

Memorandum

To: Jeff Wiggins and Sreyoshi Chakraborty
From: Rory Renfro and Kim Voros, *Alta Planning + Design*
Date: March 16, 2011
Re: Draft Working Paper # 4: Existing Conditions



This memorandum describes the current Greenway and on-street bikeway network in the Cheyenne Metropolitan Area (CMA). The memorandum begins with an inventory and assessment of existing bicycle and Greenway facilities. The second section discusses important destinations for bicyclists, particularly connections to downtown, greenway connections, transit and schools. An analysis of system strengths and weaknesses follows, highlighting key areas where improvement opportunities exist.

Community Setting

Cheyenne area residents have been cyclists and trail users for many years. Since the early 1970's, the City, Cheyenne Metropolitan Planning Organization, Laramie County, and the Wyoming Department of Transportation have considered cyclists and trail users in land use and transportation decisions to varying degrees. The community has received regional recognition for the existing Greenway system, which provides recreation and transportation opportunities for area residents. In 2000, approximately .03 percent of residents bicycled to work, indicating that there is current interest in cycling to work and improvements to the physical environment could substantially increase the number of regular cycling commuters.

The CMA covers about 197 square miles, has approximately 87,000 residents (according to the 2005 – 2009 American Community Survey 5-Year Estimates), and is home to Wyoming's largest city. Cheyenne is the Laramie County seat and state capital. Warren Air Force Base, directly west of the Cheyenne city boundary, is one of the area's largest employers. Other major employers include the City of Cheyenne, Laramie County, Laramie County School District Number 1, and Union Pacific Railroad. The CMA is home to bicycle-related businesses (such as Bicycle Station and Rock on Wheels). The CMA has one school district: Laramie County School District Number 1.

Existing Off-Street Bikeways

Federal and state bicycle planning and design guides define bikeways as preferential roadways



Figure 1. The Cheyenne area's system of off-street facilities provides recreation opportunities for users of all types.

Cheyenne On-Street Bicycle Plan and Greenway Plan Update

accommodating bicycle travel through the use of bicycle route designations, bike lane striping, or off-street trails (e.g., Shared Use Paths and Greenways) to physically separate cyclists from motorists. Map 1 on page 7 shows the Cheyenne Metropolitan Planning Area's existing and funded on-street bikeway and Greenway network.

Off-street facilities (Shared Use Paths and Greenways) are often viewed as recreational facilities, but they are also important corridors for utilitarian trips (Figure 1). The Cheyenne area's off-street bicycle facilities can be categorized into the following typologies:

- A **Greenway** is a facility that is separated by grade from the roadway, is generally ten feet wide and is constructed with concrete.
- A **Shared Use Path** is a facility that is physically separated from the roadway, is between eight and ten feet wide, and is constructed of concrete or asphalt.

The following section describes these off-street facilities in greater detail.

Existing Greenways

Cheyenne's existing ADA-accessible Greenway system (Table 1) includes over 30 miles of physically separated trails that accommodate users throughout the year. The original vision of the Greenway system was to build a continuous loop trail around the city. To date, nearly three quarters of the original loop trail has been completed. The system is comprised of many individual segments of varying lengths, with the longest continuous segment, Dry Creek (Figure 2), providing nearly continuous east/west travel from US 30 to I-25. Within the neighborhoods south of I-80, Greenway facilities provide off-street travel facilities along roadways and waterways (e.g., Allison Draw).



Figure 2. The Dry Creek Greenway provides a pleasant traveling experience in varying weather conditions

Greenway segments are typically constructed based on design standards developed in the 1992 *Greenway Development Plan*. Trails are typically ten feet wide and constructed of concrete. The existing trail network was developed to take advantage of generous roadway rights-of-way and drainage channels (e.g., Crow Creek and Dry Creek), which function as part of the Cheyenne area's storm water management system. Coupling these two compatible uses creates a system that takes advantage of the Cheyenne Metropolitan Planning Area's natural features and provides opportunities to interact with nature.

Table 1. Existing Greenway Facilities

Existing Greenway	Length (mi)
Segment	
Airport Parkway	0.24
Allison Draw	2.74
Converse Avenue	0.69
Crow Creek	2.69
Dry Creek	8.35
East Extension	3.02
Evans Avenue	0.58
Southeast	0.67
Lions Park	0.94
Yellowstone	1.0
Mason Way	0.23
Dry Creek (Mylar Park)	0.49
Norris Connector	1.32
Pointe	0.92
South Cheyenne	2.95
Southeast	0.66
Storey Boulevard	2.74
US 30	0.46
Yellowstone Road	0.99
Total	30.7

Funded Greenways

In recent years, city and MPO staff have worked aggressively to expand the existing Greenway system (Figure 3). As a result, nearly nine miles of Greenway have been included in the 2010 – 2013 Transportation Improvement Plan (Table 2). These facilities will improve network connectivity in the southern and eastern half of the urbanized area, primarily by filling gaps in the existing system. These funded facilities will provide connections to several schools, including Arp Elementary and Saddle Ridge Elementary. One new connection that will be created by this effort is the BNSF Rail Trail, located south of I-80 and east of College Drive. This soft surface trail will connect to the existing Southeast Greenway and travel east along Crow Creek, towards Campstool Road.



Figure 3. Newly constructed greenway facilities, such as the WAPA corridor, have significantly expanded Greenway system mileage in the past few years. The City has plans to construct additional trails in coming years.

Table 2. Funded Greenway Facilities

Funded Greenway	
Segment	Length (mi)
Avenue C -- Reiner to Fox Farm	0.41
BNSF Rail Trail -- Abandoned RR ROW	2.65
College Drive Underpass @ UPRR	0.10
Converse -- Grandview to Dell Range	0.47
Cribbon -- I-80 Overpass to Allison	0.44
Crow Creek -- Westland to MLK Jr. Park	0.38
Deming & Walterscheid to South Park	0.43
East Phase IV - Norris Connector	0.55
Holliday Park Connector -- Lincolnway Crossing	0.12
Morrie Ave -- 1st St to Fox Farm Rd	0.54
Powderhouse -- Storey to Gardenia	0.19
Reiner Court -- Ave C to Arp Elem.	0.16
Saddle Ridge School/US 30 Connector	1.56
Walterscheid -- Fox Farm to WAPA Corridor	0.40
WAPA Corridor -- McFarland to Jefferson	0.40
Total	8.78

Greenway Trailheads

There are 18 existing trailheads within the Greenway system. The existing trailheads include a variety of facilities ranging from the Dry Creek trailhead (Figure 4), which includes parking, benches, trail access and a disc golf course, to the Crow Creek Greenway trailhead located at Optimist Park, which includes parking, artwork, restrooms, interpretative signs, benches, playground equipment, and trail access points.



