



TRANSPORTATION

WHY IT MATTERS

Transportation is intertwined with all aspects of community life. People use transportation to get to work, school, shopping, medical facilities, recreation, and community and social activities. The availability and convenience of transportation can have a profound influence on quality of life, economic development, housing options, and health and human services. A transportation system that serves all users well can help a community achieve desired land use patterns and other goals, and allow residents and visitors of Casper travel choices, public safety, and freedom of personal mobility.

KEY POINTS + ASSUMPTIONS

The automobile is the predominant means of transportation.

Land use and transportation are mutually dependent on each other. If one is not well planned, the other suffers.

There is a desire for increased biking and walking transportation through better trails, bike lanes, more frequent transit service, and other infrastructure improvements.

The Casper Area Transportation Coalition (CATC), contracted by the City of Casper, provides “The Bus” for fixed route deviation and CATC buses for demand-responsive transit service. Not all of the metro area is served by “The Bus” on all days of the week.

Freight corridors passing through the Casper area include: the Burlington Northern and Santa Fe (BNSF) Railways, I-25, US 20/26, and SH 220.

EXISTING CONDITIONS

Travel Patterns

The Casper Metropolitan Area is relatively isolated from other communities in the state, meaning the vast majority of people live and work in the area. Almost all commuting is to and from the neighboring communities of Bar Nunn, Mills and Evansville and the most common form of transportation is driving alone (82%), while 11% carpool (Figure 2-16). According the Center for Economic Studies, US Census Bureau, each day, over 15,100 people live and work within the City of Casper limits. Over 11,100 people live in Casper but work in the neighboring communities, or outside the metro area. Almost 9,900 people live outside of Casper but commute daily to work in Casper. Just over half (51.5%) of residents have less than a 15 minute commute to work, 38.4% have a 15 - 29 minute commute, and 10% commute more than 30 minutes. The average commute time is 17.8 minutes (Figure 2-17).

Approximately 46% of Casper residents pay 46% of their household income to cover the cost of their transportation (22%) and housing (24%) (Figure 2-18). The Center for Neighborhood Technology's (CNT) research indicates that these costs should remain below 45% to be affordable.

Functional Classification

The functional classification of a roadway describes its primary purpose, such as moving traffic efficiently, providing local or regional connections, or providing land parcel access. Functional classification is based on traffic volumes, vehicle speeds, length of typical trips, spacing between similar roads, and state/regional significance. Each functional classification has a corresponding set of design criteria, such as access spacing, design speed, and typical cross sections. The primary functional classifications that exist in Casper and their primary purpose are outlined in Table 2-1. Table 2-2 summarizes the typical characteristics of each Functional Classification.

Streets generally serve two important functions: mobility and land access. These two functions conflict with each other – more land access generally leads to reduced mobility and traffic carrying capacity, and vice versa. Each roadway type is specifically designed to operate with certain characteristics based on the adjoining land uses, level of continuity, and proximity/connections to other facilities.

FIGURE 2-16. TRAVEL MODE

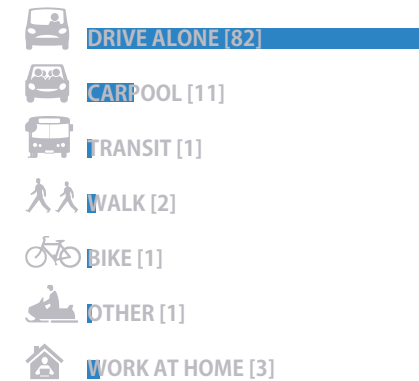


FIGURE 2-17. AVERAGE COMMUTE TIME

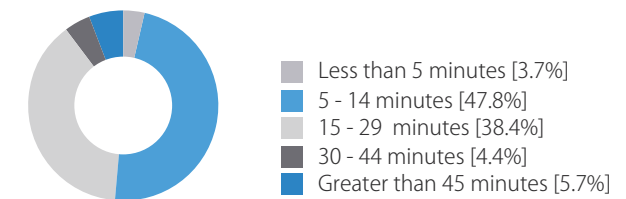
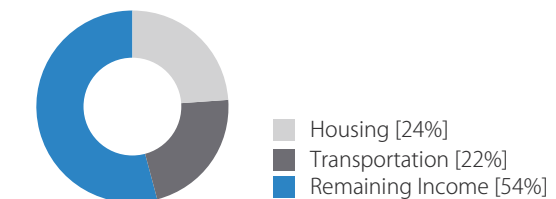


