8. Transportation



The 2040 Transportation Plan is an integrated component of the Apple Valley Comprehensive Plan Update. The transportation plan is a key component of the city's Comprehensive Plan that assesses all modes of transportation, including streets and highways; trails and sidewalks; transit facilities; and airport accessibility. This plan expresses the location, limits, function, and capacity of all transportation facilities in the City of Apple Valley.

The State of Minnesota, through the enactment of the Metropolitan Land Planning Act (M.S. 473.859, Subd.3(1)) requires the Metropolitan Council's review of each metropolitan community transportation plan to assure conformity with the regional development framework. The Metropolitan Council's 2040 Transportation Policy Plan (TPP) is the planning document that provides guidance for policies and strategies included in the 2040 Apple Valley Transportation Plan.

Introduction and Authority

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The State of Minnesota, through the enactment of the Metropolitan Land Planning Act (M.S. 473.859, Subd.3(1)) requires the Metropolitan Council's review of each metropolitan community transportation plan to assure conformity with the regional development framework. The Metropolitan Council's 2040 Transportation Policy Plan (TPP) is the planning document that provides guidance for policies and strategies included in the 2040 Apple Valley Transportation Plan.

Background and Purpose of the Transportation Plan

The City of Apple Valley recognizes the changing travel needs of its residents, commuters, visitors, commercial transporters, pedestrians, and cyclists making trips within and through the community. To provide for safe, multimodal transportation facilities that offer adequate capacity (existing and future) with a high level of mobility, a transportation improvement plan that corresponds to the City's overall comprehensive plan must be adopted and implemented.

The 2040 Apple Valley Transportation Plan describes, designates, and schedules the location, extent, function, and capacity for all transportation modes within the community. To be consistent with the regional policy, the 2040 Apple Valley Transportation Plan includes the following elements:

- An assignment of socio-economic forecasts (population, households, and employment) to traffic analysis zones (TAZs);
- a street and highway plan that maps and describes existing roads and planned improvements, analyzes traffic volumes, and addresses safety and capacity issues;
- a bicycle and pedestrian plan;
- a transit plan for facilities and service; and
- an aviation plan that identifies aviation-related facilities and addresses airspace protections.

Goals, Objectives, and Policies

Transportation goals and policies reflect the vision for Apple Valley's transportation system. These goals and policies help to guide future priorities and investment. They also provide a means to measure the performance of the transportation system over time, and as necessary an opportunity to revise or supplement the desires of the community. The goals and policies listed below are not ranked or presented in any order, importance, or need.

Apple Valley Goals and Policies

Goal 1. Continue to establish and maintain an interconnected affordable network of roadways, transit service, bicycle trails and pedestrian facilities between neighborhoods, recreational and community facilities, and commercial centers, as well as connections outside of Apple Valley to the interconnected Metropolitan Region.

Policy 1.1 Work collaboratively with key stakeholders including Dakota County, Apple Valley Chamber of Commerce, and affected property owners on solutions that sustain, grow, unify and keep the downtown vital.

Policy 1.2 Coordinate regional roadway preservation improvements with other transportation system partners in the community, including: the Minnesota Department of Transportation (MnDOT), Dakota County, Minnesota Valley Transit Authority (MVTA), and school transit providers.

Policy 1.3 Look for opportunities with neighboring jurisdictions to enhance local street connectivity between communities. Also, utilize the Regional Bicycle Transportation Network (RBTN) to provide continuity across major barriers and between jurisdictions for bicycle connectivity.

Policy 1.4 Prioritize investments in A-minor arterials that build, manage, or improve the system's

ability to supplement the capacity of the principal arterial system.

Goal 2. Integrate and achieve a balanced mix of all transportation modes. All transportation projects within the city affect all modes of transportation. Consequently, all projects should be evaluated as to the impact on each mode.

Policy 2.1 Utilize Complete Streets principles to meet the travel needs of pedestrians, bicyclists, and transit users.

Policy 2.2 Promote design best practices, especially in provided and improving facilities for bicyclists and pedestrians, who are the most vulnerable users of the transportation system.

Policy 2.3 Facilitate neighborhood pedestrian and bicycle connections to highway-oriented commercial districts. While also promoting safe pathways for pedestrians and bicyclists in parking lots and internal traffic circulation areas.

Policy 2.4 Review new developments for adequacy of parking based upon need and the potential for joint use of parking facilities.

Policy 2.5 Provide and protect efficient connections from major freight facilities to the regional highway system.

Goal 3. Protect investments in the transportation system through strategic preservation, maintenance, and operation of system assets.

Policy 3.1 Maintain pavement and permanent right-of-way fixtures associated with the local roadway, bridge, trail, and sidewalk system using routine inspections, maintenance programs, and improvement programs coordinated by the Apple Valley Public Works Department.

Policy 3.2 Existing roadways should be upgraded when warranted by demonstrated volume, safety, or functional needs. Utilizing performance measures to catalog system deficiencies and identifying the level of satisfaction experienced by users of the transportation system.

Policy 3.3 Protect and strengthen the role of the regional transportation system to provide secure and effective emergency response to serious incidents and threats through transportation improvements and municipal policy.

Policy 3.4 Invest in transportation improvements that will attract and retain businesses and workers within Apple Valley, and pursue design alternatives that reflect the values of its citizens.

Goal 4. Improve the functionality and safety of the transportation system as a whole.

Policy 4.1 Reduce travel demand by encouraging programs that provide alternatives to single occupant vehicles. Work with businesses and developers during the plan review process to plan for multimodal strategies and options.

Policy 4.2 Coordinate with regional governments, transit agencies, and rideshare programs to capture the environmental and social costs of commuting and incentivize alternatives to single-occupancy vehicle trips.

Goal 5. Work with local entities to continue to enhance transit usage in Apple Valley while providing linkages both locally and regionally via transit.

Policy 5.1 Continue to work with MVTA to determine future transit services consistent with the city's transit market and its associated service standards and strategies.

Policy 5.2 The city will develop a transportation system that is cost-feasible, where expenditures satisfy a public transportation policy.

Policy 5.2 Provide trail connections to transit facilities.

Goal 6. Ensure the Apple Valley transportation system is resilient, sustainable, and able to evolve with societal advancements and changes, safeguarding investments for many years to come.

Policy 6.1 Consider opportunities to improve the city's intelligent transportation system (ITS) infrastructure to be prepared to potentially support autonomous and connected vehicles (AV/CV) in the future.

Policy 6.2 Utilize projects with significant investments (i.e., construction and reconstruction projects) to implement AV/CV technology.

Policy 6.3 Mitigate impacts to the natural environment and cultural resources when planning, constructing, and operating transportation systems.

Roadway System

Roadway Jurisdictional Classification System

Jurisdiction over Apple Valley's roadway system is divided among the state, county, and city. The system includes the interstate and Trunk Highway (TH) system, managed by MnDOT, and the County State Aid Highway (CSAH) and County Road system, managed by Dakota County. All remaining public streets and roadways are the city's responsibility. Roadway jurisdiction is based on several factors, including the following:

- Length of road/length of trip served;
- Connections to roads of similar jurisdiction level;
- Average daily traffic;
- Functional classification; and
- Special facilities served.

In general, the following relationships are observed and are depicted on Figure 1:

- Roadways that serve regional, inter-county or statewide transportation needs are typically owned and maintained by the State (MnDOT).
- Roadways that serve inter-city and sub-regional needs generally qualify as CSAHs or county roads and are owned and maintained by Dakota County.
- Roadways that primarily serve local transportation needs are owned and maintained by the City of Apple Valley.

Metropolitan Highway System

Roadways within Apple Valley that are under MnDOT's jurisdiction include:

- Interstate 35E; and
- TH 77

County Road System

In addition to the metropolitan highway system, most of the city's main transportation corridors are part of the county highway system. Roadways within Apple Valley that are under Dakota County jurisdiction include:

- CSAH 11;
- CSAH 23 (Cedar Avenue);
- CSAH 31 (Pilot Knob Road);
- CSAH 33 (Diamond Path);
- CSAH 38 (McAndrews Road);
- CSAH 42 (150th Street); and
- CSAH 46 (160th Street).

Local Street System

The city's remaining public streets and roadways constitute the local city street system.

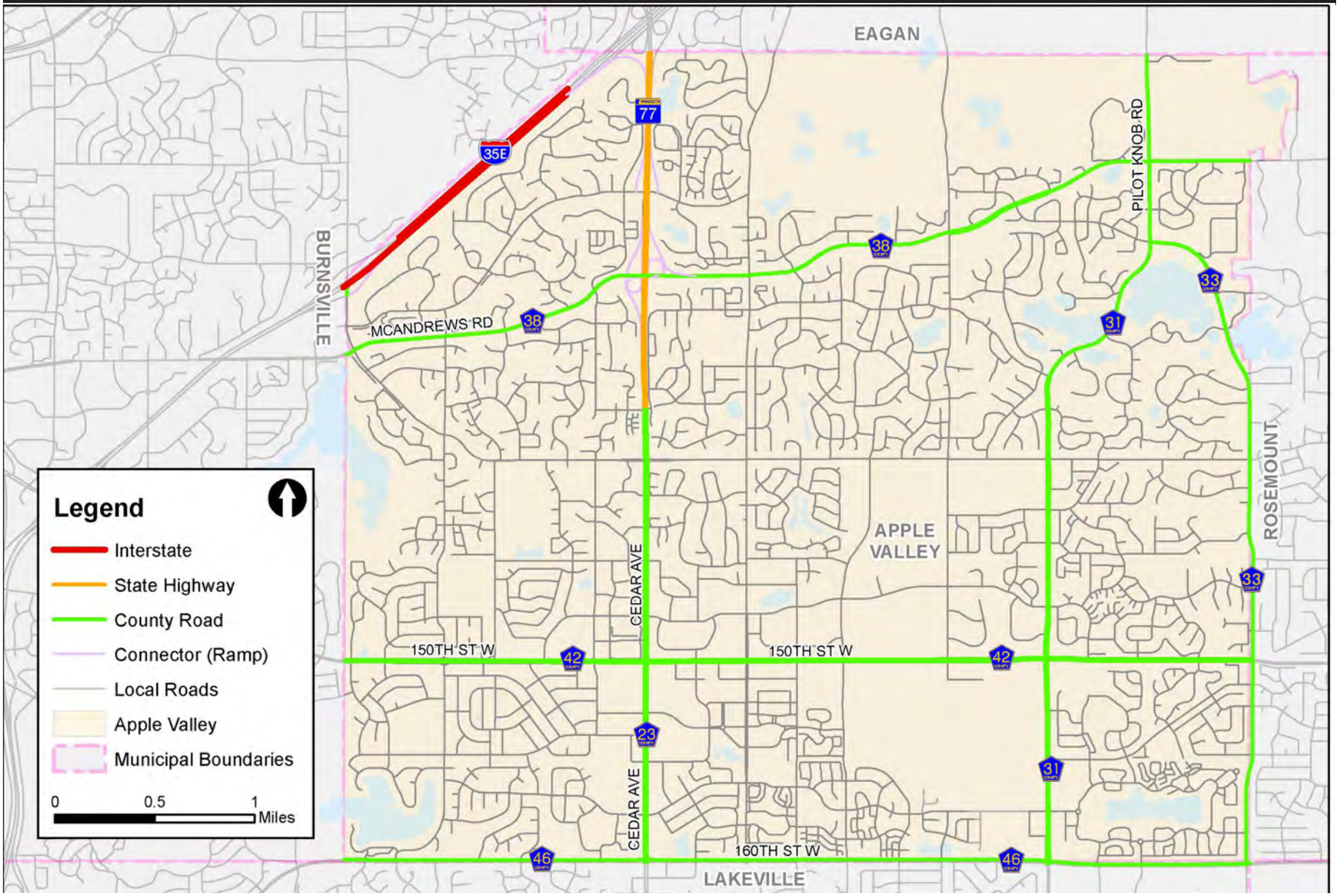
Roadway Functional Classification System

The purpose of a functional classification system is to create a hierarchy of roads that collects and distributes traffic from neighborhoods to the county and state highway systems in as efficient a manner as possible. Roads are placed into functional categories based on the degree to which they provide access to adjacent land or provide mobility to through traffic. Ideally, roads are designed to perform a designated function and are located to best serve the type of travel needed. Transportation issues arise when roadway design is inconsistent with the functional demands imposed on the roadway.

The functional classification system used in the City of Apple Valley is like that of the Metropolitan Council except for the minor collector designation which is currently not reflected on the Metropolitan Council network but is part of the city's system. This designation is proposed to be added to the Metropolitan Council's system as documented later in this chapter. Apple Valley's functional classification system, as currently recognized by the Metropolitan Council (illustrated on Figure 3), includes the following four primary categories:

- Principal Arterials
- Minor Arterials (A Minor and Other Arterials)
- Major Collectors
- Local Streets

Figure 1. Jurisdictional Classification



The A Minor/Other Arterials and Major/Minor Collector designations were adopted by the Metropolitan Council as a means for identifying roadways which are oriented toward mobility or through-trips (A-Minor and Major Collectors) versus those that are oriented more toward accessibility or land access (Other Arterials or Minor Collectors). Figure 2 depicts the relationship between land access and mobility and how the different classifications of roads provide varying degrees of mobility versus land access. Table 1 details criteria for roadway functional classification per the Metropolitan Council's classification system.