Figure 4. Trailheads provide system access and enhance the recreational experience, (e.g., the Dry Creek Parkway trailhead, located adjacent to the Dry Creek disc golf course).

Greenway Amenities

Greenway amenities are designed to enhance the travel experience and include pedestrian-scale lighting, interpretative kiosks, trail maps, mileage markers, trash receptacles, and artwork (Figure 5). Many Greenway amenities (with the exception of public artwork) are designed for consistency across the system. As discussed in the 1992 *Greenway Development Plan*, the use of standard amenities has several benefits. First, it provides users with a sense of familiarity and increases the perception of system connectivity. Use of consistently designed amenities also reduces maintenance costs through the development of common maintenance schedules and budgets.

Existing Shared Use Paths

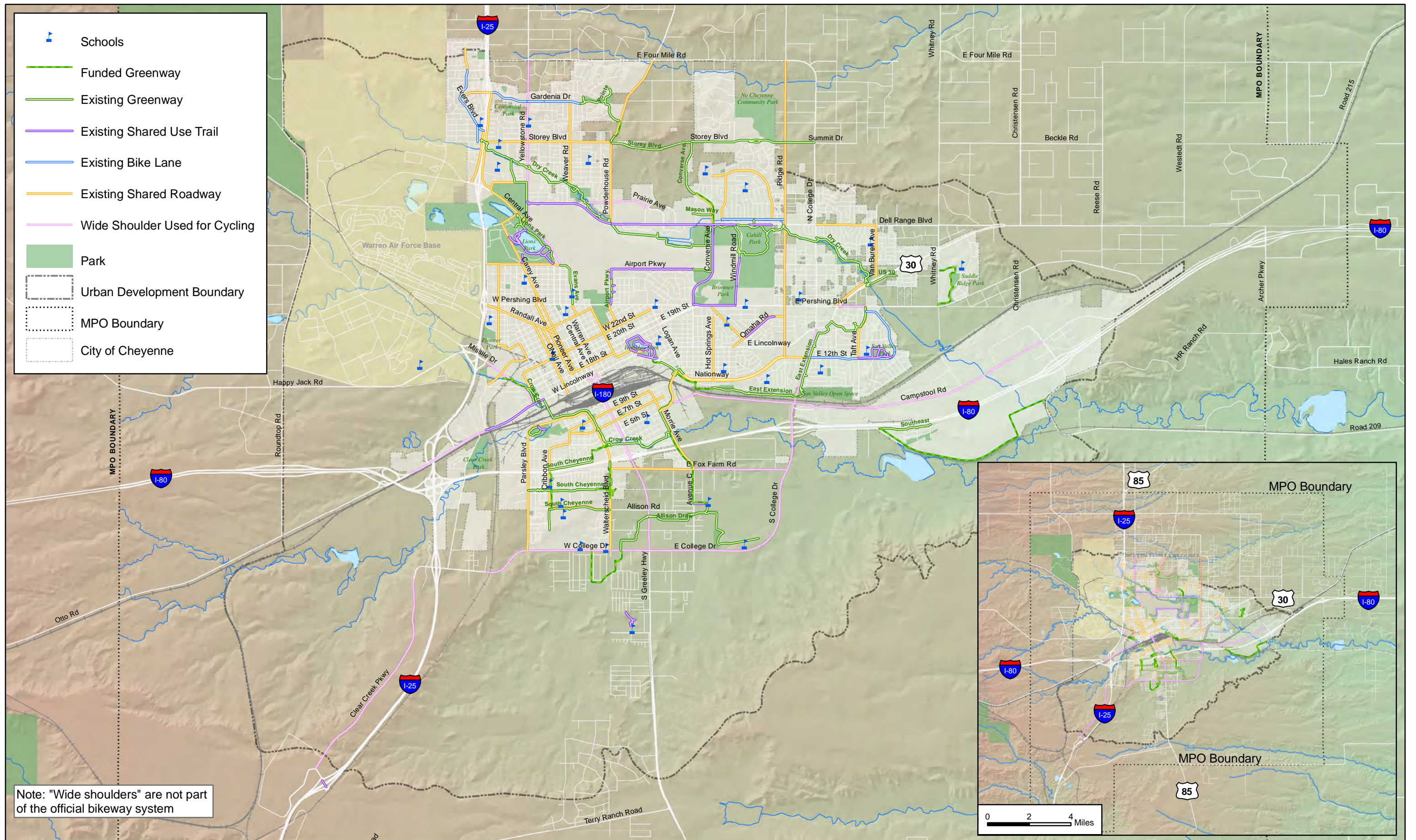
Within the CMA there are several existing Shared Use Paths (Table 3). These trails typically consist of an eight-foot asphalt pathway running along one side of a roadway. Examples of Shared Use Paths in the Cheyenne area include Dell Range Boulevard and Converse Avenue. These trails function as part of the off-street trail system but were designed and constructed prior to the development of the present day Greenway system. The key differences in these facilities lay in their narrower width (generally eight feet) and surfacing material (generally asphalt).



Figure 5. Trail amenities, including art installations, can be found throughout the Greenway system.

Table 3. Existing Shared Use Paths

Existing Shared Use Paths	
Segment	Length (mi)
Afflerbach School	0.27
Airport Parkway	1.25
Arp School	0.16
Converse Ave	1.43
Dell Range	2.93
Holliday Park	1.68
Lions Park	1.45
Omaha Rd	0.43
Pershing Blvd	0.52
Romero Park	0.11
Sun Valley Park	0.97
West Lincolnway	0.82
Windmill Rd	0.24
Total	12.2



Map 1. Draft Existing and Funded Bicycle Facilities

Cheyenne On-Street Bicycle Plan
and Greenway Plan Update

Source: Cheyenne - Laramie County Cooperative GIS Program
Date: March 2010



0 0.5 1 Miles



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On-Street Bikeways

According to AASHTO's *Guide for the Development of Bicycle Facilities* (1999), the *Wyoming Bicycle and Pedestrian Plan* (2002), as well as the 1993 *Cheyenne Area On-Street Bicycle Plan Report of Investigation*, there are several types of on-street bicycle facilities. While cyclists are legally allowed to use all roadways in the CMA, on-street bikeways are distinguished as preferential roadways that have facilities to accommodate bicycles. Accommodation can consist of a bicycle route designation or bicycle lane striping.