FIGURE 2-18. DISTRIBUTION OF HOUSEHOLD INCOME



Source: US Census

TABLE 2-1. FUNCTIONAL CLASSIFICATION

FUNCTIONAL CLASSIFICATION	PRIMARY PURPOSE
Highway	Highways serve long distance trips within and across states, generally have limited access via interchanges, and carry high traffic volumes at high speeds. Their primary purpose is to move traffic quickly and efficiently.
Principal Arterial	Principal arterials serve travel between cities and other activity centers. Typically, these roadways have high traffic volumes and are frequently the route of choice for intercity buses and trucks. Principal arterials play a unique role in providing a high degree of mobility and carrying a high proportion of travel for long distance trips. Wyoming Boulevard and CY Avenue are examples of Principal arterials in Casper.
Minor Arterial	Minor arterials serve longer trips within and between urban and suburban areas. They are typically designed with limited locations at which vehicles can enter or exit the roadway. Minor arterials typically have higher posted speed limits, and typically account for more than half of the daily vehicle-miles of travel. Casper Mountain Road, Twelfth Street, Collins Drive, and Beverly Street are classified as minor arterials.
Collector Road	Collector roads connect local roads and arterial roadways, and are typically shorter and narrower than arterial routes but longer and wider than local roads. Collectors often provide traffic circulation between neighborhoods as well as commercial, industrial, or civic districts, and have a higher number of access points to parcels. Collectors account for the next largest percentage of travel, accounting for 5% to 15% in urban areas. College Drive, Fifteen Street, and McKinley Street are classified as Collector Roads.
Local Road	Local roads provide direct access to properties. In contrast to other classifications, local roads are lined with access points in the form of driveways, intersecting roadways, crosswalks, and transfer points for buses and other modes. Speed limits are kept low to promote safety and neighborhood quality of life. The urban local road network serves denser land uses and therefore accounts for a larger proportion of travel than its rural counterpart. Beech Street, Farnum Street, and Scoffman Avenue are classified as Local Roads.