Figure 2. Roadway Access and Mobility Relationship

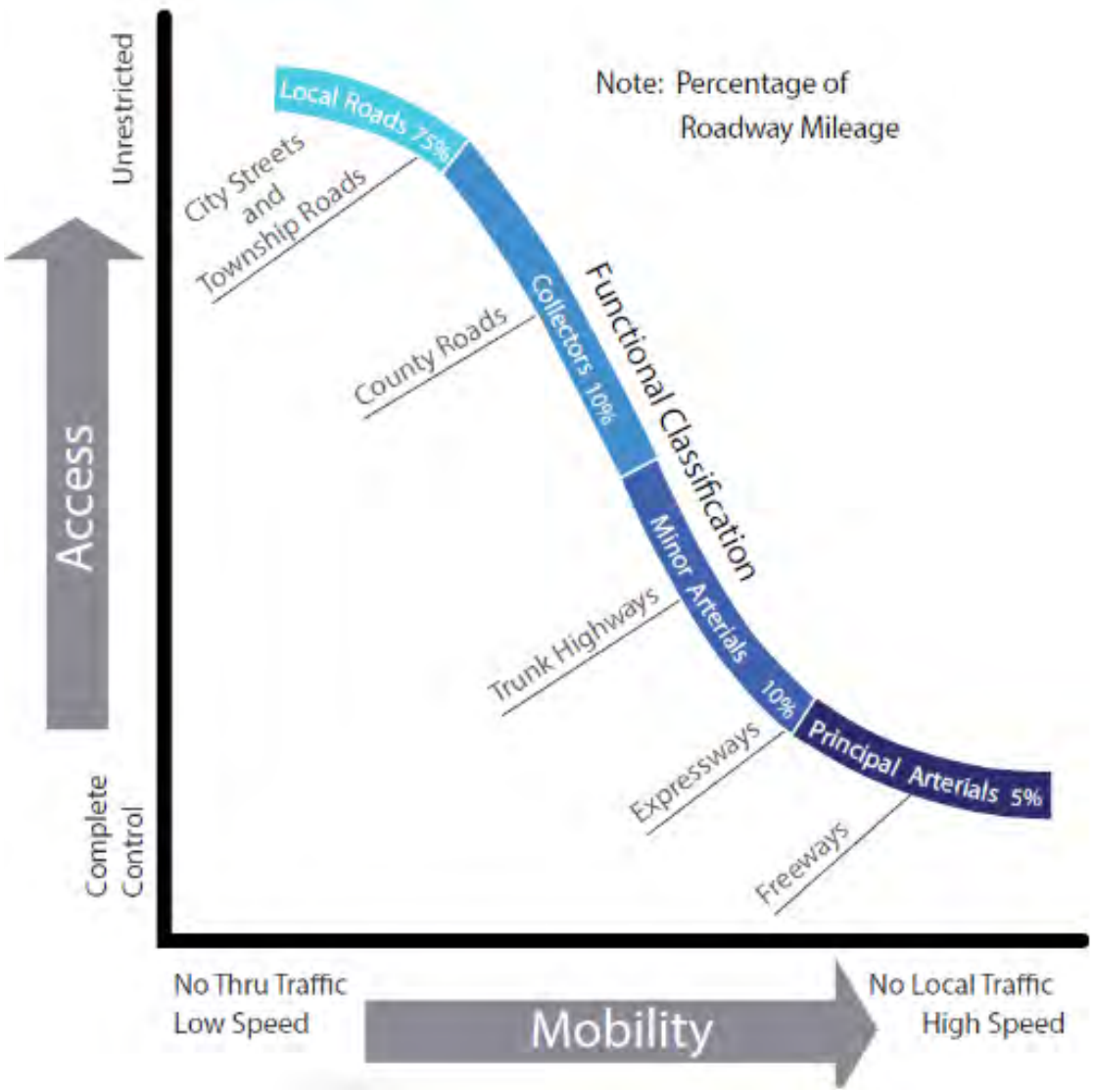


Figure 3. Existing Functional Classification

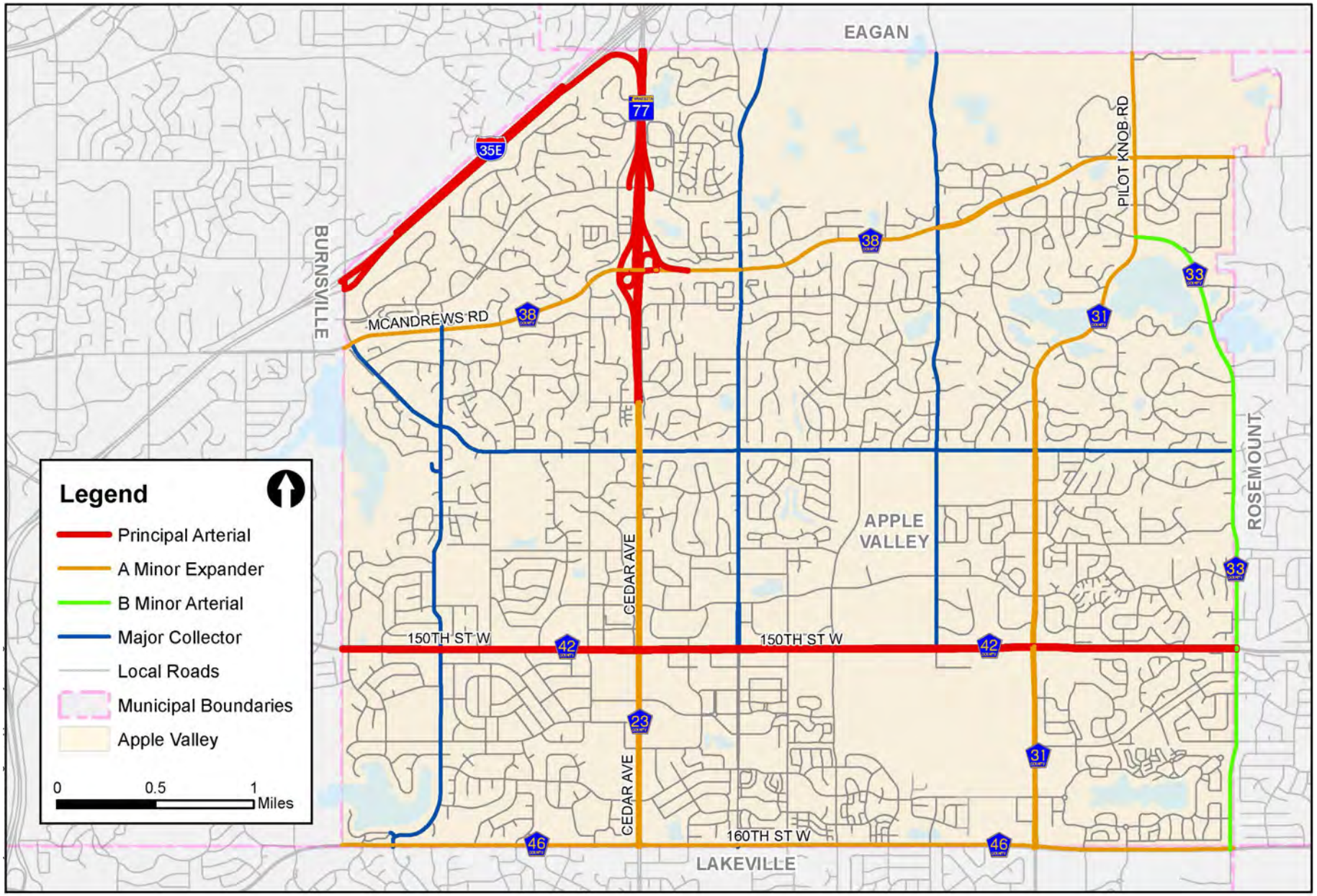


Table 1. Roadway Functional Classification Criteria				
Criteria	Type of Structure	Storage Capacity (Gallons)		Available/Usable Storage Capacity (Gallons)
Place Connections	Connect regional job concentrations and freight terminals within the urban service area.	Provide supplementary connections between regional job concentrations, local centers, and freight terminals within the urban service area.	Connect neighborhoods and centers within the urban service area.	Connect blocks and land parcels within neighborhoods and within commercial or industrial developments.
Spacing	Urban communities: 2 – 3 miles Suburban communities: Spacing should vary in relation to development density of land uses served, 2 – 6 miles	Regional job concentrations: 1/4 – 3/4 mile Urban communities: 1/2 – 1 mile Suburban communities: 1 – 2 miles	Job concentrations: 1/8 – 1/2 mile Urban Communities: 1/4 – 3/4 mile Suburban Communities: 1/2 – 1 mile	As needed to access land uses
System Connections	To Interstate freeways, other principal arterials, and select 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.	To most interstates, principal arterials, other minor arterials, collectors and some local streets	To minor arterials, other collectors, and local streets.	To a few minor arterials. To collectors and other local streets.
Trip-Making	Trips greater than 8 miles with at least 5 continuous miles on principal arterials. Express and highway bus rapid transit trips	Medium-to-short tips (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.	Short trips (1-4 miles depending on development density) at low-to-moderate speeds.	Short trips (under 2 miles) at low speeds, including bicycle and pedestrian trips. Longer trips accessing the collector and arterial network.
Service	Emphasis is on mobility for longer trips rather than direct land access. Little or no direct land access within the urbanized area.	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.	To collectors and other local streets.	Emphasis on land access, not on mobility. Direct land access predominantly to residential land uses.
Mobility vs. Land Access	5-10%	10-15%	Equal emphasis on mobility and land access. Direct land access predominantly to development concentrations.	60-75%
System Mileage	15-35%	15-25%	5-15%	10-25%
Percent of Vehicle Miles Traveled	5-10%	10-15%	5-15%	60-75%
Criteria	15-35%	15-25%	10-25%	10-25%

Table 1. Roadway Functional Classification Criteria

Criteria	Type of Structure	Storage Capacity (Gallons)		Available/Usable Storage Capacity (Gallons)
Intersections	Grade separated desirable where appropriate. At a minimum, high-capacity controlled at-grade intersections	Traffic signals, roundabouts, and cross-street stops	Four-way stops and some traffic signals	As required
Parking	None	Restricted as necessary	Restricted as necessary	Permitted as necessary
Large Trucks	No restrictions	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
Management Tools	Ramp metering, preferential treatment for transit, access control, median barriers, traffic signal progression, staging of reconstruction, intersection spacing	Traffic signal progression and spacing, land access management/control, preferential treatment for transit	Number of lanes, traffic signal timing, land access management	Intersection control, cul-de-sacs, diverters
Typical Average Daily Traffic Volumes	15,000-100,000+	5,000-30,000+	1,000-15,000+	Less than 1,000
Posted Speed Limit	40-65 mph	30-45 mph	30-40 mph	Maximum 30 mph
Right-of-Way	100-300 feet	60-150 feet	60-100 feet	50-80 feet
Transit Accommodations	Transit advantages that provide priority access and reliable movement for transit in peak periods where possible and needed	Transit advantages for reliable movement where needed.	Regular-route buses, transit advantages for reliable movement, where needed	Normally used as bus routes only in nonresidential areas
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 minor arterial, with greater emphasis along transit routes and in activity centers. Crossings should be spaced to allow for adequate crossing opportunities.	On, along, or crossing the collector with higher emphasis along transit routes and in activity centers. Crossings should be spaced for adequate crossing opportunities.	On, along, or crossing the local road

Source: Metropolitan Council, 2040 Transportation Policy Plan, 2015

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

Principal Arterials

Principal arterials are part of the metropolitan highway system and provide high-speed mobility between the Twin Cities and important locations outside the metropolitan area. They are also intended to connect the central business districts of the two central cities with each other and with other regional business concentrations in the metropolitan area. Principal arterials are generally constructed as limited access freeways in the urban area, but may also be constructed as multiple-lane divided highways. Apple Valley is served by three principal arterials: I-35E, TH 77 (north of CSAH 42), and CSAH 42 (150th Street) (as shown in Figure 3).

Table 2 provides an overview of the principal arterial roadways within Apple Valley. It identifies the number of travel lanes along with the existing (2014) traffic volumes for each principal arterial in the City.

Table 2. Principal Arterial Summary

Roadway	From	To	Lanes	2014 Volume
Interstate 35E	CSAH 11	Trunk Highway 77	2	9300
TH 77 (Cedar Avenue)	I-35E	Palomino Drive	6	76,000
	Palomino Drive	CSAH 38 (McAndrews Road)	5	70,000
	CSAH 38 (McAndrews Road)	138th Street	5	55,000
	138th Street	CSAH 42 (150th Street)	6	45,400
CSAH 42 (150th Street)	West City Limits	CSAH 23 (Cedar Avenue)	4	31,000
	CSAH 23 (Cedar Avenue)	Galaxie Avenue	4	34,500
	Galaxie Avenue	Johnny Cake Ridge Road	4	34,500
	Johnny Cake Ridge Road	CSAH 31 (Pilot Knob Road)	4	28,000
	CSAH 31 (Pilot Knob Road)	East City Limits	4	19,000

Source: MnDOT, Metropolitan Council, SRF Consulting Group, Inc.

Minor Arterials

Minor arterials are intended to connect important locations inside and outside of the city. They generally connect to principal arterials or other minor arterials or collectors. While there is generally more access to minor arterials than principal arterials, the emphasis is still on mobility. Major business concentrations and other important traffic generators are commonly located on minor arterials. The Metropolitan Council has identified minor arterials that are of regional importance because they relieve traffic on the principal arterials or substitute for principal arterials when necessary. These roads have been labeled as Minor arterials and categorized into four types: Relievers, Expanders, Connectors, and Augmenters.