The following types of bikeways are recognized by AASHTO and the *Wyoming Bicycle and Pedestrian Plan* and are currently found within the CMA:

- **Shared Roadway / Signed Shared Roadway (Bike Routes)** – Shared roadways include designated roadways on which bicyclists and motorists share the same travel lane. This is the most common type of bikeway. The most suitable roadways for shared bicycle use are those with low speeds (25 mph or less) or low traffic volumes (3,000 vehicles per day or fewer). Signed roadways provide links to other bicycle facilities (e.g., bicycle lanes), or to designate a preferred route through the community. Common practice is to sign the route with standard Manual on Uniform Traffic Control Devices (MUTCD) green bicycle route signs with directional arrows. Signed shared roadways can also be signed with innovative signing that highlights a special touring route (e.g., Cheyenne/Laramie/Snowy Range) or provides directional information, distance and riding time.
- **Shoulder Bikeway** – These are paved roadways that have striped shoulders wide enough for bicycle travel. The *Wyoming Bicycle and Pedestrian Plan* states that “adding or improving paved shoulders can be the best way to accommodate bicyclists in rural areas, and also benefit motor vehicle traffic.” Roadways with shoulders less than four feet are considered shared roadways. Sometimes shoulder bikeways are signed to alert motorists to expect bicycle travel along the roadway. Shoulder bikeways are not recognized as part of the official bikeway system, but are regularly used to accommodate bicycle travel.
- **Bike Lane** - Bike lanes are portions of the roadway designated specifically for bicycle travel via a striped lane and pavement stencils. AASHTO standard width for a bicycle lane is five feet. The minimum width of a bicycle lane against a curb or adjacent to a parking lane is five feet. A bicycle lane may be as narrow as four feet, but only in very constrained situations. The existing Cheyenne and Laramie County roadway design standards are consistent with these minimums. Bike lanes are most appropriate on arterials and collectors, where high traffic volumes and speeds warrant greater separation.

Existing On-Street Facilities

Bicycle Lanes

Bicycle lanes are provided along several roadways in the CMA (Table 4). Bicycle lanes are typically five feet wide and provide dedicated roadway space for cyclists, though some bicycle lanes are narrower (e.g., portions of Evers Boulevard). Within the Cheyenne area, bike lanes are typically found on wide collector roadways in residential neighborhoods (Figure 6). Facilities are marked with pavement stencils, striping, and (in some cases) signs marking the lane’s beginning and end. Existing bike lanes are also connected to Cheyenne’s system of designated shared use roadways.



Figure 6. Bicycle lanes, such as these facilities on Vandehei Avenue, provide a measure of separation between cyclists and motor vehicles.

A cyclist’s experience may vary significantly from roadway to roadway, based in part on daily motor vehicle volumes; for example, Evers Boulevard typically carries about 1,600 vehicles per day while East 12th Avenue serves 8,000 to 10,000 vehicles per day. Other roadways with existing bike lanes have motor vehicle volumes that vary between these two limits.

Table 4. Existing Bike Lanes

Existing Bike Lane		
Segment	Jurisdiction	Length (mi)
Meadow Dr	Cheyenne	0.71
Deer Ave	Cheyenne	0.20
Vandehei St	Cheyenne	0.72
Gardenia Dr	Cheyenne	0.65
Sheridan St	Cheyenne	0.77
Evers Blvd	Cheyenne	0.87
E 12th St	Cheyenne	1.06
Total		4.99

Shared Roadways

Cheyenne’s system of shared roadways, shown in Table 5, encompasses a wide range of functional roadway classes, including principal arterials, minor arterials, collectors, and local roadways (Figure 7). Existing motor vehicle volumes range from several hundred vehicles per day on local roadways such as Morrie Avenue to over 10,000 vehicles per day (e.g., portions of Ridge Road). A cyclist’s level of comfort for travel on shared roadways generally decreases as motor vehicle speeds and volumes increase, indicating that some users may not feel comfortable utilizing some of the CMA’s existing system of shared roadways.

Several shared roadways in the Cheyenne area are marked with bicycle route signs, including Randall Avenue, Cribbon Avenue, Carey Avenue, East 22nd Street, Nationway, Pioneer Avenue, Snyder Avenue, East 7th Street and portions of Dell Range Boulevard. Additionally, bicycle route signs exist on some roadways that are not part of the formally recognized bicycle network.

Most neighborhood or residential streets in the CMA can be considered as undesignated “shared roadways.” Opportunities may exist to take advantage of the extensive local street network to provide alternatives for cyclists who may feel uncomfortable riding on major streets.



Figure 7. Shared roadways with low motor vehicle volumes and posted speeds provide comfortable cycling conditions for many system users.



Figure 8. Higher speed and volume shared roadways, such as Ridge Road, may not be comfortable for some riders.