TABLE 2-2. TYPICAL CHARACTERISTICS OF EACH FUNCTIONAL CLASSIFICATION

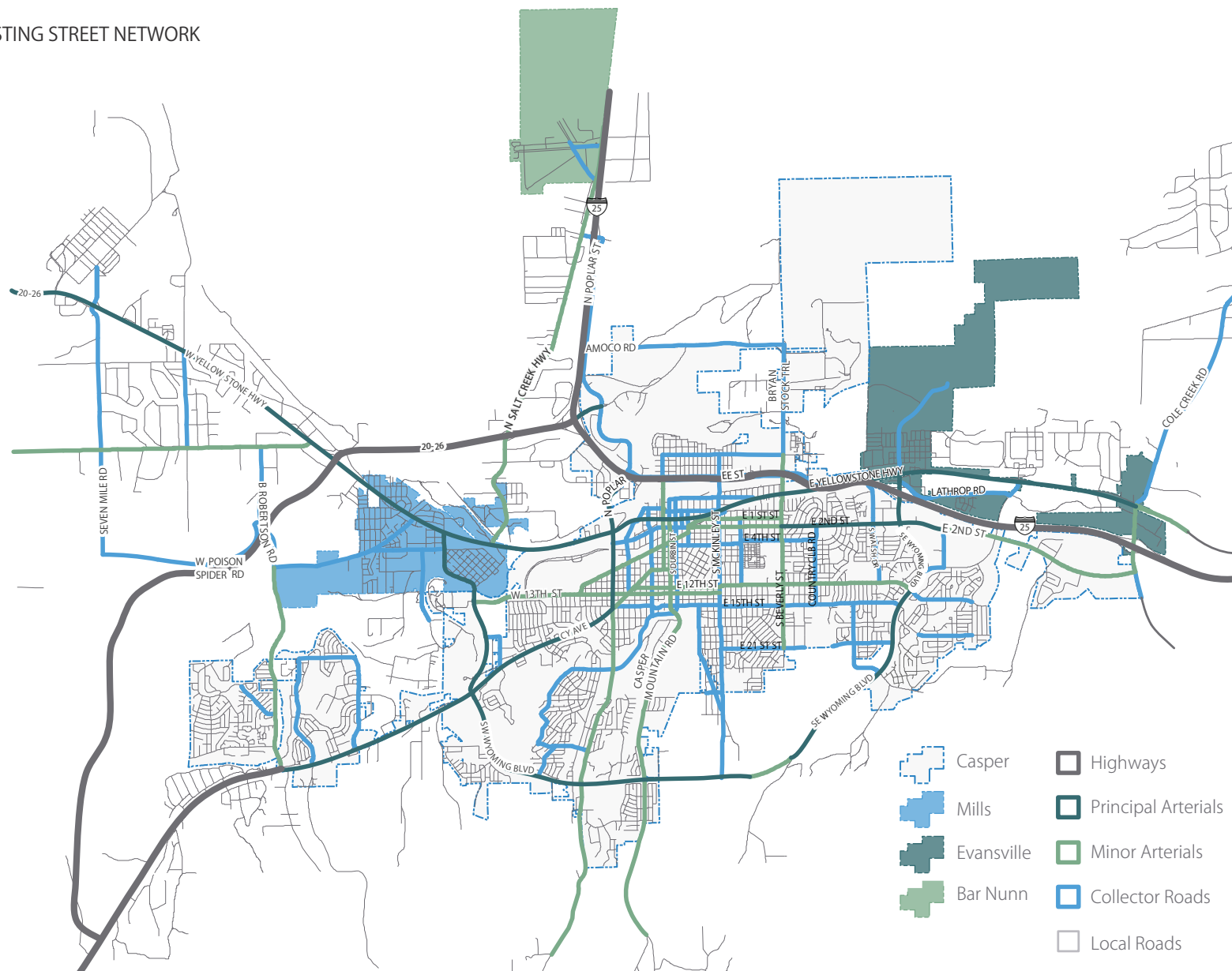
FUNCTIONAL CLASSIFICATION	TRIP LENGTH/ ROAD LENGTH	INTERSECTIONS	SPEED LIMIT	DISTANCE BETWEEN SIMILAR ROADS	TRAFFIC	SIGNIFICANCE	NUMBER OF TRAVEL LANES
Highway	Long	Few (all with grade separation)	High	Long	High	National/ Statewide	High
Principal Arterial	Long	Few, some at-grade	Medium-High	Long	High	Statewide	High
Minor Arterial	Medium	Few to medium, most at-grade	Medium-High	Long to Medium	High	Regional	High
Collector Road	Medium/ Short	Medium	Medium	Medium to Short	Medium	Local/ Regional	Medium
Local Road	Short	Many	Low	Short	Low	Local	Low

A street's functional classification describes these characteristics. Arterial roads focus more on mobility, local streets on accessibility, and collector roads somewhere in between. I-25 and the US and State highways are owned by WYDOT.

The street network in Casper includes approximately 3,300 miles of local streets that provide direct access to residences, I-25 (national interstate facility) and arterial roads US 20/26, CY Avenue and Popular Street (SH 220), Wyoming Boulevard (SH 258) and the West Belt Loop (SH 257). Local streets account for 96% of the street network, and arterial roads and collectors each consist of about 2% (**Map 2-2**).

The Casper Area Long Range Transportation Plan indicates that almost all roads within Casper operate at level of service (LOS) D or better, indicating acceptable traffic flow with relatively minimal congestion. Based on 2040 traffic projections, however, a number of arterial and collector roadways in Casper are forecast to drop to unacceptable LOS below D. Congestion is anticipated to increase appreciably. This is likely to be due to increased traffic volumes, and a lack of adequately spaced arterial and collector roads in some parts of town.

MAP 2-2. EXISTING STREET NETWORK





In addition, land uses, lack of connectivity between adjacent developments, and lack of a grid street system can all contribute to congestion on arterial and collector road intersections. People must use the major roads for travel that might otherwise be accommodated on interior local or connector roads. Constructing a grid block configuration has been shown to decrease trip lengths by over 40%, while reducing congestion and air pollution.

This is particularly evident in East Casper and West Casper. As an example, near the intersection of SE Wyoming Boulevard and Second Street, Second Street currently experiences over 24,000 vehicles per day, while SE Wyoming Boulevard handles over 23,000 vehicles per

day. When compared to the volume of about 8,000 vehicles per day on I-25 in that area, it is easy to understand the congestion at that intersection.

