

# Circulation

## Introduction

The vast geographic scale and topographic variation in Coconino County make travel a challenge to visitors and local residents alike. These physical characteristics not only influence transportation planning but they also impact our ability to construct and maintain an efficient, affordable **CIRCULATION SYSTEM**. The airports, rail lines, highways, and **TRAILS** move large volumes of materials and millions of people, including nearly 5 million visitors annually to Grand Canyon National Park. Our limited funding resources dictate a continuing emphasis on maintaining existing systems rather than pursuing new roadway construction and other improvements.

This Element provides guidelines for managing and improving the county’s circulation system. The goals and policies strive to balance our need for providing safe and efficient travel opportunities throughout Coconino County with our need to preserve the county’s rural and scenic character.

IN THIS ELEMENT	
Roadways	56
Public & Private Transit Systems	57
Airports & Airspace	58
Nonmotorized Circulation	58
Infrastructure Design & Development	59
Maintenance & Improvements	60
Access Management & Safety	61

## The Conservation Framework Relationship

The goals and policies in this Circulation Element are strongly related to the **CONSERVATION FRAMEWORK** because roadways, rail lines, airport facilities, and trails require physical footprints. Without sound, conservation-based planning, this infrastructure can fragment or damage **HABITAT**, limit wildlife movement, introduce pollutants and non-native **SPECIES**, cause adverse hydrologic impacts, and create excessive noise. Conserving natural resources requires that our circulation system incorporate **MULTIMODALISM**.

All five ecological principles apply to this Element. In addition, because of the potential for habitat fragmentation, **CONSERVATION GUIDELINES A, B, C, & E** are especially important. We must also take care to follow conservation guideline F, which addresses nonnative species, during roadway maintenance.

## Our Purpose & Vision

Our county vision involves providing sufficient infrastructure in rural areas to facilitate safe access for all modes in a way that minimizes impacts to the **NATURAL ENVIRONMENT**. The *Coconino County Comprehensive Plan* establishes policies that increase the efficiency and safety of our circulation system while meeting the access and mobility needs of residents, including needs for nonmotorized and alternate modes of transportation. These policies also focus on improving transit service in unincorporated areas, providing infrastructure for alternatives to motorized vehicle travel, and supporting the development of **MULTIMODAL CORRIDORS**. Finally, they support air travel while protecting human and natural communities from adverse impacts of aircraft and associated facilities.



## Roadways

Coconino County features many types of roadways—federal and state highways, a variety of County roads, U.S. Forest Service roads, and private roads, among others. Our primary, long-distance roadways include federal interstate highways, U.S. highways, and designated State Routes. Two major highways serve crucial circulation roles for Coconino County—Interstate 17, which heads south to Phoenix, and Interstate 40, the only east-west roadway extending across the county. U.S. highways in Coconino County primarily serve north-south traffic.

### Circulation System in Coconino County



County roads range from local neighborhood roads to long-distance, intercounty roads. As of 2002, the Coconino County Public Works Department maintained and improved 1,228 miles of road within unincorporated areas. Of these, only 250 miles were asphalt; the remainder were gravel or cinder. The Public Works Department uses a **FUNCTIONAL CLASSIFICATION SYSTEM** to schedule capital improvements and maintenance for County roads, and to plan neighborhood circulation patterns. In 2002, these roads included 75 miles of **MINOR ARTERIALS**, 15 miles of **MAJOR COLLECTOR ROADWAYS**, 112 miles of **MINOR COLLECTORS**, and 1,026 miles of **LOCAL ROADWAYS**. A classification of “local narrow residential street” was added in 2001.

Other roadways and transportation infrastructure in the county are maintained by the Bureau of Indian Affairs, the Bureau of Land Management, the U.S. Forest Service, the National Park Service, the **ARIZONA DEPARTMENT OF TRANSPORTATION (ADOT)**, and incorporated cities.<sup>36</sup> In some areas, Coconino County enters into intergovernmental agreements with these agencies to maintain roadways. The County **BOARD OF SUPERVISORS** and staff participate in the planning efforts of these organizations.