Table 5. Existing Shared Roadways

Existing Shared Roadway			Existing Shared Roadway		
Segment	Jurisdiction	Length (mi)	Segment	Jurisdiction	Length (mi)
7th St Bridge	Cheyenne	0.02	Nationway	Cheyenne	2.85
7th St. I-180 Overpass	Cheyenne	0.07	Omaha Rd	Cheyenne	0.66
Bishop Blvd	Cheyenne	0.66	Oneil Ave	Cheyenne	0.95
Carey Ave	Cheyenne	2.03	Parsley Blvd	Cheyenne	0.85
Central Ave	Cheyenne	0.61	Pioneer Ave	Cheyenne	1.09
Converse Ave	Cheyenne	0.47	Plain View Rd	Cheyenne	0.58
Cribbon Ave	Cheyenne	1.25	Powderhouse Rd	Cheyenne	2.13
Dell Range Blvd	Cheyenne	0.74	Randall Ave	Cheyenne	0.97
Deming Dr	Cheyenne	0.88	Ridge Rd	Cheyenne	2.00
Dey Ave	Cheyenne	0.20	Ridge Rd	Laramie County	1.63
Dillon Ave	Cheyenne	0.20	S Cribbon Ave	Cheyenne	0.42
Duff Ave	Cheyenne	0.50	S Parsley Blvd	Cheyenne	0.96
E 5th St	Cheyenne	0.13	Seymour Ave	Cheyenne	0.68
E 7th St	Cheyenne	1.19	Sheridan St	Cheyenne	0.77
E 8th Ave	Cheyenne	0.07	Snyder Ave	Cheyenne	0.17
E 9th St	Cheyenne	0.59	Stanfield Ave	Cheyenne	0.01
E 12th St	Cheyenne	1.35	Storey Blvd	Cheyenne	1.03
E 17th St	Cheyenne	0.20	Taft Ave	Cheyenne	0.66
E 18th St	Cheyenne	0.39	Thomas Ave	Cheyenne	0.26
E 22nd St	Cheyenne	1.04	US 30	Laramie County	0.47
E 23rd St	Cheyenne	0.20	Van Buren Ave	Cheyenne	0.65
E 27th St	Cheyenne	0.39	Vandehei Ave	Cheyenne	0.85
E Fox Farm Rd	Laramie County	0.71	W 5th St	Cheyenne	0.25
Evans Ave	Cheyenne	0.14	W 7th St	Cheyenne	0.07
Evers Blvd	Cheyenne	1.16	W 8th Ave	Cheyenne	0.82
Gardenia Dr	Cheyenne	0.52	W 9th St	Cheyenne	0.52
Henderson Dr	Cheyenne	0.56	W 18th St	Cheyenne	0.20
Hilltop Ave	Cheyenne	0.63	W 22nd St	Cheyenne	0.72
Holliday Park	Cheyenne	0.21	W 24th St	Cheyenne	0.45
Holmes St	Cheyenne	0.12	W 27th St	Cheyenne	0.51
Hot Springs Ave	Cheyenne	0.79	W Allison Rd	Cheyenne	0.75
Hynds Blvd	Cheyenne	1.23	W Fox Farm Rd	Cheyenne	0.31
I-80 Overpass	Cheyenne	0.06	Walker Rd	Cheyenne	0.10
Kennedy Rd	Cheyenne	0.23	Walterscheid Blvd	Cheyenne	1.28
Manewal Dr	Cheyenne	0.26	Weaver Rd	Cheyenne	0.99
Meadow Dr	Cheyenne	0.05	Western Hills Blvd	Cheyenne	0.51
Melton St	Cheyenne	0.02	Westland Rd	Cheyenne	0.24
Morrie Ave	Cheyenne	1.46	Total		50.21
Mountain Rd	Cheyenne	0.56			

Bike Parking

Bike parking is a critical component of a community's bikeway network, and can strongly influence one's decision whether to complete a trip via bicycle. Examples of existing bicycle parking in Cheyenne include the Laramie County Library, retail locations near the downtown core, schools, and parks. The need for adequate bicycle parking is discussed in the *Road Street & Site Planning Design Standards* and the *Parks and Recreation Design Standards* lists bicycle racks as required park elements.

The quality of existing bike parking facilities varies by location, particularly due to the style of rack chosen and/or placement of the rack. Some existing racks near schools and shopping areas are considered substandard because they do not provide sufficient points of contact to support a bicycle at two points (Figure 9). In other words, they do not allow a bicycle frame and at least one wheel to be locked to the rack without the use of a long bicycle cable or mounting the bicycle over the rack.

Informal bike parking (bikes being locked to hand rails, street signs, light poles and other objects) indicates a demand for additional bike parking supply (Figure 10). Some bikes have been informally parked throughout the study area, including at multi-family residences along Lincolnway, suggesting that insufficient formal bike parking is being provided, or that it is not conveniently located in close proximity to a storefront or building entrance.



Figure 9. Bicycle parking near some commercial establishments could be improved by upgrading existing bicycle racks.



Figure 10. Informal bicycle parking at multi-family residences along Lincolnway indicates that additional bicycle parking would be beneficial.

Bicyclist Destinations

It is particularly important for the on-street bicycle and Greenway network to provide access to destinations popular among pedestrians and bicyclists. Within the Cheyenne area, popular destinations are likely to include:

- Educational facilities: elementary schools, junior high schools, high schools and Laramie County Community College
- Cheyenne Regional Medical Center

- Employment centers: Warren Air Force Base, Frontier Mall, National Center for Atmospheric Research, state and local government, Albertsons, Safeway, Qwest Corporation, etc.
- Commercial areas: the Frontier Mall, South Greeley Highway, Depot Plaza (Figure 11)
- Institutional buildings: City Hall, Laramie County Library, Cheyenne Civic Center, State Capitol Complex
- Parks in and around Cheyenne including: Lions Park, Holliday Park, Cahill Park, and Curt Gowdy State Park



Figure 11. Depot Plaza is a popular bicycling destination for Cheyenne area residents.

Transit Connections

Providing a strong bicycle link to transit is an important part of making non-motorized transportation a part of daily life in Cheyenne. Bicycling can extend transit's reach by providing transportation for 'the last mile' of a trip. Additionally, transit provides cyclists with the option of a ride after dark, during inclement weather, or in the case of a bicycle breakdown. There are several main components of bicycle transit integration:

- Allowing bicycles on transit
- Providing bicycle parking at transit stops
- Improving connections between bikeways and transit

CTP, the Cheyenne Transit Program, operates several fixed-service routes and curb-to-curb paratransit service. The five fixed-service routes are geographically based and provide coverage along many collector and arterial roadways in the CMA including:

- Dell Range Boulevard
- Storey Boulevard
- Central Avenue
- Powderhouse Road
- Lincolnway
- Nationway
- College Drive
- South Greeley Highway
- Fox Farm Road
- East Pershing Boulevard