There is a lack of arterial/collector street connectivity, and proper arterial/collector street spacing. There are no east-west arterial roads that traverse the entire City of Casper. If heading east on Highway 26 to First Street, one must head south one block to Second Street to stay on an arterial road. The same occurs on Twelfth Street/Thirteenth Street. In the north/south directions, only Poplar Street and SE Wyoming Boulevard traverse the city. Center Street traffic must move to Wolcott Street. Traffic on McKinley Street and Beverly Street has no adjacent arterial roads which to transfer. Neither street fully extends through the city. This leads to congestion at

the “transfer point” intersections, higher traffic volumes on collector and local streets, and safety concerns.

Roadway spacing is a concern in some of the newer parts of Casper. In the established neighborhoods, optimal one mile spacing for arterial roads, and $\frac{1}{4}$ to $\frac{1}{2}$ mile spacing for collector streets is reasonably provided. In East and West Casper, spacing between arterial roads is usually much greater than one mile, as few arterial roads currently exist in those areas. As development continues to occur without these high-functioning roads, congestion and safety will likely be significant problems in those areas.

There is a lack of consistent street cross sections throughout Casper (See **Figure 2-19**). The number of lanes; lane widths; provisions for parking, pedestrians, bicycles and transit and their offsets from the travel lanes; presence of a median and other access management techniques; lighting; and other street cross section elements all contribute to how a street functions, how safe it is and feels, and how it supports the character of the community. Having medians, bike lanes and sidewalks appear and disappear, lanes widths vary from 12 feet to as low as 9 feet, and other variables set inconsistent expectations amongst the travelers, leading to confusion, conflicts, and safety concerns. For example, if a highway with two 12-foot lanes per direction with a raised median suddenly narrows to two 10-foot lanes with no median and on-street parking, the tendency is to keep driving just as fast as before and not pay attention to cross traffic, the opening of doors of parked cars, and pedestrians. Not having continuous and consistent pedestrian and bicycle facilities can lead to the same concerns, as walkers and bicyclists may have to share the road with vehicular traffic where they were separate before.

When funding is tight, street maintenance can often suffer. If regular maintenance is not completed, it can lead to crashes, and much higher costs to reconstruct streets in the future. Several streets were noted as needing maintenance during tours of the Casper area.

Residential street speed is a perennial problem in all urban and suburban cities. As congestion increases on arterial and collector streets, motorists often use local roads to bypass the delays. Where not enough arterial and collector streets are provided, traffic often has no choice but to use local roads for regional travel. Finally, local streets tend to be wide open pavement. There is usually no striping, and if no cars are parked on the curbs, they can be inviting to higher speeds.