- A Minor – Relievers are roadways that provide direct relief for traffic on major metropolitan highways (principal arterials).
- A Minor – Expanders are routes that provide a way to make connections between developing areas outside the interstate ring.
- A Minor – Connectors are roadways that provide good, safe connections among town centers.
- A Minor – Augmenters are roadways that augment principal arterials within the interstate ring.

Within Apple Valley, the following roadways are classified as “A” minor arterials:

- CSAH 11 – Expander

- CSAH 38 (McAndrews Road) – Expander
- CSAH 31 (Pilot Knob Road) – Expander
- CSAH 23 (Cedar Avenue: south of CSAH 42) – Expander
- CSAH 46 (160th Street) – Expander

There is one "Other" arterial roadway within Apple Valley that runs north-south through the City:

- CSAH 33 (Diamond Path)

Tables 3 and 4 provide an overview of the minor arterials within Apple Valley. Table 3. A Minor Arterial (Expander) Summary

Table 3. A Minor Arterial (Expander) Summary

Roadway	From	To	Lanes	2014 Volume
CSAH 38 (McAndrews Road)	West City Limits	Garden View Drive	4	7,700
	Garden View Drive	Pennock Avenue	4	10,800
	Pennock Avenue	Trunk Highway 77	4	11,400
	Trunk Highway 77	Galaxie Avenue	4	17,900
	Galaxie Avenue	Johnny Cake Ridge Road	4	14,600
	Johnny Cake Ridge Road	Everest Trail	4	11,300
	Everest Trail	CSAH 31 (Pilot Knob Road)	4	9200
	CSAH 31 (Pilot Knob Road)	East City Limits	2	9300
CSAH 31 (Pilot Knob Road)	Northern City Limits	CSAH 38 (McAndrews Road)	4	20,500
	CSAH 38 (McAndrews Road)	CSAH 33 (Diamond Path)	4	17,500
	CSAH 33 (Diamond Path)	140th Street	4-5	12,600
	140th Street	CSAH 42 (150th Street)	4	18,900
	CSAH 42 (150th Street)	South City Limits	4	24,000
CSAH 11	I-35E	Palomino Drive	4	21,200
	Palomino Drive	CSAH 38 (McAndrews Road)	4	17,800
CSAH 23 (Cedar Avenue)	CSAH 42 (150th Street)	South City Limits	6	34,100
CSAH 46 (160th Street)	West City Limits	Garden View Drive	4	25,200
	Garden View Drive	CSAH 23 (Cedar Avenue)	4	29,000
	CSAH 23 (Cedar Avenue)	Flagstaff Avenue	4	28,000
	Flagstaff Avenue	CSAH 31 (Pilot Knob Road)	4	27,500
	CSAH 31 (Pilot Knob Road)	East City Limits	4	24,000

Source: MnDOT, Metropolitan Council, SRF Consulting Group, Inc.

Table 4. "Other" Arterial Summary

Roadway	From	To	Lanes	2014 Volume
CSAH 33 (Diamond Path)	CSAH 31 (Pilot Knob Road)	140th Street	2	8,100
	140th Street	145th Street	4	10,600
	145th Street	CSAH 42 (150th Street)	2	8,400
	CSAH 42 (150th Street)	Dodd Blvd	2	3,400
	Dodd Blvd	155th Street	2	4,550
	155th Street	South City Limits	2	2,750

Source: MnDOT, Metropolitan Council, SRF Consulting Group, Inc.

Collectors

As noted previously, the Metropolitan Council's functional classification system provides for two types of collector streets (Major and Minor), which provide a balance between land access and mobility and move local street traffic to the arterial roadway system. Major collector roadways are designed to serve shorter trips that occur primarily within the city, and collect and distribute traffic from neighborhoods and employment centers to the arterial system. These streets are typically

part of the city's municipal state aid system. The city's major collector system includes the following streets (as shown in Figure 3):

- Galaxie Avenue;
- 140th Street;
- Garden View Drive (south of CSAH 38/McAndrews Road); and
- Johnny Cake Ridge Road (north of CSAH 42/150th Street).

The number of travel lanes and existing (2014) traffic volumes for the city's four major collectors are provided in Table 5.

Minor collector roadways collect and distribute traffic from neighborhoods to the major collector and arterial networks. These roads are generally shorter and less continuous than major collectors, but serve to supplement those streets. These streets are typically part of the city's municipal state aid system. As noted previously, the Metropolitan Council's 2017 Functional Classification system does not identify any minor collector streets within the City of Apple Valley.

Table 5. Major Collector Summary

Roadway	From	To	Lanes	2014 Volume
140th Street	CSAH 38 (McAndrews Road)	Garden View Drive	4	11,000
	Garden View Drive	CSAH 23 (Cedar Avenue)	4	10,400
	CSAH 23 (Cedar Avenue)	Galaxie Avenue	4	17,900
	Galaxie Avenue	Johnny Cake Ridge Road	4	17,200
	Johnny Cake Ridge Road	CSAH 31 (Pilot Knob Road)	4	15,400
	CSAH 31 (Pilot Knob Road)	142nd Path W	4	8,800
	142nd Path W	East City Limits	4	7,000
Garden View Drive	CSAH 38 (McAndrews Road)	140th Street	4	2,750
	140th Street	Walnut Lane	4	4,500
	Walnut Lane	CSAH 42 (150th Street)	4-5	3,600
	CSAH 42 (150th Street)	Whitney Drive	4	4,650
	Whitney Drive	South City Limits	4	3,050
Galaxie Avenue	North City Limits	127th Street W	2	3950
	127th Street W	CSAH 38 (McAndrews Road)	2	6400
	CSAH 38 (McAndrews Road)	132nd Street	4	11,400
	132nd Street	140th Street	4	11,700
	140th Street	CSAH 42 (150th Street)	4-5	14,000
	CSAH 42 (150th Street)	153rd Street	4-5	13,600
	153rd Street	South City Limits	4-5	8,500
Johnny Cake Ridge Road	North City Limits	125th Street W	3	6,800
	125th Street W	CSAH 38 (McAndrews Road)	3	6300
	CSAH 38 (McAndrews Road)	132nd Street	4	9,000
	132nd Street	140th Street	4	7,700
	140th Street	CSAH 42 (150th Street)	4	7,500

Source: MnDOT, Metropolitan Council, SRF Consulting Group, Inc.

Local Streets

All other public and private streets within Apple Valley are classified as local streets. Local streets provide the highest level of direct access and carry the lowest traffic volumes at the lowest speeds.

Recommended Changes to Functional Classification System

The functional classification system for roadways in the City of Apple Valley was reviewed to ensure appropriate network connectivity is maintained and for consistency with the functional classification criteria established by the Metropolitan Council. Based on this review, there are no recommended functional classification changes to the principal or minor arterial systems within the City of Apple Valley. Therefore, the functional classification system illustrated in Figure 4 is representative of future conditions for principal and minor arterial classifications in the City of Apple Valley.

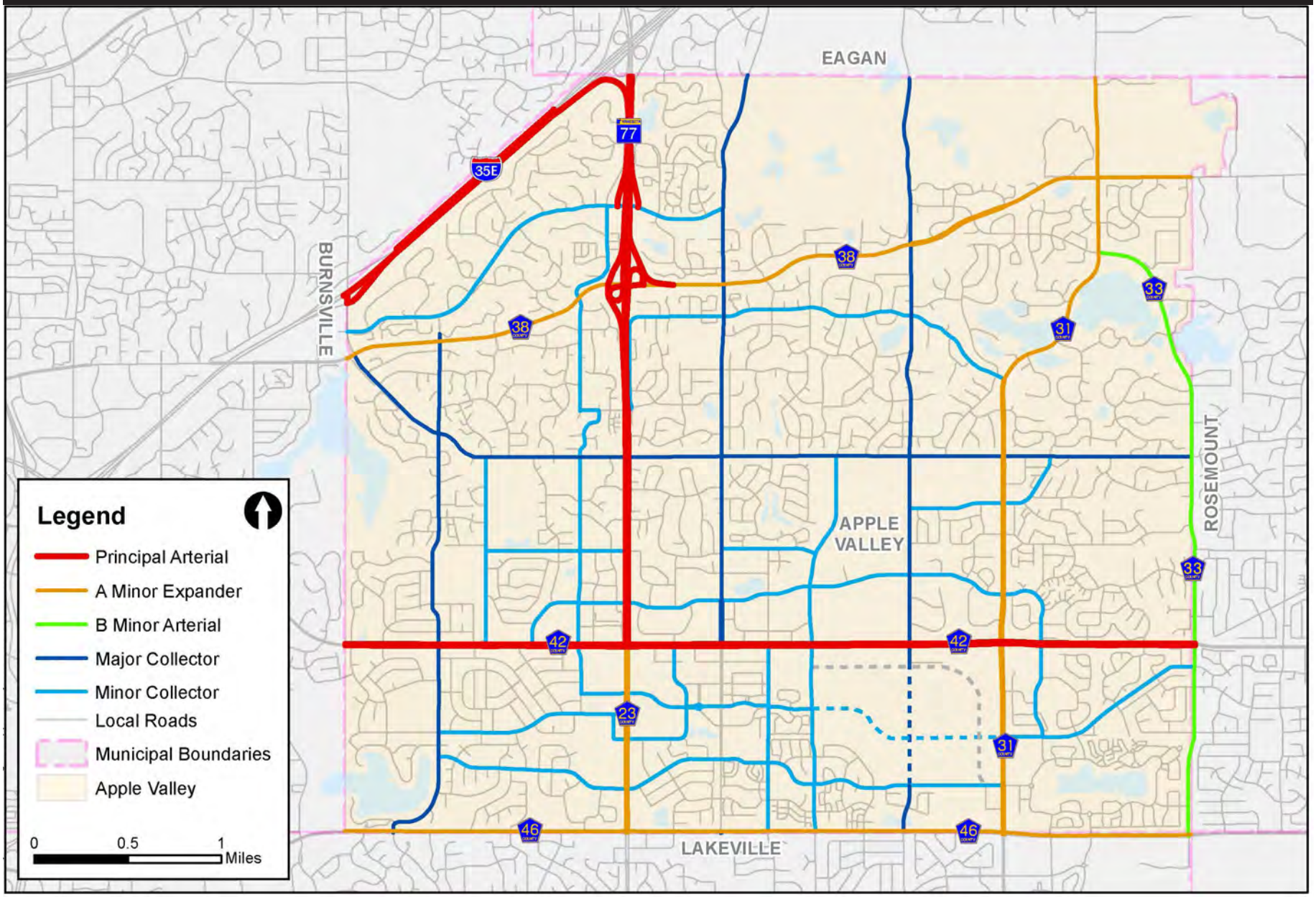
Although there are no changes to the principal or minor arterial classifications, there are changes proposed to the collector/local functional classifications. The proposed changes are based on the Federal Highway Administration's Functional Classification Manual criteria, Metropolitan Council guidance and several other factors, including:

- Estimated trip length,
- Trip type,
- Connections to activity centers,
- Spacing,
- Continuity,
- Mobility,
- Accessibility, and
- Speed

Given these criteria, the following roadways are recommended to be reclassified from local streets per the Metropolitan Council's 2017 Functional Classification system (as identified in Figure 3) to minor collectors. The minor collector designation acknowledges each of the roadways' function of providing connections to major collectors and arterial routes while emphasizing land access over mobility.

- Palomino Drive
- 127th Street
- Evermoor Parkway
- 132nd Street
- Ellice Trail
- 142nd Street
- Essex Avenue
- 145th Street
- 147th Street
- 153rd Street

Figure 4. Recommended Future Functional Classification System



Planning Context – Studies, Projects, Issues

The purpose of this section is to highlight the various roadway/corridor studies that have been conducted wholly or partially within Apple Valley since the 2009 Apple Valley Transportation Plan was completed. The descriptions highlight the issues and opportunities facing some of the key roadways in the city.

Dakota County 2030 Transportation Plan

The Dakota County 2030 Transportation Plan (June 2012) identifies major transportation system investments and prioritizes the anticipated needs associated with preservation, management, replacement, and transportation alternatives goals.

The plan identifies two highways within the city that will likely exceed the six-lane divided highway capacity: CSAH 42 (Foliage Avenue to Hayes Avenue) and CSAH 23 (TH 77 to 155th Street). The plan also notes that TH 77 (between CSAH 32 and 140th Street) is forecasted to experience a capacity deficiency over the plan period assuming no additional highway improvements are made.

County Highway 42 Study

In 2017, Dakota County, together with Apple Valley and Burnsville, completed the County Highway 42 Pedestrian Study. This study assessed intersection improvements and access intersection needs; and determined several intersection projects through the Capital Improvement Program Process as shown in the section below, Programmed or Planned Improvements. The study focuses on maintaining safety and mobility through necessary improvements at intersections along County Road 42. The study also recommends signal construction projects to affect Apple Valley in 2019. The following intersections with County Highway 42 were evaluated as part of the study:

- Elm Drive,
- Hayes Drive,
- Redwood Drive,
- Garden View Drive,
- 147th Street, and
- Pennock Avenue

Orchard Place Land Use Concept

In 2017 Apple Valley completed a concept study for the Orchard Place development located south of CSAH 42 and east of Flagstaff Avenue. This land use concept identifies the following land uses within the area: low and high density residential; commercial; office, and industrial. Planned land development and increased travel demand will attract additional traffic to the area. Thus, three important local collector streets are planned for the area:

- Johnny Cake Ridge Road will be extended from CSAH 42 to 157th Street.
- 153rd Street will extend to the east and connect with 155th Street at Pilot Knob Road.
- Local streets will be constructed to run north/south and east/west to provide internal traffic circulation from 155th Street to Johnny Cake Ridge Road extensions.