Unincorporated county areas also contain hundreds of miles of **PRIVATE ROADWAYS** in residential

areas where properties have been developed through the minor land-division process. They also occur in platted **SUBDIVISIONS** where paving waivers have been approved, in subdivisions that do not desire County maintenance, and in older subdivisions where roadways were never improved to County standards and thus never accepted for County maintenance. By statute, the County cannot improve or maintain private roads.

Land use and circulation are inextricably linked. Population growth increases traffic volumes and vehicle trip lengths; in rural Coconino County, considerable distances often separate residential areas from commercial areas and employment centers. In addition, land uses that generate relatively high traffic volumes, such as convenience stores and restaurants, affect the flow of traffic on adjacent roadways. In areas with low-density residential development, virtually every trip requires the use of an automobile.

#### FUNCTIONAL CLASSIFICATION SYSTEM

An established roadway hierarchy that accounts for the roadway's purpose, its character given the adjacent land uses, and its role in supporting multimodalism.

#### SEE ALSO

PAGE 61

Maintenance & Improvements  
– Improvement Districts



**Goal:** Maintain a circulation network that is safe, efficient, and complementary to local communities and the environment.

**Policies:**

1. The County will coordinate land use and circulation planning activities to encourage comprehensive and efficient land development patterns that support adjacent land uses, complement the character of communities and adjacent neighborhoods, and minimize impacts to the natural environment. SEE CONSERVATION GUIDELINES: C, E
2. The circulation system should facilitate the movement of goods, services, and people throughout Coconino County in support of existing economic activity and economic reinvestment.

## Public & Private Transit Systems

Transit service is extremely limited within unincorporated Coconino County and outside the boundaries of the **FLAGSTAFF METROPOLITAN PLANNING ORGANIZATION (FMPO)**. Coconino County provides fixed-route service (“Mountain Line”) within the incorporated limits of Flagstaff. It also provides door-to-door **PARA-TRANSIT** service (“VanGo”) for persons with disabilities within Flagstaff as well as in some unincorporated FMPO areas. A 5-year transit plan adopted by the Board of Supervisors specifies improvements to transit service within the FMPO boundary. As of 2002, it included no plans to extend Mountain Line or VanGo service to areas outside the FMPO or to provide additional transit services in other areas of the county.

Fixed-route, intercity service is available in the Navajo Nation between Tuba City and Window Rock. This is the only route maintained by the Navajo Transit System that has a destination within Coconino County. Private intercity transit service is available from Flagstaff to destinations within and outside of the county. In 2003, these private services included vans from Flagstaff to Phoenix and Grand Canyon National Park, and seasonal service between the North Rim and South Rim of the Grand Canyon. The Greyhound bus terminal in Flagstaff provides intercity service to other locations around the country.

Amtrak passenger rail service is available in Flagstaff and Williams. The Southwest Chief leaves each city twice daily—once westbound, en route to Los Angeles, and once eastbound, en route to Chicago. Service from Williams to Grand Canyon National Park is available on the historic Grand Canyon Railway. This train makes one round trip to Grand Canyon National Park daily.

**Goal:** Improve rural and regional transit service opportunities.

**Policies:**

3. As communities continue to develop and populations increase, the County supports opportunities to enhance and expand local, regional, and interjurisdictional transit services.
4. Consideration should be given to providing public transit access or sites for future transit infrastructure development in the review of major developments and subdivisions. SEE CONSERVATION GUIDELINE: K



## Airports & Airspace



Grant Cooper



Grant Cooper

Arizona's primary airport system in Coconino County includes commercial airports in Flagstaff, Grand Canyon National Park, and Page. It also includes public-use airports in Tuba City, Williams, and Valle. A few public airports fall under the secondary classification system—Marble Canyon, Cliff Dwellers, and Leupp/Painted Desert. Commercial air service connects the county to Phoenix and other points. Air service also serves an important role in delivering freight and goods that would otherwise travel by truck or rail. Coconino County has no jurisdictional authority over the administration and planning of airport facilities.