Major Barriers to Transportation

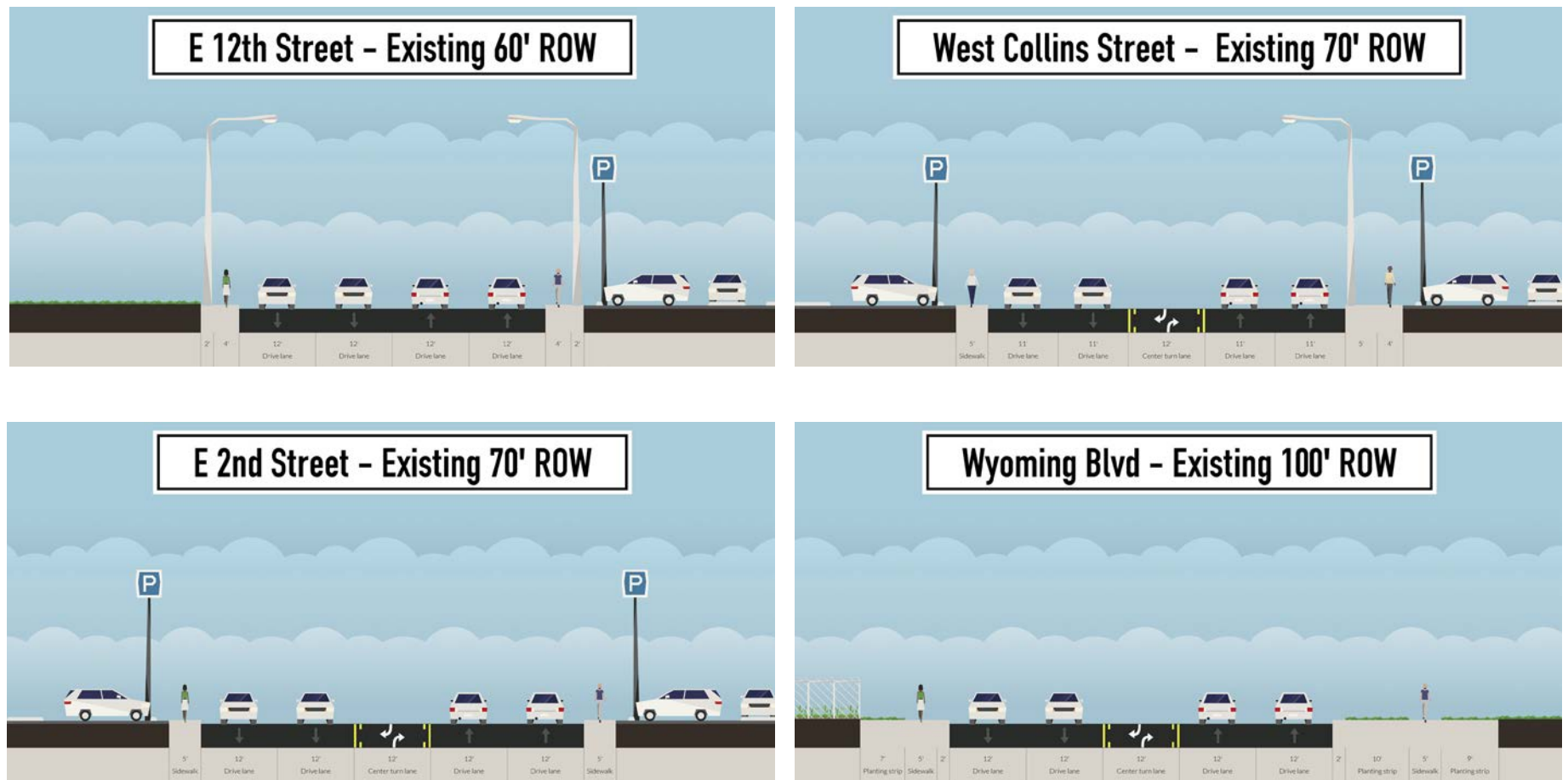
Within Casper, there are a number of features which act as barriers and largely impact the future transportation network. These include existing highways, such as I-25, US 20/26 and the West Belt Loop; railroads; the North Platte River and associated drainages; green space such as parks and golf courses; bodies of water like Soda Lake; and hilly terrain. These barriers are illustrated on **Map 2-3**.

Connectivity

In addition to the barriers listed above, the connectivity of major roads and individual parcels of land with the resulting block sizes impact how well the transportation system functions.

Urban planners use a concept of transect zones to determine the appropriate density and form for a given area. These transects go from very low density rural development to very high density urban development. Within Casper, the development density varies from suburban to low density urban development transects. In these transects, block perimeters, or the measurement of a block size, should be between 2,000 to 3,000 feet to reduce the distance a pedestrian must travel and to allow for a distribution of traffic throughout the city. Larger blocks result in fewer roads and options for vehicles to travel, which leads to wider roads and larger intersections. Wide roads and large intersections become increasingly more difficult and less desirable for pedestrians. In short, larger block perimeters lead to reduced connectivity.

FIGURE 2-19. EXAMPLE OF EXISTING CROSS SECTIONS



In the suburban areas of Casper, 3,000 foot block perimeters are acceptable, but block perimeters in more urban areas, such as the urban center, should not exceed 2,000 feet.

An assessment of the existing roadway network and developed land within the city limits shows quite a few blocks that exceed this block perimeter recommendation. More specifically, block sizes adjacent to highways, the railroad, and around natural amenities and parks tend to be quite large. These larger blocks create north/south and east/west barriers to the transportation network. Accounting for pedestrian trails and pathways, some of these blocks may be less of a barrier for bikes and pedestrians, while still forcing vehicles to traverse them. Many of these blocks are of certain uses that are not anticipated to experience redevelopment during the planning horizon. Some of those uses include cemeteries, golf courses, schools, and parks/preserve land.

Connectivity of the local roadway network and connectivity between individual parcels of land can help to reduce traffic on major roadways and at major intersections by allowing users alternate ways in and out of the site. In some cases, a patron wants to go into more than one non-residential use along a block, but without interconnects, the number of opportunities for vehicle and/or pedestrian conflicts increases as vehicles exit one site and enter another from the arterial. The City requires connectivity between residential uses, but connectivity between non-residential uses is lacking.

