other projects specifically included in the plan.

There are no projects which have received NEPA approval and have not progressed within three years.

Although a small portion of the Twin Cities Metropolitan Area is a maintenance area for PM-10, the designation is due to non-transportation sources, and therefore is not analyzed herein.

## List of Regionally Significant Projects

Pursuant to the Conformity Rule, the projects listed in the Transportation Policy Plan (see Appendix C) were reviewed and categorized using the following determinations to identify projects that are exempt from a regional air quality analysis, as well as regionally significant projects to be included in the analysis. The classification process used to identify exempt and regionally significant projects was developed through an interagency consultation process involving the MPCA, EPA, FHWA, the Council and MnDOT. Regionally significant projects were selected according to the definition in Section 93.101 of the Conformity Rules:

“Regionally significant project means a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, etc., or transportation terminals as well as most terminals themselves) and would normally be included in the modeling of a metropolitan area’s transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel.”

Junction improvements and upgraded segments less than one mile in length are not normally coded into the Regional Travel Demand Forecast Model, and therefore are not considered to be regionally significant, although they are otherwise not exempt. The exempt air quality classification codes used in the “AQ” column of project tables of the Transportation Improvement Program are listed in Exhibit F-4. Projects which are classified as exempt must meet the following requirements:

- The project does not interfere with the implementation of transportation control measures.
- The project is exempt if it falls within one of the categories listed in Section 93.126 in the Conformity Rule. Projects identified as exempt by their nature do not affect the outcome of the regional emissions analyses and add no substance to the analyses. These projects are determined to be within the four major categories described in the conformity rule.

The inter-agency consultation group, including representatives from MnDOT, FHWA, MPCA, EPA, and the Council, reviewed list of projects to be completed by 2040 including the following:

- Existing regionally significant highway or transit facilities, services, and activities;
- Regionally significant projects (regardless of funding sources) which are currently:
  - under construction or undergoing right-of-way acquisition, or;
  - come from the first year of a previously conforming Transportation Improvement Program, or;
  - have completed the NEPA process, or;
  - listed in the 2015-2018 Transportation Improvement Program, or;
  - listed in the Transportation Policy Plan (Appendix C), or;
  - identified for Wright County.

Each project was assigned to a horizon year (open by January of 2020, 2030 or 2040) and categorized in terms of potential regional significance and air quality analysis exemption as per Sections 93.126 and 93.127 of the Conformity Rule, using the codes listed in this appendix. The resulting list of regionally significant projects for 2015 and 2020 is shown below.

## Horizon Year 2020

### Rebuild and Replace Highway Assets

- I-35W: from MN36/MN280 in Roseville to just N I-694 in Arden Hills/new Brighton- Auxiliary lanes
- I-35W MnPASS Southbound from downtown Minneapolis to 46th St.
- TH 100: from 36th St to Cedar Lake Rd in St. Louis Park - reconstruct interchanges including constructing auxiliary lanes

### Strategic Capacity Enhancements

- I-94: EB from 7th St Exit to Mounds Blvd in St Paul- add auxiliary lane
- TH 55: from N Jct MN149 to S Jct MN149 in Eagan- widen from 4-lane to 6-lane
- I-494 SB from I-94/I-694 to Bass Lake Road: add auxiliary lane
- I-494 from CSAH 6 to I-94/I-694: Construct one additional lane in each direction
- I-494 from TH 55 to CSAH 6, construct one auxiliary lane
- I-494 NB from I-394 to Carlson Pkwy, construct auxiliary lane
- I-694 from Lexington Ave to east of Rice St: Construct one additional lane in each direction
- I-94 from TH 241 in St. Michael to TH 101 in Rogers: Extend westbound ramp, add westbound lane through TH 101 interchange, and add eastbound lane between the interchanges
- I-35E MnPASS Extension from Little Canada Road to County Road J
- TH 610 from I-94 to Hennepin County 81: Complete 4-lane freeway
- TH 5 from 94<sup>th</sup> St to Birch St in Waconia: Widen to 4-lanes

### Regional Highway Access | Horizon Year 2020

- US 10 at Armstrong Blvd in Ramsey: New interchange and rail grade separation
- US 52 at Dakota CSAH 86 in Randolph Township – grade separated crossing
- I-94 at 5th/7th Street in Minneapolis- reconstruct interchange to close 5th street ramp and replace it with one at 7th street.

### Transitway System

- METRO Orange Line
- METRO Green Line extension
- Arterial BRT along Snelling Ave in Saint Paul from 46th St. Station on METRO Blue Line to Roseville
- Arterial BRT along Penn Ave in Brooklyn Center and Minneapolis

### Regional Solicitation Selected Projects

- St. Paul Pierce Butler Rte: from Grotto St to Arundel St at Minnehaha Ave-extension on a new alignment as a 4-lane roadway
- 105th Ave: extension to 101st Ave W of I-94 in Maple Grove
- Lake Street and I-35W – Minneapolis purchases ROW, begin engineering and construction
- TH 149: from TH 55 to just N of I-494 in Eagan-reconstruct from 4-lane to 5-lane
- Anoka CSAH 11: from N of Egret Blvd to N of Northdale Blvd - reconstruction of CSAH 11 (Foley Blvd) as a 4-lane divided roadway
- Hennepin CSAH 34: from W 94th St to 8500 Block in Bloomington - reconstruction of CSAH 34 (Normandale Blvd) as a 4-lane divided roadway
- Hennepin CSAH 53: from just W of Washburn Ave to 16th Ave in Richfield-reconstruct to a 3-lane section center turn lane, raised concrete median, signal replacement, sidewalks, on-road bikeways
- Hennepin CSAH 81: from N of 63rd Ave N to N of CSAH 8 in Brooklyn Park - reconstruct to a multi-lane divided roadway
- Hennepin CSAH 35: from 67th St to 77th St in Richfield-reconstruct including transit, bicycle, and pedestrian facilities
- Scott CSAH 17: from S of CSAH 78 to N of CSAH 42 - reconstruct as a 4-lane divided roadway
- Anoka CSAH 116 from east of Crane St through Jefferson St – reconstruct to 4-lane divided roadway

### Projects Outside of Metropolitan Planning Area, Inside Maintenance Area

- I-94: from MN 25 to CSAH 18 – reconstruction including addition of auxiliary lanes

## Horizon Year 2030

### MnPASS Investments | Horizon Year 2030

- I-35W from MN 36 to US 10 – construct MnPASS Lane
- I-94 from Cedar Avenue to Marion Street – construct MnPASS Lane

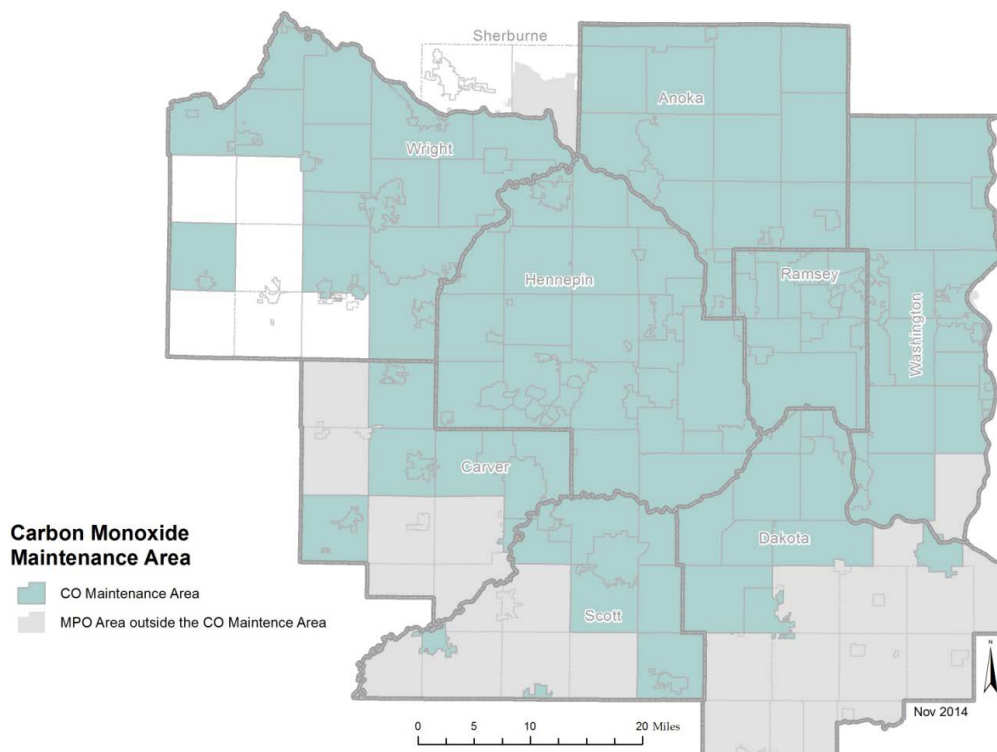
### Transitway System | Horizon Year 2030

- METRO Blue Line extension
- METRO Gold Line dedicated BRT
- Arterial BRT along Chicago Avenue and Emerson and Fremont avenues in Brooklyn Center, Minneapolis, Richfield, and Bloomington
- METRO Red Line Stage 2 improvements including extension of BRT service to 181st Street in Lakeville.

## Horizon Year 2040

- No projects identified

Figure E-1: Carbon Monoxide Maintenance Area







## Minnesota Pollution Control Agency

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300

800-657-3864 | 651-282-5332 TTY | www.pca.state.mn.us | Equal Opportunity Employer

July 25, 2014

Ms. Arlene McCarthy  
Director  
Metropolitan Transportation Services  
Metropolitan Council  
390 North Robert Street  
St. Paul, MN 55101

**RE: Air Quality Conformity Analysis for the 2040 Transportation Policy Plan**

Dear Ms. McCarthy:

The Minnesota Pollution Control Agency (MPCA) has completed its review of the 2040 Transportation Policy Plan (Plan) submitted by the Metropolitan Council (Council). The Minnesota Interagency Air Quality Conformity Consultation Committee, with representatives from the MPCA, Council, Minnesota Department of Transportation (MnDOT), Federal Highway Administration (FHWA), and the U.S. Environmental Protection Agency (EPA), was consulted during the preparation of the Plan. Several ongoing communications also occurred along with periodic meetings, draft reports, e-mails, and phone calls.

On November 8, 2010, the EPA approved a Limited Maintenance Plan for the Twin Cities maintenance area. Under a Limited Maintenance Plan, the EPA has determined that there is no requirement to project emissions over the maintenance period and that "an emissions budget may be treated as essentially not constraining for the length of the maintenance period". The EPA made this determination because it is unreasonable to expect that the Twin Cities maintenance area would experience so much growth in that period that a violation of the carbon monoxide National Ambient Air Quality Standards would result. No regional modeling analysis is required; however, federally-funded projects are still subject to "hot spot" analysis requirements.

I have examined the document for conformity with a checklist of requirements from the joint Federal Transportation Conformity Rule of the EPA and the U.S. Department of Transportation. Based on this information, the MPCA has determined that the projects included in the 2040 Plan meet all relevant regional emissions analysis and budget tests as required by the Conformity Rule.

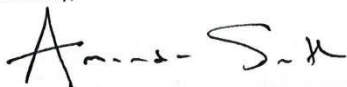
Therefore, the 2040 Plan fully meets and conforms to the relevant sections of the Federal Transportation Conformity Rule and to the applicable sections of the Minnesota State Implementation Plan for Air Quality.

Ms. Arlene McCarthy  
Page 2  
July 25, 2014

The MPCA appreciates the opportunity given to review this document as part of the EPA's Transportation Conformity Rule consultation process, and for the great work done by the Council's staff in completing this analysis in a timely fashion. The MPCA also appreciates the cooperation of the interagency consultation group with their immediate assistance in resolving all policy and technical issues with respect to the Plan's Air Quality Conformity determination.

If you have any questions, please contact me at 651-757-2486 or by e-mail at [amanda.smith@state.mn.us](mailto:amanda.smith@state.mn.us).

Sincerely,



Amanda Jarrett Smith  
Air Policy Planner  
Environmental Analysis and Outcomes Division

AJS:je

cc: Jonathan Ehrlich, Metropolitan Council  
Elaine Koutsoukos, Metropolitan Council  
Patricia Bursaw, MnDOT and TAC Chair  
Karl Keel, City of Bloomington, F&P Chair  
Brian Isaacson, MnDOT  
Susan Moe, FHWA  
Michael Leslie, EPA  
J. David Thornton, MPCA  
Shannon Lotthammer, MPCA  
Frank Kohlasch, MPCA  
Mary Jean Fenske, MPCA  
Innocent Eyoh, MPCA

## Status of Transportation Control Measures

Pursuant to the Conformity Rule, the Council reviewed the Transportation Improvement Program and certifies that the Transportation Improvement Program conforms to the State Implementation Plan and does not conflict with its implementation. All transportation system management strategies that were the adopted transportation control measures for the region have been implemented or are ongoing and funded. There are no transportation management strategy projects remaining to be completed. There are neither fully adopted new regulatory transportation control measures nor fully funded non-regulatory measures that will be implemented during the programming period of the Transportation Improvement Program. There are no prior control measures that were adopted since Nov. 15, 1990, nor any prior measures that have been amended since that date.

A list of officially adopted transportation control measures for the region may be found in the Nov. 27, 1979, Federal Register notice for EPA approval of the Minneapolis-St. Paul Carbon Monoxide Maintenance Plan, based on the 1980 Air Quality Control Plan for Transportation, which in turn cites transit strategies in the 1978-1983 Transportation Systems Management Plan. It is anticipated that the Transportation Air Quality Control Plan will be revised in the near future. The following lists the summary and status of the currently adopted transportation control measures:

**Vehicle Inspection and Maintenance Program** (listed in the Transportation Control Plan as a potential strategy for hydrocarbon control with carbon monoxide benefits). This program became operational in July 1991 and was terminated in December 1999.

**I-35W Bus/Metered Freeway Project.** Metered freeway access locations have bus and carpool bypass lanes at strategic intersections on I-35W. A revised metering program became operational in March 2002. The 2030 Transportation Policy Plan calls for the implementation of Bus Rapid Transit in the I-35W corridor. As part of the Urban Partnership Agreement (UPA) additional transit lanes have been added to Marquette and 2nd Ave in Minneapolis, and transit capacity in the I-35W corridor has been enhanced through dynamic priced shoulder lanes.

**Traffic Management Improvements** (multiple; includes State Implementation Plan amendments):

**Minneapolis Computerized Traffic Management System.** The Minneapolis system is installed. New hardware and software installation were completed in 1992. The system has been significantly extended since 1995 using CMAQ funding. Traffic signal improvements were made to the downtown street system to provide daily enhanced preferred treatment for bus and LRT transit vehicles in 2009.

**St. Paul Computerized Traffic Management System.** St. Paul system completed in 1991.

**University and Snelling Avenues, St. Paul.** Improvements were completed in 1990 and became fully operational in 1991.

**Fringe Parking Programs.** Minneapolis and St. Paul are implementing ongoing programs for fringe parking and incentives to encourage carpooling through their respective downtown traffic management organizations.

**Stricter Enforcement of Traffic Ordinances.** Ongoing enforcement of parking idling and other traffic ordinances is being aggressively pursued by Minneapolis and St. Paul.

**Public Transit Strategies** (from the 1983 Transportation Systems Management Plan):

**Reduced Transit Fares.** Current transit fares include discounts for off-peak and intra-CBD travel. Reduced fares are also offered to seniors, youth, Medicare card holders, and persons with disabilities.

**Transit Downtown Fare Zone.** All transit passengers can ride either the Minneapolis or Saint Paul fare zones for 50 cents. Since March 2010 passengers can ride Nicollet Mall buses for free within the downtown zone.

**Community-Centered Transit.** The Council is authorized by legislation to enter into and administer financial assistance agreements with local transit providers in the metropolitan region, including community-based dial-a-ride systems. A regional restructuring of dial-a-ride service, now called Transit Link, occurred in 2010.

**Flexible Transit.** Several routes in the region are operated offering flexible, on-demand stops. Also, Metro Mobility, as well as the dial-a-ride services mentioned above, operates with flexible routes catered to riders' special needs.

**Total Commuter Service.** The non-CBD employee commuter vanpool matching services provided by this demonstration project, mentioned in the 1983 Transportation Systems Management Plan as well as the Transportation Control Plan, are now administered by the Van-Go! program, a service of the Metropolitan Council.

**Elderly and Handicapped Service.** ADA Paratransit Service is available for people who are unable to use regular route transit service (or have extreme difficulty doing so) because of a disability or health condition. ADA Paratransit Service provides "first-door-through-first-door" transportation in 89 communities throughout the metropolitan area for persons who are ADA-certified. The region's ADA paratransit service is provided by four programs: Metro Mobility, Anoka County Traveler, DARTS, and H.S.I. (serving Washington County). In addition, every regular-route bus has a wheelchair lift, and drivers are trained to help customers use the lift and secure their wheelchairs safely. LRT trains offer step-free boarding, and are equipped with designated sections for customers using wheelchairs. In addition, all station platforms are fully accessible.

**Responsiveness in Routing and Scheduling.** Metro Transit conducted a series of Transit Redesign "sector studies" to reconfigure service to better meet the range of needs based on these identified transit market areas. Service is now re-evaluated as needed.

**Central Business Districts Parking Shuttles.** The downtown fare zones mentioned above provide fast, low-cost, convenient service to and from parking locations around the central business districts.

**Simplified Fare Collection.** The fare zone system in place at the time of the Transportation Systems Management Plan has since been eliminated. Instead, a simplified fare structure based on time (peak vs. off-peak) and type (local vs. express) of service has been implemented, with discounts for select patrons (e.g. elderly, youth). Convenient electronic fare passes are also available from Metro Transit, improving the ease of fare collection and offering bulk savings for multi-ride tickets.

**Bus Shelters.** Metro Transit coordinates bus shelter construction and maintenance throughout the region. Shelter types include standard covered wind barrier structures as well as lighted and heated transit centers at major transfer points and light rail stations.

**Rider Information.** Rider information services have been greatly improved since the 1983 Transportation Systems Management Plan was created. Schedules and maps have been re-designed for improved clarity and readability, and are now available for download on Metro Transit's website, which also offers a custom trip planner to help riders choose the combination of routes that best serve their needs. Bus arrival and departure times are posted in all shelters, along with the phone number of the TransitLine automated schedule information hotline. Some shelters and stations have real-time "next trip" information. Schedule and real-time data is shared with private web and smartphone developers to provide more information to riders.

**Transit Marketing.** Metro Commuter Services, under the direction of Metro Transit, coordinates all transit and rideshare marketing activities for the region, including the work by five Transportation Management Organizations (TMOs) that actively promote alternatives to driving alone through employer outreach, commuter fairs and other programs. Metro Commuter Services also conducts an annual Commuter Challenge, which is a contest encouraging commuters to pledge to travel by other means than driving alone.

**Cost Accounting and Performance-Based Funding.** Key criteria in the aforementioned Transit Redesign process includes service efficiency (subsidy per passenger) and service effectiveness (passengers per revenue hour). Metro Transit uses these metrics to evaluate route cost-effectiveness and performance and determine which routes are kept, re-tuned or eliminated.