Downtown "Ring Route"

The downtown area of Apple Valley is near Cedar Avenue and CSAH 42. The area has been designated as the shopping, service and employment center of the community. Distinctive streetscape improvements were built in 1990 to allow local traffic to patronize local businesses. This is known as the downtown "ring route".

The city should ensure that the transportation elements in the downtown area continue to accommodate existing and future travel demand to serve the community shopping and service needs of its residents due to its convenient location to Apple Valley residents, contribution to the city tax base, and its significance as an activity hub in the city.

"Great Streets" Concept

The Vision chapter of the Apple Valley Comprehensive Plan states that the city should be a place of "great streets". A great street extends beyond the street surface to the sidewalks and landscaping in the adjacent right-of-way. A great street provides for the safe and efficient movement of vehicles while encouraging travel by bicycles and pedestrians. A great street supports and enhances land use. A great street adds to the quality of life and identity of Apple Valley. The street system

should be designed to avoid unintended traffic patterns and volumes. Therefore, the city should implement the "great streets" concept when planning future improvements to transportation corridors such as CSAH 23 (Cedar Avenue), CSAH 42, and the Downtown Ring Route.

Programmed or Planned Improvements

Programmed improvements are those improvements that have been approved for implementation with funding sources already identified. Programmed improvements are identified in MnDOT's Metro Capital Highway Investment Plan (CHIP), Metropolitan Council's 2040 Transportation Policy Plan (TPP), Dakota County's Capital Improvement Plan (CIP), and the City of Apple Valley's CIP.

MnDOT

- No projects identified within the City of Apple Valley

Metropolitan Council

- METRO Red Line Extension: 3-mile extension of the Red Line with plans to include 3 new stations from Apple Valley to Lakeville

Dakota County

- CSAH 33 (Diamond Path): Construction of a roundabout at the intersection of CSAH 33 (Diamond Path) and 140th Street (Apple Valley)/Connemara Trail (Rosemount) (timeframe: 2019-2022)
- CSAH 38 (McAndrews Road): Conversion of existing two-lane roadway to a three-lane roadway with right-turn lanes at major intersections from CSAH 31 (Pilot Knob Road) in Apple Valley to TH 3 in Rosemount (timeframe: 2017-2018)
- CSAH 31 (Pilot Knob Road): Construction of an Advanced Traffic Management System along CSAH 31 (Pilot Knob Road) from 170th Street in Lakeville to CSAH 38 (McAndrews Road) (timeframe: 2017-2018)
- CSAH 38: Repair/replace deteriorating modular block retaining walls along CSAH 38 (timeframe: 2021)
- County Road 42: Replace/rebuild traffic control signal systems along the intersections of County Road 42 and Hayes Avenue, Southcross Drive, Garden View Drive, Garrett Avenue and median/access modifications at Elm Drive and Redwood Drive (timeframe 2018-2020)

City of Apple Valley

- Apple Valley 12th Addition (Redwood Drive Area): Street and Utility Reconstruction (timeframe: 2018)
- Johnny Cake Ridge Road: Four Lane to three Lane Conversion and Street and Utility Reconstruction from 140th Street to Falcon Ridge Trail (timeframe: 2019)
- Cimarron & Surrey Trail Area: Street and Utility reconstruction (timeframe: 2020)
- Aple Valley 11th and 12th Addition (Ramsdell, Baldwin, Lowell Drive Area): Street and Utility reconstruction (timeframe: 2019)
- 142nd Street from Pennock to Cedar: Street Reconstruction (timeframe: 2019)
- 145th Street from Pennock to Cedar: Street Reconstruction (timeframe: 2021)
- Pennock Lane from 140th to 145th Street: Street Reconstruction
- Gardenview Drive: Street and Utility reconstruction (timeframe: 2020)
- Hayes Road from 140th to 150th Street: Street Reconstruction (timeframe: 2022)
- 157th Street from Cedar Avenue to Galaxie Avenue: Street Reconstruction (timeframe 2022)
- Traffic Signal Reconstruction
  - ✓ CSAH 42 and Elm Drive, Garden View Drive, Hayes Road and Pennock Avenue
  - ✓ CSAH 11 and CSAH 38 and 140th Street
- Traffic Signal Construction
  - ✓ Johnny Cake Ridge Road and Upper 147th Street
  - ✓ 132nd Street and Galaxie Avenue
- Roundabout Construction
  - ✓ 147th Street and Glazier Avenue

Coordination with Other Jurisdictions

The City of Apple Valley should continue to coordinate with adjacent jurisdictions (i.e., Burnsville, Eagan, Rosemount, and Lakeville), Dakota County, and MnDOT when planning future improvements. Coordination among jurisdictions provides opportunities for collaboration that could benefit all agencies and the public. This collaboration can result in financial and time savings through economies of scale, as well as potentially reducing construction impacts to residents through the coordination of projects.

2040 Forecast Traffic Volumes

Year 2040 daily traffic volumes were developed by considering the historical traffic growth rates on each roadway in Apple Valley, the broader Metropolitan Council regional travel demand activity-based model trends, and previously prepared forecasts for roadways in the area. In areas where land development is anticipated, the projected traffic volume was compared to generalized traffic trip rates for the development types and the traffic volumes adjusted as necessary. For documentation purposes, Figure 5 presents the roadway network and Transportation Analysis Zones for the City of Apple Valley contained in the Metropolitan Council regional travel demand model. Figure 6 presents the existing (2014) and forecast (2040) traffic volumes for all roadways within Apple Valley.

Figure 5. Transportation Analysis Zones

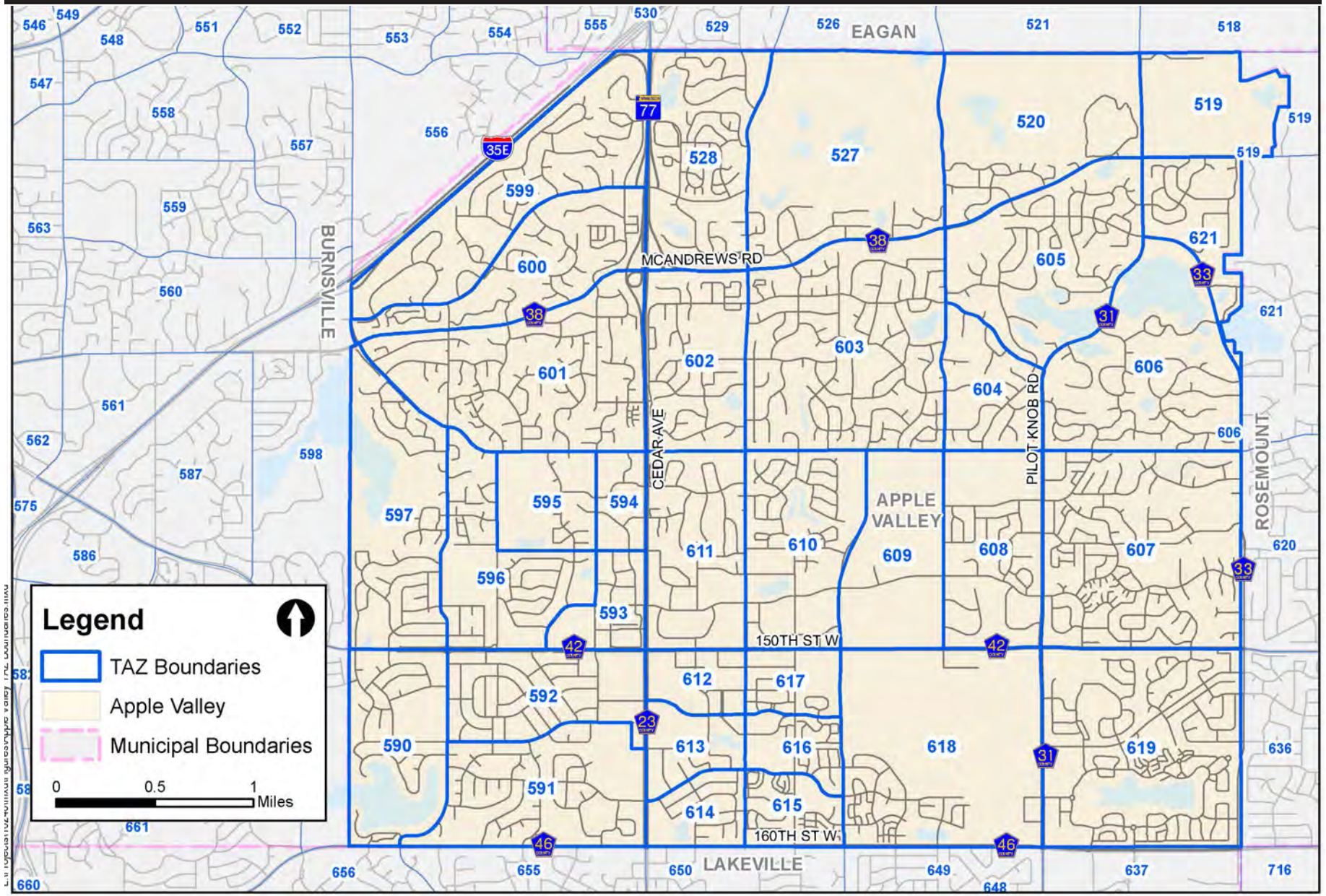
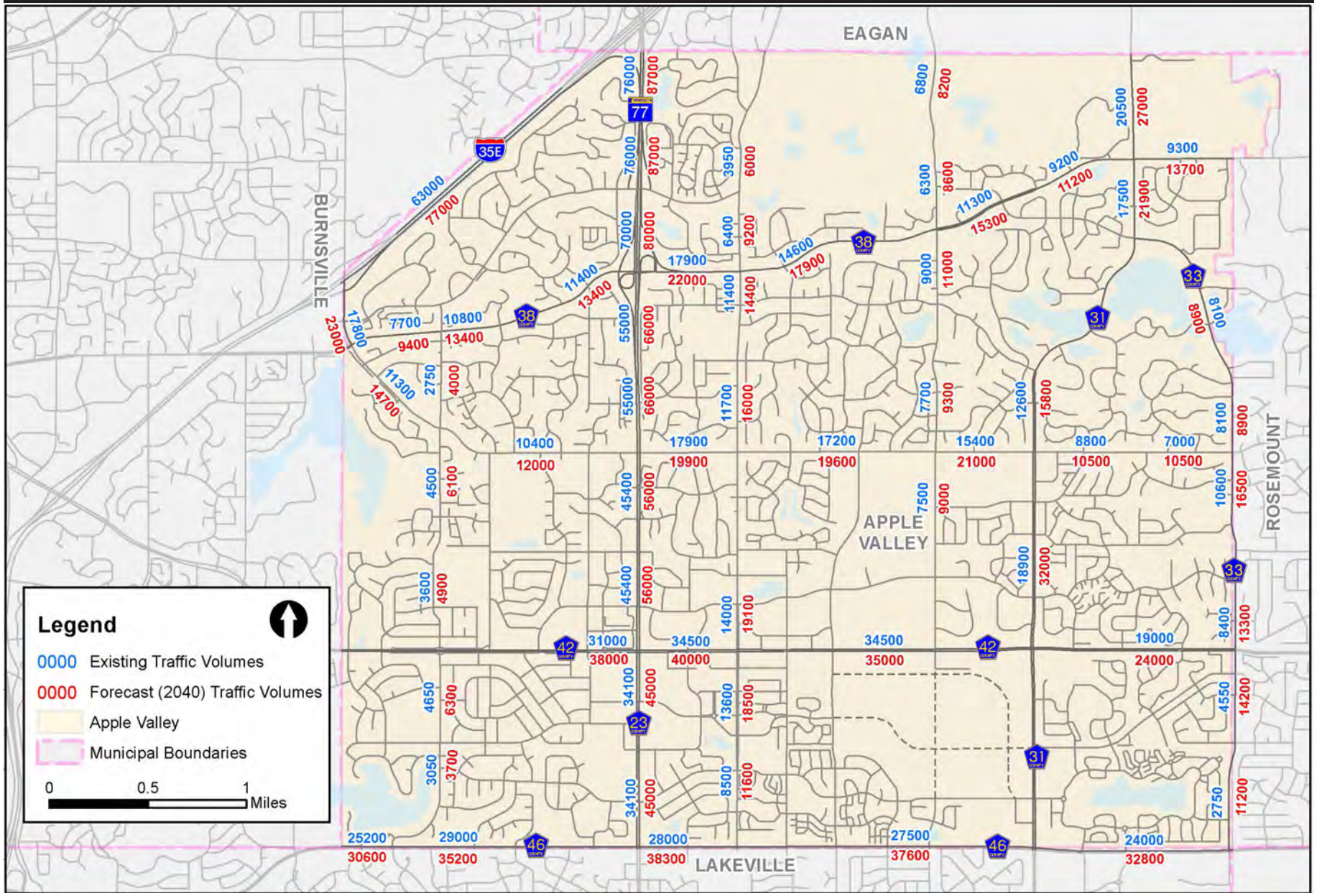


Figure 6. Existing & Forecasted Traffic Volumes



Capacity Assessment

As noted on the city's website, the development of Apple Valley has included a well-planned system of streets that fulfill travel desires of residents and employees in the city. However, as the city nears full development, issues have arisen regarding roadway capacity and safety. To gain a clearer understanding of the primary areas of concern regarding roadway capacity constraints, an assessment of the existing and forecast operational concerns through the community has been completed using the existing (2014) and 2040 traffic forecast data.