Scenic flights over areas such as the Grand Canyon and Oak Creek Canyon are popular with tourists and generate revenue for tour operators. Most fly to Grand Canyon National Park from either Grand Canyon National Park Airport, Page Municipal Airport, or McCarran International Airport in Las Vegas. Park users have expressed concerns about noise generated by flights over **WILDERNESS AREAS**. Congress adopted the *National Parks Overflights Act* in 1987 to provide for “substantial restoration of the natural quiet and experience of the park and protection of public health and safety from adverse effects associated with aircraft overflights.” The **FEDERAL AVIATION ADMINISTRATION (FAA)** implemented regulations on overflights in 1988 and strengthened those rules in 1994. These regulations limit hours of operation, specify permissible flight corridors and minimum altitude requirements, and implement no-fly zones. They continue to be the subject of debate among air tour operators, owners of private aircraft, residents, visitors, and environmental groups.

**Goal:** Support air travel opportunities while minimizing the impacts on human and natural communities.

### Policies:

5. The County supports improved air service at existing commercial airports as a means of moving passengers and goods between both urban and rural communities in Coconino and surrounding counties.
6. As renovations or expansions are proposed for airport facilities (including private airstrips and heliports), compatibility with local land use patterns should be considered and adverse impacts from aircraft noise minimized. SEE CONSERVATION GUIDELINE: I
7. To preserve the quality of visitor experiences, the County supports efforts to enforce existing flight restrictions and no-fly zones over national parks. SEE CONSERVATION GUIDELINE: I

## Nonmotorized Circulation

Opportunities for nonmotorized travel in Coconino County are limited. Although the county features hundreds of pedestrian and bicycle **TRAILS**, they are used almost exclusively for recreational purposes on Forest Service or Park Service lands. Almost all opportunities for pedestrian travel are found within incorporated cities and towns, as well as within the boundaries of the **FMPO**. Likewise, most bicycle commuting is also confined to cities and the FMPO area. Although state and County highways feature no designated bicycle lanes, state law allows bicycle **COMMUTERS** to use widened shoulders unless otherwise posted. However, the great distances between populated areas of the county severely limit bicycling as a viable choice for most people.

SEE ALSO

PAGE 65

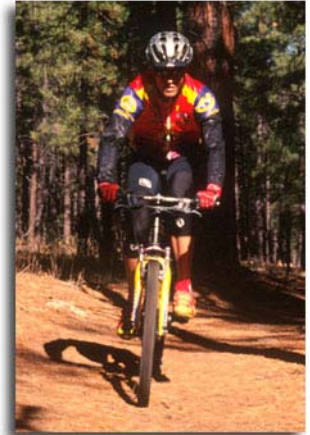
Parks &amp; Recreation: Trails



**Goal:** Improve nonmotorized circulation networks and provide greater opportunity for alternative modes of travel.

**Policies:**

8. The County encourages development projects to provide infrastructure for nonmotorized travel, and when appropriate for new developments along major roadways, the County shall require the installation of trails and bicycle lanes. *SEE CONSERVATION GUIDELINES: G, H*
9. In coordination with ADOT, the Forest Service, and land managers and owners, the County promotes the connection of existing neighborhoods and communities (at both a local and regional scale) with trails, nonmotorized, and multimodal facilities.
10. Multimodal and nonmotorized travel facilities should be designed to complement and enhance local community character and provide opportunities for interaction among residents.
11. Where pedestrian and bicycle routes exist on adjacent properties, major developments and subdivisions must maintain connections and continue the cohesive development of the nonmotorized circulation network.
12. The County shall set an example of incorporating pedestrian and bicycle travel infrastructure into the redevelopment or new construction of County collector and arterial roadways, and supports efforts to incorporate nonmotorized facilities into state highway redevelopment projects. *SEE CONSERVATION GUIDELINE: G*



## Infrastructure Design & Development

Economic influences such as logging, ranching, tourism, and recreation have played a role in developing the county's **CIRCULATION SYSTEM**. Historically, much of this system evolved to provide access to agricultural, public, and residential lands—it was not developed in anticipation of new growth areas. Today, the design of circulation infrastructure is based primarily on the *Coconino County Engineering Design & Construction Criteria* manual<sup>37</sup>, adopted by the **BOARD OF SUPERVISORS** in 1991 and updated subsequently. The manual contains guidelines for designing roadways and accompanying pedestrian, equestrian, and bicycle facilities. Based on the County's **FUNCTIONAL CLASSIFICATION SYSTEM**, these guidelines specify engineering and **RIGHT-OF-WAY** requirements for roadways built through the private development process as well as through capital improvement projects.