**"Real-Time" Monitoring of Bus Operations.** The regional Transit Operations Center permits centralized monitoring and control of all vehicles in the transit system.

**Park and Ride.** The *2030 Park-and-Ride Plan* provides guidelines intended for use in planning, designing, and evaluating proposed park-and-ride facilities served by regular route bus transit. The guidelines can also be used for park-and-ride lots without bus service and at rail stations. The Metropolitan Council administers capital funding to transit operating agencies building, operating and maintaining park-and-ride facilities. In 2013, the region served 106 park-and-ride facilities with a capacity of 31,088. Average usage in 2013 was 63 percent.

**Hennepin and First Avenue One-Way Pair.** These streets in downtown Minneapolis were re-configured subsequent to the 1980 Air Quality Control Plan for Transportation to address a local carbon monoxide hot-spot issue that has since been resolved. The streets reverted to a two-way configuration in 2009.

The above list includes two transportation control measures that are traffic flow amendments to the State Implementation Plan. The MPCA added them to the State Implementation Plan since its original adoption. These include, in St. Paul, a carbon monoxide Traffic Management System at the Snelling and University Avenue.

While not control measures, the MPCA added two additional revisions to the State Implementation Plan that reduce carbon monoxide: A vehicle emissions inspection/maintenance program, implemented in 1991, to correct the region-wide carbon monoxide problem; and a federally mandated four-month oxygenated gasoline program implemented in November 1992. In December 1999 the vehicle emissions inspection/maintenance program was eliminated.

The MPCA requested that the USEPA add a third revision to the State Implementation Plan, a contingency measure consisting of a year-round oxygenated gasoline program if the carbon monoxide standards were violated after 1995. The USEPA approved the proposal. Because of current state law that remains in effect, the Twin Cities area has a state mandate year-round program that started in 1995. The program will remain regardless of any EPA rulemaking.



## Exempt Projects

Certain transportation projects eligible for funding under Title 23 U.S.C. have no impact on regional emissions. These are “exempt” projects that, because of their nature, will not affect the outcome of any regional emissions analyses and add no substance to those analyses. These projects (as listed in Section 93.126 of the Conformity Rules) are excluded from the regional emissions analyses required in order to determine conformity of the Transportation Policy Plan and Transportation Improvement Programs.

The following is a list of “exempt” projects and their corresponding codes used in column “AQ” of the Transportation Improvement Program. Except for projects given an “A” code, the categories listed under Air Quality should be viewed as advisory in nature, and relate to project specific requirements rather than to the air quality conformity requirements. Ultimate responsibility for determining the need for a hot-spot analysis for a project rests with the U.S. Department of Transportation. The Council has provided the categorization as a guide to possible conformity requirements.

### Projects that Do Not Impact Regional Emissions

#### Safety

- S-1: Railroad/highway crossing
- S-2: Hazard elimination program
- S-3: Safer non-federal-aid system roads
- S-4: Shoulder improvements
- S-5: Increasing sight distance
- S-6: Safety improvement program
- S-7: Traffic control devices and operating assistance other than signalization projects
- S-8: Railroad/highway crossing warning devices
- S-9: Guardrails, median barriers, crash cushions
- S-10: Pavement resurfacing and/or rehabilitation
- S-11: Pavement marking demonstration
- S-12: Emergency relief (23 U.S.C. 125)
- S-13: Fencing
- S-14: Skid treatments
- S-15: Safety roadside rest areas
- S-16: Adding medians
- S-17: Truck climbing lanes outside the urbanized area
- S-18: Lighting improvements

- S-19: Widening narrow pavements or reconstructing bridges (no additional travel lanes)
- S-20: Emergency truck pullovers

## Transit

- T-1: Operating assistance to transit agencies
- T-2: Purchase of support vehicles
- T-3: Rehabilitation of transit vehicles
- T-4: Purchase of office, shop, and operating equipment for existing facilities
- T-5: Purchase of operating equipment for vehicles (e.g., radios, fareboxes, lifts, etc.)
- T-6: Construction or renovation of power, signal and communications systems
- T-7: Construction of small passenger shelters and information kiosks
- T-8: Reconstruction or renovation of transit buildings and structures (e.g., rail or bus buildings, storage and maintenance facilities, stations, terminals and ancillary structures)
- T-9: Rehabilitation or reconstruction of track structures, track and trackbed in existing rights-of-way
- T-10: Purchase of new buses and rail cars to replace existing vehicles or for minor expansions of the fleet
- T-11: Construction of new bus or rail storage/maintenance facilities categorically excluded in 23 CFR 771

## Air Quality

- AQ-1: Continuation of ridesharing and vanpooling promotion activities at current levels
- AQ-2: Bicycle and pedestrian facilities

## Other

- O-1: Specific activities that do not involve or lead directly to construction, such as planning and technical studies, grants for training and research programs, planning activities conducted pursuant to titles 23 and 49 U.S.C., and Federal-aid systems revisions
- O-2: Engineering to assess social, economic and environmental effects of the proposed action or alternatives to that action
- O-3: Noise attenuation
- O-4: Advance land acquisitions (23 CFR 712 or 23 CFR 771)
- O-5: Acquisition of scenic easements
- O-6: Plantings, landscaping, etc.
- O-7: Sign removal
- O-8: Directional and informational signs



- O-9: Transportation enhancement activities (except rehabilitation and operation of historic transportation buildings, structures or facilities)
- O-10: Repair of damage caused by natural disasters, civil unrest, or terrorist acts, except projects involving substantial functional, locational or capacity changes

## Projects Exempt from Regional Emissions Analyses that May Require Further Air Quality Analysis

The local effects of these projects with respect to carbon monoxide concentrations must be considered to determine if a “hot-spot” type of an analysis is required prior to making a project-level conformity determination. These projects may then proceed to the project development process even in the absence of a conforming transportation plan and Transportation Improvement Program. A particular action of the type listed below is not exempt from regional emissions analysis if the MPO in consultation with the MPCA, MnDOT, EPA, and FHWA (in the case of a highway project) or FTA (in the case of a transit project) concur that it has potential regional impacts for any reason.

Channelization projects include left and right turn lanes and continuous left turn lanes as well as those turn movements that are physically separated. Signalization projects include reconstruction of existing signals as well as installation of new signals. Signal preemption projects are exempt from hot-spot analysis. A final determination of the intersections that require an analysis by the project applicant rests with the U.S. DOT as part of its conformity determination for an individual project.

## Projects Exempt from Regional Emissions Analyses

- E-1: Intersection channelization projects
- E-2: Intersection signalization projects at individual intersections
- E-3: Interchange reconfiguration projects
- E-4: Changes in vertical and horizontal alignment
- E-5: Truck size and weight inspection stations
- E-6: Bus terminals and transfer points

## Non-Classifiable Projects

Certain unique projects cannot be classified, as denoted by “NC.” These projects were evaluated through an interagency consultation process and determined not to fit into any exempt or intersection-level analysis category, but they are clearly not of a nature that would require inclusion in a regional air quality analysis.

## Traffic Signal Synchronization

Traffic signal synchronization projects (Sec. 83.128 of the Conformity Rules) may be approved, funded and implemented without satisfying the requirements of this subpart. However, all subsequent regional emissions analysis required by subparts 93.118 and 93.119 for transportation plans, Transportation Improvement Programs, or projects not from a conforming plan and Transportation Improvement Program, must include such regionally significant traffic signal synchronization projects.

## Regionally Significant Projects

The following codes identify the projects included in the “action” scenarios of the air quality analysis:

- A-20: Action Year 2020
- A-30: Action Year 2030
- A-40: Action Year 2040

# Appendix F: Highway Interchange Request Criteria and Review Procedure

## Background

The evaluation criteria and review procedures for highway interchange requests have been established by the Metropolitan Council to meet the objectives of Access to Destinations Strategy 11: Regional transportation partners will manage access to Principal and A-minor arterials to preserve and enhance their capacity and safety.

The Council will work with MnDOT to review interchange requests for the principal arterial system using the procedures outlined in this Appendix.

These criteria and procedures are based on work originally done in 1979 by a joint committee of the Transportation Advisory Board and the Metropolitan Council. They have been revised and simplified over time to reflect policy changes, revised state and federal laws and regulations and experience with applying the criteria. The most recent changes reflect the differing circumstances of adding/modifying an interchange on an access controlled freeway, or adding an interchange to a highway where other access is provided through at grade intersections.

## Procedures

An applicant has the responsibility to prove that new interchange or additional interchange capacity is required. Typically this will require a detailed analysis of existing and forecasted highway access needs. Therefore, informal discussion of interchange requests with MnDOT and Council staff is encouraged before the applicant initiates a potentially expensive and time-consuming study.

The following steps should be taken to obtain Council approval to add or expand a principal arterial system interchange:

- A request for an interchange addition or expansion is made to the joint MnDOT/Council Interchange Planning Review Committee. If the committee determines that the interchange requires review, the applicant must respond to each of the criteria shown below. The committee will review the proposal's consistency with the criteria in this section and provide a letter with findings.
- If the interchange is on an interstate freeway, the applicant, in coordination with MnDOT and following MnDOT's policies, should submit an interstate Access Request to Federal Highway Administration (FHWA).
- A comprehensive plan amendment should be submitted to the Council including the requested interchange and supportive surrounding land uses and street network. Council staff will evaluate response to all qualifying and technical criteria and the consistency of the proposed interchange with regional and local plans.

- In addition, prior to acquiring land for or constructing the proposed interchange, the applicant should submit a request to the Council for approval of controlled access highway construction pursuant to MN. Stat. 473.166.

## Types of Interchange Requests

Two types of interchange requests are commonly seen on the principal arterial system:

Type A: New or modified interchanges on existing freeways. These are distinguished by requesting new access to the system where none had previously been provided, or modifying interchanges to provide new movements or wider ramps. When these are evaluated, they are further divided into three types which receive differing levels of review: a new interchange or new access at an existing interchange, major geometric revisions at an existing interchange, and minor geometric changes at an existing interchange.

Type B: New interchanges on a multi-lane highway with traffic signals. These requests are conversions of existing at-grade intersections to interchanges. These interchanges will often be part of a staged conversion of the multi-line highway with traffic signals to a freeway design, with the elimination of minor access points between the new interchanges resulting in more restricted access to a principal arterial, as opposed to providing access where none previously existed.

Qualifying Criteria: Type A (New or Modified Interchange on Existing Freeway)

### **1. Additional interchange capacity should be considered only when it supports Thrive MSP 2040 and the Transportation Policy Plan, and local comprehensive plans approved by the Metropolitan Council.**

Discussion: This is a critical objective. In addition to solving highway capacity deficiencies, new interchanges or major interchange modifications should be consistent with regional plans and regionally approved local plans, and should support land uses shown in these local plans. In most cases, a new interchange should be in the Metropolitan Urban Service Area or a rural center.

### **2. Need for additional capacity or safety improvements must be demonstrated and documented before a new interchange, new ramps or expanded ramp capacity are considered.**

Discussion: Subjective arguments alone should not be used to justify interchange design revisions. Volume forecasts and capacity calculations are required to document the need for a design revision. Volume and capacity figures should be consistent with Council-approved land use plans and with the transportation element of those local plans.

### **3. Freeway interchanges should only connect to other principal arterials or to an A-minor arterial as defined in the functional classification system adopted by the Transportation Advisory Board and approved by the Metropolitan Council.**

### **4. New or expanded interchanges are not to be provided if the need for additional**

**capacity is justified only as a convenience for short trips; to compensate for lack of an adequate complementary minor arterial or collector system; to compensate for deficient minor arterial or frontage road capacity; or to correct collector or minor arterial capacity deficiencies caused by poor design or excessive access to adjacent parcels.**

Discussion: The purpose of the principal arterial system is to serve regional trips, not to substitute for inadequate local access and circulation capacity.

**5. When an interchange is to be constructed or expanded, the operational integrity of the mainline and associated weaving sections must be maintained. The new or expanded interchange must be acceptable in terms of route design and standards as specified by the MnDOT, conforming to such factors as basic number of lanes, lane continuity, lane balance, lane drops, continuity of mainline levels of service and other general design criteria.**

Discussion: Highway design standards should be maintained to the greatest extent possible. Operational integrity is measured by the forecasted level of service and safety considerations, including freedom or ease of lane changing and vehicle spacing on the through lanes of a freeway or arterial.

**6. Interchanges on the principal arterial system should be spaced at a minimum of one mile (center to center). If it is determined appropriate to locate an interchange at less than one mile apart or modify an existing interchange, the safe operation of the main roadway must be maintained.**

Discussion: Experience has shown that interchanges spaced less than one mile apart have inadequate weaving distance and require special design features such as auxiliary lanes to maintain safety. Outside of urban center, urban, and suburban areas, other principal arterials or A-minor arterials are typically not needed closer than 2 miles due to the lack of intense development.

## Qualifying Criteria: Type B (Multi-lane Highway with Traffic Signals to Freeway)

**1. Additional interchange capacity should be considered only when it supports Thrive MSP 2040 and the Transportation Policy Plan, and local comprehensive plans approved by the Metropolitan Council.**

Discussion: In addition to solving highway capacity or safety deficiencies, new interchanges should be consistent with regional plans and regionally approved local plans, and should support development in desirable locations. New interchanges should be built in sequence as part of a conversion. If the eventual vision of the highway is not a freeway, alternative designs to an interchange should be considered.

**2. Need for additional capacity or safety improvements must be demonstrated and documented before a new interchange, new ramps or expanded ramp capacity are considered.**

Discussion: Subjective arguments alone should not be used to justify interchange design revisions. Volume forecasts and capacity calculations are required to document the need for a design revision. Volume and capacity figures should be consistent with Council-approved land use plans and with the transportation element of those local plans. New interchanges should be adjacent to an existing interchange unless the intermediate access can be modified or managed to address safety concerns.

**3. Principal arterial system interchanges should only connect principal arterials to other principal arterials or to an A-minor arterial as defined in the functional classification system adopted by the Transportation Advisory Board and approved by the Metropolitan Council.**

**4. When a new interchange is planned, an adequate complementary minor arterial or collector system and frontage system should be planned to serve local trips and access currently served by the highway.**

Discussion: The purpose of the principal arterial system is to serve regional trips, not to substitute for inadequate local access and circulation capacity.

**5. When an interchange is to be constructed or expanded, the operational integrity of the mainline and associated weaving sections must be maintained. The new interchange or related system change must be acceptable in terms of route design and standards as specified by the MnDOT or the implementing agency, conforming to such factors as basic number of lanes, lane continuity, lane balance, lane drops, continuity of mainline levels of service and other general design criteria.**

Discussion: Highway design standards should be maintained to the greatest extent possible. Operational integrity is measured by the forecasted level of service and safety considerations, including freedom or ease of lane changing and vehicle spacing on the through lanes of a freeway or arterial.

**6. Interchanges on the principal arterial system should be spaced at a minimum of 1 mile (center to center). If it is determined appropriate to locate an interchange at less than 1 mile apart or modify an existing interchange, the safe operation of the main roadway must be maintained.**

Discussion: Experience has shown that interchanges spaced less than one mile apart have inadequate weaving distance and require special design features such as auxiliary lanes to maintain safety. Outside of urban center, urban, and suburban areas, other principal arterials or A-minor arterials are typically not needed closer than 2 miles due to the lack of intense development.

### Technical Criteria: Development

An interchange may be warranted when access to new urban development cannot be adequately or safely served by existing or new minor arterials or by existing ramps at an adjacent interchange. New local urban development must be provided with good local arterial access before principal arterial system access is considered. Local comprehensive plans should establish the level of development expected (land use element) and the local arterial system (transportation element) proposed to serve the expected development pattern.

Interchange additions or revisions to support new development must be subordinate to current, adopted corridor plans for the route. Regional travel demand for the principal arterial system will take precedence over local or land parcel development and related access needs. Access needs should be evaluated as part of an overall corridor plan.

The proposed ramp configuration may not serve a single development exclusively. Legal and policy requirements dictate that a public highway facility may not be designated for the sole benefit of a property owner.

Public benefits, as well as estimated costs of the interchange, should be evaluated.

Local governments and the owners and developers of properties that would benefit from an additional interchange should share the cost of additional construction or right-of-way to the extent that they receive tangible benefits.

### Technical Criteria: Design

Interchange ramp configuration and design should be based on traffic forecasts developed and adopted by the Metropolitan Council and the MnDOT. Regional traffic forecasts are based on socioeconomic data developed for the entire region. Local units of government may submit revised forecasts based on more detailed land development plans, but such forecasts must be analyzed and accepted by MnDOT and the Council before they are used to evaluate design changes.

Traffic backups resulting from interchange ramp designs must occur on cross streets and frontage roads rather than on the principal arterial. If traffic backups at an interchange are

unavoidable for short periods, the design should ensure that they occur on the slower-speed, lower-function roadways.

A-minor arterial roadways connecting with the proposed interchange must be adequate for the anticipated volumes on the interchange. An interchange justification must demonstrate that the connecting and other supporting roadways critical to its safe and adequate operation are or will be available at the time the interchange is open to traffic.

Ramp configurations must be capable of being signed for safe and expeditious movement.

Interchange ramp configuration and design should provide for preferential treatment of transit and rideshare vehicles.

If local cross-street improvements or functional classification changes are needed in conjunction with the interchange, their construction must be coordinated with construction of the interchange. Local cross-street improvements necessary for safe and adequate operations should be part of the initial interchange design.



# Appendix G: Regional Transit Design Guidelines and Performance Standards

## Transit Market Areas

Demand for transit service varies across the region. This applies to the time of day that transit is used, the number of trips taken, and the purpose of trips taken on transit. While this variation in transit demand is driven by a number of factors, it is primarily due to differences in development density, urban form, and demographics. To account for these differences in the planning and evaluation of transit service, the region is divided into five distinct Transit Market Areas representing different levels of potential transit demand.

Transit Market Areas are a tool used to guide transit planning decisions. They help ensure that the types and levels of transit service provided, in particular fixed-route bus service, match the expected demand in a given area. For example, transit service in a suburban community where the automobile is the most convenient mode for the majority of trips might focus on the work commute, providing express bus service to downtown. Transit service in a dense urban core neighborhood might need to accommodate a broader variety of transit service needs that can be met by providing frequent, all-day service to a variety of destinations.

## Transit Market Index

Transit Market Areas are determined using a Transit Market Index which in turn is based on a combination of measures of density, urban form, and automobile availability.

## Population and Employment Density

Population and employment density are strong indicators of transit demand. Higher density areas generate more transit demand for the simple reason that they have more people living and working within the fixed area within walking distance of any transit stop. Additionally, people living and working in high density areas are more likely to take transit than those living in low density areas. This is because automobile use is often inconvenient because of congestion and parking costs and because residents typically have less need for a car since there are more destinations within walking distance.

In the Transit Market Index, population and employment densities are calculated separately by dividing the total population and total jobs in a census block group by the developed land area of the block group.