Existing and Forecast Roadway Capacity Deficiencies

To assess capacity deficiencies, existing (2014) and forecast (2040) traffic volumes were reviewed, along with design capacity guidelines. For example, traffic operations data indicates that two-lane roadways begin to experience noticeable problems once traffic volumes exceed approximately 10,000 trips per day.

The capacity thresholds presented in Table 6 were used to identify segments of roadway that are either nearing capacity or exceeding capacity of the roadway type. Figures 7 and 8 illustrate the existing (2014) and future (2040) capacity deficiencies within the community. Several segments of county facilities are currently experiencing and/or are projected to experience capacity deficiencies. Existing roadways that are near their design capacity include the following:

- I-35E from west city limits (140th Street) to north city limits (TH 77)
- CSAH 38 (McAndrew Road W) from CSAH 31 (Pilot Knob Road) to east city limits
- CSAH 31 (Pilot Knob Road) from CSAH 38 (McAndrew Road W to north city limits
- CSAH 31 (Pilot Knob Road) from 140th Street to south city limits
- CSAH 42 (150th Street) from CSAH 31 (Pilot Knob Road) to west city limits
- CSAH 46 (160th Street) from east city limits to west city limits
- 140th Street from TH 77 to CSAH 31 (Pilot Knob Road)
- Galaxie Avenue from 140th Street to 147th Street

Some of these roadways are under Dakota County jurisdiction and are major transportation corridors within the county highway system.

Overall, the local roadway system within the city has been designed to serve local transportation needs. Conflicts can result when regional traffic uses local roads as alternative routes. The local roads used as relievers to the regional system are typically those that serve a collector roadway function. Residential property owners along these routes recognize the increase in traffic when congestion on the regional system occurs. This increase in traffic can create conflicts with those residential land uses. Although the city recognizes that collector roads may be used in this manner, some methods can be employed to discourage the use of these roadways by regional traffic.

Table 6. Roadway Capacity Guidelines

Facility Type	From	Under Capacity			Near Capacity		Over Capacity
		LOS A	B	C	D	E	F
		0.2	0.4	0.6	0.85	1.0	>1.0
Two-lane undivided urban	8,000 – 10,000	2,000	4,000	6,000	8,500	10,000	> 10,000
Two-lane undivided rural	14,000 – 15,000	3,000	6,000	9,000	12,750	15,000	> 15,000
Two-lane divided urban	14,000 – 17,000	3,400	6,800	10,200	14,450	17,000	> 17,000
(Three-lane)	18,000 – 22,000	4,400	8,800	13,200	18,700	22,000	> 22,000
Four-lane undivided urban	24,000 – 28,000	5,600	11,200	16,800	23,800	28,000	> 28,000
Four-lane undivided rural	28,000 – 32,000	6,400	12,800	19,200	27,200	32,000	> 32,000
Four-lane divided urban	35,000 – 38,000	7,600	15,200	22,800	32,300	38,000	> 38,000
(Five-lane)	45,000	9,000	18,000	27,000	38,250	45,000	> 45,000
Four-lane divided rural	60,000 – 80,000	16,000	32,000	48,000	68,000	80,000	> 80,000
Four-lane expressway rural	90,000 – 120,000	24,000	48,000	72,000	102,000	120,000	> 120,000

Figure 7. Existing Roadway Deficiencies

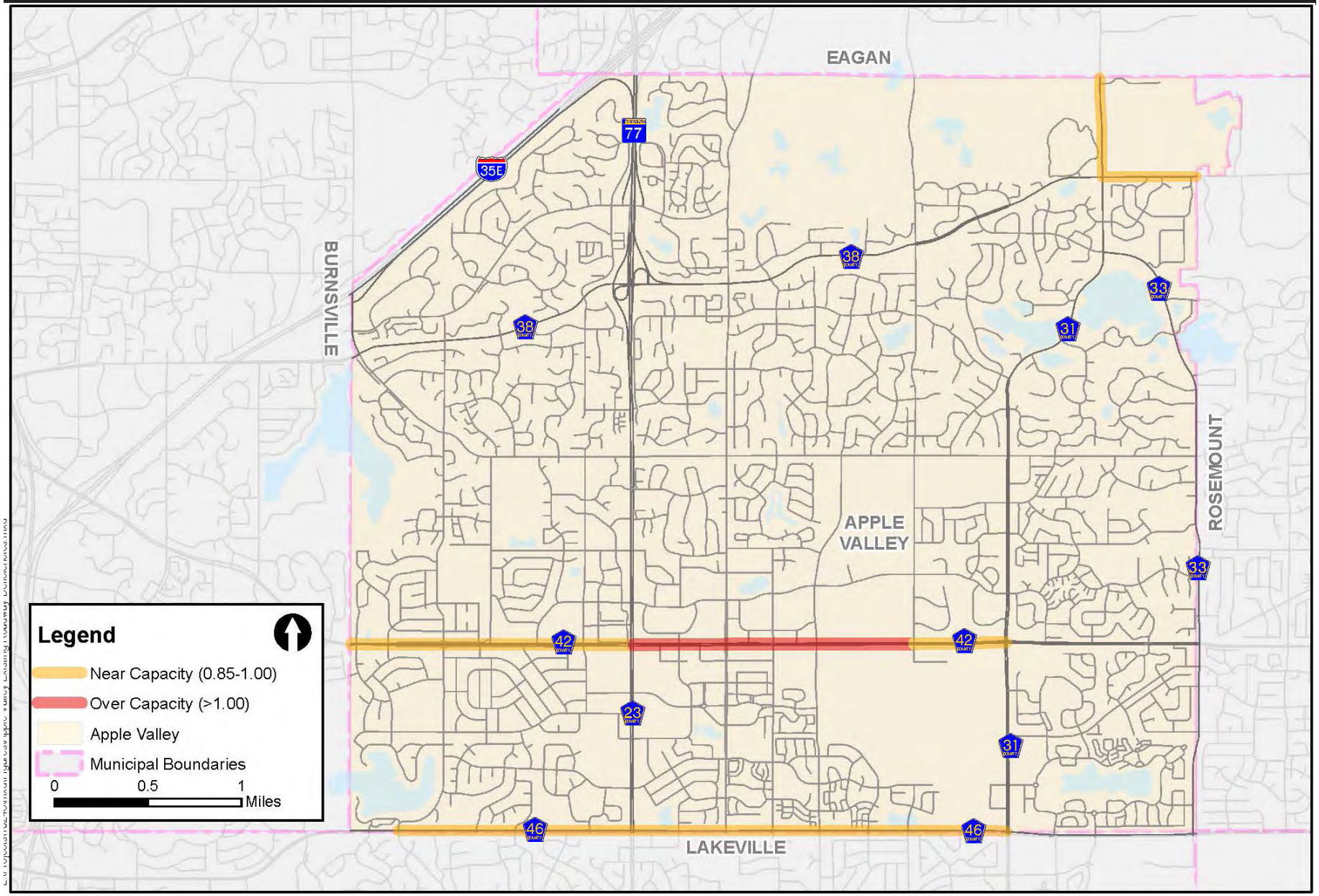
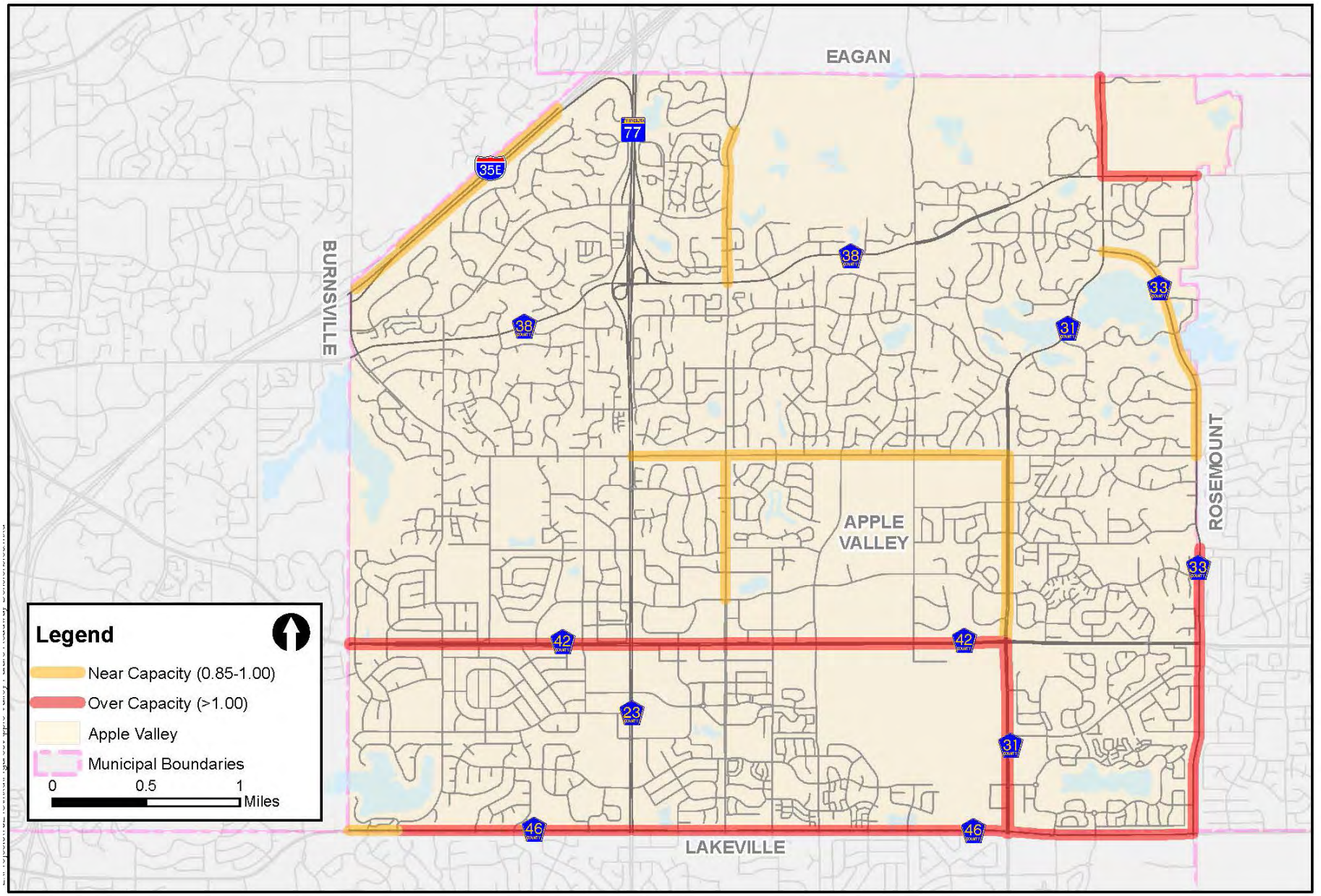


Figure 8. Forecast Year 2040 Roadway Deficiencies



Safety Assessment

In addition to capacity issues, roadway safety is a major concern and a priority for all jurisdictional levels. Crash locations and statistics for the city are recorded in MnDOT's crash mapping software (MnCMAT). A five-year reporting period beginning January 1, 2011 and ending December 31, 2015 was utilized in this assessment. Reported crashes during this time-period are listed in Table 7. For more local context an additional five years of data was reviewed to determine the top 10 local intersections with issues, by frequency – summarized in Table 8.

Most crashes occur along Pilot Knob Road/150th Street, Pilot Knob Road/CSAH 46 (160th Street), Cedar Avenue/150th Street and at County Road intersections. Since these are major county roads and highways, it is assumed that most of the crashes on these facilities occur during the morning (6:00 a.m. - 10 a.m.) and evening (3:00 p.m. - 7:00 p.m.) rush hour periods when traffic volumes are higher and more conflicts occur.

Overall, the crash frequency on local city streets is relatively moderate. A more rigorous investigation of crash rates, types, and severity for all the top crash locations in Apple Valley is suggested prior to drawing conclusions regarding appropriate corrective measures. As improvements in these corridors and intersections are considered, these safety concerns should be explored more thoroughly.

Table 7. Motor Vehicle Crashes in Apple Valley 2011 to 2015

Year	Fatal	Personal Injury Crashes			Property Damage	Total Crashes
		Type A Incapacitating Injury	Type B Non-Incapacitating Injury	Type C Possible Injury		
2011	2	8	33	163	327	533
2012	2	8	34	136	331	511
2013	1	4	27	128	366	526
2014	0	4	29	145	440	618
2015	2	6	28	130	369	535
Totals	7	30	151	702	1,833	2,723

Source: Apple Valley

Table 8. Top 10 Local Intersection Crash Locations in Apple Valley 2006-2015 (By Frequency of Crashes)

	Intersection	Total Crashes
1.	153rd Street and Garrett Avenue	60
2.	140th Street and Galaxie Avenue	62
3.	147th Street and Pennock Avenue	43
4.	140th Street and Johnny Cake Ridge Road	37
5.	147th Street and Galaxie Avenue	46
6.	138th Street and Glendale Court	32
7.	151st Street and Galaxie Avenue	30
8.	157th Street and Galaxie Avenue	32
9.	158th Street and Frisian Lane	12
10.	158th Street and Galaxie Avenue / Garret Drive	12

Source: Apple Valley

Access Management

Access management is an effort to maintain the effective flow of traffic and the safety of all roads while accommodating the access needs of adjacent land. Successful access management requires cooperation between land use and transportation interests to protect the public's investment in roads. Principal arterials, minor arterials, and collector streets function best with proper access spacing. Access management reduces congestion and accidents; preserves road capacity; reduces travel time for the delivery of goods and services; provides easy movement to destinations; and promotes sustainable community development.