Legend

- Railroads
- Waterbodies
- Parks_Preserves

Roadways

- Interstate Highway
- US Highway
- State Highway
- Major Road
- Arterials
- Collector
- Residential

Connectivity (Low to High)

- >6,000
- >5,000 to 6,000
- >4,000 to 5,000
- >3,000 to 4,000

The map displays the city of Lincoln, Nebraska, with various streets and landmarks labeled. The connectivity of streets is color-coded according to the legend, ranging from light yellow (low connectivity) to dark purple (high connectivity). The map also shows the location of parks and preserves in green, water bodies in blue, and railroads in black. The city is bounded by the Missouri River to the west and the Nebraska-Missouri border to the east. The map includes a legend for road types and connectivity, and a title 'Lincoln, Nebraska' at the top.

Rail and Freight

The Burlington Northern Santa Fe (BNSF) Railway one-track Casper line traverses east-west on the north side of the City of Casper, carrying an average of eight trains per day. There is a rail yard and some short spur lines to serve customers. There are four at-grade railroad crossings (including two minor access crossings) in Casper, the most notable being across Bryan Stock Trail. The trains are generally slow moving and long, often blocking the at-grade crossing locations for long periods of time.

The last rail accidents in the Casper area occurred in 2003, although at-grade crossings are inherently dangerous for injury and fatality crashes. In 2009 WYDOT conducted the Wyoming Quiet Zone Study which produced

recommendations for Casper. The Study examined the two major public crossings in Casper: Bryan Stock Trail and Hereford Lane and found a feasible quiet zone with the installation of medians or the installation of wayside horns at both crossings. A wayside horn is used in place of the locomotive's horn in quiet zones to reduce ambient noise.

Three of Wyoming's freight corridors (as identified in the Statewide Freight Plan) travel through Casper – I-25, US 20/26 and SH 220. Some roads in Casper such as Poplar Street (SH 220), SE Wyoming Boulevard (SH 258), and Bryan Stock Trail/Beverly Street are heavily impacted by overweight industrial trucks, resulting in considerable damage, deterioration, and shortened life expectancy for the pavement.

Bicycle and Pedestrian

Casper is slowly transitioning into a more walkable city. Walking conditions along arterial roadways vary throughout Casper. In the older parts of Casper, sidewalks are generally present on both sides of the street. The same can be said of most newer areas of the city, however there are notable gaps with sidewalks not present on one or both sides of the roadway. On-street parking or landscaping typically buffers pedestrians from the traffic movements in Casper's urban core area. Elsewhere, sidewalks are often attached to travel lanes decreasing safety and desire to travel along these routes. Curb ramps exist at many intersections. Pedestrian crossings are generally marked near schools and other higher pedestrian activity areas, including signalized intersections.

On collector roadways walking condition also varies. Attached sidewalks are more numerous in many areas outside of Downtown Casper. Walking conditions on local roadways are usually better, with sidewalks on one or both sides of the street in most areas. On-street parking typically provides a buffer.



Cycling is often challenging and stressful on arterial roads. While some bike lane and off-road facilities are provided on a few arterials, most cyclists must mingle with traffic. The same occurs at most intersections. Traffic signal detection for bicyclists is lacking. Collector roadways can be better for cyclists, except where they widen to four lanes with higher speed vehicles. There are bike lanes on several collector roads such as Blackmore Road, Centennial Village Drive, and Centennial Boulevard, but observations show little use. Most local roadways are better for cycling due to low volumes and speeds.

Casper has a regional path/trail system that can meet recreational needs for much of Casper. The approximately ten-mile long Platte River Parkway runs mostly east-west along the North Platte River from the North Casper Soccer Complex to Paradise Valley Park.



The Casper Rail Trail runs from Downtown Casper to Edness Kimball Wilkins State Park along the abandoned Chicago and Northwestern Rail line. There are also several local trails, some of which connect to the two regional trail facilities, but many areas of the metro area are not served by any trails. In general, there is a lack of connectivity between the trails and desired destinations. See the Natural Assets and Recreation section for more information.

Maintenance is often a challenge with an off-street pedestrian and bicycle network. While use logically goes down during cold and snow months, some people may still prefer to use it as a commuting and recreational route. Pedestrian and bicycle facilities often come near the bottom of the maintenance priority lists; therefore, keeping them in good shape is a challenge.