## Intersection Density

Block size and urban form are important factors in transit demand. Areas with smaller blocks tend to have more traditional street-grids and provide a more walkable environment for pedestrians. The Transit Market Index measures urban form using intersection density; it is the total number of three-, four-, and five-way intersections in a block group divided by the total developed area. Intersections are weighted by the number of intersecting roads, such that a five-way intersection has more weight than a three-way intersection.

## Automobile Availability

For any number of reasons transit is the only means of mobility for many people in the region. Areas with a more people who rely on transit will tend to generate greater demand for transit. The Transit Market Index measures reliance on transit by calculating the availability of automobiles by block group. Automobile availability is calculated by subtracting the total number of automobiles available in a census block group from the total population aged 16 or over. This value then divided by the total developed land area of the block group.

## Calculating the Transit Market Index

The four measures included in the Transit Market Index were found to have a strong relationship to existing transit demand in our region. Their respective weights in the Transit Market index formula are determined based on their relative impact on transit demand. The Transit Market Index (TMI) is calculated for each block group as follows:

$$\begin{aligned} \text{TMI} &= 0.64 * (\text{Population Density}) \\ &+ 0.23 * (\text{Intersection Density}) \\ &+ 0.20 * (\text{Employment Density}) \\ &+ 0.11 * (\text{Automobile Availability}) \end{aligned}$$

Block groups are separated into the five Transit Market Areas based on Transit Market Index values. See Table G-1 for the index value ranges for each market area. Block groups with the highest Transit Market Index values are assigned to Market Area I while those with the lowest index value are assigned to Market Area V.

## Data Sources

Table G-1 shows the data sources used to calculate the Transit Market Index measures for each block group.

**Table G-1:** Transit Market Index Data Sources

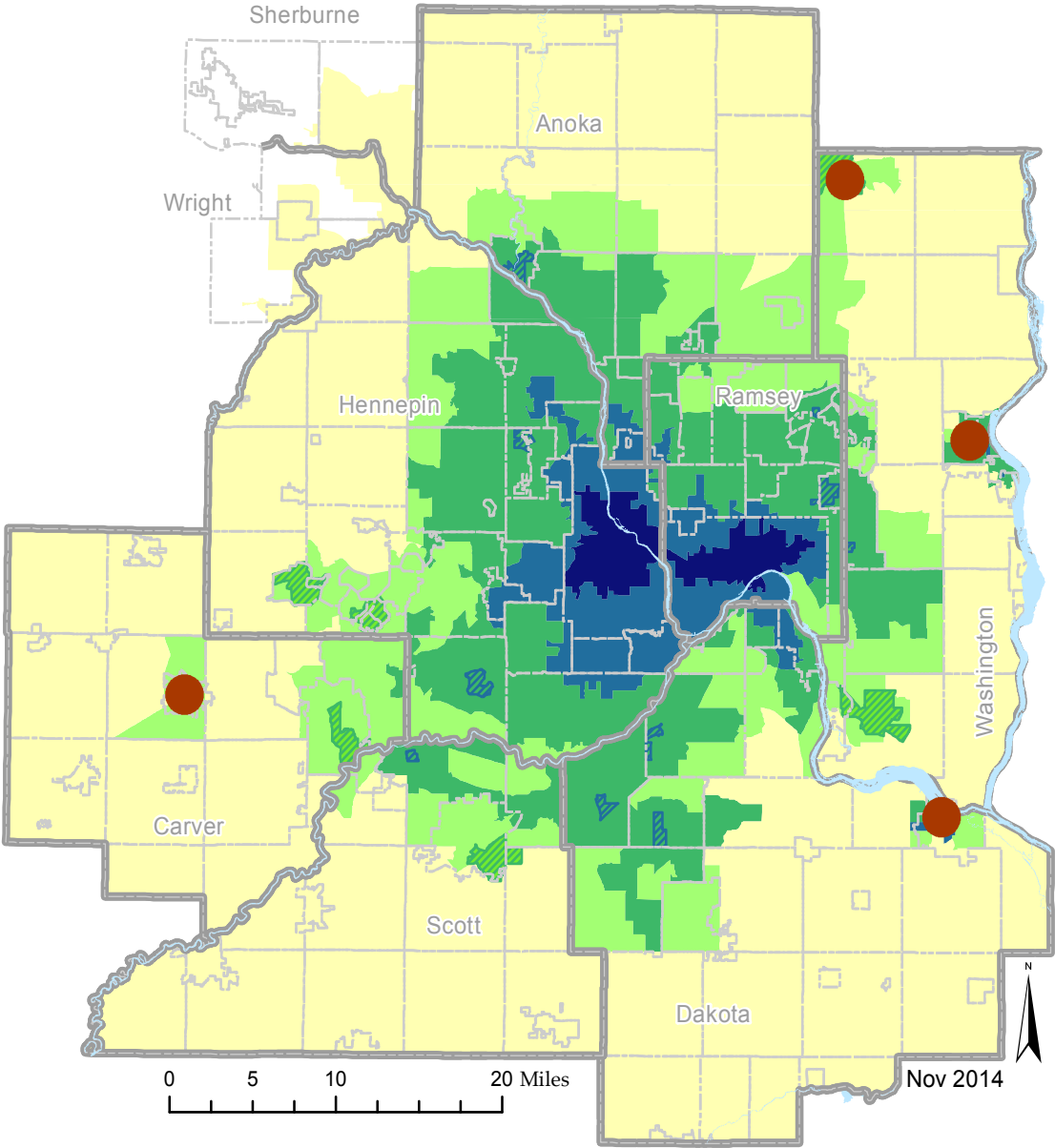
Measure	Data Source
Population	U.S. Census Bureau; Census 2010
Employment	U.S. Census Bureau; Longitudinal-Employer Household Dynamics Program; LODES Data
Automobile Availability	U.S. Census Bureau; American Community Survey, 2012 ACS 5-Year Estimates
Intersection Density	NCompass Technologies; Street Centerline Data
Developed Acres (used to calculate density)	Metropolitan Council; 2010 Generalized Land Use Survey

### Adjacency and Connectivity

While the Transit Market Index is calculated at the block-group level, individual block groups do not exist in isolation. Transit demand in any block group is influenced by the characteristics of neighboring block groups. Another way of looking at this is that connected areas of transit demand will have higher overall ridership potential than similar areas that are disconnected. To account for this effect, the Transit Market Area of each block group takes into account the index values of neighboring block groups.

Figure G-1: Transit Market Areas

### Transit Market Areas



- Market Area I
- Market Area II
- Emerging Market Area II
- Market Area III
- Emerging Market Area III
- Market Area IV
- Market Area V
- Freestanding Town Center

## Transit Market Area Characteristics

### Transit Market Area I

Transit Market Area I has the highest density of population, employment, and lowest automobile availability. These are typically Urban Center communities and have a more traditional urban form with a street network laid out in grid form. Market Area I has the potential transit ridership necessary to support the most intensive fixed-route transit service, typically providing higher frequencies, longer hours, and more options available outside of peak periods.

### Transit Market Area II

Transit Market Area II has high to moderately high population and employment densities and typically has a traditional street grid comparable to Market Area I. Much of Market Area II is also categorized as an Urban Center and it can support many of the same types of fixed-route transit as Market Area I, although usually at lower frequencies or shorter service spans.

### Transit Market Area III

Transit Market Area III has moderate density but tends to have a less traditional street grid that can limit the effectiveness of transit. It is typically Urban with large portions of Suburban and Suburban Edge communities. Transit service in this area is primarily commuter express bus service with some fixed-route local service providing basic coverage. General public dial-a-ride services are available where fixed-route service is not viable.

### Transit Market Area IV

Transit Market Area IV has lower concentrations of population and employment and a higher rate of auto ownership. It is primarily composed of Suburban Edge and Emerging Suburban Edge communities. This market can support peak-period express bus services if a sufficient concentration of commuters likely to use transit service is located along a corridor. The low-density development and suburban form of development presents challenges to fixed-route transit. General public dial-a-ride services are appropriate in Market Area IV.

### Transit Market Area V

Transit Market Area V has very low population and employment densities and tends to be primarily Rural communities and Agricultural uses. General public dial-a-ride service may be appropriate here, but due to the very low-intensity land uses these areas are not well-suited for fixed-route transit service.

## Non-contiguous Market Areas:

### Emerging Market Overlay

The Emerging Market Overlay identifies locations within Transit Market Areas III and IV that have a higher potential for transit usage than the rest of the market areas surrounding them. These areas are currently too small or non-contiguous to support a higher level of transit service. Focusing growth in and around these areas to connect to other areas of higher potential transit use will present good opportunities for future transit improvement.

### Freestanding Town Centers

Freestanding Town Centers are areas that historically grew independently of Minneapolis and St. Paul and are still separated from the urban and suburban areas of the metro by rural land. Because of their concentrated downtowns laid out in a traditional urban form, these areas have a Transit Market Index value that would indicate Market Area III or higher. However, their relatively small population and land area, as well as their distance from other transit-supportive land uses, limits the potential for local fixed-route transit.

## Typical Transit Service Types

Table G-2 shows the typical transit service types and levels that are most appropriate for the different transit market areas. The service types listed here are general descriptions for each market area; specific implementation of transit service will depend on available resources, specific analysis of local transit demand and existing ridership, complementary and competing services, and other factors. Detailed analysis of specific communities and locations may determine that other types and levels of service are more appropriate.

**Table G-2: Transit Market Area Transit Demand and Typical Services**

Transit Market Area	Transit Market Index Range	Propensity to Use Transit	Typical Transit Service
Market Area I	TMI greater than 256.0	Highest potential for transit ridership	Dense network of local routes with highest levels of service accommodating a wide variety of trip purposes. Limited stop service supplements local routes where appropriate.
Market Area II	TMI between 128.0 and 256.0	Approximately 1/2 ridership potential of Market Area I	Similar network structure to Market Area I with reduced level of service as demand warrants. Limited stop services are appropriate to connect major destinations.
Market Area III	TMI between 64.0 and 128	Approximately 1/2 ridership potential of Market Area II	Primary emphasis is on commuter express bus service. Suburban local routes providing basic coverage. General public dial-a-ride complements fixed route in some cases.
Market Area IV	TMI between 32.0 and 64.0	Approximately 1/2 ridership potential of Market Area III	Peak period express service is appropriate as local demand warrants. General public dial-a-ride services are appropriate.
Market Area V	TMI less than 32.0	Lowest potential for transit ridership	Not well-suited for fixed-route service. Primary emphasis is on general public dial-a-ride services.
Emerging Market Overlay	Varies.	Varies. Typically matches surrounding Market Area.	Varies. Typically matches surrounding Market Area.
Freestanding Town Center	TMI at least 64.0	Varies. Typically matches surrounding Market Area.	Varies. Potential for local community circulator as demand warrants. Some peak period commuter express service may be appropriate

## Transitways

Transitways are unique transportation corridors with specific, detailed planning processes that result in appropriate levels of service for specific corridors. The detailed planning work on transitway corridors leads to unique applications of transit service design standards and specific types of service unique to each corridor. See the *Regional Transitway Guidelines* for more information about planning Arterial Bus Rapid Transit (BRT), Highway BRT, Light Rail Transit (LRT) and Commuter Rail

## General Public Dial-a-Ride

General public dial-a-ride service is provided by the Metropolitan Council through Transit Link. Transit Link service is open to the general public and operates where regular-route transit service is not available. It is intended to augment the regular-route network and is only available for trips that cannot be accomplished on regular routes alone. Transit Link trips may drop-off passengers at major transfer points to complete their trip on the regular-route network.

## ADA Paratransit Services

ADA paratransit service is public transportation for certified riders who are unable to use the regular fixed-route bus due to a disability or health condition. In the Twin Cities region, the Metropolitan Council oversees all ADA paratransit services. Metro Mobility contracts with ADA paratransit service providers, who provide customers with “first-door-through-first-door” transportation.

## ADA Eligibility

Eligibility for ADA services is determined using federal guidelines established by the Americans with Disabilities Act (ADA). A person may be eligible for ADA Paratransit Service if any of the following conditions apply:

- The individual is unable to independently navigate the fixed-route transit system because of a health condition or disability (OR)
- The individual is unable to independently board or exit fixed-route vehicles due to a health condition or disability (OR)
- The individual is unable to propel to or from a bus stop within the fixed-route service area due to a health condition or disability.

## ADA Service Span and Coverage

The ADA paratransit service coverage area and hours of service are determined by several factors including Federal and State requirements. Per the Federal requirements, ADA paratransit service must operate within a minimum of 3/4 mile of the local fixed-route network and for the same hours of the day that the fixed-route network operates.



To meet this requirement, Metro Mobility matches the fixed-route hours of service delivery for Weekday, Saturday, and Sunday/Holiday service in each community where fixed-route service is available.

In addition to Federal requirements, the State of Minnesota requires Metro Mobility to provide service to all communities within the transit capital levy district. Metro Mobility is available to eligible residents living in these areas by providing 12 hours of service on Weekdays, and on an as-space-is-available bases on Saturdays and Sundays/Holidays.

## Route Types

For the purposes of the Regional Transit Design Guidelines and Performance Standards, routes in the regional transit network are classified based on their mode and role within the overall network. All of the routes classified below are fixed-route service operating along an established path with a published schedule and designated stops.

### Core Local Bus

Core Local routes typically serve the denser urban areas of Market Areas I and II, usually providing access to a downtown or major activity center along important commercial corridors. They form the base of the core bus network and are typically some of the most productive routes in the system.

Some Core Local Bus routes are supplemented with a limited stop route designed to serve customers wishing to travel farther distances along the corridor. Limited stop routes make fewer stops and provide faster service than the Core Local routes.

### Supporting Local Bus

Supporting Local routes are typically designed to provide crosstown connections within Market Areas I and II. Typically these routes do not serve a downtown but play an important role connecting to Core Local routes and ensuring transit access for those not traveling downtown.

### Suburban Local Bus

Suburban Local routes typically operate in Market Areas II and III in a suburban context and are often less productive than Core Local routes. These routes serve an important role in providing a basic-level of transit coverage throughout the region.

## Commuter and Express Bus

Commuter and Express Bus routes primarily operate during peak periods to serve commuters to downtown or a major employment center. These routes typically operate non-stop on highways for portions of the route between picking up passengers in residential areas or at park-and-ride facilities and dropping them off at a major destination.

## Arterial Bus Rapid Transit

Arterial bus rapid transit (BRT) lines operate in high demand urban arterial corridors with service, facility, and technology improvements that enable faster travel speeds, greater frequency, an improved passenger experience, and better reliability. Design guidelines for arterial BRT can be found in the *Regional Transitway Guidelines*.

## Highway Bus Rapid Transit

Highway bus rapid transit (BRT) lines operate in high demand highway corridors with service, facility, and technology improvements providing faster travel speeds, all-day service, greater frequency, an improved passenger experience, and better reliability. Design guidelines for highway BRT can be found in the *Regional Transitway Guidelines*.

## Dedicated Bus Rapid Transit

Dedicated bus rapid transit (BRT) lines operate in dedicated right-of-way for the exclusive use of buses in high demand corridors. Service, facility and technology improvements are similar to light rail. It provides faster travel speeds, all-day service, greater frequency, an improved passenger experience, and better reliability. Design guidelines for dedicated BRT have not yet been developed. An update to the *Regional Transitway Guidelines* is identified as a work program item and will consider addressing dedicated BRT.

## Light Rail

Light rail operates using electrically-powered passenger rail cars operating on fixed rails in dedicated right-of-way. It provides frequent, all-day service stopping at stations with high levels of customer amenities and waiting facilities. Design guidelines for light rail can be found in the *Regional Transitway Guidelines*.

## Commuter Rail

Commuter rail operates using diesel-power locomotives and passenger coaches on traditional railroad track. These trains typically only operate during the morning and evening peak period to serve work commuters. Design guidelines for commuter rail can be found in the *Regional Transitway Guidelines*.

## Transit Design Guidelines

Transit Design Guidelines are intended to guide the appropriate allocation of transit resources and ensure regional coordination and consistency. The design guidelines are organized by Transit Market Area and/or Route Type. These guidelines are representative of the general types of transit service that are appropriate to implement, however exceptions often exist based on specific local circumstances and available funding.

### Stop Spacing

Stop spacing guidelines must balance between providing greater access to service with faster travel speeds. More stops spaced closer together reduce walk distances to transit but also increase travel times. In general, the average distance people are willing to walk to access transit services is  $\frac{1}{4}$  mile for local bus service and  $\frac{1}{2}$  mile for limited stop bus service and transitway service. Table G-3 shows the recommended stop spacing guidelines that seek to balance between access and speed.

**Table G-3: Stop Spacing**

Route Type	Typical Stop Spacing:
Core Local Bus*	1/8 to 1/4 mile
Supporting Local Bus	1/8 to 1/4 mile
Suburban Local Bus	1/8 to 1/4 mile
Arterial BRT	1/4 to 1/2 mile
Highway BRT	1/2 to 2 miles
Light Rail	1/2 to 1 mile
Commuter Express Bus	Market Specific**
Commuter Rail	5 to 7 miles

\* Local routes with limited stop service will have a typical stop spacing of 1/4 to 1/2 mile.

\*\*In downtowns and local pickup areas, stop spacing will follow the standards for local routes. Along limited stop or non-stop portions of the route, stop spacing will be much greater.

An allowable exception to standards may be central business districts and major traffic generators. These guidelines are goals, not a minimum or maximum.

### Route Spacing

Route spacing refers to the distance between two parallel routes. Route spacing guidelines seek to balance service coverage with route productivity and transit demand. Routes that are spaced too close together will have overlapping service areas and compete for riders, reducing the productivity of both routes. Routes spaced too far apart will lead to coverage gaps. Generally areas with lower transit demand will have routes spaced farther apart. Table G-4 shows the route spacing guidelines by route type and market area. Commuter Express bus and transitway routes are determined on a case by case basis according to specific transit market conditions. Please see the *Regional Transitway Guidelines* for more details about transitway planning.

**Table G-4:** Route Spacing

Route Type	Market Area				
	Area I	Area II	Area III	Area IV	Area V
Core Local Bus*	1/2 mile	1 mile	Specific**	NA	NA
Supporting Local Bus	1 mile	1-2 miles	Specific**	NA	NA
Suburban Local Bus	NA	2 miles	Specific**	Specific**	NA

\*Local limited stop routes do not follow a route spacing guideline. They will be located in high demand corridors.

\*\* Specific means that route structure will be adapted to the demographics, geography and land use of a specific area.

## Span of Service

Span of service refers to the periods of the day that transit is in service. Service span guidelines are typically based on the role a route type plays in the overall transit network. Route types designed to primarily serve commuters generally operate only in peak periods, while route types that serve a broader set of trip purposes generally have a longer span of service. Table G-5 shows the recommended hours of service by route type.