The *Coconino County Subdivision Ordinance* contains minimum development standards for circulation infrastructure in platted **SUBDIVISIONS**. Requirements for roadway and nonmotorized transportation improvements depend on the minimum lot size of properties in the subdivision and the functional classification of roadways. Paved roads are required for all new subdivisions, although developers can apply for a paving waiver if lot sizes are 2½ acres or greater. Roadways with paving waivers will not be accepted into the County maintenance system; they must be maintained by a homeowners association using the same criteria as County-maintained roads.

Practically all circulation corridors in unincorporated areas of Coconino County provide infrastructure for only one transportation mode—travel by motorized vehicle. This reality will likely continue for the foreseeable future. Efforts have been made within the **FMPO** boundaries to plan for a more balanced circulation system that includes **MULTIMODAL CORRIDORS**. Amenities such as bike lanes, pedestrian and equestrian facilities, and bus turnouts may not be incorporated into roadway designs for the rural county in the near future. However, adding features such as wide shoulders into reconstruction projects would accommodate these amenities at little or no additional cost in the future.

SEE ALSO PAGE 56

Roadways – Functional Classification System

### MULTIMODAL CORRIDORS

Physical, linear areas containing the infrastructure that supports travel by both motorized and nonmotorized circulation.



**Goal:** Ensure the quality design and development of circulation systems.

**Policies:**

13. Before considering capacity improvements, the County encourages the preservation, improvement, and (where appropriate) redevelopment or restoration of existing circulation infrastructure. *SEE CONSERVATION GUIDELINES: C, H, K*
14. The County promotes the development of multimodal and public transit opportunities as preferred alternatives to new roadway capacity improvements along highly traveled and congested travel corridors.
15. Circulation infrastructure in major developments and subdivisions should be designed based on the principles of integrated conservation design.
16. In consideration of federal, state, and local environmental requirements, circulation infrastructure should be developed in a manner that promotes energy efficiency, protects air quality, and preserves historic, scenic, cultural, and environmental resources. *SEE CONSERVATION GUIDELINE: G*
17. To protect unique natural areas and preserve wildlife habitat and movement areas, the County encourages creative design of circulation infrastructure improvement projects. *SEE CONSERVATION GUIDELINES: B, C, E*



John Aber

18. Private property owners are encouraged to meet minimum County standards for rights-of-way when private easements are created.

19. The County supports the use of special design features such as interpretive signage, turnouts and landscape treatments for infrastructure that provides access to major tourist destinations.

## Maintenance & Improvements

Coconino County is responsible for maintaining and/or improving three types of roadways.<sup>38</sup> The first type includes the roads it owns—roads that have been built to County engineering standards, located on County rights-of-way, and accepted by the **BOARD OF SUPERVISORS**. The second type, “cooperative” roads, includes roads located on properties that the County does not own but maintains through intergovernmental agreements with other jurisdictions, including incorporated cities, **ADOT**, the Forest Service, and the Navajo Nation. The third type includes primitive roadways located on easements or **RIGHTS-OF-WAY** that have not been accepted as official County roads, but have been

open since June 13, 1975; the maintenance of these roadways has been “grandfathered” into the system by the Board of Supervisors.

Property owners are responsible for maintaining and improving private roads adjacent to their land. Because these responsibilities are not enforced, however, private road maintenance is generally haphazard or nonexistent. Liability rests with property owners as well; those who neglect roadway maintenance could face legal consequences if someone pursues civil action. Private roads are generally local, with low **AVERAGE DAILY TRAFFIC (ADT)** volumes. Nevertheless, local residents use them every day. These roads often present problems because the public cannot address issues related to dust control, maintenance and snowplowing, and access by emergency vehicles, mail carriers, school buses, pedestrians, bicycles, and equestrians.