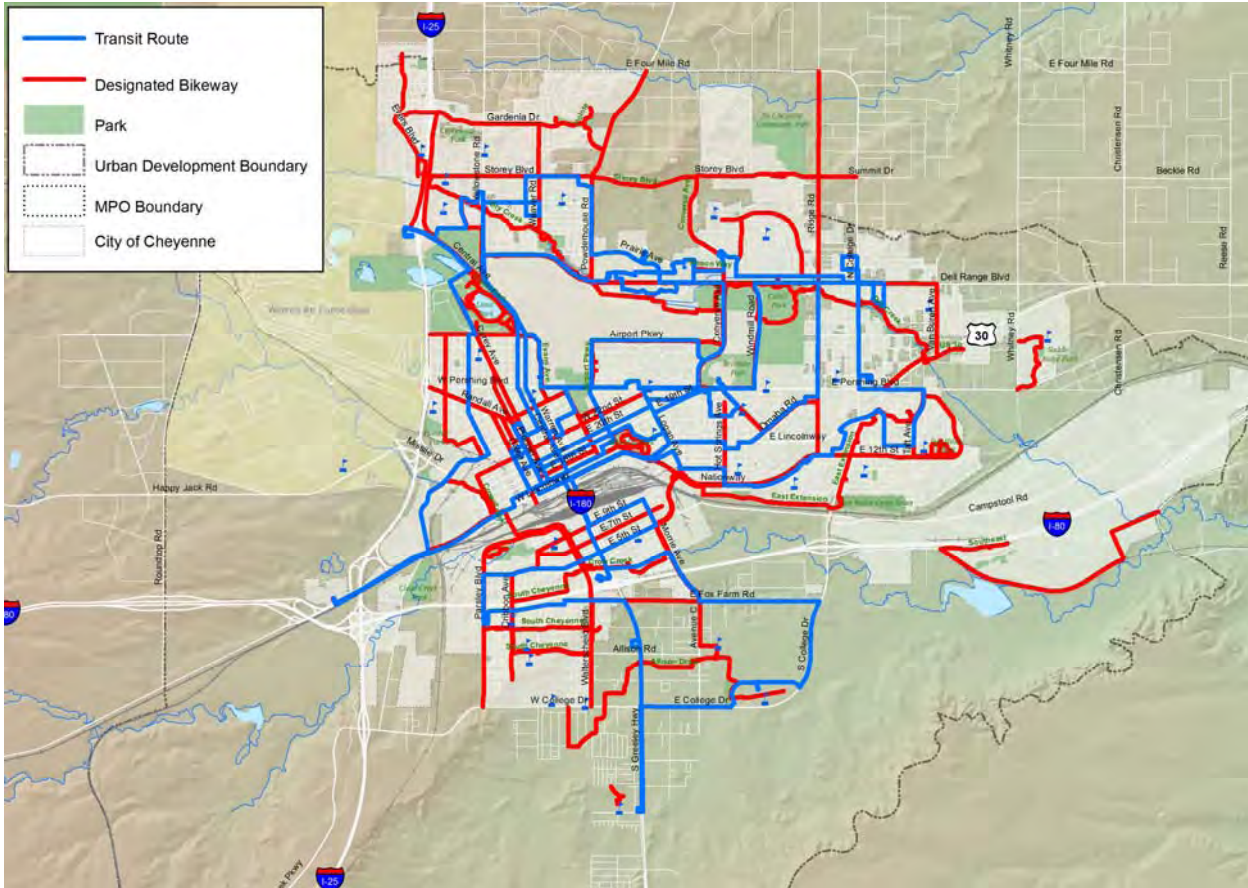


Figure 12. Cheyenne area fixed route transit service vehicles have front racks capable of carrying two bikes.

These routes, shown on Map 2 provide hourly service six days a week within the city boundaries, as well as extending south and east along College Drive and South Greeley Highway. Transit service typically runs from 6:00 AM to 7:00 PM during the week and 10:00 AM to 5:00 PM on Saturday. All

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regular buses have bike racks with capacity for two bicycles (Figure 12). Most bus stops do not have bicycle parking.



Map 2. Transit Routes and Designated Bikeways

System Opportunities and Constraints

This section provides an assessment of the existing conditions for on-street bikeways and Greenways in the Cheyenne area, outlining opportunities for improvement.

Opportunities

Various characteristics foster an environment where bicycling is comfortable and enjoyable in the Cheyenne Metropolitan Planning Area. These system strengths are described below.

Scenic, Extensive, and Well-Maintained Greenways and Shared Use Paths

Residents of the CMA benefit from an extensive network of Shared Use Paths and Greenways. These facilities encourage residents to use these trails for exercise, recreation, and connections with the natural environment. The geographic coverage of existing facilities also ensures 38% of residents are within one-quarter mile of a Greenway and 96% of residents are within one mile of a Greenway (Map 3).



Figure 13. Many existing on-street bikeways and Greenways are relatively flat.

Topography

The topography of the Cheyenne area is relatively flat, with few challenging hills to deter bicycling (Figure 13).

Grade-Separated Crossings

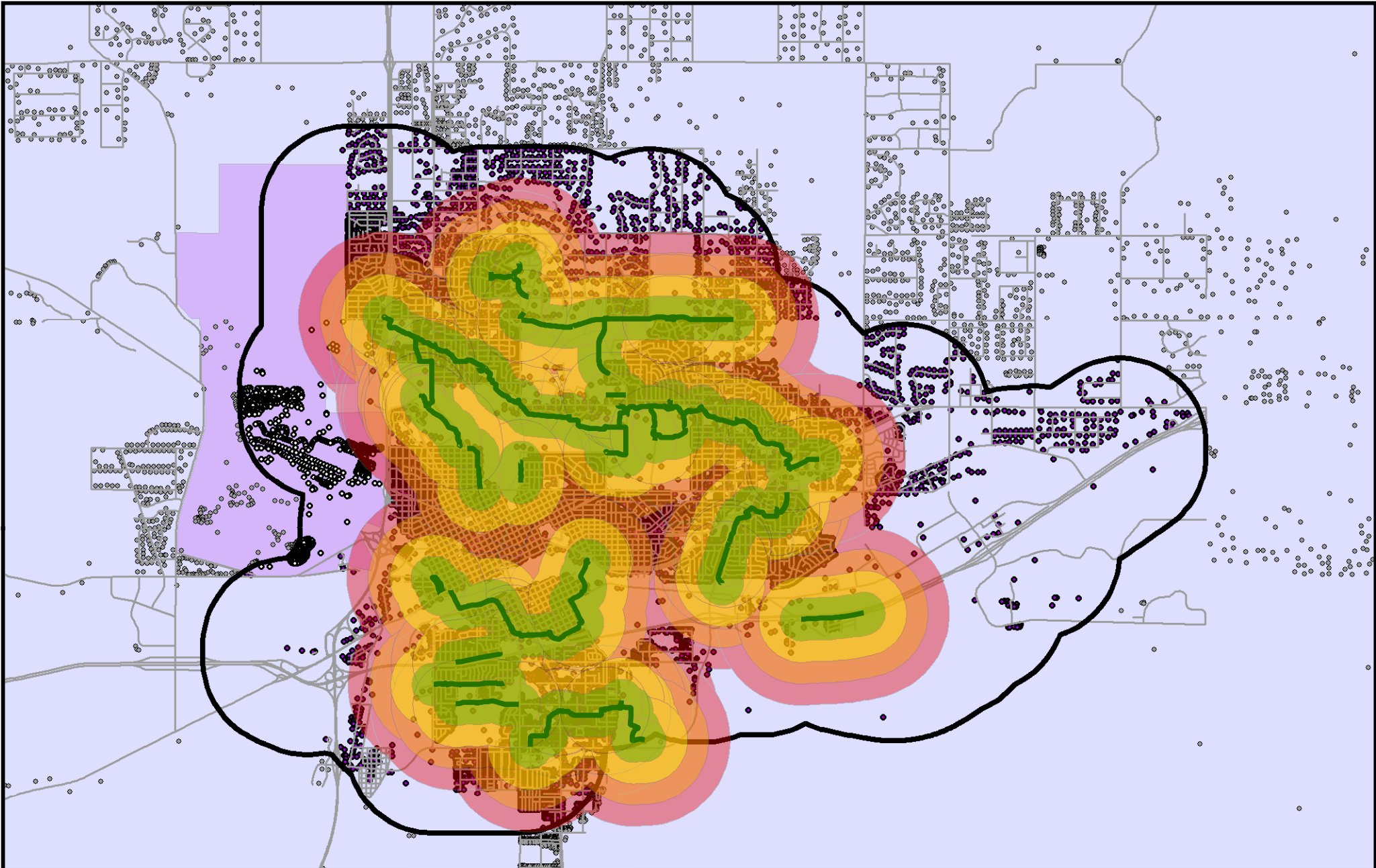
While the interstates, high volume arterial roadways, and railroads running through the CMA create significant barriers to bicycling connectivity, 15 grade separated crossings reduce the impact of these obstacles (Figure 14). Grade-separated overcrossings exist at the following locations:

- Cribbon Avenue (crossing of I-80 near Cole Elementary School)
- Converse Avenue near Dell Range Boulevard
- Western Hills Boulevard (crossing of I-25 near McCormick Junior High School)
- Seventh Street (crossing of I-180)
- Norris Viaduct (crossing of Union Pacific railroad tracks)



Figure 14. Undercrossings, such as this one located at College Drive on the Dry Creek Greenway, provide a comfortable crossing by separating bicyclists from motorists.

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- City + 1 Mile
- Greenway
- 1/4 mile
- 1/2 mile
- 3/4 mile
- 1 mile
- Laramie Co. Addresses
- Addresses w/in 1 Mile
- AFB Addresses
- Warren Air Force Base
- Roads

Households* Within a Fixed Distance of the Greater Cheyenne Greenway
Analysis Completed December 1, 2009

1/4 mile	%	1/2 mile	%	3/4 mile	%	1 mile	%
11,175	38%	20,808	71%	26,825	91%	28,396	96%

*Addresses within a 1 mile buffer of Cheyenne (excluding Air Force Base)
 29,456 addresses = 76% of addresses in Laramie County, Wyoming (38,506)

1 in = 1.5 miles

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Other grade-separated undercrossings include:

- Dry Creek Greenway at US 30
- Dry Creek Greenway at Ridge Road
- Dry Creek Greenway at College Drive
- Dry Creek Greenway at Yellowstone Road
- Dry Creek Greenway at Powderhouse Road
- Crow Creek Greenway at I-180
- Allison Draw Greenway at South Greeley Highway, West Prosser Road and Avenue C
- 12th Street at College Drive
- An underpass of the UPRR tracks on Ames Avenue south of West Lincolnway
- Dell Range Boulevard north of Cahill Park
- Central Avenue at Lions Park
- Windmill Road south of Powers Field

Potential for On-Street Bicycle Signal Activation

Bicycle signal activation is an important feature for bike routes, enabling cyclists to trigger traffic signals without dismounting to use the pedestrian signal or waiting for an automobile to trigger the green phase (Figure 15) Existing video detectors can be calibrated to respond to the presence of bicycles as can existing magnetic loop detectors. The City of Cheyenne provides video detection at several locations (e.g., Pershing Boulevard and Carey Avenue), which could also be used to provide bicycle signal activation.

Multi-Modal Traffic Impact Studies

As discussed in the Transportation Element of *Plan Cheyenne*, transportation impact studies that are prepared for all design proposals should include consideration of impacts to all transportation modes, including cycling. These studies, such as the corridor study in progress for Fox Farm Road, contribute to the development of a balanced transportation system.

Generous Road Rights-of-Way and Existing Unofficial Shoulder Bikeways

The existing Greenway system makes use of generous rights-of-way to provide a system of separated trails that parallel major roadways (e.g., Converse Avenue and Allison Road).

In other locations, the existing roadway width is sufficient to mark bicycle lanes or formalize existing wide shoulders as bikeways without physically altering the roadway configuration (Figure 16).

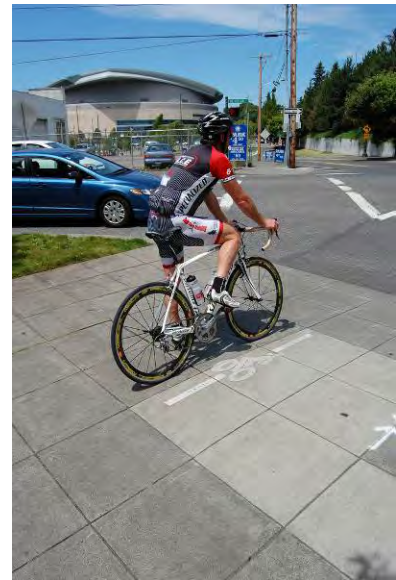


Figure 15. Traffic signals can be activated by in-pavement signal loops. Pavement markings guide cyclists in correct placement of their bicycle to trigger the traffic signal.

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The CMA's shoulder bikeways provide varying facility widths to accommodate bicycle travel. Examples four-foot shoulders on Yellowstone Road, twelve-foot shoulders on College Drive, and six-foot shoulders on Campstool Road.



Figure 16. Unofficial shoulder bikeways, such as this shoulder along US 30, are already in use throughout the CMA.