**Table G-5:** Span of Service

Route Type	Weekday				Weekend	
	Peak	Midday	Evening	Owl	Saturday	Sunday
Core Local Bus*	●	●	●	○	●	●
Supporting Local Bus	●	●	●	○	◐	◐
Suburban Local Bus	●	●	◐	○	○	○
Arterial BRT	●	●	●	○	●	●
Highway BRT	●	●	●	○	●	●
Light Rail	●	●	●	○	●	●
Commuter Express Bus	●	○	○	○	○	○
Commuter Rail	●	○	○	○	○	○

Service Provided ●; Service Typically Provided ◐; Service As Demand Warrants ○

Peak - 6:00am to 9:00am and 3:00pm to 6:30pm; Midday - 9:00am to 3:00pm; Evening - 6:30pm to 1:30am; Owl - 1:30am to 5:00am; Saturday - Saturday Service; Sunday - Sunday/Holiday Service

\*Local limited stop routes will operate primarily in the peak period.

## Minimum Frequency

Minimum frequency refers to the average number of minutes between transit vehicles on a given route or line traveling in the same direction. Routes serving areas of higher transit demand will tend to have higher frequencies. Table G-6 shows the recommended minimum frequency by route type and market area.

**Table G-6:** Minimum Frequency

Route Type	Market Area				
	Area I	Area II	Area III	Area IV	Area V
Core Local Bus	15" Peak 30" Offpeak 30" Weekend	30" Peak	60" Peak	NA	NA
Supporting Local Bus	30" Peak 30" Offpeak 30" Weekend	60" Offpeak 60" Weekend	60" Offpeak 60" Weekend	NA	NA
Suburban Local Bus	NA			NA	NA
Arterial BRT	15" Peak			NA	NA
Highway BRT	15" Offpeak			NA	NA
Light Rail	15" Weekend			NA	NA
Commuter Express Bus	30" Peak		3 Trips each peak		NA
Commuter Rail	NA		30" Peak		

Additional service may be added as demand warrants and these guidelines apply primarily to the peak direction.

## Accessibility

Accessibility refers to how well the transit network is meeting the travel needs of its users and potential users. People use transit to reach destinations they wish to visit, e.g. work, school, shopping, among many others. Accessibility measures how easily or difficult transit users can reach desired destinations using the transit network. This is related to, but distinct from mobility, which measures the overall distance people are able to travel on the network. By taking into account the destinations that people are able to access via that network, measures of accessibility can provide a more complete measure of the overall usefulness of the network to its users.

The Metropolitan Council views accessibility as an important tool to measure and evaluate the regional transit network and land use patterns. Efforts to develop and implement appropriate measures of accessibility are ongoing.

## Passenger Amenities

Regional transit providers offer a range of amenities at bus stops and other passenger facilities to improve the customer experience. Passenger amenities include shelters, shelter lighting or heat, trash receptacles, seating, security cameras, good pedestrian access, bicycle parking and storage, and signage both static and real-time, indicating route, schedule, frequency and other information.

Passenger amenities create a more comfortable, accessible and attractive waiting environment for transit customers. Features such as shelter lighting and good pedestrian access enhance passenger safety. Transit travel may be completed more easily with access to transit service information or secure bike parking. Passenger amenities can also benefit the surrounding

neighborhood by making transit a more attractive travel option for nearby land uses and by contributing to the overall character of the streetscape.

Table G-7 identifies the standard amenities that are included with various facility types. Some amenities are always provided and others are occasionally provided depending on the size, location, or use of the facility.

**Table G-8: Passenger Amenities**

Facility Type	Shelter	Light	Heater	Trash Receptacle	Stand Alone Bench	Security Cameras	Pedestrian access	Bike parking	Secure bike storage	Customer information	Real-time Customer Information
Transit Centers	●	●	●	●	●	◐	●	◐	◐	●	◐
Park-and-rides	●	●	◐	◐	◐	◐	◐	◐	◐	●	◐
Rail Stations	●	●	●	●	●	●	●	●	◐	●	●
Bus Stop	◐	◐	◐	○	○	○	●	◐	◐	◐	◐

Always Provided ●; Occasionally Provided ◐; Not Provided ○

In some cases transit providers lease park and-rides and some shelters are owned and maintained by other entities. In such cases, providers may not offer all the customer amenities identified above.

In addition to these standard amenities, transit providers occasionally provide - or partner with other organizations to provide - more unique amenities including custom shelters, landscaping, and public art. These amenity options are generally considered where they are integrated into a larger initiative such as a transitway, Transit Center, downtown bus stop, Transit Oriented Development project, or park-and-ride owned and maintained by a regional transit provider. The design of custom shelters, landscaping and public art should address ease of maintenance, repair and replacement.

## Bus Stop Shelters

Bus stop shelters provide seating and protection from bad weather for customers and are particularly important to senior citizens, parents with small children, and persons with disabilities. The costs of shelter placement and ongoing maintenance limit the number of bus stops that can include shelters. Metro Transit considers the following factors to prioritize the bus stops where shelters are placed:

- High number of total passenger boardings, typically 40 or more boardings per day at bus stops located in Minneapolis and St. Paul and 25 or more boardings per day at bus stops located in suburban communities. This factor prioritizes shelter placement at bus stops where the most passengers are waiting, relative to the amount of transit service generally available in the community.

## APPENDICES

- High number of limited mobility boardings, to ensure that people vulnerable to inclement weather are protected.
- Stop location relative to minority and low-income census block groups to ensure regional equity goals are achieved.
- High number of transit transfers, to provide shelter where it is more likely that passengers are including a wait time in their transit trip.

Further, bus stop locations must be capable of supporting transit shelters. Factors such as sidewalk and right-of-way space, topography, land use compatibility and proximity to bus boarding locations are considered. Transit providers may consider locating shelters where ADA improvements are scheduled to maximize capital improvement investments. Requests from the community to place or remove shelters are considered in context of the quantitative analysis used to prioritize shelter locations.

## Customer Information

Customer information at passenger facilities, including basic signage, maps, and schedules and real-time information, is an important component of transit service. Transit information can provide customers with basic route information such as a map of the route and the destinations along the route, a schedule, and real-time information about when the next bus will arrive. This type of information increases customer satisfaction and reassures them that they can depend on transit. New technologies play an important role in the deployment of customer information, and the Council will continue to expand a network of customer information systems using proven and cost-efficient technology at key locations, such as transit stations and centers, online and on mobile devices.

## Transit Performance Standards

Performance standards are used to evaluate the relative productivity and efficiency of the services provided. To be responsible and dynamic, a transit system must consistently measure and adjust service in unproductive routes and address insufficient service in productive areas. These standards serve as indicators of route performance and call attention to routes that may need to be adjusted. The use of multiple performance standards provides better insight into the operational and financial performance of individual services and allows transit providers to balance the cost and ridership of each route with its role in the regional transit network.

## Productivity

Productivity is measured as the number of Passengers per In-Service Hour. It is the total number of passengers carried divided by the in-service time. A high number of passengers per in service hour means a route is serving more people with the resources provided. The passengers per in-service hour standard establishes a minimum threshold of route performance. It is calculated at both the route and trip level. Table G-8 shows the minimum passengers per in-service hour by route type.

**Table G-9:** Passengers per In-Service Hour

Route Type	Route Average*	Minimum per Trip**
Core Local Bus	≥ 20	≥ 15
Supporting Local Bus	≥ 15	≥ 10
Suburban Local Bus	≥ 10	≥ 5
Arterial BRT	≥ 25	≥ 5
Highway BRT	≥ 25	≥ 5
Light Rail	≥ 70	≥ 50
Commuter Express Bus	Peak ≥ 20; Off-peak ≥ 10	Peak ≥ 15; Off-peak ≥ 5
Commuter Rail	≥ 70	≥ 50
General Public Dial-a-Ride	≥ 2	N/A

\*Route average represents the average passengers per in service hour over the entire day. Individual hours may fall below standard.

\*\*Minimum per trip represents the minimum passengers per in service hour for individual trips on a route. Multivehicle trips, such as three-car trains, will be treated as a single trip.

Routes and trips that do not meet these minimum standards should be reviewed for potential changes to increase ridership or reduce service. Very poor performing routes may be considered for elimination.

## Cost Effectiveness

The cost effectiveness of a route is measured by the subsidy required to operate the route per passenger. Subsidy is calculated as the difference between the total cost of providing service minus revenue from passenger fares. Since different types of routes are expected to have different levels of performance, each route's subsidy is compared to the average subsidy of its peers. This standard identifies routes that are not operating within the range of peer routes and focuses corrective action for those services. Subsidy thresholds are determined by calculating the non-weighted subsidy per passenger average within each route type. Table G-9 shows the subsidy thresholds and possible corrective action.

**Table G-10:** Subsidy per Passenger

Threshold Level	Subsidy per Passenger	Monitoring Goal	Possible Action
1	20 to 35 percent over peer route average	For quick review	Minor modifications to route
2	35 to 60 percent over peer route average	For intense review	Major changes to route
3	Greater than 60 percent over peer route average	For significant change	Restructure or eliminate route



## Appendix H: National and State Airport Classification

The National Plan of Integrated Airports (NPIAS) is constantly updated as state and local airport and system plans are completed and accepted by the FAA. Table H-1 indicates the current mix of airports for the region included in the 2013-2017 national plan and officially eligible for federal airport funding. Current national plan information is summarized below.

**Table H-1: Current Mix of Airports Included in National Plan**

Airport	Hub Type	Role		Year 5 Based Aircraft
		Current	Year 5	
Buffalo		GA	GA	50
Cambridge		GA	GA	47
Faribault		GA	GA	75
Le Sueur		GA	GA	57
Princeton		GA	GA	45
Red Wing		GA	GA	57
Rush City		GA	GA	41
St. Cloud		P	P	109
Winsted		GA	GA	33
Airlake		Reliever	Reliever	165
Anoka Co.-Blaine		Reliever	Reliever	494
Crystal		Reliever	Reliever	288
Flying Cloud		Reliever	Reliever	491
MSP International	Large	P	P	162
Lake Elmo		Reliever	Reliever	249
St. Paul Downtown		Reliever	Reliever	125
So. St. Paul		Reliever	Reliever	218
New Richmond		GA	GA	221
Osceola		GA	GA	69

Other airports, in addition to those in the National Plan of Integrated Airports (NPIAS) shown in Figure H-1, are part of the Minnesota State Airport System Plan (SASP) as depicted in Figure H-2. Several near-by airports in adjacent states are included to indicate where some Minnesota communities may access air service. Some of the ambiguities between the state and metro system designations are based upon state-wide requirements and laws and rules that apply only to the metro area; thus, the metro airport classifications are depicted on the map as a separate group without classification.

The existing Regional Airport System Plan (RASP) for the metropolitan area is depicted in Figure H-3; it identifies key parts of the system involving the hub airport, reliever airports, and special purpose facilities.

Figure H-1: National Plan of Integrated Airports

**Twin Cities Metro & Collar Counties  
National Plan of Integrated  
Airport System (NPIAS)**

- Commercial Service Primary**  
- Minneapolis St. Paul International (MSP)
- Commercial Service Other**  
- None
- Commercial Service Reliever**  
- St. Cloud Regional (STC)
- Reliever**  
- Crystal (MIC)      - Anoka County Blaine (ANE)  
- Lake Elmo (ELM)   - Flying Cloud (FCM)  
- Airlake (LVN)      - St. Paul Downtown (STP)  
- South St. Paul (SGS)
- General Aviation**  
- Princeton (PNM)   - Cambridge (CBG)  
- Rush City (ROS)   - Osceola (OEO)  
- Red Wing (RGK)   - Faribault (FBL)  
- Le Sueur (LES)   - Winsted (WSD)  
- Buffalo (CFE)      - New Richmond (RNH)
- Non-NPIAS Airports**  
- Forest Lake (FOR)  
- Wipine Seaplane Base (WPL)  
- Rice Lake (Surfside) Seaplane Base (SFS)

**Reference Items**

- Trunk Highways
- Principal Arterial Roads
- Lakes and Rivers
- County Boundary
- 2040 Municipal Urban Services Area  
MPO Area

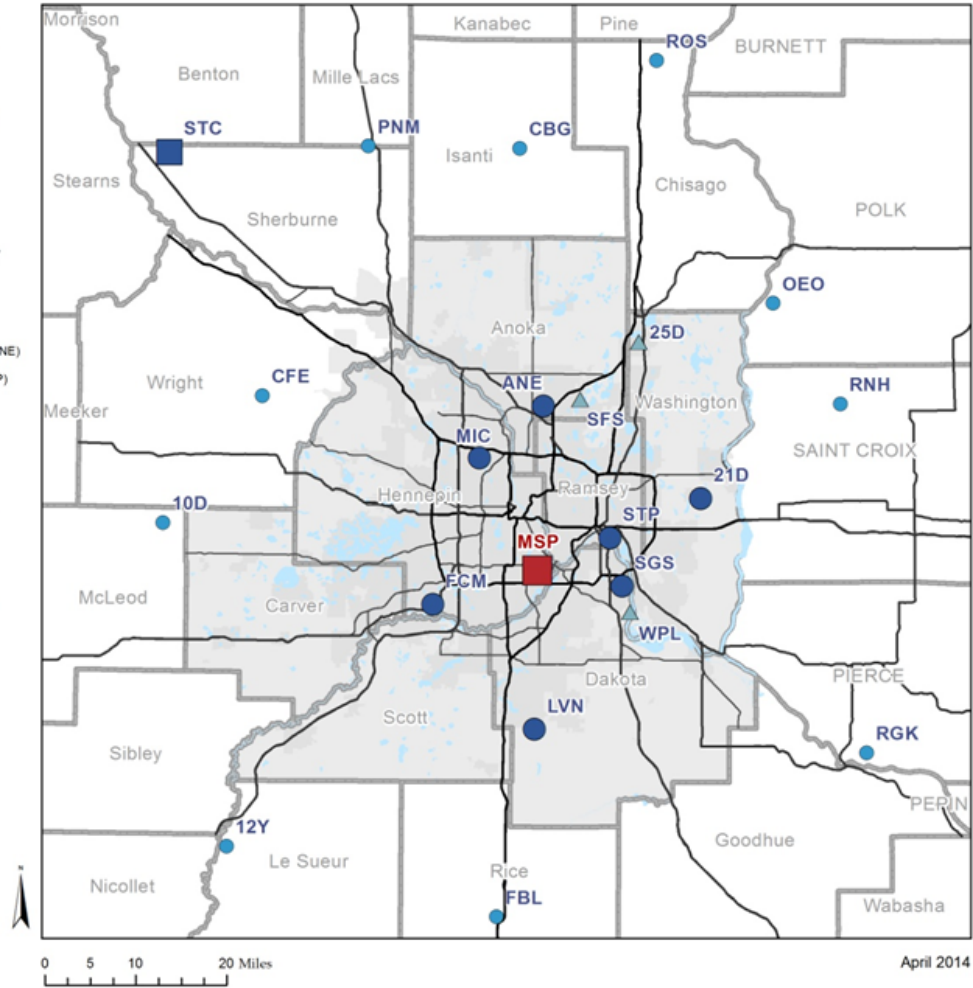
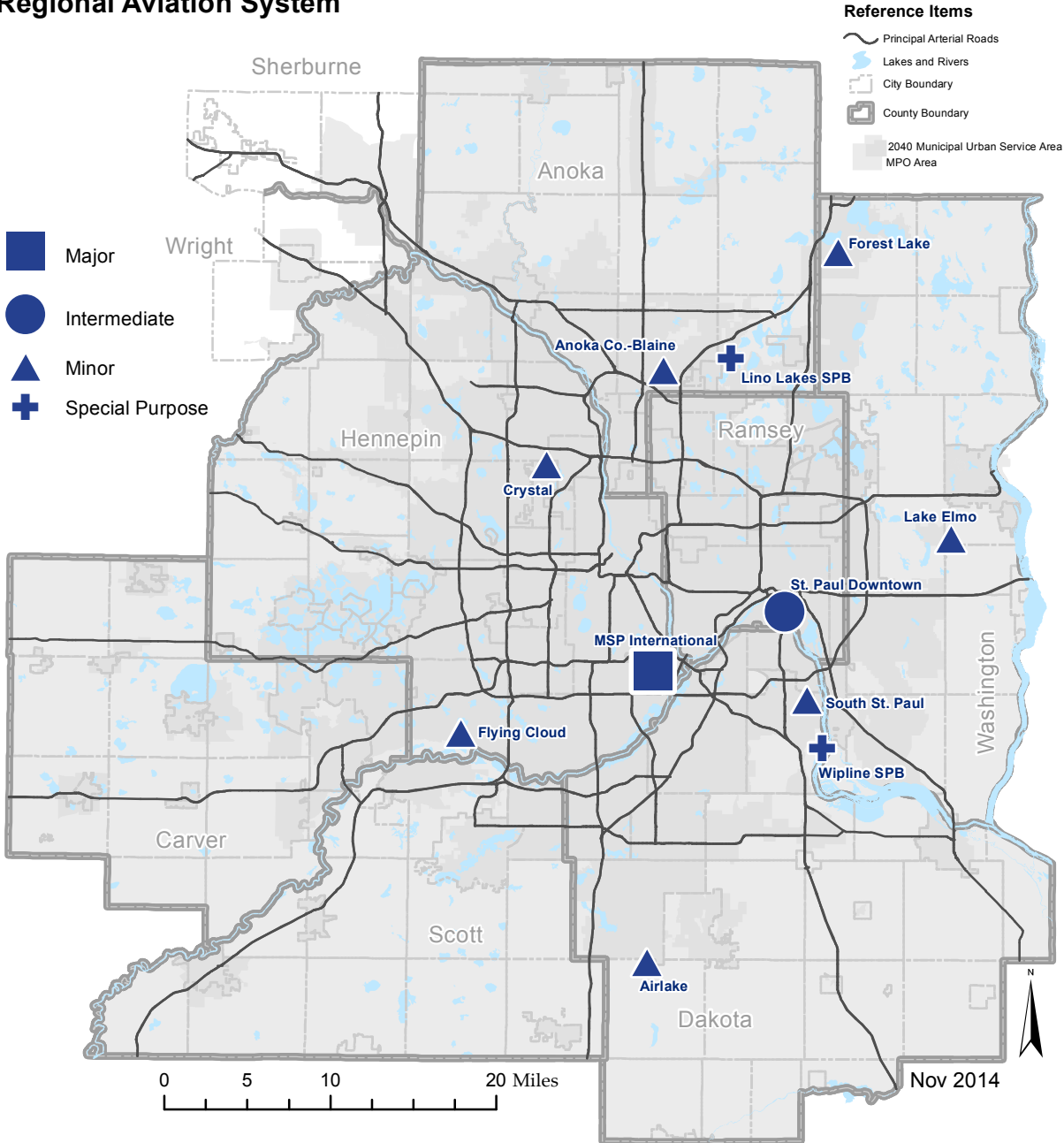




Figure H-3: Existing Regional Airport System

### Regional Aviation System



## Appendix I: Regional Airspace

All of the open sky covering the United States, from less than an inch off the ground all the way to outer space, is part of America's airspace. This airspace resource is recognized in both the Minnesota state airports system plan and the Minneapolis-St. Paul Metropolitan regional aviation system plan. All of this airspace is divided into several standardized types ranging from A through G, with A being the most restricted and G the least restrictive as depicted in Figure I-2.