In 2008, MnDOT developed access management guidelines for access spacing for use by local governments, as well as MnDOT roadway management. Dakota County has also identified access management guidelines in its 2025 Transportation Plan. Apple Valley will continue to observe these guidelines in its long-range transportation system planning and will work with these agencies to support access management for the roadway network in Apple Valley.

Tables 8 and 9 illustrate the applicable MnDOT and Dakota County access spacing guidelines adopted for use in Apple Valley's Transportation System.

Table 9. MnDOT Access and Signal Spacing Guidelines

Intersection Spacing				
Functional Classification	Primary Full	Total Crashes	Signal Spacing	Example Corridors in Apple Valley
Principal Arterials	Interchange Access Only		N/A	Interstate 35E
Principal Arterials	Interchange Access Only		Interim	Minnesota Trunk Highway 77
(Full Grade Separation)	1/4 mile	1/8 mile	1/4 mile	CSAH 38
Minor Arterials	1/8 mile	Not Applicable	1/4 mile	140th Street

Source: MnDOT Office of Investment Management/Access Category System and Spacing Guidelines/January 2008

Table 9. Dakota County Access Management Guidelines

	Divided Highways			Undivided Highways		
Functional Classification	Principal Arterial	Non-Principal Arterial	Non-Principal Arterial	Non-Principal Arterial	Non-Principal Arterial	Non-Principal Arterial
2025 Projected ADT	All	>35,000	15,000 to 35,000	15,000 to 22,000	<15,000	<3,000
Full Movement Public Street Intersections (a)	½ mile	½ mile	¼ mile (c)	¼ mile (c)	1/8 Mile (c), (d)	(b), (d)
Public Street Access (a)	¼ mile (a)	1.4 mile (a)	1/8 mile Right-in/ Right-out only (c)	N/A	N/A	N/A

Source: MnDOT Office of Investment Management/Access Category System and Spacing Guidelines/January 2008

Roadway type refers to the anticipated cross section. Divided section must be in place for conditional intersection (right-in/right-out or ¾ intersection) to be built.

(a) Median access points may be removed or modified to address safety and operational issues identified through engineering review.

(b) Determined based on engineering review, judgment considering location, distance from other driveways, nearby intersections, alignment with other access points, visibility and other operation/safety issues.

(c) Multiple commercial access permitted.

(d) Private residential or individual commercial access permitted. N/A – Not applicable to undivided roadway segments

Source: Dakota County 2025 Transportation Plan

The city can control access onto local roadways. However, access onto other roadways becomes the responsibility of the state or county. Access onto local roadways is managed through local subdivision and zoning standards. When the city receives a development proposal that proposes access onto a roadway under the jurisdiction of the state or county, the city will coordinate the review of these proposals with the appropriate agencies. The city will also participate in the design process with the appropriate agency when roadways are proposed for construction or reconstruction to ensure proper design and location of access points.

Traffic Calming

Traffic calming is the management of traffic to improve safety not only for vehicles, but other users of the roadway such as pedestrians and cyclists. Management techniques include the physical modification of the street to divert nonlocal traffic off local roadways and influence the behavior of drivers using the street, particularly to lower the vehicle speed. The objective is to achieve a traffic behavior pattern that is compatible with other appropriate street activities and adjacent land uses.

Examples of traffic calming measures include narrow streets, roundabouts, medians, curb extensions (bump-outs), crosswalks, and entry treatments. The city will review these techniques during the design process for local road construction and reconstruction to determine if they are appropriate. Traffic calming measures will generally be considered for local streets only if:

- The measure selected is consistent with the problem being addressed.
- The measure will not divert traffic onto other local streets or degrade public safety.
- State Aid Design Standards are met, if applicable.

Right-of-Way Preservation

There are many different techniques available to protect right-of-way corridors for future road improvements. The basic approaches can be summarized as follows:

- Land acquisition (purchase of easements, title purchase, and eminent domain). In general, land acquisition is an approach applied when specific improvements are eminent. The applicability of acquisition is directly linked to the availability of funding.
- Landowner agreements (development agreements, transferable development rights). Landowner agreements are often limited in effectiveness when dealing with a large project area. They are applied on a parcel-by-parcel basis and are most effective when dealing with larger land holdings and when specific improvements are eminent.
- Land use regulations (development exactions, setback ordinances, official map, subdivision regulations). Land use regulation techniques are facilitated through the comprehensive planning process. Certain regulations such as setback ordinances can be applied community-wide while others such as official maps are typically developed for individual corridors and require a more significant level of corridor definition.
- Access management (limiting curb cuts, reverse lot frontage). Access management principals should be a centerpiece of any community's transportation plan. To be successful, it is important that the guidelines are applied consistently and uniformly at the time platting occurs.

In summary, the applicability of these options is dependent on many factors including available funding, the immediacy of development, and the timing of the need for the road improvements.

Transit System

As designated by the Metropolitan Council, Apple Valley is in the Metropolitan Transit Taxing District, and is composed of three Transit Market Areas: II, III, and Emerging Market Area IV. Market Area II features limited stop service to connect major destinations and a network of local routes with moderate level of service and frequency. Service options for Transit Market Area III include peak-only express, small vehicle circulators, midday circulators, special needs paratransit (ADA, seniors), and ridesharing. Figure 10 illustrates current transit system routes, stops, and support facilities in Apple Valley (described in greater detail in the

next section).

Existing Transit System

Bus Service

Transit service in Apple Valley is provided by the Minnesota Valley Transit Authority (MVTA). The MVTA is an independent transportation agency for the cities of Apple Valley, Burnsville, Eagan, Rosemount and Savage formed under state legislation that allowed outer-ring suburbs to "opt-out" of centrally provided transportation services. The MVTA operates peak express service to downtown Minneapolis and downtown St. Paul, local crosstown service, and reverse commute express services.

MVTA currently operates several bus routes along Apple Valley's principal and minor arterial routes. Current routes include 420 Local Flex Route, 440 Local Route, 442 Local Route, 476 Minneapolis Express, 477 Minneapolis Express, 478 Minneapolis Express and 480 St. Paul Express Route. Bus service is more frequent during the A.M. and P.M. peak commute times, with only a few Express Routes offering trips in the middle of the day.

Demand-Response Service

Unique transit needs in the community are presented by populations housed in group quarters and facilities that offer specialty care services for temporarily or permanently disabled populations and seniors. The transit needs of these populations are varied and are typically provided by specialized paratransit providers that offer express or demand-response services, such as the Metro Mobility program administered by the Metropolitan Council. Dial-a-ride service for seniors and persons with disabilities is also provided by Dakota Area Resources and Transportation for Seniors (DARTS). DARTS is a non-profit that provides demand responsive services for seniors among other social services. It is funded by Dakota County, donations, and receives Performance Based Funding Grants from the Metropolitan Council.

Transit Facilities

Park and Ride

MVTA operates three park and ride facilities in Apple Valley where passengers may park their cars free of charge and board a bus, carpool or vanpool. The park and ride facilities include the Apple Valley Transit Station, the Palomino Hills Park & Ride Lot, and the 157th Street Station.

Apple Valley Transit Station, established in 1998 and located on Cedar Avenue by 155th Street W, features 750 parking spaces both in structured and surface parking. The facility also includes an indoor climate-controlled waiting area, restrooms, and bike lockers and bike racks. Furthermore, the parking deck connects to a pedestrian bridge, which crosses over Cedar Avenue to a METRO Red Line station. Per Metro Transit's 2016 Park and Ride System Report, the Apple Valley Transit Station is at capacity and relies on overflow lots to meet consumer demand. Bus routes 420, 440, 442, 475, 477, and 480 serve this station, as well as the METRO Red Line.

Palomino Hills Park & Ride Lot opened in 1993 and is located just west of Cedar Avenue and south of Palomino Drive on Pennock Avenue. The park and ride facility features 318 parking spaces, a heated shelter, bike lockers, and a newspaper rack. The station predominantly serves residents in the northern part of Apple Valley. In the past five years, the Park and Ride experienced above 75 percent utilization; however, recently utilization fell below 60 percent. Bus routes 440, 476, 477 and 480 serve this park and ride facility.

The 157th Street Station opened in 2006 and is located on Pilot Knob Road between CSAH 46 (160th Street) and 157th Street next to Quarry Point Park. This station features 250 parking spaces, an indoor climate-controlled waiting area, a restroom and bike lockers. As shown in Table 10, the station experiences low park and ride utilization relative to previous years. The utilization may rebound with the redevelopment of Orchard Place, located north of the station. Routes 477 and 479 serve the 157th Street Station.

Table 10. Park & Ride Capacity and Usage 2013-2016

	Apple Valley Transit Station		Palomino Park and Ride		157th Park and Ride	
Capacity	768		318		258	
2013 Use	758	99%	272	86%	164	44%
2014 Use	818	107%	250	79%	32	12%
2015 Use	759	99%	256	81%	29	11%
2016 Use	767	99%	188	59%	18	7%

Source: 2016 Park and Ride System Report (Jan 2017), 2015 Park and Ride System Report (Mar 2016), 2014 Park and Ride System Report (March 2015).

Bus Stop and Stations

Stations along the METRO Red Line feature indoor climate-controlled shelters with electronic signage displaying arrival times. All stations have a similar design featuring a sinuous roofline and large windows thus, visually uniform and easy to identify.

Transit Advantages

Bus-only shoulders allow buses to use the roadway shoulder to bypass automobiles that are in the general-purpose lanes. Implemented as part of the METRO Red Line project, the METRO Red Line now uses shoulders along Cedar Avenue in situations where the commuter traffic is slower than 35 miles an hour.

Metro bypass allows a bus to enter the highway without waiting for metered passenger traffic. There is one meter bypass in Apple Valley, entering Cedar Avenue northbound from Palomino Drive.

Travel Demand Management

Travel demand management (TDM) is a set of techniques used to reduce peak period vehicle trips by shifting travelers from driving alone into shared ride arrangements or by encouraging alternative work arrangements, such as flextime and telecommuting, which remove trips from the peak travel times. Travel demand management techniques are best implemented through a partnership of cities, regional and state agencies, and employers to encourage travelers to change their behavior through incentives, enhanced services, and high occupancy facilities.

Ridesharing is a travel demand management tool being used in Apple Valley to include Metro Commuter Services, which provides carpool-matching services to employers and individuals.

The city supports travel demand management to alleviate congestion on roadways within the city. The city will encourage transit-friendly design and employer participation in travel demand management in the development review process. The city will work with businesses within the community to encourage the development of voluntary travel demand management programs. Development plans will also be reviewed to ensure transit is accommodated where it is feasible.

Programmed or Planned Improvements

METRO Red Line

Programmed improvements associated with the METRO Red Line include an initial study for the Palomino Station. The station design is confronted by space constraints largely caused by the Cedar Avenue entrance and exit ramps at Palomino Drive/127th Street West. To remediate the current space limitations, an alternative design that includes removing the entrance and exit ramps was explored in the Cedar Avenue Corridor Transitway Implementation Plan Update (2015). The design would to create enough space for the METRO Red Line to safely reach stations and create more parking spaces to supplement increased use at Palomino Park and Ride.

The expansion may include as many as 700 new, dedicated spaces to support ridership at the Palomino METRO Red Line Station. The expansion is in response to a market study that showed the need for more park and ride opportunities in the northern part of Apple Valley in 2011. There has been difficulty acquiring land near the 140th Street and 147th Street Stations to support a park and ride.

Park and Ride Facilities

Programmed improvements associated with the METRO Red Line include a study of parking expansion at the Palomino Park and Ride with a newly designed station, described in detail in the previous section.

The 157th Street Park and Ride will need to be monitored for performance and adequacy as Orchard Place fills with new development.

Apple Valley Transit Station currently has 750 parking spaces in both structured and surface parking. Due to consistent peak capacity, expansion may be warranted.