John Aber



Coconino County has insufficient financial resources to pave all existing unpaved roadways.<sup>39</sup> However, **IMPROVEMENT DISTRICTS** provide a mechanism for property owners to pave, grade, maintain, or otherwise improve all or part of a street. Improvements must adhere to minimum County standards and *Arizona Fire Code* access road standards. In addition, those owning property fronting the roadway must deed the necessary right-of-way to the County. Once improved, these roads are eligible to be accepted by the Board of Supervisors as County roads, which are eligible for perpetual County maintenance. In most cases, improvement districts provide the only way for residents to get County and private roads paved. Another option that residents can use to establish a road maintenance program is forming a type of improvement district known as a Road Maintenance District. To be eligible, residents must improve roads to a minimum, County-defined condition rather than to County road standards. Maintenance is performed by a private contractor under the administration of County staff. Residents pay for this maintenance annually as long as the district exists.

**Goal:** **Improve and maintain circulation infrastructure while protecting the environment and community character.**

**Policies:**

20. To support local improvement initiatives, the County encourages the formation of improvement districts for previously developed areas.
21. The County will program improvements which are designed, built, and operated to minimize air, water, and noise pollution and the disruption of natural surface water drainage in compliance with provisions and requirements of applicable federal, state, and local environmental regulations. *SEE CONSERVATION GUIDELINES: C, F, I*
22. The County promotes safety improvement and maintenance projects for circulation infrastructure (including snow and ice removal) which are consistent with conservation and ecosystem protection. *SEE CONSERVATION GUIDELINES: A, C, I*

## Access Management & Safety

Protecting the traveling public's safety is a primary objective that the Public Works Department achieves by programming projects for the **CAPITAL IMPROVEMENT PLAN (CIP)**, regularly maintaining roadways, and establishing design requirements for new improvements. Both the Sheriff's Office and the Public Works Department maintain vehicle accident data for County roads to help prioritize programming, adjust maintenance schedules, or otherwise improve potentially unsafe situations. In addition to maintaining roadways, bridge facilities are regularly inspected and maintained to ensure safety.

**TRANSPORTATION SYSTEM MANAGEMENT (TSM)** is a process that facilitates minor efficiency improvements to enhance the safety and operation of roadways without making major capital investments. One TSM technique, **ACCESS MANAGEMENT**, improves roadway capacity and increases safety by regulating vehicular access to public roadways from adjoining properties. The types of land uses that can thrive along transportation corridors depend on vehicle access. Adding access points to a corridor decreases through-trip mobility because vehicles must turn into traffic, creating possible conflicts. Access management techniques can mitigate these conflicts. Common ones include adding medians, frontage roads, common driveways and parking lots, as well as controlling driveway spacing and improving the circulation patterns within developments adjacent to the roadway. Access management techniques should consider **ADT** volumes and **FUNCTIONAL CLASSIFICATION** of the roadway. In March 2002, the Board of Supervisors approved recommendations in the first access management study<sup>40</sup> to improve safety in the State Route 64 corridor



Grant Cooper

### IMPROVEMENT DISTRICT

A local unit of government (other than a city or county), authorized and regulated by statute, that is established for road improvements, water control, irrigation, port districts, fire, hospital, sanitary districts, and regional air quality control.

SEE ALSO PAGE 99

Growth: Capital Improvements



from the City of Williams to Grand Canyon National Park. This study was a joint project between ADOT and Coconino County.

**Goal:** Provide for safe travel and access to property.

**Policies:**

23. To ensure the safe and efficient flow of traffic, the County encourages the use of access management techniques to increase safety and supports development of public transit facilities and services in areas of high vehicle congestion.
24. Where not addressed through the CIP, major developments and subdivisions shall pay for necessary circulation improvements to support access to and within the site.
25. To provide adequate access for emergency service vehicles, circulation infrastructure in major developments, subdivisions, and other residential neighborhoods must provide connectivity to adjacent existing and potential future infrastructure.
26. The County will work with developers to improve safety and circulation efficiency for pedestrians and bicyclists when adjacent roadway improvement or property development occurs.

**THEODORE ROOSEVELT**

*"In any moment of decision the best thing you can do is the right thing, the next best thing is the wrong thing, and the worst thing you can do is nothing."*