Coordination and proper planning are required to make efficient and safe use of the airspace between the different classes of airports and air-transportation users. At lower altitudes this airspace is shared with the nation's communications industry and others that requires airport and airways protection from potential obstructions to air navigation, or activities that disrupt aviation communications and navigation/landing aids. Each type of airspace has its own required level of air traffic control services and its own minimum requirements for pilot qualifications, aircraft equipment, and weather conditions. In addition, there is other airspace reserved for special purposes called special use airspace.

Within the United States, airspace is classified as either controlled or uncontrolled. Controlled airspace will have specific defined dimensions (e.g. altitude ranges or vertical boundaries, and an applicable surface area or horizontal boundaries). Within controlled airspace air traffic control services are provided to all pilots operating under instrument flight rules, because they are flying solely by reference to instrument indicators. The services are also provide to some pilots operating under visual flight rules even though they are using points on the ground to navigate.

Class A airspace covers the entire United States at altitudes between 18,000 and 60,000 feet mean sea level. All jet routes are in this airspace that is used primarily by jets and airliners traveling over long distances between major cities. Air traffic in this airspace operates under IFR rules and must maintain radio contact with en route air traffic control. As aircraft transition from a jetway route to lower altitudes they are handed off to a specific destination airport's air traffic control. In most cases they will be arriving to an airport with an air traffic control tower that is surrounded by a Class B, C, or D airspace.

Figure I-2 depicts all airspace requirements, and Class B airspace extends from the surface to 10,000 feet and out to 30 nautical miles and is structured like an upside-down wedding cake. Class B airspace surrounds the nation's busiest airports, such as Minneapolis-St. Paul International Airport. At the outer limits of the Class B airspace, from the surface to 10,000 feet MSL at MSP, there is a Mode-C Veil. This is an imaginary vertical surface that delineates where an aircraft must have a Mode-C transponder so ATC can track their flight. Visual flight rules transition routes are specific designated flight paths used by air traffic control to route visual flight rules traffic through Class B airspace. Visual flight rules flyways are general flight paths through low altitudes for general aviation to fly from one ground-based radio beacon to another across the U.S. It helps pilots plan flights into, out of, through, or near complex Class B terminal airspace, especially where instrument flight rules routes occur.

Class C airspace extends from the surface to 4,000 feet above ground level for a 20 nautical mile distance from the airport. This airspace surrounds other busy airports that have radar services for



arriving and departing aircraft. No Class C airport airspace is designated in the Twin Cities metro area airspace.

Class D airspace surrounds airports with operating air traffic control towers and weather reporting services. This airspace extends from the surface to 2,500 feet above ground level within 4.3 nautical miles (5 statute miles) of the airport. In the metro area the Anoka County-Blaine, Crystal, Flying Cloud and St. Paul Downtown Airports have a Class D airspace designation. These airports have part-time air traffic control tower and their airspace reverts to Class E airspace areas when the towers are not in operation.

Class E airspace includes all other controlled airspace in the United States that is not designated as class A, B, C, D or G. This airspace extends to 18,000 feet MSL from various altitudes and can be extended to the surface. Class E airspace also surrounds airports with weather reporting services in support of instrument flight rules operations, but no operating control tower. In the Twin Cities area the Airlake Airport is such a facility.

Class F designated airspace is not used in the United States.

Class G airspace is uncontrolled; it includes all airspace in the United States not classified as Class A, B, C, D, or E. No air traffic control services are provided and the only requirement for flight is certain visibility and cloud clearance minimums. Most of the airspace below 1,200 feet above ground level is Class G airspace.

Special Conservation Area includes airspace surrounding national parks and wildlife refuges. In the Twin Cities region the St. Croix National and Scenic Wild River is such an area and pilots are requested to maintain a minimum altitude of 2,000 feet above ground level whenever possible. One objective is to avoid bird strikes and another is to minimize noise intrusion on wildlife and tranquility for user experience in protected natural settings.

## Special Use Airspace

Special Use Airspace is where aeronautical activity must be limited, usually because of military use or national security concerns. (Note: None of the following airspace areas occur within the Twin Cities region.) Special Use Airspace includes the following:

- Prohibited areas (e.g. Camp David)
- Restricted areas (military activities including Controlled Firing Areas)
- Warning areas (extends outward from 3 nm off the coast).
- Military operations areas (established for military training activities)
- Alert areas (e.g. established for areas with a high volume of pilot training)

## Other Airspace Areas

Other Airspace Areas are designated usually as temporary limitations for specific events and include:

- Airport Advisory Areas
- Military Training Routes
- National Security Area
- Temporary Flight Restrictions

Figure I-1: U.S. Airspace at a glance

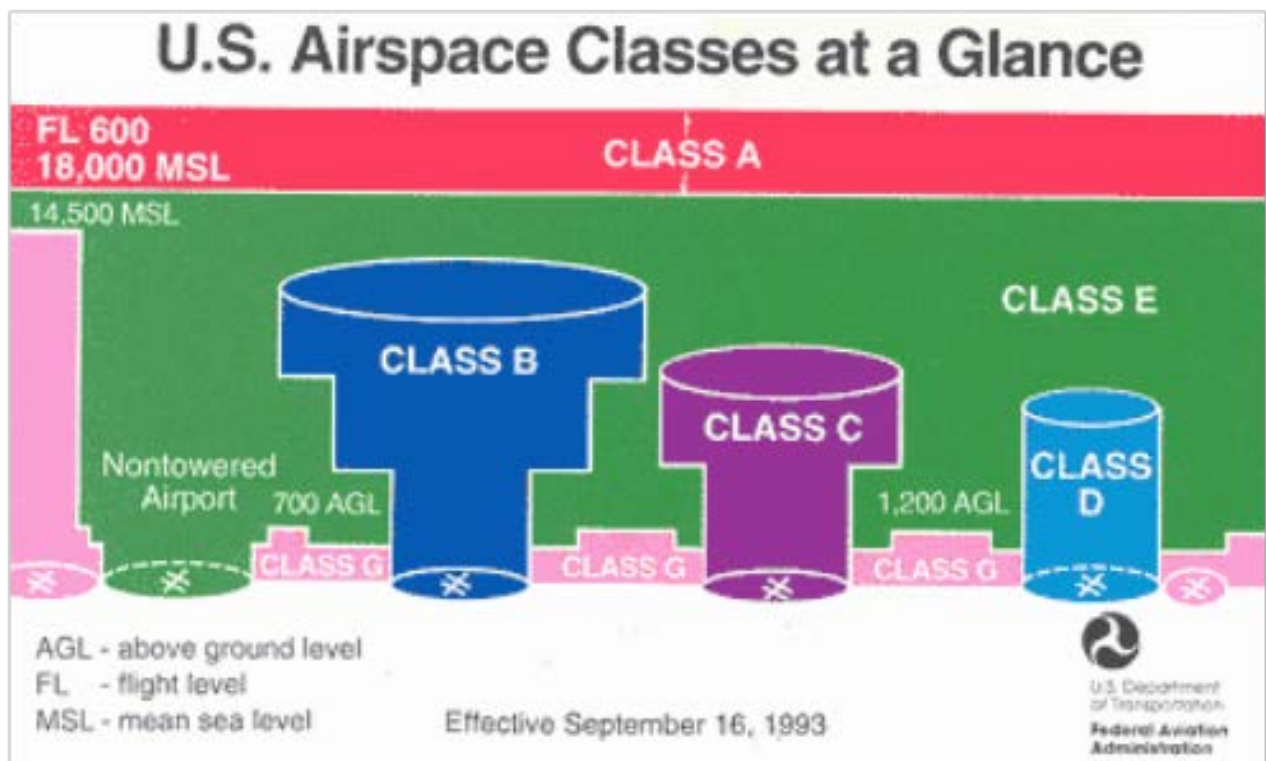
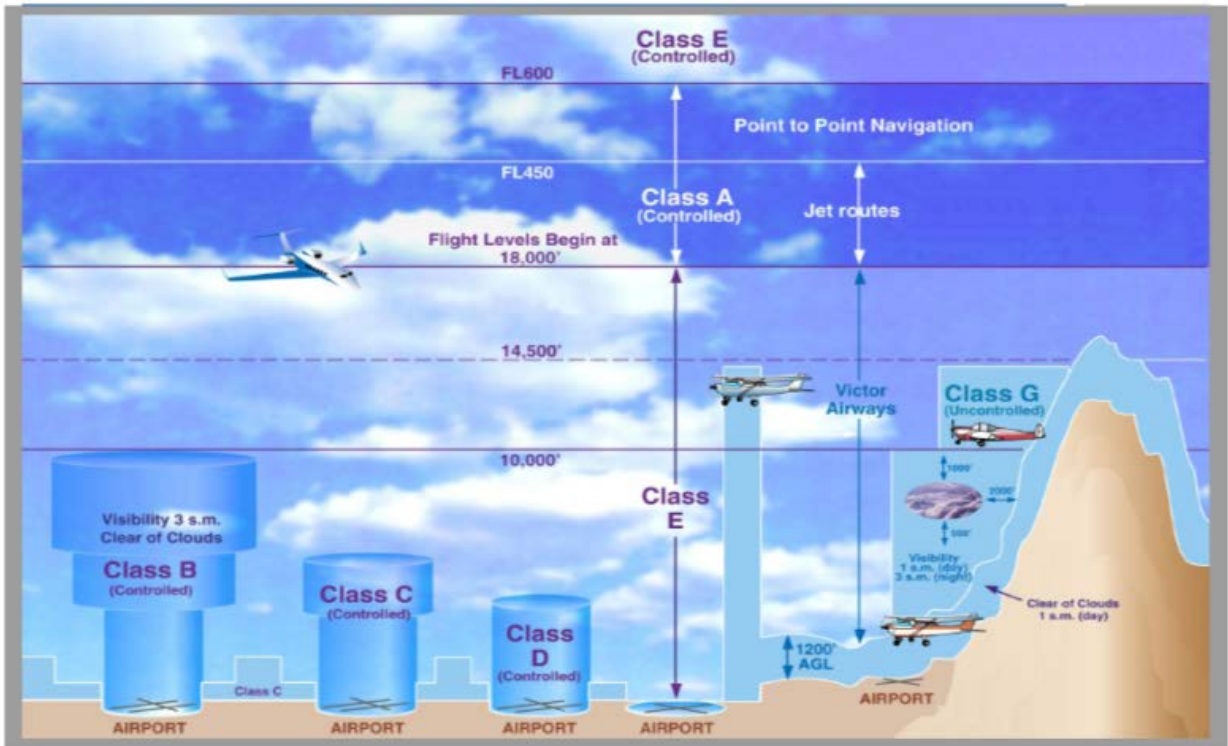


Figure I-2: Class B Airspace



Source: FAA and HNTB Corporation



# Appendix J: Metropolitan Airports Commission Capital Investment Review Process

The overall aviation planning process for the Twin Cities metro area is discussed in the planning process section of the TPP Chapter 10. In Figure 10-19 the various local planning elements are depicted by shading, and include the capital improvement plan. Additional detail on the local capital investment agency review process is provided in this appendix.

## Authority

As defined under state statutes for the Council and the Metropolitan Airports Commission, the capital investments made at the region's public-use airports are reviewed and commented upon, or under some conditions require approval, by the Metropolitan Council. For municipal or privately-owned, public-use airports the Council coordinates with MnDOT Aeronautics through their 5-year capital improvement program. This program is updated annually and is used in for identifying project eligibility and defining state and federal funding participation levels/schedule in the Statewide Transportation Improvement Program. The Metropolitan Airports Commission prepares a capital improvement program for the metro area airports they own and operate.

The Council reviews annually the Metropolitan Airports Commission capital improvement program under the following key legislative authorizations:

- MS 473.165, Council Review: Independent Commission, Board, Agency

## Sd1

The Metropolitan Council shall review all long-term comprehensive plans (LTCP's) of each independent commission [Metropolitan Airports Commission], board, or agency prepared for its operation and development within the metropolitan area but only if such plan is determined by the Council to have an area-wide effect, a multi-community effect, or to have a substantial effect on metropolitan development. Each plan shall be submitted to the council before any action is taken to place the plan or any part thereof, into effect.

- MS 473.171, Council Review: Applications for Federal, and State Aid

## Sd1 Federal

The Council shall review all applications of a metropolitan agency, independent commission, board or agency, and local governmental units for grants, loans or loan guarantees from the U.S. or agencies thereof submitted in connection with proposed matters of metropolitan significance, all other applications by metropolitan agencies, independent commission, boards and agencies and local governmental units for grants, loans, or loan guarantees from the United States or any agency thereof if review by a regional agency is required by federal law or the federal agency, and all applications for grants, loans or allocations from funds made available by the United States to the metropolitan area for regional facilities pursuant to a federal revenue sharing or

similar program requiring that the funds be received and granted or allocated or that the grants and allocations be approved by a regional agency.

## Sd2 State

The council shall review all applications or requests of a metropolitan agency, independent commission, board or agency, and local governmental units for state funds allocated or granted for purposed matters of metropolitan significance, and all other applications by metropolitan agencies, independent commissions, boards, agencies, and local governmental units for state funds if review by a regional agency is required by state law or the granting state agency.

- MS 473.181, [Additional] Council Review Powers

## Sd5 Airports

The Council shall review Metropolitan Airports Commission capital projects pursuant to section 473.621, Sd6. The plans of the Metropolitan Airports Commission and the development of the metropolitan airports system by the commission shall, as provided in sections 473.611, Sd5 and 473.655, be consistent with the development guide of the Council.

- MS 473.621, Powers of [Metropolitan Airports Commission] Corporation

## Sd6 Capital projects, review

All Minneapolis-St. Paul International Airport capital projects of the commission requiring expenditure of more than \$5 million shall be submitted to the Metropolitan Council for review. All other capital projects of the commission requiring expenditure of more than \$2 million shall be submitted to the Metropolitan Council for review. No such project that has a significant effect on the orderly and economic development of the metropolitan area may be commenced without the approval of the Metropolitan Council.

In addition to any other criteria applied by the Metropolitan Council in reviewing a proposed project, the council shall not approve a proposed project unless the council finds that the commission has completed a process intended to provide affected municipalities the opportunity for discussion and public participation in the commission's decision-making process. An "affected municipality" is any municipality that (1) is adjacent to a commission airport, (2) is within the noise zone of a commission airport, as defined in the Metropolitan Development Guide, or (3) has notified the commission's secretary that it considers itself an "affected municipality."

The council must at a minimum determine that the commission:

- provided adequate and timely notice of the proposed project to each affected municipality;
- provided to each affected municipality a complete description of the proposed project;
- provided to each affected municipality notices, agendas, and meeting minutes of all commission meetings, including advisory committee meetings, at which the proposed project was to be discussed or voted on in order to provide the municipalities the opportunity to solicit public comment and participate in the project development on an on-going basis; and, considered the comments of each affected municipality.

## Sd7 Capital project

For purposes of this section, capital projects having a significant effect on the orderly and economic development of the metropolitan area shall be deemed to be the following:

- the location of a new airport,
- a new runway at an existing airport,
- a runway extension at an existing airport,
- runway strengthening other than routine maintenance to determine compliance with Federal Air Regulation, Part 36,
- construction or expansion of passenger handling or parking facilities which would permit a 25 percent or greater increase in passenger enplanement levels,
- land acquisition associated with any of the above items or which would cause relocation of residential or business activities.
- MS 473.614, Environmental Review

In addition to overall NEPA and MEPA environmental requirements the Metropolitan Airports Commission has the following state directives concerning preparation of environmental documentation in relation to development and implementation of capital improvements.

### Sd1 Capital Plan; environmental assessments

The commission shall prepare an assessment of the environmental effects of projects in the commission's seven-year capital improvement program and plan at each airport owned and operated by the commission. The assessment must examine the cumulative environmental effects at each airport of the projects at that airport, considered collectively. The commission need not prepare an assessment for an airport when the capital improvement program and plan for that airport has not changed from the one adopted the previous year or when the changes in the program and plan will have only trivial environmental effects.

## Sd2 Capital Program: Environmental Assessment Worksheets

The commission shall prepare environmental assessment worksheets under chapter 116D, rules issued pursuant thereto, on the environmental effects of projects in the commission's capital improvement program at each airport owned and operated by the commission. The scope of the environmental assessment worksheets required by this section is limited to only those projects in the program for an airport that meet all of the following conditions:

- The project is scheduled in the program for the succeeding calendar period.
- The project is scheduled in the program for the expenditure of \$5 million or more at MSP, or \$2 million or more at any other airport.
- The project involves (i) the construction of a new or expanded structure for handling passengers, cargo, vehicles, or aircraft; or (ii) the construction of a new or the extension of an existing runway or taxiway.

After adopting its capital program, the commission may amend the program by adding or changing a project without amending or redoing the worksheets required by this subdivision, if the project to be added or the change to be made is one that the commission could not reasonably have foreseen at the time it completed the worksheets.

For the purpose of determining the need for an environmental impact statement (EIS), the commission shall consider the projects included in the scope of a worksheet as a single project and shall assess their environmental effects collectively and cumulatively. The commission's decision on whether an environmental impact statement is needed must be based on the worksheet and comments. The commission may not base a decision that an EIS is not needed on exemptions of projects in state or federal rules. The commission is not required to prepare an EIS on an individual project, or to include a project in the scope of an EIS that the commission determines is needed, if the project is shown in the worksheet to have trivial environmental effects or if an EIS on the project has been determined to be adequate under state law.

The commission may incorporate into worksheets information from the commission's long-term plans, environmental assessments prepared under subdivision 1, or other environmental documents prepared on projects under state or federal law.

### Sd2a Environmental Impact Report

Notwithstanding the provisions of subdivision 2, the commission shall prepare a report documenting the environmental effects of projects in the Minneapolis-St. Paul International Airport 2010 LTCP. Environmental effects of and costs associated with, noise impacts, noise mitigation measures, and land use compatibility measures must be evaluated according to alternative assumptions of 600,000, 650,000, 700,000 and 750,000 aircraft operations at the Minneapolis-St. Paul International Airport.

## Sd3 Procedure

The environmental assessments required under subdivision 1 and the EAW's required under subdivision 2 must be prepared each year before the commission adopts its capital improvement plan and program.

The commission shall hold a public hearing on each environmental assessments and EAW before adopting the capital improvement plan and program. The commission may consolidate hearings.

The initial environmental assessments and EAW's must be completed before the commission adopts its capital improvement program for calendar years 1989-1995.

## Sd4 Other Environmental Review

Nothing in this section limits the responsibility of the commission or any other governmental unit or agency, under any other law or regulation, to conduct environmental review of any project, decision, or recommendation, except that the EAW's prepared under subdivision 2 satisfy the requirements under state law or rule for EAW's on individual projects covered by worksheets prepared under subdivision 2.

## Review Materials

The Metropolitan Airports Commission and the Council prepare various materials for their respective policy bodies and to facilitate coordination with standing committees, advisory groups and the public. The Metropolitan Airports Commission process is depicted in schematic form in Figure J-1, indicating the flow of various work /review elements in development of the capital improvement program and relationship of Metropolitan Council and EQB reviews.