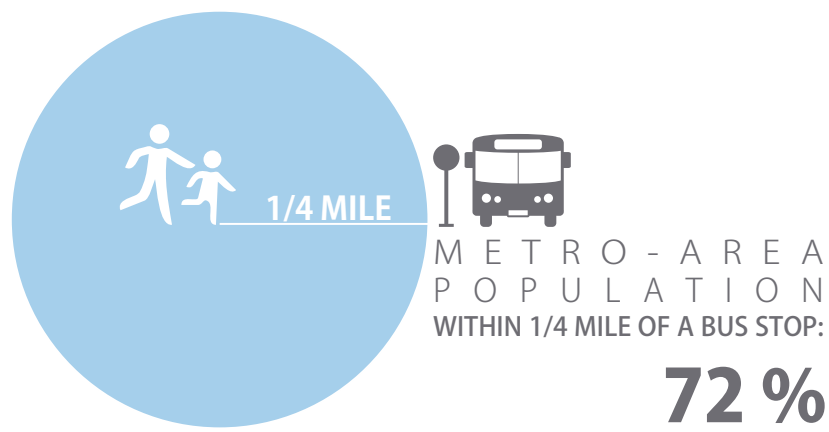
Transit

There are two primary transit services in Casper, both managed by the City of Casper and operated by the Casper Area Transportation Coalition (CATC). The first is a demand responsive service that CATC designed primarily for transportation-challenged individuals.

The second, called The Bus, is a fixed route/route deviation service. There are currently six routes that serve much of the Casper metropolitan area. Four of the routes intersect at a transfer point along Beech Street just south of Second Street. The other two routes serve primarily Mills and Evansville. Buses are allowed to deviate from their fixed route to be a bit more demand-responsive, as long as their schedules are maintained. Buses are equipped with bike racks. There is now weekend service for "The Bus."

An examination of the existing bus routes illustrates that some areas are not served by a close enough route, and other parts of the Casper metro area are not served at all (**Map 2-4**). However, 72% of the metro-area's population is within a quarter mile to a bus stop (**Figure 2-20**). In addition, it was noted through survey input that service is not available on all days and during all needed hours. As with all transit systems, shorter headways will help to increase ridership, but at a cost. Amenities are generally lacking at bus stops. Having to stand in the snow and rain does not attract additional riders.

FIGURE 2-20. PROXIMITY TO BUS STOPS



The map displays the city of Casper, Wyoming, with its various bus routes and neighborhood boundaries. The bus routes are color-coded: Blue Line, Green Line, Orange Line, Purple Line, Red Line, and Yellow Line. The boundaries are also color-coded: Casper (light blue), Evansville (dark blue), and Mills (medium blue). Major roads are labeled, including W Yellowstone Hwy, W 13th St, SE Wyoming Blvd, and W 1st St. Bus stops are indicated by yellow dots along the routes. The map also shows the location of the Casper, Evansville, and Mills neighborhoods.

Source: City of Casper

Safety

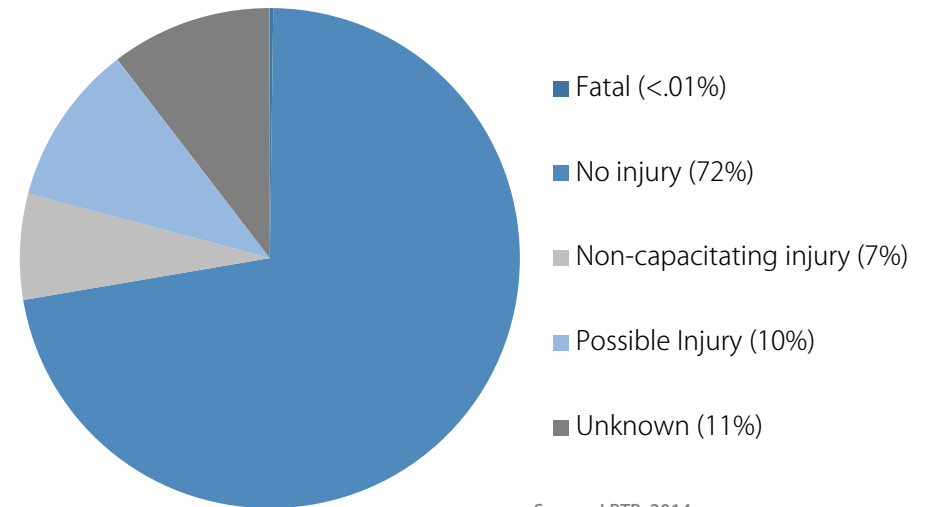
From 2011 – 2014, 5,683 crashes occurred in Casper. While 71% of those crashed resulted in property damage only, 953 crashes resulted in injury, and 12 involved fatalities (**Figure 2-21**). Pedestrians (1%) and bicyclists (0.7%) were involved in a relatively low percentage of crashes, and there have been no train crashes since 2003.