Table 6. Existing Unofficial Shoulder Bikeways

Existing Wide Shoulder		
Segment	Jurisdiction Responsible for Maintenance	Length (mi)
Airport Pkwy	Cheyenne	0.99
Campstool Rd	Cheyenne	2.89
Campstool Rd	Laramie County	1.58
Central Ave	WYDOT	0.88
E 5th St	Cheyenne	0.33
E College Dr	WYDOT	1.42
E Pershing Blvd	Cheyenne	0.34
E Fox Farm Rd	Laramie County	1.54
E Fox Farm Rd	Cheyenne	0.25
I-180	WYDOT	2.27
Missile Dr	Cheyenne	0.81
N College Dr	WYDOT	0.76
N College Dr	WYDOT	1.02
N Greeley Hwy	WYDOT	0.14
Powderhouse Rd	Cheyenne	2.13
Prairie Ave	Cheyenne	0.78
Ridge Rd	Cheyenne	2.00
Ridge Rd	Laramie County	1.63
S College Dr	WYDOT	0.98
S Greeley Hwy	WYDOT	1.03
W College Dr	WYDOT	2.10
W Lincolnway	WYDOT	1.07
Yellowstone Rd	Cheyenne	1.07
Yellowstone Rd	WYDOT	0.67
Total		28.67

Land use

The existing patterns of land use in the CMA provide a mix of residential, commercial, and institutional destinations within a comfortable cycling distance (i.e., less than five miles) for many area residents. Additional characteristics of the existing urban area that improve conditions for cyclists include bicycle/pedestrian accessways in cul-de-sac style development (e.g., Pinto Lane); a grid of connected streets within downtown and many inner neighborhoods (e.g., The Avenues); and shorter street blocks that enhance a cyclist's route choice and can reduce the need for out-of-direction travel.

Education and Encouragement Programs

Cheyenne's strong greenway network and growing public interest in bicycling and trail use offers great potential for education and encouragement programs. Programs teaching bicycle safety and skills to children may be an especially good fit, but education programs aimed at adults should be considered as well. The League of American Bicyclists offers a standardized bicycle training program through its certified instructors. Although there are no League-Certified Instructors in Wyoming, there are five in Denver who could be invited to present a youth or adult training course.

As far as encouragement programs are concerned, the Cheyenne Cycling Club meets regularly for sport cycling training rides, and there are a number of annual events as well such as the Moonlight Cowboy Ride, the Spring Into Green Walk/Ride/Run, the Tour de Prairie, the Cheyenne Ride for Sight, and the Cheyenne Sprint Triathlon. There is an opportunity to complement competitive events by creating more greenway and bicycling events that appeal to families and novices.

Cheyenne residents currently have access to two maps: the Greater Cheyenne Greenway Map¹ and the Greater Cheyenne Greenway: Bicycle & Pedestrian System Map². As the greenway and on-street bikeway network expands, it will be important to update these user maps. An opportunity also exists to include additional information on the map (such as bike safety information or a list local resources) and/or to distribute the map online and to handheld devices.

Cheyenne's existing Safe Routes to School work and Plan will also jump-start future education and encouragement efforts. In the past, events have been scheduled for International Walk to School Day in October, and Safe Walking Route maps are distributed annually to LCSD #1 families.

Potential partners and stakeholders in creating future education and encouragement programs include the Greater Cheyenne Greenway Advisory Committee, the Cheyenne Greenway Foundation, the Nature Conservancy, WINhealth Partners, local bike shops (such as Bicycle Station), and Safe Kids Wyoming. Detailed education and encouragement recommendations will be developed for Draft Working Paper #13: 4 E's Report.

Enforcement Efforts

Law enforcement agencies are essential partners in the effort to create safer streets. While studies have shown that on-street bikeways and well-engineered greenway trail crossings improve safety,

¹ <http://www.cheyennecity.org/DocumentView.aspx?DID=2081>

² <http://www.cheyennecity.org/DocumentView.aspx?DID=2082>

another part of the puzzle is working with the Cheyenne Police Department and the Laramie County Sheriff's Office to enforce traffic laws. The Cheyenne Police Department already circulates a radar speed enforcement trailer, and citizens can request deployment of the radar trailer. The *Transportation Safety Management Plan* could be an important resource for this effort in the future. Detailed enforcement recommendations will be developed for Draft Working Paper #13: 4 E's Report.

Evaluation and Benchmarking

Ongoing evaluation will help Cheyenne track progress towards meeting the goals of the On-Street Bicycle Plan and Greenway Plan, and will be an important way to communicate with elected officials and the public. The City of Cheyenne is already interested in performing annual bicycle and pedestrian counts on greenways and bicycle facilities; the National Bicycle and Pedestrian Documentation Project has created templates that can jump-start this process. Other benchmarks and reporting recommendations will be developed for Draft Working Paper #13: 4 E's Report.

Constraints

Described below, bicyclists in the Cheyenne area face a variety of challenges.

Limited On-Street Bikeway Options

The existing bicycle network serves residents by providing routes through the city and connecting to recreational opportunities. The separation provided by the Greenway is beneficial to new or inexperienced cyclists, who may be uncomfortable riding in traffic as well as recreational cyclists. The CMA could benefit from a more complete network of on-street bikeways that provides direct utilitarian connections to destinations throughout the region.

Barriers

Major roadways, freeways, airport and railroad tracks are significant barriers to bicycling in Cheyenne. As the City, MPO and County continue to make progress and overcome these barriers, they will face a variety of challenges. For example, I-80, I-25 and I-180 are barriers due to the long distance between crossing locations. Other roadways that serve as barriers to bicycle movement due to higher vehicle speeds and volumes include arterials such as Yellowstone Road, Dell Range Boulevard, Nationway, College Drive, Pershing Boulevard and South Greeley Highway. Finally, roads that cross the regular grid at a diagonal can create complicated intersection geometry and increase crossing distances. Examples include Randall Avenue and Logan Avenue. The Union Pacific Railroad also creates a barrier due to the distance between crossing locations (Figure 17).

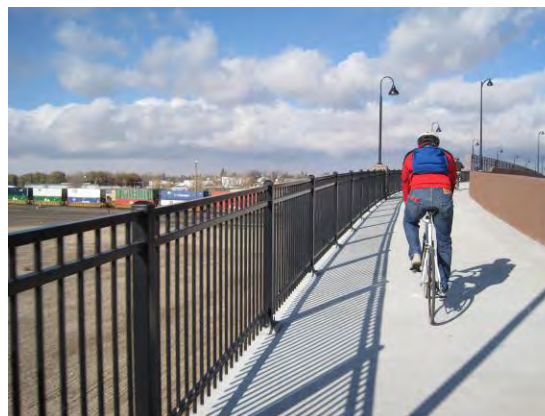


Figure 17. Barriers, such as the Union Pacific Railroad tracks, can be overcome by constructing facilities like the Greenway extension on the Norris Viaduct.