Figure J-1: Development of MAC Capital Improvement Program

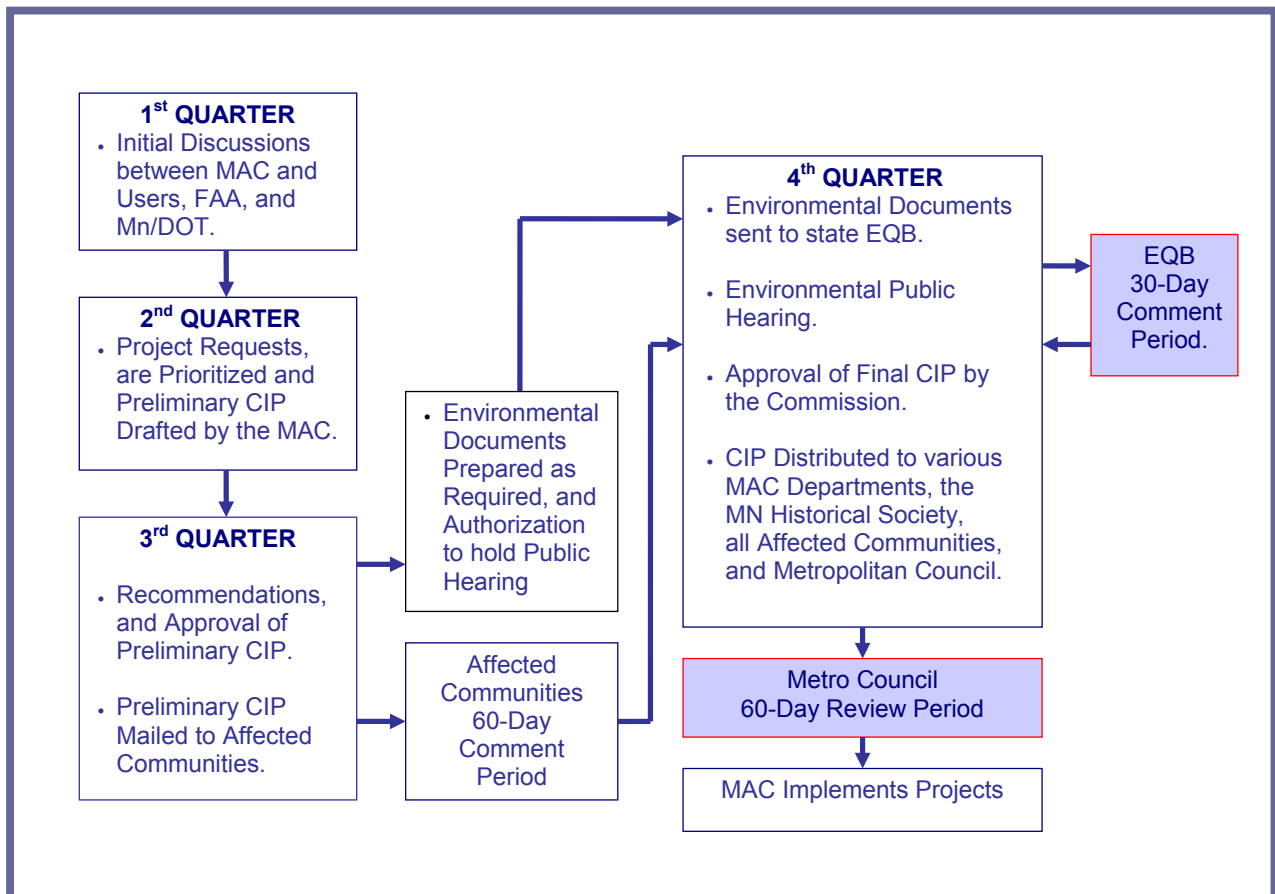


Table J-1 indicates the actual review schedule that has been programmed for calendar year 2014. This same process is repeated annually with some slight change to the dates involved for specific actions. The review dates for the Council's Technical Advisory Committee (TAC) and the Transportation Advisory Board (TAB) are also included. The Metropolitan Airports Commission capital improvement program is reviewed within the capital review process in relation to the current long-term comprehensive airport development plan (LTCP), environmental evaluation or required environmental assessment worksheet or environmental impact statement, and project criteria as defined in the statutes.

**Table J-1:** Annual Capital Improvement Program Review and Implementation Process

METROPOLITAN AIRPORTS COMMISSION CAPITAL IMPROVEMENT PROGRAM	RESPONSIBILITY	SCHEDULE
<b>PROJECTS DEFINITION</b>		
Initial Capital Improvement Program (CIP) Discussions	MAC Airport Development	January
Requests for CIP Projects to Airport Development	MAC Departments	Feb. 1 - June 1
Develop Project Scopes/Costs/Prioritization	MAC Departments/ Airport Development/ Consultants	Feb. 1 - July 31
Develop Draft Preliminary CIP	Airport Development	Feb. 1 - July 31

METROPOLITAN AIRPORTS COMMISSION CAPITAL IMPROVEMENT PROGRAM	RESPONSIBILITY	SCHEDULE
<b>PROJECTS ENVIRONMENTAL REVIEW</b>		
Prepare AOEEs and EAWs as required	Environment	July 31- Oct 15
Notice of PD&E Meeting mailed to affected Communities	Airport Development	September
PD&E Recommendation of Preliminary CIP to MAC for Environment Review/Authorizatoin to hold P.H on AOEE's & EAW's.	Airport Development	September
PD&E Minutes of Sept. Meeting and Notice of Sept. Commission Meeting mailed to Affected Communities	Airport Development	September
MAC Approval of Preliminary CIP for Environmental Review/Authorization to hold Public Hearings on AOEE's and EAW's	Airport Development	September
Preliminary CIP Mailed to Affected Communities	Airport Development	September
AOEE's and EAW's to Environmental Quality Board (EQB)	Environment	September
Public Hearing notice published in EQB Monitor, starting 30-Day comment period	Environment	October
Minutes of Sept. Commission Meeting mailed to Affected Communities	Airport Development	October
Public Hearing on AOEE's and EAW's at Nov. PD&E Committee Meeting	Environment	October
Thirty-Day Comment Period on AOEE's and EAW's ends	Environment	November
Metropolitan Council - TAC - Aviation Advisory Task Force	Metropolitan Council	November
Final Date for Affected Communities on Preliminary CIP to MAC	Affected Communities	November
Metropolitan Council - Technical Advisory Committee (TAC)	Technical Advisory Committee	December
Notice of December PD&E Meeting mailed to Affected Communities	Airport Development	December
Recommendation by PD&E to Commission on Final CIP	Airport Development	December
Minutes of December PD&E Meeting and Notice of December Commission Meeting mailed to Affected Communities	Airport Development	December
Metropolitan Council - Transportation Advisory Board	TAB - Transportation Advisory Board	December



METROPOLITAN AIRPORTS COMMISSION CAPITAL IMPROVEMENT PROGRAM	RESPONSIBILITY	SCHEDULE
<b>PROJECTS PLANNING and FINANCIAL REVIEW</b>		
Approval of Final CIP by Commission	Airport Development	December
Notification of Commission Action to EQB	Airport Development	December
CIP Distributed to MAC Departments, Met Council, State Historical Society and Affected Communities	Airport Development	December
Metropolitan Council - Transportation Committee	Transportation Committee	January/(New Yr)
Metropolitan Council	Metropolitan Council	January/(New Yr)
Minutes of December Commission Meeting mailed to Affected Communities	Airport Development	January/(New Yr)

Note: 1) All dates are tentative and subject to change. 2) Shaded items represent actions/dates which pertain to the Affected Communities as defined in Minnesota Statutes § 473.621, Sd. 6 as amended. 3) FD&E = Metropolitan Airports Commission Finance, Development and Environment Committee. 4) AOEE = Assessment of Environmental Effects. 5) EAW = Environmental Assessment Work Sheet. 6) EQB = Minnesota Environmental Quality Board

The Council does not officially review the Metropolitan Airports Commission annual operating budget or bonding proposals, but may use information from these documents to help clarify capital improvement program proposals and their implementation. Figure J-3 is the form designed by the Council to directly reflect those statutory criteria and is used by the TAC Aviation Advisory Task Force in its initial review of the capital improvement program. This is an initial review in that final comments by affected communities may not have been received or addressed by the Metropolitan Airports Commission prior to mailing to the TAC advisory task force. In most instances the Metropolitan Airports Commission 30-day review comment period is just ending, and proposed capital improvement program funding information is not completed and acted upon by the Commission.

Comments on the AOEEs and EAWs are addressed administratively by staff letter to the Metropolitan Airports Commission during the 30-Day EQB review period. The latest capital improvement program changes to come out of the review process at this time are often addressed verbally at the full TAC if they are different than the initial action item submitted for review. Final action by the Commission’s Finance, Development & Environment Committee (FD&E), including any changes different from the information provided to the TAC, are addressed in reviews by the TAB Policy Committee and the full Transportation Advisory Board. Comments/recommendations made by the TAB are the forwarded for consideration by the Council’s Transportation Committee report to the full Council for action.

**Table J-2: Criteria for Initial Review of the 2013 Capital Improvement Program**

2013 Capital Improvement Program	Prior Reviews/Actions		Capital Review Criteria*						(H)**	
	LTCP	AOEE***	(A)	(B)	(C)	(D)	(E)	(F)		(G)
Project Listings by Airport	Approved(Yes/No) Current ?	EA-EAW Prepared, EIS- Reviewed, NPDES Approved, Legislative Requirement, Regulatory Requirement	Project meets the dollar threshold at MSP = \$5M, Relievers = \$2M	Location of a New Airport	New Runway at an Existing Airport	Runway Extension at an Existing Airport	Runway Strengthening Other than Routine Maintenance	New or Expanded Passenger Handling or Parking Facilities for > 25% capacity increase	Land Acquisition associated with the other criteria, or that would cause relocations of residential or business activities	Project information made available by the MAC to affected municipalities for their review
Minneapolis-St. Paul International Airport	Y									Y
St. Paul Downtown Airport	Y									Y
Flying Cloud Airport	Y									Y
Crystal Airport	Y									Y
Anoka County-Blaine Airport	Y									Y
Lake Elmo Airport	Y									Y
Airlake Airport	Y									Y

\* Criteria as defined under MS 473

\*\*Requirements defined under MS 473

\*\*\* See AOEE Summary Environmental Assessment

If an AOEE or EAW is required for projects in the annual Capital Improvement Program the following form in Table J-3 indicates the types of environmental categories that are examined and whether it has an environmental effect or cumulative effect for a particular airport. The AOEE or EAW, along with the capital improvement program, provide more detailed information that is required if the project has an environmental effect.

**Table J-3: Types of Environmental Categories Used in Reviews**

\* All required mitigation is being completed as part of the project.

Project Description	Are the Effects of the Project Addressed in an Approved EAW, EA or EIS?	Environmental Categories Affected by the Project								
		Air Quality	Compatible Land Use	Fish, Wildlife and Plants	Floodplains and Floodways	Hazardous Materials, Pollution Prevention and Solid Waste	Historical, Architectural, Archaeological and Cultural Resources	Light Emissions and Visual Effects	Parks, recreation Areas and trails	Noise
<b>MSP Projects</b>										
Project X	Yes 2010 LTCP FEIS, May 1998	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect
<b>Reliever Airport Projects</b>										
Airport X	Yes Expansion FEIS June 2004	Effect*	Effect*	No Effect	No Effect	No Effect	Effect*	No Effect	No Effect	Effect*
<b>Airport Y</b>										
Airport Z										

con't on next page

**Table J-3:** Types of Environmental Categories Used in Reviews (con't)

\* All required mitigation is being completed as part of the project.

Project Description	Environmental Categories Affected by the Project				
	Water Quality (Storm, Waste and Ground Water)	Wetlands	Infrastructure and Public Services	Farmland	Erosion and Sedimentation
<b>MSP Projects</b>					
Project X	No Effect	No Effect	No Effect	No Effect	No Effect
<b>Reliever Airport Projects</b>					
Airport X	Effect*	No Effect	No Effect	No Effect	No Effect
Airport Y					
Airport Z					

# Appendix K: Airport Long Term Comprehensive Plans

## Plan Context

The 20-year long-term comprehensive airport plan (LTCP) is intended to integrate all information pertinent to planning, developing and operating an airport in a manner that reflects its system role and compatibility with its surrounding environs. The plan content guidelines apply to major, intermediate and minor airports; therefore some flexibility for emphasis or level of detail on certain plan elements will be necessary.

Plans should be reassessed every five years and updated according to the review schedule defined later in this appendix. The reassessment involves reviewing the new forecasts against prior forecasts and actual airport activity, checking the progress of implementation efforts (e.g. individual project planning, environmental evaluations, and capital program), and identifying any other issues or changes that may warrant continued monitoring, interim action or establish a need for a plan update.

The LTCP does not replace any other planning or reporting requirements of another governmental unit. The scope and emphasis of a long-term comprehensive airport plan should reflect the airport's system role and the objectives for each plan content category as described below.

## Plan Content

### Airport Development

**Objective:** To portray the type and location of airport physical and operational development in a systematic fashion, reflecting both the historical and forecast levels of unconstrained aviation demand. The plan should include:

Background data including a description of previous planning studies and development efforts; each item described should contain a synopsis of pertinent dates, funding sources, objectives and results.

An overview of historical and forecast aviation activity (number of based aircraft, aircraft mix, number of annual and peak hour aircraft operations) and the demand compared to the existing and proposed facilities.

An airport map showing land use areas, by type, within the airport property boundary or under airport control. Maps showing airport development phasing based upon key demand and capacity levels. A description of facilities staging, by phase, for specific land use areas. A copy of the latest FAA-approved airport layout plan (ALP) with associated data tables as described in FAA AC 150/5070-6.

## Airport and Airspace Safety

Objective: To identify planning and operating practices required to ensure the safety of aircraft operations and protect the regional airspace resource. The plan should include:

An airport map depicting the airport zoning district, land use safety zones and a description of the associated airport zoning ordinance as required under MS 360.061-360.074 and defined in MN Rules 8800.2400. This map should contain appropriate topographical reference and depict those areas under aviation easements.

An airport area map showing the FAA FAR Part 77 airspace surfaces, including an approach and clear zone plan as described in FAA AC 150/5070-6.

A map of aircraft flight tracks depicting the local aircraft traffic pattern and general description of operating parameters in relation to the physical construction and operational development phasing of the airport.

## Airport and Aircraft Environmental Capability

Aircraft on-ground and over-flight activities described within a historical and forecast context, including seasonal and daily traffic. Maps of aircraft noise impact areas depicted by contours of DNL noise levels for annualized aircraft activity.

Description of adopted Noise Abatement Operations Plan and/or operational abatement measures being implemented.

Description of land use measures and proposed strategy for off-airport land uses affected by aircraft noise as defined in the Land Use Compatibility Guidelines for Aircraft Noise. Description of aircraft, ground vehicle and point-source air pollution emissions within a historical and forecast context, including definition of the seasonal and daily operating environment. Identify existing and potential air-quality problem area(s).

Description and map of existing drainage system including natural drainage-ways and wetlands by type. Provide map and description of proposed surface water management plan for water quantity and quality including proposed facilities, storage volumes, rates and volumes of runoff from the site, and pollutant loadings associated with planned airport site facilities (as identified in SPCC and SWPPP) that could affect surface water quality. Proposed mitigation measures and facilities (during construction and long-term) to avoid off-site flooding and minimize polluting of surface waters. A description of measures to mitigate the potential impact or compensate for the loss or alteration of wetlands.

Description of the types of potential groundwater contaminants present on the site and proposed measures for the safe handling, storage and disposal of these substances to protect ground water, including description of the Metropolitan Airports Commission and private operators roles for managing these materials.

Projection of the annual average volume of wastewater to be generated for the next 20 years by five-year increments from terminals, operators and the proposed facilities (description and map) for handling and treating wastewater including public sewer service, private treatment plants and individual on-site sewage disposal systems. Include a description of proposed management for private facilities and roles of the Metropolitan Airports Commission and private operators in implementation.

Description of recommended air, water and noise control plans, including monitoring programs.

## Compatibility with Metropolitan and Local Plans

Objective: To identify demand and capacity relationships between airport and community systems and define a management plan for maintaining compatibility. The plan should include:

Description of historical and forecast ground traffic activities, including average and peak-flow characteristics on a seasonal, daily, and peak hour basis. Map showing location of ground access points, parking areas and associated traffic counts. Definition of potential problem areas and plan for traffic management.

Description of water supply, sanitary and storm sewer and solid waste systems. Definition of historical and forecast use levels and capacities. Depictions of locations where airport systems interface with local or regional systems. Identification of potential problem areas and the plan(s) for waste management.

Description of other airport service needs (for example, police and fire) that may require changes in agreements or types/levels of governmental and/or general public support.

## Implementation Strategy

Objective: To establish the type, scope and economic feasibility of airport development and recommended actions to implement a compatible airport and community plan. The plan should include:

- Description of the overall physical and operational development phasing needed over the next 20 years.
- A capital improvement plan to cover a seven-year prospective period. The first three years of the development plan should be project-specific, and the other four years of the plan, including projects of more than four years duration and new projects, may be aggregate projections. Estimates of federal, state and local funding shares should be included for all projects included in the plans.
- Identification of the planning activities needed for implementation of the comprehensive airport plan.