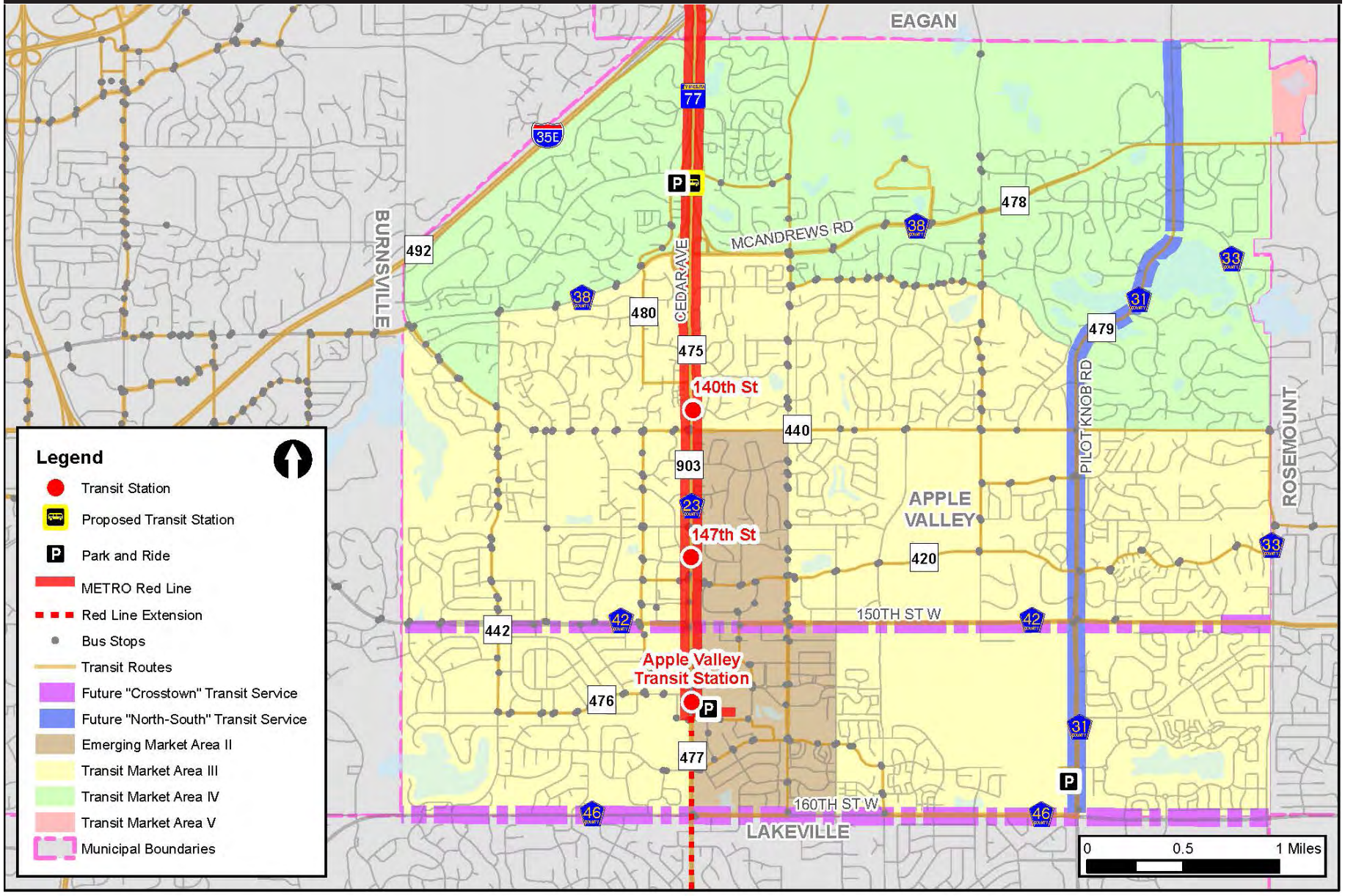
Future Transit Opportunities

The City of Apple Valley may directly work with MVTA and DARTS to influence the decisions of these organizations. They city may also weigh in on the planning and management of the METRO Red Line. The city should continue to fully engage the decision-making processes within these organizations and programs to ensure an effective and high-level transit service in the city.

With the redevelopment at Orchard Place and welcoming of hundreds of new jobs, there should be a focus on inviting large employers to engage in TDM measures. Employers can assist with transit promotion and transit alternatives, like carpooling. Along this line, the city staff can connect employers, especially new firms, to the planning and services offered by MVTA and DARTS. Collaboration between employers and transit providers may include better facilities and reverse commute options, among others.

A call for higher density housing within a half-mile of a station and corridor-wide station area planning is included in the Cedar Avenue Corridor Transitway Implementation Plan Update. To help guide transit oriented development near stations, Apple Valley can complete station area plans.

Figure 9. Existing Transit Service



Pedestrian and Bicycle Facilities

Increasingly, pedestrian and bicyclist facilities in the city are serving the dual role of providing recreational value as well as viable options for commuters (for work or shopping). A detailed discussion of pedestrian and bicycle facilities, along with the long-range planning for these facilities in relationship to the community's recreational assets, can be found in the Parks and Active Living chapter of the Apple Valley Comprehensive Plan.

The expansion of commuter pedestrian and bicyclist use is expected into the future with the expansion of transit facilities and expected continued increases in automobile use costs. Thus, pedestrian and bicyclist system improvements will need to focus on enhancing connections between neighborhoods and the primary roadway system and the commercial areas of the City.

Bicycle and pedestrian accessibility to existing and planned transit corridors and transit facilities will be greatly enhanced within Apple Valley with the Cedar Avenue BRT Improvements. As previously noted, BRT offers passengers the option to bring a bicycle along to complete their trip to a nearby destination. Furthermore, the Draft Dakota County Transit Plan notes that, "The condition of [bike and pedestrian trails] within a half-mile around a transit station or stop can have a high impact on the user friendliness and access to transit services."

2010 BikeWalk Apple Valley

In 2010, the City of Apple Valley produced BikeWalk Apple Valley, a trail and sidewalk plan designed to inform and improve alternative transportation and multimodal connectivity. BikeWalk Apple Valley assessed the existing gaps within the network and offered recommendations. The following priority areas were included as part of the BikeWalk Apple Valley Plan: Southwest Apple Valley, Downtown, and East Central Apple Valley.

Regional Bicycle Transportation Network (RBTN)

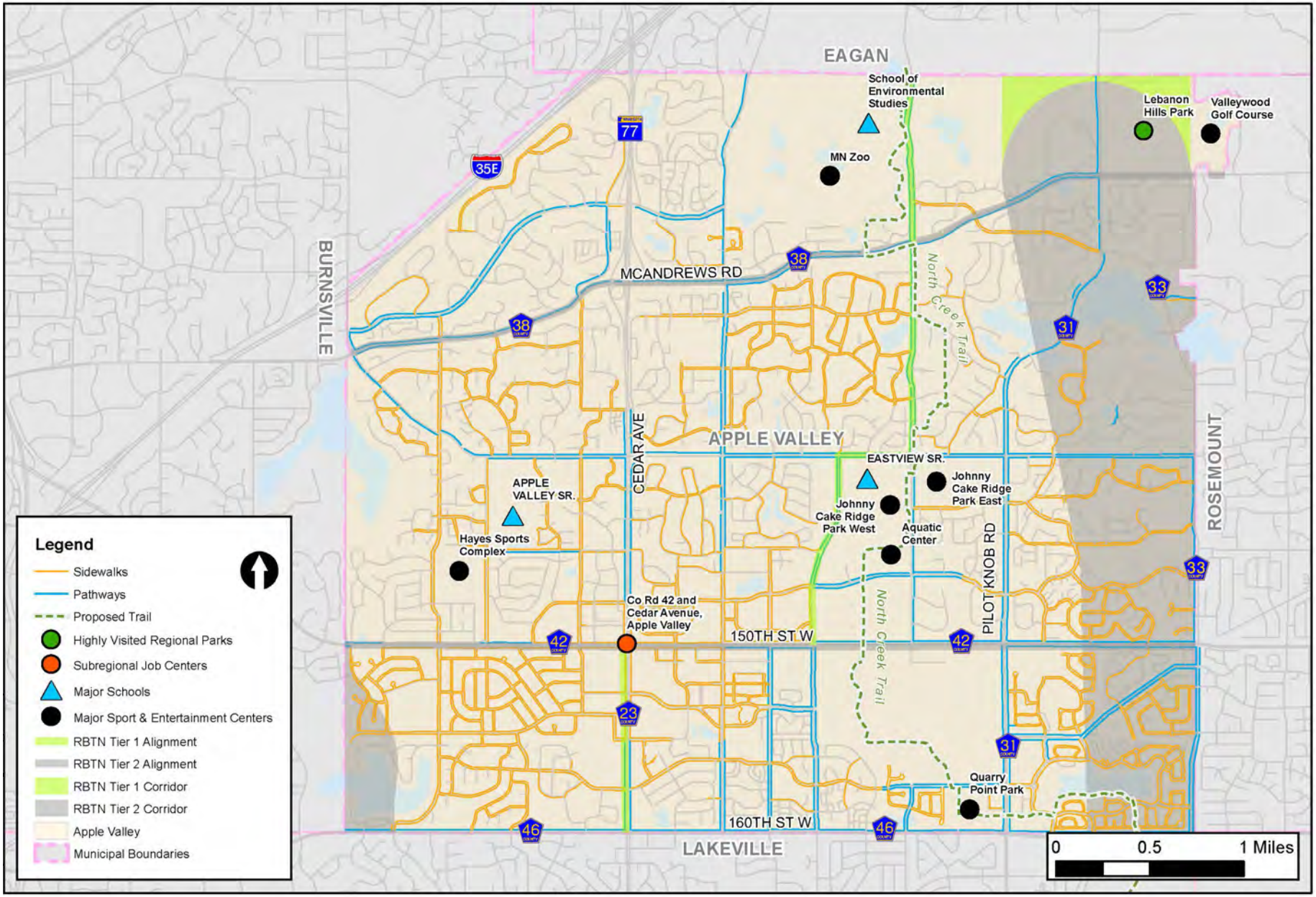
The RBTN was developed as an outcome to the Regional Bicycle System Study and serves as a framework of designated regional corridors and alignments and defines critical bicycle transportation links to help municipalities guide their bikeway planning and development. The RBTN is subdivided into two tiers for regional planning and investment prioritization:

1. Tier 1 – Priority Regional Bicycle Transportation Corridors and Alignments. These corridors and alignments have been determined to provide the best transportation connectivity to regional facilities and developed areas, and are given the highest priority for transportation funding.
2. Tier 2 - Regional Bicycle Transportation Network Corridors and Alignments. These corridors and alignments are the second highest priority for funding. They provide connections to regional facilities in neighboring cities, and serve to connect priority regional bicycle transportation corridors and alignments.

The Tier 1 Corridors and Alignments in Apple Valley primarily follow a north-south orientation. They include connections along Flagstaff Avenue and Johnny Cake Ridge Road, and also Cedar Avenue south of CSAH 42 (see Figure 11).

The Tier 2 Corridors and Alignments intersect the city primarily east-west along CSAH 42 (150th Street W), and CSAH 38 (McAndrews Road) (see Figure 10).

Figure 10. Existing Pedestrian and Bicycle System



Aviation

The City of Apple Valley does not have public airport facilities within its jurisdiction. However, the city is located south of the Minneapolis-St. Paul (MSP) International Airport, which is owned and operated by the Metropolitan Airports Commission (MAC). The city is located outside of the designated Airport Influence Area for MSP. The MAC opened an 8,000-foot north-south runway (Runway 17/35) on October 27, 2005 which distributes arriving and departing aircraft in airspace over Apple Valley. Apple Valley's distance from MSP buffers it from being included in the MAC's 2007 noise policy area as well as, the MAC's most recent noise contour study completed in 2016.

Airspace Protection

According to Federal Aviation Administration (FAA) and MnDOT Aeronautics safety standards, any applicant who proposes to construct a structure 200 feet above the ground level must get appropriate approval. The Federal Aviation Administration (FAA) requires the FAA Form 7460-1 "Notice of Proposed Construction or Alteration", under code of federal regulations CFR-Part 77, be filed for any proposed structure or alteration that exceeds 200 feet. FAA Form 7460-1 can be obtained from FAA headquarters and regional offices.

These forms must be submitted 30 days before alteration/construction begins or the construction permit is filed, whichever is earlier. MnDOT must also be notified (see MnDOT Rules Chapter 8800). The MSP airport/community zoning board's land use safety zoning ordinance should also be considered when reviewing construction in the city that raises potential aviation conflicts.

The City of Apple Valley zoning ordinance does not permit buildings to be constructed to a height of 200 feet or taller, nor do any buildings exceed that height now.

City of Apple Valley Ordinance Section 155.385, Towers and Antennas Site Design and Maintenance, controls the development and construction of objects affecting navigable airspace including construction exceeding 200 feet. Currently the tallest structure in the City is a 150-foot communications tower located on private property.