The intersections of CY Avenue with Wyoming Boulevard and South Poplar Street experience the highest number of crashes (54 and 50, respectively). While the intersection of E First Street and Center Street was noted to experience 18 crashes, it was interesting to note that 416 crashes (7.4% of the total), plus 18 (32%) of pedestrian-involved crashes and 5 (13%) of bike-involved crashes occurred at or within 2000 feet of that intersection. 14 other pedestrian-involved crashes occurred on Second Street, and 50% of pedestrian-involved crashes occurred between the hours of 3 pm and 8 pm on weekdays.

As for bike-involved crashes, seven occurred in the vicinity of the Wyoming/Second Street intersection, seven occurred along Twelfth Street, and five occurred around the intersection of CY/Poplar. Forty-seven percent of bike-involved crashes occurred between 3 pm and 6 pm on weekdays.

The report states that 73.5% of pedestrian fatalities in Wyoming were on roads with a speed limit of 40 mph or higher, compared to 8.2% on streets with a speed limit of 30 mph or under. The data show that street design matters. When the needs of all users—all ages, all abilities and all modes of travel—are properly balanced, our streets are safer and easier to navigate for everyone.

FIGURE 2-21. VEHICLE CRASH INJURIES



Source: LRTP, 2014

CODE REVIEW

The requirements for a Traffic Study are listed in the Code of Ordinances, Section 16.20.080. Following are overall observations, or noted sections that are missing/could be revised to assist the City in achieving its transportation vision. Recommendations addressing these observations are presented in Chapter 5:

- Define how the “adjacent street system” is to be defined as it related to the assessment of potential transportation impacts.
- Pedestrian Study. This section does not specify how to determine impacts to pedestrians, nor does it include anything on connectivity measurement or mitigation.
- No assessment of bicycle or transit service/facilities is included.
- Traffic counts do not require counting of pedestrians, bicyclists, or bus riders.
- There is no requirement to study adjacent side interconnectivity or apply access management principles.

According to the 2016 Casper Signal Timing Study, 50% of traffic lights are prematurely constructed. Casper and the MPO should strive not only for greater accuracy in traffic studies, but also appropriate application of their results as related to code.

CITIZENS' PERSPECTIVE

Input indicates that changes in city codes to implement an effective long-term transportation network are needed.

The necessary transit improvements most often mentioned by residents ultimately address the need to make public transportation more convenient. These improvements include increasing the frequency of buses, the number of bus stops, and the number of routes. A resident suggested special event shuttles that offer another mode of transportation to large public events, such as fairs and concerts, as a way to provide residents a convenient opportunity to take public transportation.

An important part of a good transportation service, as expressed by Casper residents, is making sure the bus stops provide shelter, and are ADA accessible year-round. Maintaining these bus stops is especially important for Casper’s handicapped population. In the winter, snow removal in the right-of-way between the bus and the shelter is essential.

The community wants Casper to be bike-friendly. Stakeholders have reported that installing bicycle lanes on common routes and main corridors is an important step in encouraging more people to bike. These routes are seen as a way to provide an efficient way to get to Casper’s large employment sectors, entertainment venues, and popular commercial corridors and destinations.

Making Casper more walkable is a priority amongst community members. They want Casper to have improved walkability through fixing broken sidewalks, downtown streetscape transformations to widen sidewalks, and connecting Casper’s existing trails.

Within Casper, some road rights-of-way are narrow, thereby limiting the elements that can be accommodated within the available right-of-way. It is also preferred that bike lanes be provided on slower, less busy streets, and street trees should be given enough space to grow without the roots damaging the adjacent sidewalk. Of the other components, residents did not feel that lighting was very important in the non-residential areas, nor was there much support for dedicated travel lanes for transit.