## Plan Amendment

The LTCP is to be prepared on a regular basis for each affected airport as defined in the LTCP review schedule. The document should be prepared to meet the plan content information discussed previously. In the event that a change to the plan cannot be accommodated during its scheduled update the LTCP, or parts thereof, should be amended. Proposed amendments are assumed to have required planning and environmental work substantially in progress. An amendment should be prepared and reviewed by the Council prior to project inclusion in that year's capital improvement program. Examples of potential amendments include, but are not limited to the following items:

- Projects meeting the capital review thresholds of \$5 million at the Minneapolis-St. Paul International Airport, and \$2 million at reliever airports,
- Changes requiring an update to FAA airport layout plan,
- Runway changes
- Projects having potential off-airport effects

Reliever Airport Non-aviation land use changes. This involves land use parcels on-airport that are not being released by the FAA for sale, but remain as part of the airport property and are made available by the airport operator through lease agreements with private parties to enhance revenues to the airport sponsor . The size of parcels and lease period may vary considerably; location and use of potential parcels were not part of individual LTCP reviews. Council review objectives are:

- to monitor such parcel changes for purposes of maintaining its overall land use database
- to know the location and use of the parcels in relation to the approved LTCP
- to appraise airport operators of any recent local or metro system changes they may not be aware of that may need additional review/coordinated
- to establish an administrative review process in coordination with airport sponsors for review of non-aviation land use change proposals



**Table K-1:** Update Schedule for Airport Long-Term Comprehensive Plans

METRO AREA PUBLIC USE AIRPORTS	PLAN STATUS	5-YEAR UPDATE
Minneapolis-St. Paul Int'l.	2030 LTCP Approved June 2010	2015
St. Paul Downtown	2030 LTCP Approved April 2010	2015
Anoka County-Blaine	2030 LTCP Approved April 2010	2015
Flying Cloud	2030 LTCP Approved April 2010	2015
Airlake	2025 LTCP Approved October 2008	2014
Crystal	2025 LTCP Approved October 2008	2014
Lake Elmo	2025 LTCP Approved October 2008	2014
So. St. Paul Municipal	Community CPU Approved 2009	2018
Forest Lake Municipal	Community CPU Approved 2009	2018
Lino Lakes Seaplane Base	Community CPU Approved 2009	2018
Wipline Seaplane Base	Community CPU Approved 2009	2018

## Appendix L: Aviation Land Use Compatibility Guidelines

The regional Land Use Compatibility Guidelines for Aircraft Noise have been prepared to assist communities in preventative and corrective mitigation efforts that focus on compatible land use. The compatibility guidelines are one of several aviation system elements to be addressed in the comprehensive plans and plan amendments of communities affected by aircraft and facility operational impacts. The Metropolitan Land Planning Act, requires all local government units to prepare a comprehensive plan for submittal to the Metropolitan Council for review; updated plans will be due in December 2018. The new plans will reflect the *Thrive MSP 2040* vision, and the 2015 Metro Systems Statements. The following overall process and schedule applies:

- In 2015, after adoption of the new *2040 Transportation Policy Plan*, the Council transmits new Systems Statements to each metro community.
- Within nine months after receipt of the Systems Statements each community reviews in comprehensive plan and determines if a plan amendment is needed to ensure consistency with *Thrive MSP 2040*. If an amendment is needed the community prepares a plan amendment and submits it to the Council for review.
- Each community affected by aircraft noise and airport owner jointly prepare a noise program to reduce, prevent or mitigate aircraft noise impacts on land uses that are incompatible with the guidelines; both operational and land use measures should be evaluated. Communities should assess their noise impact areas and include a noise program in the 2018 comprehensive plan update.
- Owners/Operators of system airports should include their part of the noise program in preparation or update of each airports long-term comprehensive plan. See Table L-1 Noise Impacted Communities for listing of noise-impacted communities.
- Council reviews community plan submittal and approves, or requires a plan modification.
- Airport owner submits long-term comprehensive airport plan or plan update for Council review and approval. A schedule for updates of long-term comprehensive plans is included in Appendix K as Table K-1.

### Airport Noise

The airport section of the land use compatibility guidelines assume:

- Federal and Manufactures programs for reduction of noise at its source (engines, airframes),
- Airport operational noise abatement measures plan/in place,
- Community comprehensive plans reflect compatible land use efforts occurring through land acquisition, “preventive” land use measures, or “corrective” land use measures.
- Availability of a Council noise policy area map (from the most recently approved long-term comprehensive plan) for the facility under consideration. The noise policy exposure maps identify where, geographically, the land use compatibility guidelines are to be applied.

## Preventive and Corrective Land Use Measures

Airport noise programs, and the application of land use compatibility guidelines for aircraft noise, are developed within the context of both local community and comprehensive plans, and individual airports long-term comprehensive plans. Both the airport and community plans should be structured around an overall scheme of preventive and corrective measures. Table L-2 Current Land Use Measures depicts the current land use measures adopted in conjunction with development of the MSP noise compatibility programs.

The status of noise compatibility programs at other system airports, in relation to the land use measures adopted at Minneapolis-St. Paul International, are also included to indicate the extent of the current noise control effort on a system-wide basis. Other land use measures may also need to be considered at reliever system airports. The level and extent of noise impacts vary widely between the airports and therefore not all land use measures may be appropriate for each specific airport, in addition, the level of noise abatement emphasis may need to be different for neighborhoods with the same community.

The compatibility guidelines indicate that some uses be “discouraged.” Prior to applying the guidelines the comprehensive plan or plan amendment needs to assess what has been or can be done to discourage noise sensitive uses. This should be done when the overall preventive and corrective land use guidelines (contained in Table L-2) are defined and described below. All new land uses are categorized according to whether they are considered new/major redevelopment or new/in-fill/redevelopment.

The land uses are listed in Table L-3 Land Use Compatibility Guidelines for Aircraft Noise as specific categories grouped to reflect similar general noise attenuation properties and what the normally associated indoor and outdoor use activities are. The listing is ranked from most to least sensitive uses in each category based upon the acoustic properties of typical land uses by the standard land use coding manual. The Council has prepared a builder’s guide to assist in determining acoustic attenuation of proposed new single-family detached housing, which is discouraged, but may be allowed by communities in zone 4 and the buffer zone.

**Table L-1: Noise Impacted Communities**

Airport	Community
MSP International*	Minneapolis, Bloomington, Richfield, Mendota Heights, Mendota, Eagan, Burnsville
St. Paul Downtown	St. Paul
Anoka County- Blaine	Blaine
Flying Cloud	Eden Prairie
Crystal	Crystal, Brooklyn Park, Brooklyn Center
Airlake	Eureka Twp., Lakeville
South St. Paul	South St Paul, Inver Grove Heights
Lake Elmo	Baytown, West Lakeland, Lake Elmo

\* As defined under MS 473.621, Sd 6.

**Table L-2:** Current Land Use Measures

<i>Preventive Land Use Measures</i>		
	MSP International Airport Communities	Other Regional Airport Communities
Amend local land use plans to bring them into conformance with regional land use compatibility guidelines for aircraft noise.	YES	YES
Apply zoning performance standards.	YES	YES
Establish a public information program	YES	YES
Revise Building code.	YES/MS 473.192	YES/MS 473.192
Fair property disclosure policy.	YES/Usually applied by developer or builder.	YES/Usually applied by developer or builder.
Dedication of aviation easements/releases.	YES	YES
Transfer of development rights.	NO	NO
Land banking (acquisition of undeveloped property)	NO	NO
<i>Corrective Land Use Measures</i>		
	MSP International Airport Communities	Other Regional Airport Communities
<b>Airport Developed property:</b>		
Within RPZs	YES	YES
Within Runway Safety Zones	YES	FCM&STP
Within DNL 70	YES	Airports
Part 150 sound insulation program.	YES	NO
Property purchase guarantee	NO	NO
<b>Creation of sound barriers</b>		
Walls	YES	
Berms	YES	YES (Proposed in the FCM and ANE LTCPs)
Ground runup enclosures	YES	

**Table L-3: Land Use Compatibility Guidelines for Aircraft Noise**

Land Use Category	Compatibility with Aircraft Noise Levels								
	New Development and Major Redevelopment				Infill Development and Reconstruction or Additions to Existing Structures				
Type of Development	1 DNL 75+	2 DNL 74-70	3 DNL 69-65	4 DNL 64-60	1 DNL 75+	2 DNL 74-70	3 DNL 69-65	4 DNL 64-60	Buffer Zone
<b>Residential</b>									
Single / Multiplex with Individual Entrance	INCO	INCO	INCO	INCO	COND	COND	COND	COND	
Multiplex / Apartment with Shared Entrance	INCO	INCO	COND	PROV	COND	COND	PROV	PROV	
Mobile Home	INCO	INCO	INCO	COND	COND	COND	COND	COND	
Educational, Medical, Schools, Churches, Hospitals, Nursing Homes	INCO	INCO	INCO	COND	COND	COND	COND	PROV	
<b>Cultural / Entertainment/Recreational</b>									
Indoor	COND	COND	COND	PROV	COND	COND	COND	PROV	
Outdoor	COND	COND	COND	COND	COND	COND	COND	COMP	
Office / Commercial/Retail	COND	PROV	PROV	COMP	COND	PROV	PROV	COMP	
<b>Services</b>									
Transportation-Passenger Facilities	COND	PROV	PROV	COMP	COND	PROV	PROV	COMP	
Transient Lodging	INCO	COND	PROV	PROV	COND	COND	PROV	PROV	
Other medical, Health & Educational Services	COND	PROV	PROV	COMP	COND	PROV	PROV	COMP	
Other Services	COND	PROV	PROV	COMP	COND	PROV	PROV	COMP	
Industrial/Communication / Utility	PROV	COMP	COMP	COMP	PROV	COMP	COMP	COMP	
Agriculture Land/Water Areas / Resource Extraction	COMP	COMP	COMP	COMP	COMP	COMP	COMP	COMP	

NOTE: COMP = Compatible; PROV = Provisional; COND = Conditional; INCO = Incompatible.

## New Development: Major Redevelopment or Infill/Reconstruction

New Development - means a relatively large, undeveloped tract of land proposed for development. For example, a residential subdivision, industrial park, or shopping center.

Major Redevelopment - means a relatively large parcel of land with old structures proposed for extensive rehabilitation or demolition and different uses. For example, demolition of an entire block of old office or hotel buildings for new housing, office, commercial uses; conversion of warehouse to office and commercial uses

Infill Development - pertains to an undeveloped parcel or parcels of land proposed for development similar to or less noise-sensitive than the developed parcels surrounding it. For example, a new house on a vacant lot in a residential neighborhood, or a new industry on a vacant parcel in an established industrial area.

Reconstruction of Additions to Existing Structures - pertains to replacing a structure destroyed by fire, age, etc. to accommodate the same use that existed before destruction, or expanding a structure to accommodate increased demand for existing use (for example, rebuilding and modernizing an old hotel, or adding a room to a house). Decks, patios and swimming pools are considered allowable uses in all cases.

## Definition of Compatible Land Use

The four land use ratings in land use compatibility Table L-3 are explained as follows:

COMP/Compatible - uses are acoustically acceptable for both indoors and outdoors.

PROV/Provisional - uses that should be discouraged if at all feasible; if allowed, must meet certain structural performance standards to be acceptable according to MS 473.192 (Metropolitan Area Aircraft Noise Attenuation Act). Structures built after December 1983 shall be acoustically constructed so as to achieve the interior sound levels described in Table L-4. Each local government unit having land within the airport noise zones is responsible for implementing and enforcing the structure performance standards in its jurisdiction.

COND/Conditional - uses that should be strongly discouraged; if allowed, must meet the structural performance standards, and requires a comprehensive plan amendment for review of the project under the factors described in Table L-3.

INCO/Incompatible - Land uses that are not acceptable even if acoustical treatment were incorporated in the structure and outside uses restricted.



## Noise Policy Areas

A noise policy area is defined for each system airport and includes - aircraft noise exposure zones, a (optional) buffer zone; and, the preventative and corrective land use measures that apply to that facility. This section of the land use compatibility guidelines for aircraft noise contains maps depicting the latest noise information being used to define the noise policy areas for each system airport. The noise policy area is established as part of the [latest] LTCP reviewed and approved by the Council.

Figure L-1: 2030 Preferred Alternative Contours, Minneapolis-St. Paul International Airport