Aviation Support Facilities – FAA Radar Dome

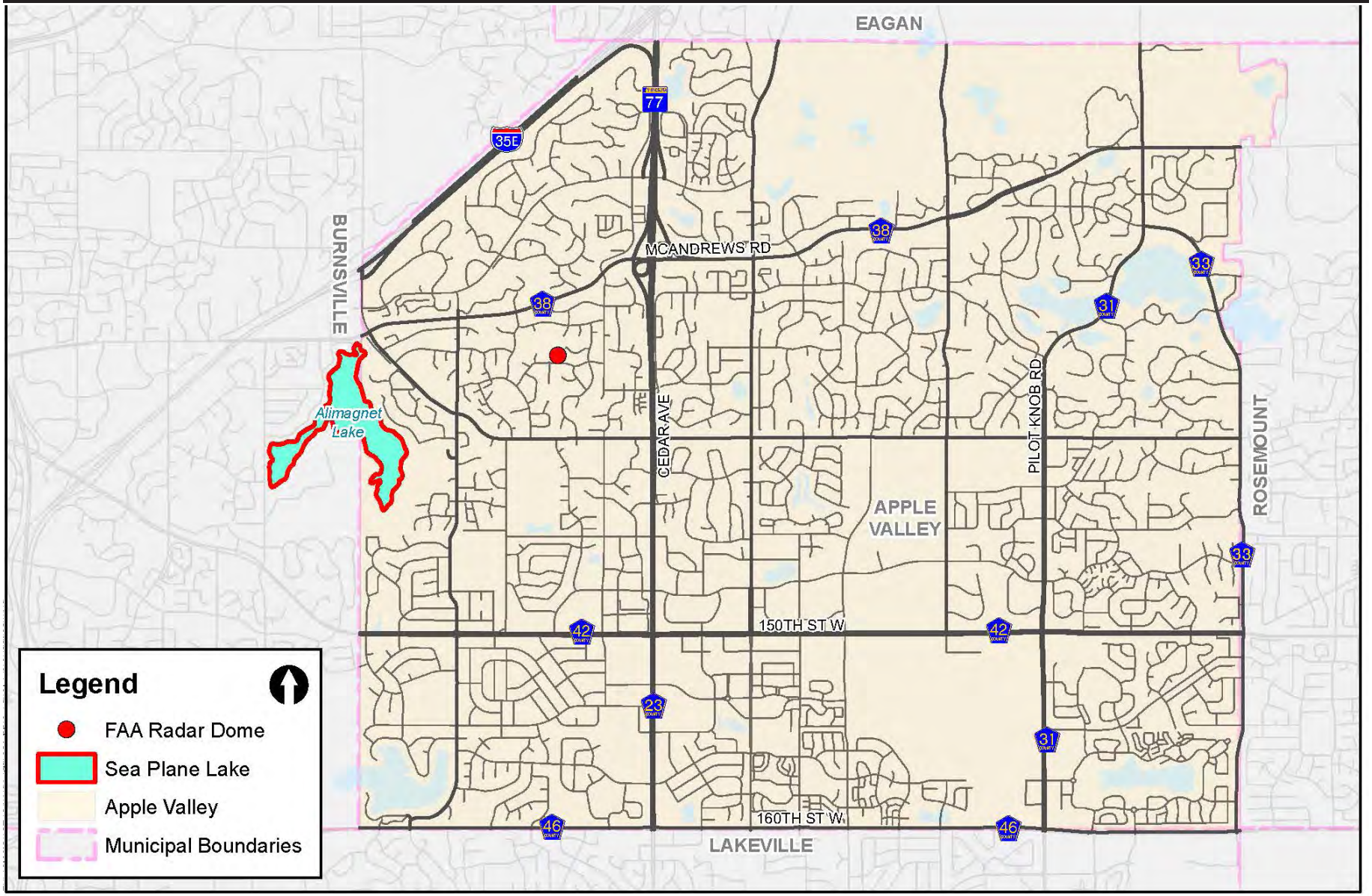
An FAA Long-Range Radar facility is located at 13591 Harwell Path, Apple Valley. The radar was constructed in 1958 before the surrounding residential area was built up around it. There are no current land use conflicts between the radar facility and the neighboring residential area.

Special Purpose Facilities – Seaplane Lake

Lake Alimagnet is designated in Minnesota State Rules Chapter 8800.2800 as authorized for purposes of safe seaplane use. Lake Alimagnet is approximately 100 acres in size with adjacent land uses including parks around the west, south and southwest sides, and residential uses along the east side of the lake. Figure 13 shows the location of Lake Alimagnet.

Figure 12 shows the location of the FAA Radar Dome and Lake Alimagnet.

Figure 11. Aeronautics



Freight and Heavy Commercial Vehicles

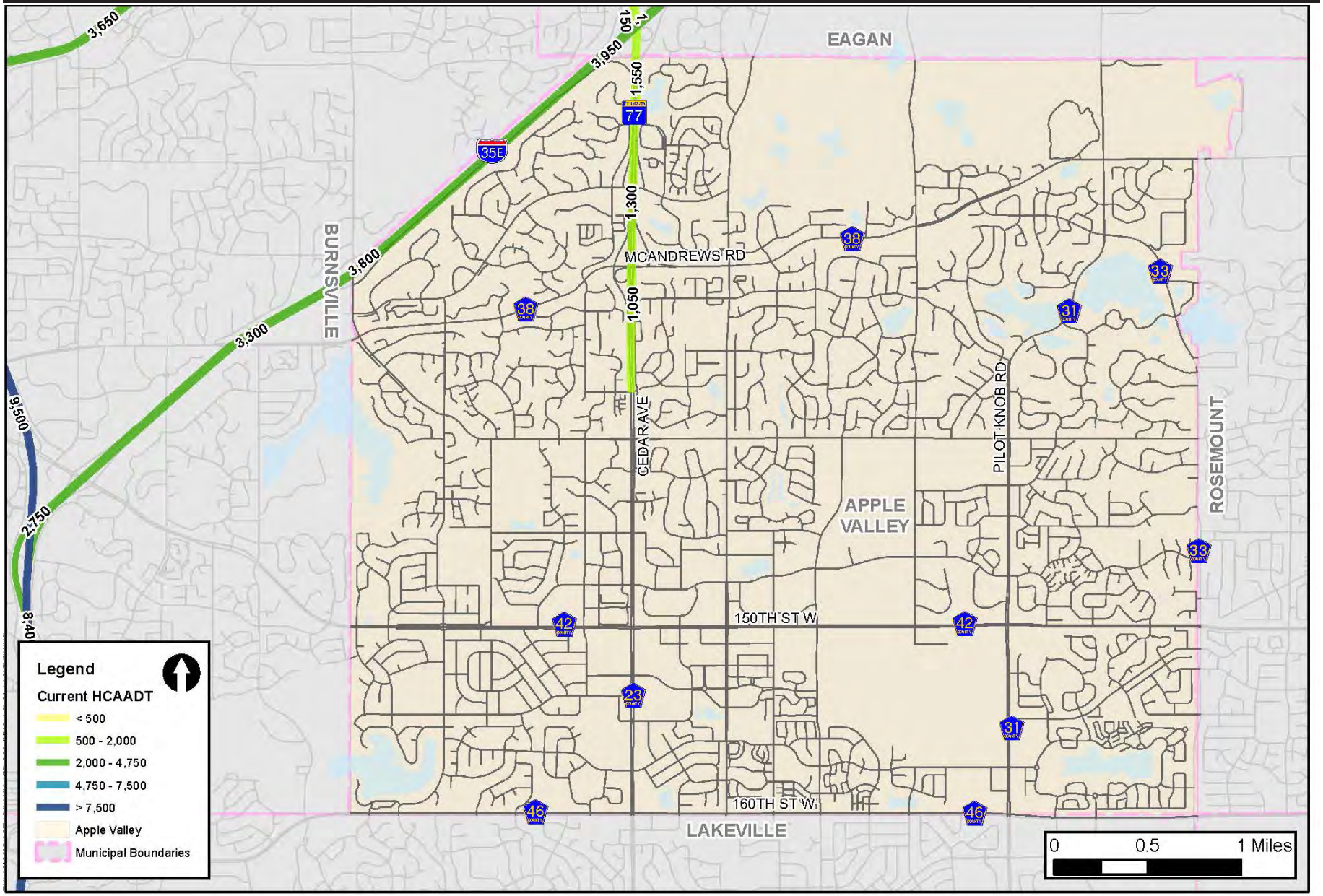
According to a recent report prepared by MnDOT entitled “Trucks and Twin Cities Traffic Management”, one of the top-ranking strategies to reduce congestion for trucks traveling within and through the Twin Cities is to provide design guidance to local governments for accommodating trucks on local roads. A copy of the 2005 technical report is available on the MnDOT web site at: http://www.dot.state.mn.us/ofrw/PDF/trucksTCTM2005_21.pdf. This strategy was adopted by MnDOT and includes ongoing guidance updates and training. The guidance is intended to help local governments identify locations where land uses currently (or are likely to) generate heavy truck movements, present unique traffic control needs, and demonstrate concerns for local street pavement and geometric design to accommodate heavy truck dimensions and weight. The guidance can be used to improve truck, motorist, and non-motorized vehicle safety and traffic flow.

Typical examples include driveways or approaches to loading zones for retail stores or industrial buildings where inadequate maneuvering and turning space causes safety conflicts between the rear tires of an off-track trailer and the access way it is intended to use. Pedestrians approaching a driveway intersection on a sidewalk may not suspect a truck’s approaching off-tracked rear tires. In addition, damages to public infrastructure can also result (broken curbs and landscaping destruction). Inadequate truck queuing can also be a problem, requiring temporary on-street parking.

An assessment of industrial and commercial truck ingress/egress areas in Apple Valley should be performed for properties where such issues have been observed for reasons associated with safety, operational efficiencies, and infrastructure preservation. In addition, the MnDOT guidance will provide support to the City of Apple Valley in conducting site plan reviews for new developments and/or redevelopments.

Figure 12 shows the existing freight network and the impact of Heavy Commercial Average Annual Daily Traffic (HCAAT) volumes on the Apple Valley roadway network.

Figure 12. Existing Freight and Heavy Commercial System



Transportation Plan Recommendations

This section summarizes the improvements identified through this transportation planning process. With the implementation of these recommendations the city's transportation system will be able to effectively and safely accommodate anticipated growth and the needs of its residents, employers, and prospective developers. The specific timing of the recommendations will be defined based on available funding, continued coordination with the City's partners (Dakota County, MnDOT, and neighboring communities), and through the development of future Capital Improvement Programs.

Roadway Network Recommendations

Several roadway improvements have been identified. The recommendations are organized by those that have been programmed (funded) and those that should be implemented in the future as issues arise.

Programmed Improvements (funded)

- Construction of a roundabout at the intersection of CSAH 33 (Diamond Path) and 140th Street with Dakota County.
- Convert CSAH 38 (McAnrews Road) from 2-lane roadway to a 3-lane roadway with right turn lanes at major intersections from CSAH 31 (Pilot Knob Road) to TH 3 in Rosemount with Dakota County.
- Convert Johnny Cake Ridge Road from 4-lane roadway to a 3-lane roadway with right turn lanes at major intersections from CSAH 38 (McAndrews Road) to 140th Street.
- Traffic Signals
  - ✓ Traffic Signal Reconstruction at CSAH 42 and Hayes Avenue
  - ✓ Traffic Signal Reconstruction at CSAH 42 and Garden View Drive
  - ✓ Traffic Signal Reconstruction at CSAH 42 and Pennock Avenue
  - ✓ Traffic Signal Reconstruction at CSAH 42 and Elm Drive
  - ✓ Traffic Signal Reconstruction at CSAH 42 and Southcross Drive
  - ✓ Traffic Signal Reconstruction at CSAH 42 and Garrett Avenue
  - ✓ Traffic Signal Construction at Johnny Cake Ridge Road and Upper 147th Street
  - ✓ Traffic Signal Construction at Galaxie Avenue and 132nd Street
  - ✓ Median/Access Modification at Elm Drive and Redwood Drive

Planned Improvements (non-funded)

- Extend Johnny Cake Ridge Road (from County Road 42 to 157th Street).
- Extend 153rd Street to the east to connect with 155th Street at Pilot Knob Road.
- Roundabout at 153rd and Johnny Cake Ridge Road
- Roundabouts at 148th and 149th and Johnny Cake Ridge Road
- Dodd Boulevard – from 155th Street to County Road 33/Diamond Path.

These roadways should be monitored over time to ensure no significant congestion issues develop.

Furthermore, in recognition of increasing operational and safety issues associated with the lane drop on northbound Cedar Avenue at 138th Street, the City strongly encourages MnDOT to construct a third traffic lane north from 138th Street. This City has identified this as a priority issue to address in the near future.

Safety Improvements

The following City street intersections should be monitored over time to determine whether safety concerns increase and intersection improvements should be pursued:

- 140th Street/Galaxie Avenue;
- 147th Street/Galaxie Avenue;
- 157th Street/Galaxie Avenue;
- 153rd Street/Garrett Avenue; and
- 147th Street/Foliage Avenue.
- Galaxie Avenue at Greenleaf School Pedestrian Improvements (HAWK Signal)

Specific recommendations at these intersections will be identified after a more rigorous investiga-

tion of crash rates, types, and severity is conducted at each location.

Transit Service Recommendations

The primary transit improvement recommendations are listed below.

- Construct a 3-mile extension of the METRO Red Line BRT system to include 3 new stations from Apple Valley to Lakeville.
- Construct new park-and-ride facilities at 140th Street and 147th Street and expand the existing facilities at the Palomino Hills Park-and-Ride and the Apple Valley Transit Station and Park-and-Ride.
- Coordinate with the MVTA regarding future "crosstown" transit routes along County Road 42 and County Road 46 and expanded north-south transit service along County Road 31 (Pilot Knob Road).
- In addition, the City should continue its proactive planning efforts with respect to transit oriented development to support the Red Line BRT system.

Pedestrian and Bicyclist Facility Recommendations

To attain a pedestrian and bicyclist system that best addresses the changing needs of the residents, the City will need to continue pursuing opportunities for system enhancements. Potential opportunities include:

- Focusing on the pedestrian and bicycle needs during the development of roadway improvement projects; and
- Ensuring future development and redevelopment in the City accommodates both the recreational aspects of pedestrian and bicycle use and the increasing commuter use to include addressing the need for enhanced amenities such as bike racks, bike lockers, and bike lanes in and around shopping areas and transit stations.
- Continue to connect "gaps" in sidewalk and trail networks
- Construction of Trails along the following roadways
  - ✓ South side of 140th Street from Galaxie Avenue to Cedar Avenue
  - ✓ South side of CSAH 38 (McAndrews Road) from Galaxie Avenue to Gardenview
- Work with Dakota County to continue to build the North Creek Greenway in accordance with the approved Master Plan .