Challenging Intersections

Major intersections can be challenging for cyclists riding either on-street or on the Greenway system. These challenges include:

- Complex crossing movements for bicyclists (e.g., West Pershing Boulevard and Randall Avenue, Ames Avenue and West Lincolnway, Nationway and East Lincolnway, Pershing Boulevard and US 30)
- Greenway crossings set back from the intersection can reduce the visibility of users to motorists making a right turn on red (e.g., Dell Range Boulevard and Windmill Road)
- Intersections with limited access roadway interchanges where motorists may not be required to stop before merging (e.g., I-80 and North College Drive)
- Lack of bicycle loop detection or other methods for a cyclist to trigger a signal change (system-wide)
- Bicycle lanes dropping upstream from an intersection (e.g., East 12th Street east of Ridge Road)
- Bicycle conflicts with vehicle turning movements at driveways and intersections (e.g., College Drive and East Fox Farm Road)

Challenging Travel Conditions on Existing Bicycle Facilities

The Cheyenne area's existing bicycle system includes facilities that may create a less than ideal experience for cyclists of some ages and abilities:

- Challenging intersections, which are described in more detail in the preceding section
- Locations where facilities drop (e.g., disappearance of the shoulder bikeway along College Drive at Laramie County Community College)
- Shared roadways with high motor vehicle volumes (e.g., Dell Range Boulevard, and Ridge Road Storey Boulevard, Powderhouse Road,)

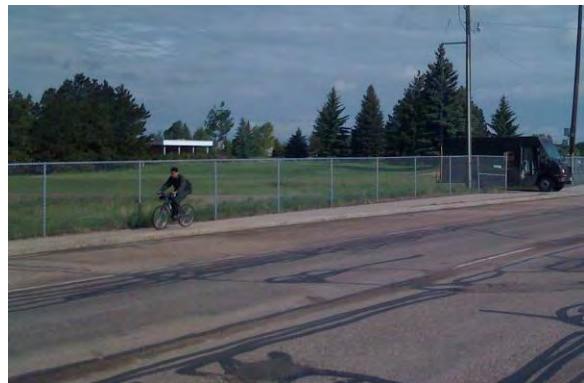


Figure 18. Limited bikeway system connectivity can result in cyclists riding on sidewalks in major corridors and along major roads.

Limited Street System Connectivity

Although streets are well connected in downtown Cheyenne and surrounding neighborhoods such as The Avenues, Fairview Heights, South Cheyenne and Western Hills, there is limited north-south connectivity due to system gaps created by the Cheyenne Regional Airport, the Dell Range Shopping Mall, the interstate system and railroads. Roads providing the most connectivity and covering longer

distances tend to be high-volume streets lacking bicycle facilities (Figure 18). Examples of these major corridors include Powderhouse Road, South Greeley Highway and Walterschied Boulevard.

Network Gaps

While bicyclists in the CMA benefit from the Greenway facilities and designated on-street bikeways, there are locations where the system is fragmented (Figure 19). In addition, larger network gaps between facilities require bicyclists to either ride on the road or on a sidewalk to access another greenway facility (e.g., College Drive, Dell Range Boulevard, Whitney Road, portions of Lincolnway, and Pershing Boulevard). Additional information on an analysis of system gaps is included in Draft Working Paper #5 Bikeway System Gap Analysis.



Figure 19. Network gaps can create challenging conditions for bicycle travel.

Lack of Wayfinding Tools

While the Greenway system is branded with identifying signs and some directional signs are available throughout the Cheyenne area (Figure 20), the bikeway system could benefit from signage and additional wayfinding tools to orient users and direct them to and through major destinations including downtown, schools, parks, and commercial areas. As the on-street network is being developed, cyclists should be directed to key destinations along the bikeway, raising awareness of new facilities and encouraging more residents to try bicycling.



Figure 20. While some wayfinding tools are present in the Greenway system, wayfinding signs found along roadways are infrequently placed and do not provide reinforcement of cycling routes.

User Conflicts on Trails

Conflicts can arise between faster-moving cyclists and slower-moving pedestrians along some Shared Use Paths in Cheyenne, particularly where they pass through areas with higher demand (e.g., the eight-foot-wide Shared Use Path on the south side of Dell Range Boulevard). Though the 1992 *Greenway Development Plan* recommends a ten foot minimum width for new Greenway facilities. Shared Use Paths built prior to plan implementation were built to the eight-foot standard and are subject to a potentially higher incidence of user conflicts.

Greenway Safety Concerns

The AASHTO Guide for the Development of Bicycle Facilities generally recommends against the development of trails adjacent to roadways. Though most Greenway facilities and some Shared Use Paths are completely separated from the road right-of-way, several existing facilities do parallel major roadways (e.g., Yellowstone Road, Dell Range Boulevard, Converse Avenue and Storey Boulevard). Also known as “side paths”, these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic and can result in wrong-way riding where cyclists enter or leave the path. This can result in an unsafe situation where motorists entering or crossing the roadway at intersections and driveways do not notice bicyclists coming from their right, as they are not expecting traffic coming from that direction. Stopped cross-street motor vehicle traffic or vehicles exiting side streets or driveways may also block path crossings. Even bicyclists coming from the left may go unnoticed, especially when sight distances are poor.

Additional concerns about Shared Use Paths directly adjacent to roadways (e.g., with minimal or no separation) are:

- Half of bicycle traffic may ride against the flow of vehicle traffic, contrary to the rules of the road
- When the path ends, cyclists riding against traffic tend to continue to travel on the wrong side of the street, as do cyclists going to the path



Figure 21. Inclement weather conditions can reduce the number of people willing to bicycle in winter months.

Inclement Weather

Winter weather conditions can create challenges both in terms of cyclist use and system maintenance (Figure 21). The CMA’s average winter snowfall is approximately sixty inches and requires plowing of major roadways after most snow events to make the roadways traversable for all users. Frequent plowing reduces the lifetime of paint and other materials used to mark bicycle lanes or shared roadways unless the roadway surface is ground out and markings installed below the level of the plow blade.

Cheyenne’s geography and prevailing weather patterns also create windy conditions that can either benefit or deter cyclists, depending on their direction of travel. During certain times of year prevailing winds of 15 to 20 miles an hour can halt a cyclist in their tracks and limit forward momentum. Typically wind has a more pronounced effect in less urbanized areas of the Cheyenne area, where fewer trees and buildings exist to provide a measure of protection.