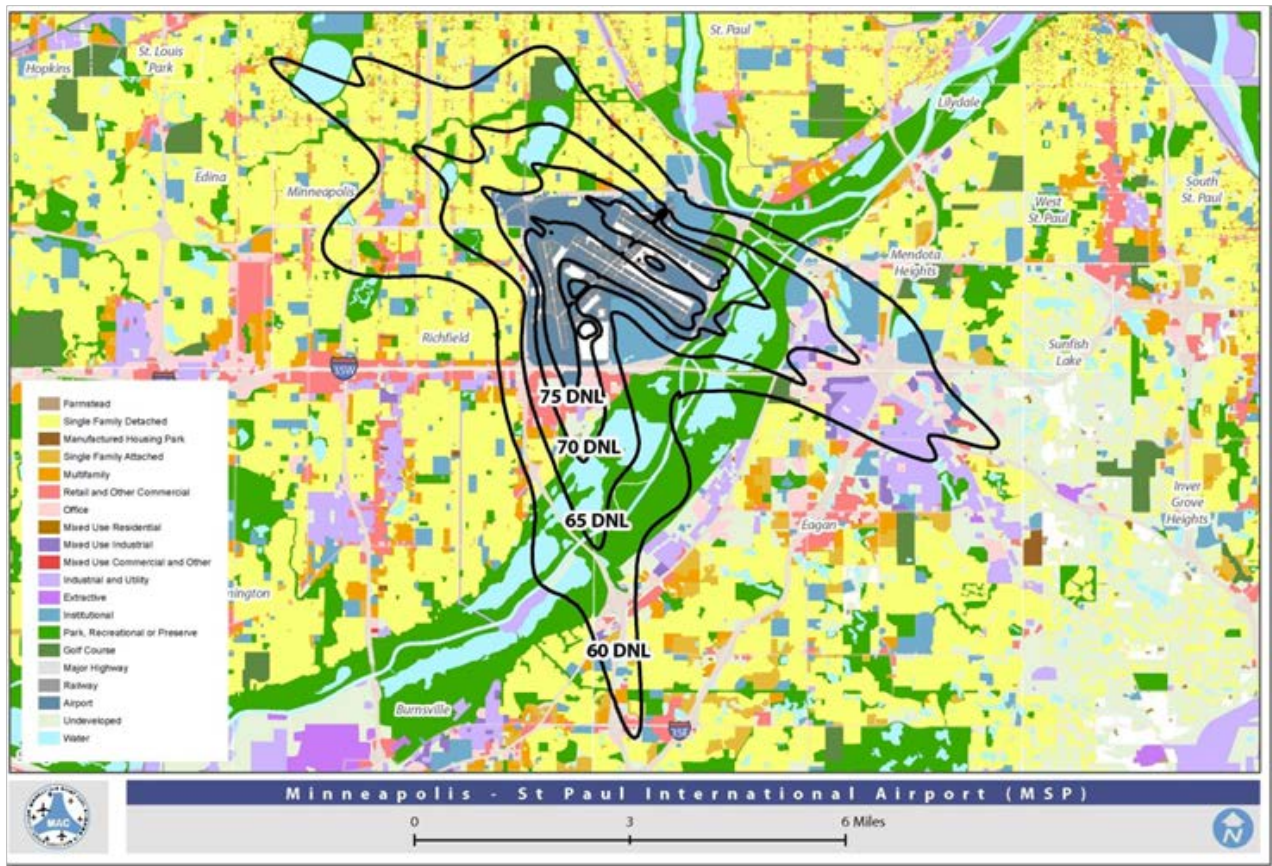


Figure L-2: 2025 Preferred Alternative Contours, St. Paul Downtown Airport

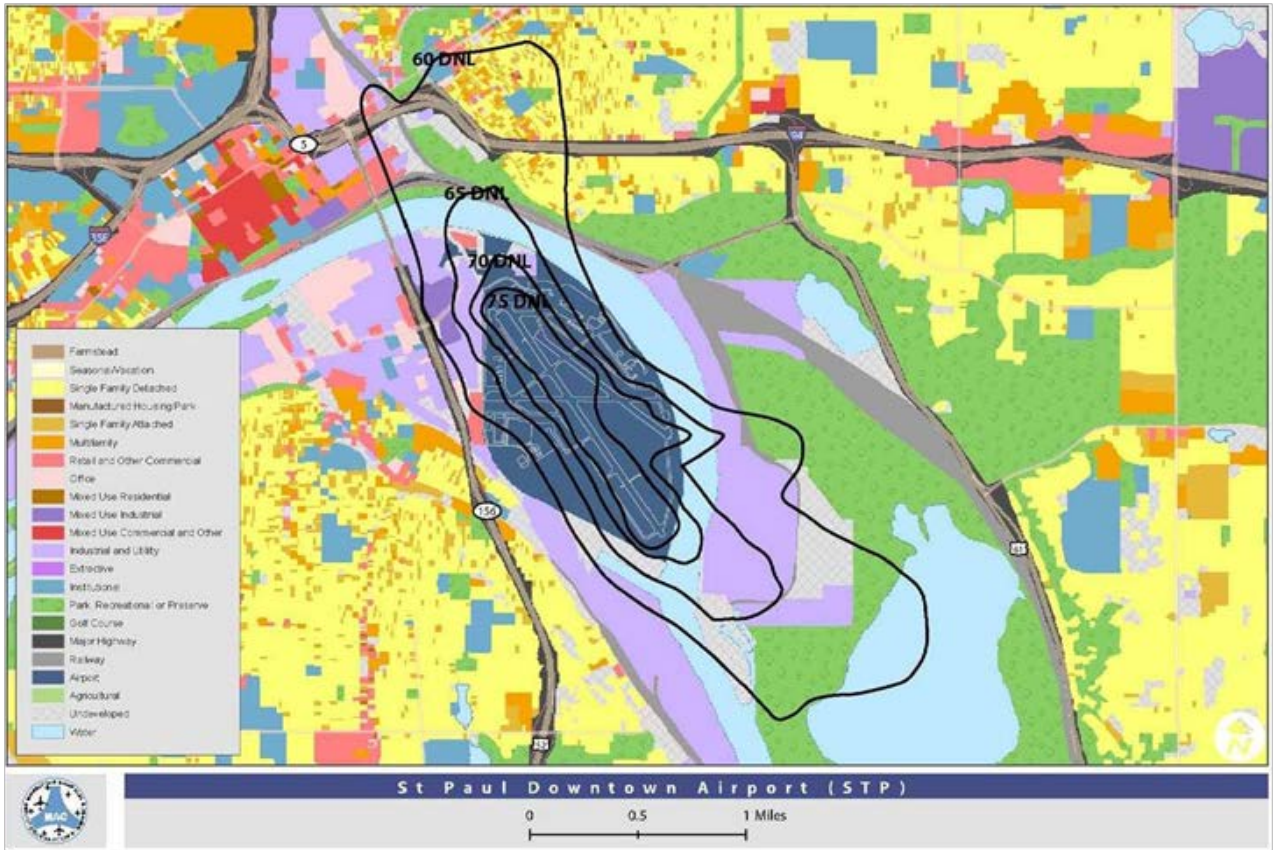




Figure L-3: 2025 Preferred Alternative Contours, Airlake Airport

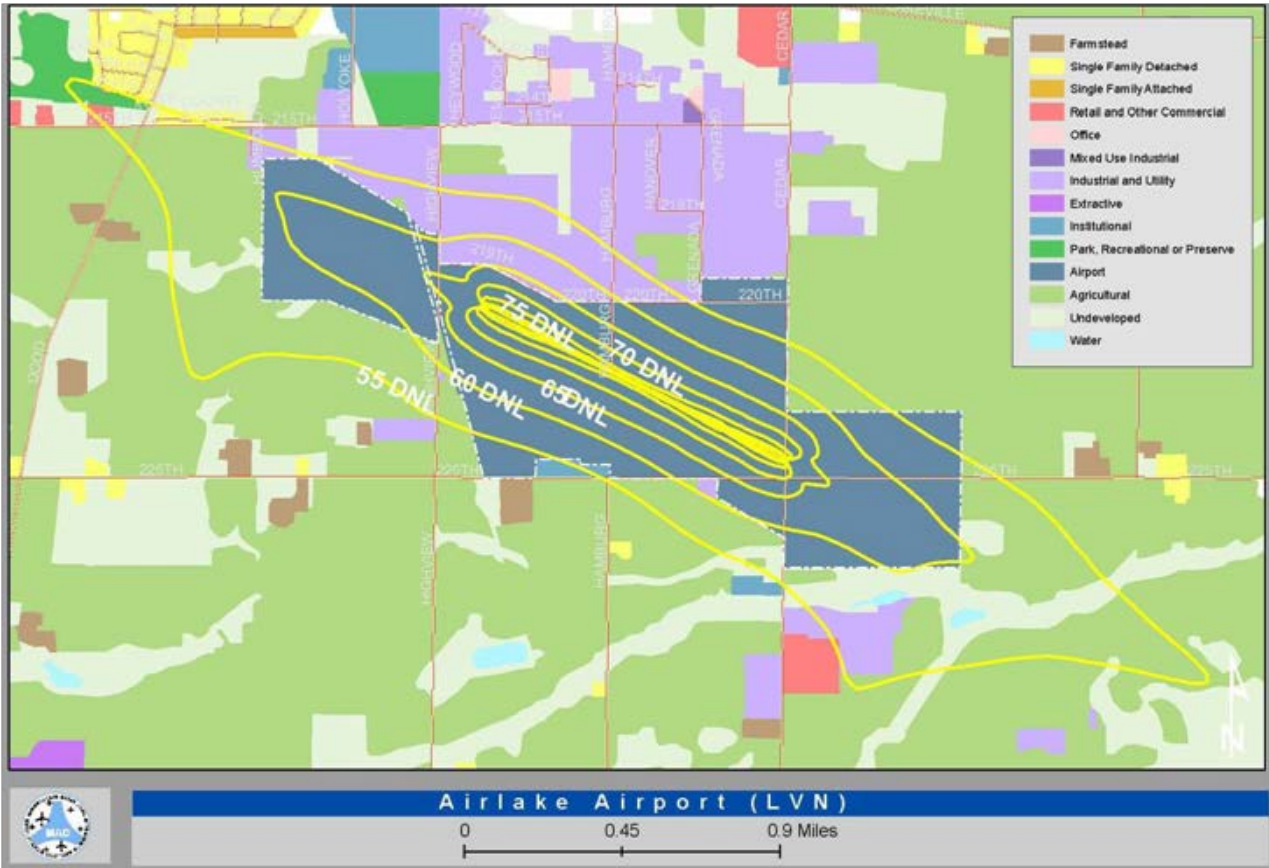


Figure L-4: 2025 Preferred Alternative Contours, Anoka County – Blaine Airport

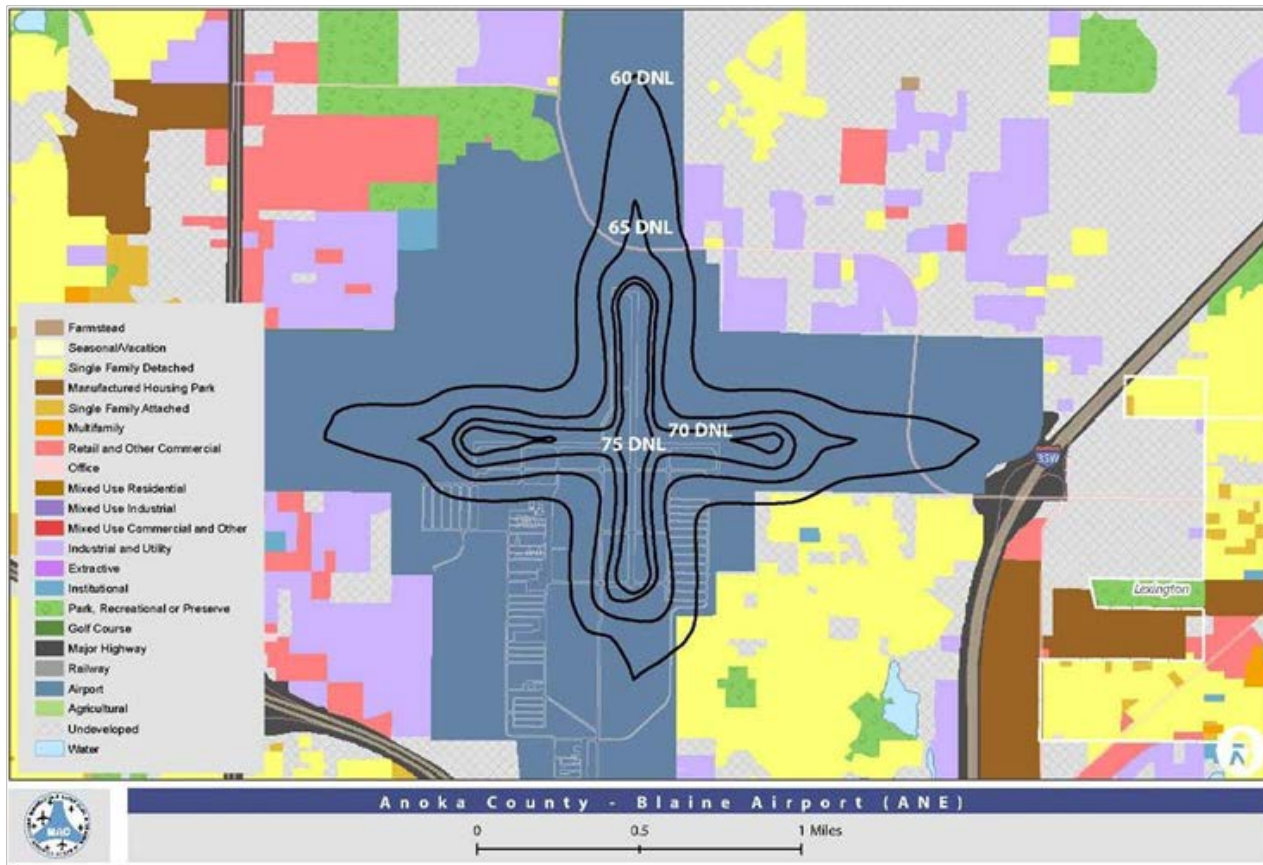


Figure L-5: 2025 Preferred Alternative Contours, Crystal Airport

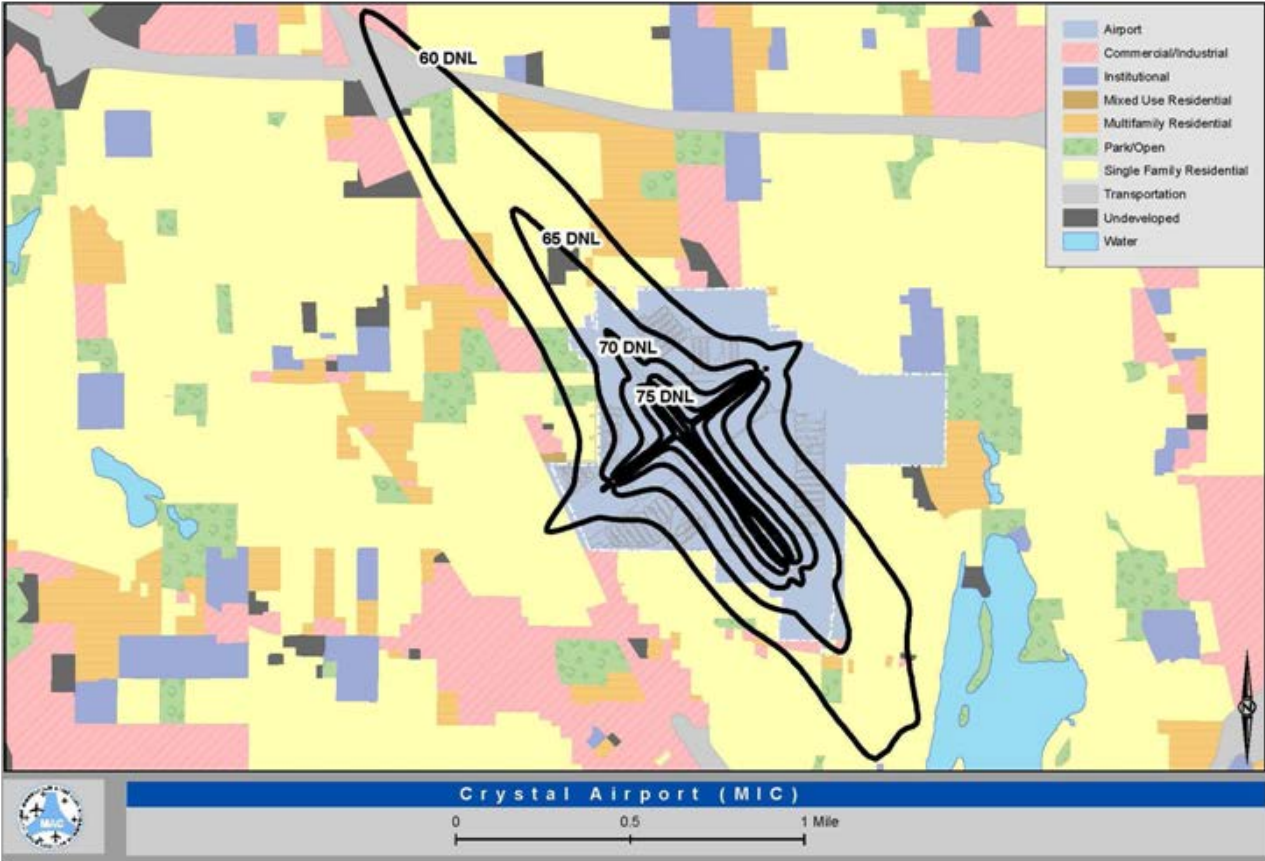


Figure L-6: 2025 Preferred Alternative Contours, Flying Cloud Airport

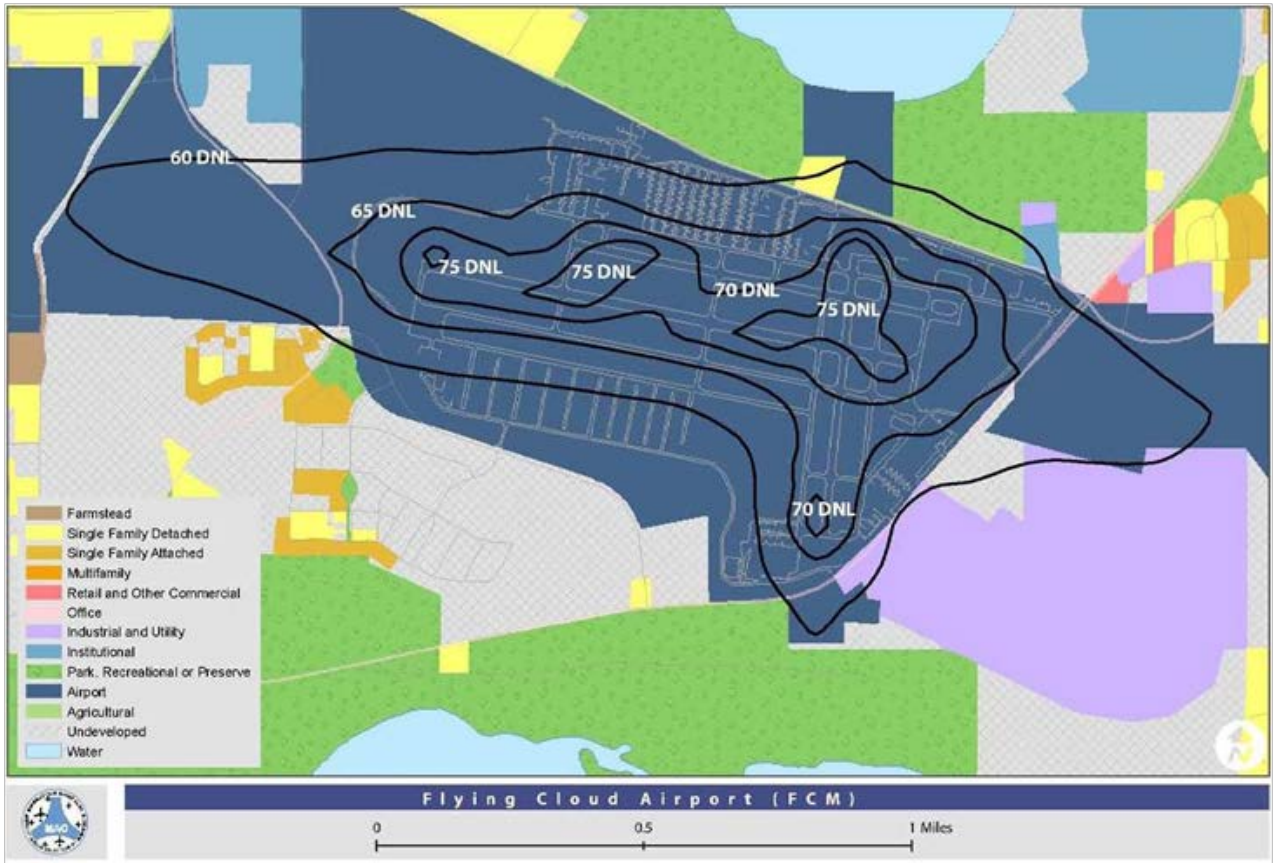
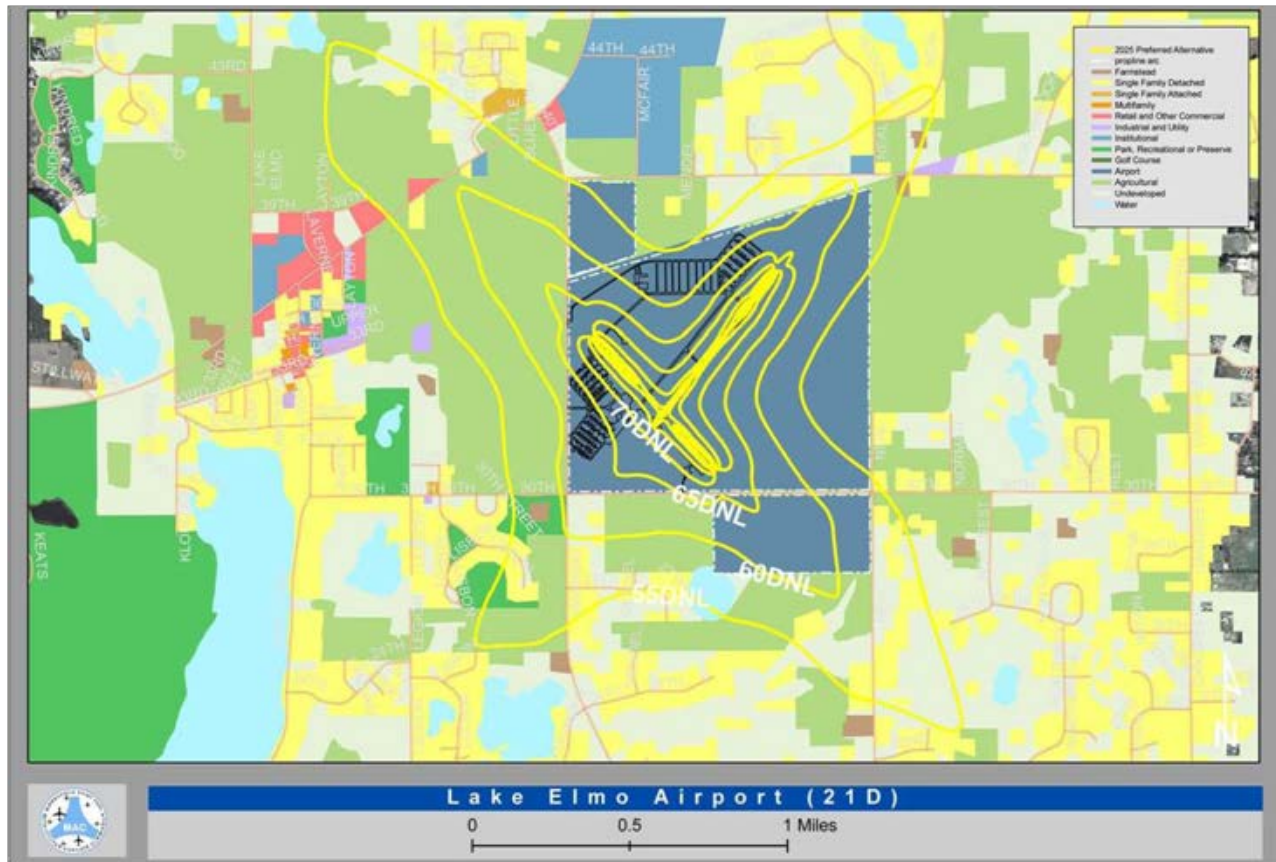




Figure L-7: 2025 Preferred Alternative Contours, Lake Elmo Airport



### Noise Exposure Zones:

Zone 1 - Occurs on and immediately adjacent to the airport property. Existing and projected noise intensity in the zone is severe and permanent. It is an area affected by frequent landings and takeoffs and subjected to aircraft noise greater than 75 DNL. Proximity of the airfield operating area, particularly runway thresholds, reduces the probability or relief resulting from changes in the operating characteristics of either the aircraft or the airport. Only, new, non-sensitive, land uses should be considered - in addition to preventing future noise problems the severely noise-impacted areas should be fully evaluated to determine alternative land use strategies including eventual changes in existing land uses.

Zone 2 - Noise impacts are generally sustained, especially close to runway ends. Noise levels are in the 70-74 DNL range. Based upon proximity to the airfield the seriousness of the noise exposure routinely interferes with sleep and speech activity. The noise intensity in this area is generally serious and continuing. New development should be limited to uses that have been constructed to achieve certain exterior to - interior noise attenuation and that discourage certain outdoor uses.

Zone 3 - Noise impacts can be categorized as sustaining. Noise levels are in the 65-69 DNL range. In addition to the intensity of the noise, location of buildings receiving the noise must also be fully considered. Aircraft and runway use operational changes can provide some relief for certain uses in this area. Residential development may be acceptable if it is located outside areas exposed to frequent landings and takeoffs, is constructed to achieve certain exterior-to-interior noise attenuation, and is restrictive as to outdoor use. Certain medical and educational facilities that involve permanent lodging and outdoor use should be discouraged.

Zone 4 - Defined as a transition area where noise exposure might be considered moderate. Noise levels are in the 60-64 DNL range. The area is considered transitional since potential changes in airport and aircraft operating procedures could lower or raise noise levels. Development in this area can benefit from insulation levels above typical new construction standards in Minnesota, but insulation cannot eliminate outdoor noise problems.

Noise Buffer zones - Additional areas that can be protect at option of the affected community; generally, the buffer zone becomes an extension of Noise zone 4. At MSP, a one-mile buffer zone beyond the DNL 60 has been established to address the range of variability in noise impact, by allowing implementation of additional local noise mitigation efforts. A buffer zone, out to DNL 55, is optional at those reliever airport with noise policy areas outside of the MUSA.

**Table L-4: Structure Performance Standard\***

Land Use	Interior Sound Level**
Residential	45dba
Educational/Medical	45dba
Cultural/Entertainment/Recreational	50dba***
Office/Commercial/Retail	50dba
Services	50dba
Industrial/Communications/Utility	60dba
Agricultural Land/Water Area/Resource Extraction	60dba

\* Do not apply to buildings, accessory buildings, or portions of buildings that are not normally occupied by people.

\*\* The federal DNL descriptor is used to delineate all the system airport noise policy zones.

\*\*\* Special attention is required for certain noise sensitive uses, for example, concert halls.