

GREATER BOZEMAN AREA TRANSPORTATION PLAN (2007 UPDATE)

prepared for

Bozeman Transportation Coordinating Committee, Bozeman, MT

in cooperation with

City of Bozeman, MT

Gallatin County, MT

Montana Department of Transportation



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EXECUTIVE SUMMARY

This Transportation Plan Update is intended to document changes and progress since the last *Greater Bozeman Area Transportation Plan (2001 Update)* was completed in the year 2001. This Plan Update strives to elevate non-motorized transportation planning in the community from both a mobility, and a liveability, perspective. The Plan attempts to address motorized and non-motorized transportation needs by placing both on equal playing fields. This has been accomplished through meaningful dialogue with the public and dozens of stakeholders, along with the analysis of the Consultant team and the transportation coordinating committee (TCC). The TCC is the advisory committee which oversaw the development of this update to the Transportation Plan.

The Greater Bozeman Area has seen and continues to experience substantial growth. The desire for growth in the community is sometimes met with mixed emotions: many long-time existing residents would like growth to subside and/or at least slow, while many new residents and business entities desire additional services and economic benefits found in a growth oriented community. Almost all recognize, however, that the impacts of growth are being felt in the Gallatin Valley. A Transportation Plan is often in the position of responding to the existing impacts of this growth, while at the same time planning for the future needs to accommodate growth. This plan recognized this dichotomy and strives to achieve a balance in addressing existing deficiencies while at the same time planning for the future. Growth within the Bozeman area was projected using a computer traffic model. The model used current socio-economic data and growth trends to project traffic volumes, as presented in **Chapter 3** of the Plan. These projected traffic volumes identified future traffic problems within the area. The projections indicate that many sections of the current street network will be insufficient to meet the traffic demands generated by future growth. The anticipated traffic demand in the year 2030 will produce unacceptable traffic congestion, and excessive vehicle delays at many major intersections. Several major corridors will need to be expanded to handle the additional traffic including South 19th Avenue, College Street, and Rouse Avenue.

Numerous new roads will also be required in the next 20 years to provide access to the new growth areas of the community. Without the recommended system upgrades, the anticipated increase in traffic volumes will overload these arterials. Even with the recommended road improvements contained in this Plan, traffic volumes on some arterials will grow to the point that some traffic congestion will still occur.

The analysis of the future traffic conditions indicated a need for numerous improvements in the area. These infrastructure improvements are contained in **Chapter 5** of this plan and are broken down into four categories:

- Transportation System Management (TSM) Improvements,
- Major Street Network (MSN) Improvements,
- Pedestrian Facility Improvements, and
- Bicycle Facility Improvements.

TSM projects focus mainly on intersection improvements, such as the addition of turning lanes and signalization. A total of thirty-seven (37) TSM projects are recommended. Major Street Network (MSN) Improvement projects focus on upgrading entire road corridors and the construction of new roadways. Thirty (30) MSN projects are recommended.

The Plan also strives to strengthen and/or reinforce policy and procedural actions for both non-motorized and motorized travel. **Chapter 6** of the plan presents concepts and guidelines for complete streets, context sensitive design (CSD) principles, transportation level of service, and a variety of pedestrian and bicycle programs and policies.

One of the most important pieces of information that is provided in this Plan is a projection of the major street network. A map showing this projection is presented in **Chapter 9**, and identifies where the arterial and collector routes of the community should be located as the area develops. This map, along with recommended street standards, is an important planning tool. This projection of the future road system is essential for the city and county planners. It provides a blueprint of how the arterial network should be developed. It enables the planners to locate future arterial corridors, and to request appropriate amounts of rights-of-way and new road sections throughout the development process. This will allow the community to create a logical and functional road network for the future. It is important to note that identifying the desired general alignment of future road corridors is significantly different from building roads to encourage development. The socio-economic trends indicate that substantial development will occur within the 20-year planning horizon of this transportation plan. This map of the future road system will insure that anticipated development also produces an appropriate road system.

The cost of the recommended improvement projects far exceeds the funds available through the federal-aid programs that are traditionally used to finance transportation improvements as defined in **Chapter 11**. Many projects will need to be financed by the private sector during the development process. The TSM projects should be completed as needed and as funding allows. Implementation of the TSM projects will keep most of the transportation system functioning at a satisfactory level during the 20-year planning period. However, a select group of Major Improvement projects must be implemented in order for the system to function effectively.

The "top ten" recommended Major Improvement projects are listed below:

Top Ten Major Improvement Projects
(Not listed in order of importance to the community)

1. **MSN-1: N. 19th Avenue (I-90 to Springhill Road)** – Upgrade to 5-lane urban arterial.
2. **MSN-2: Kagy Boulevard (S. 19th Avenue to Willson Avenue)** – Upgrade to 3-lane urban arterial.
3. **MSN-4: Rouse Avenue (Main Street to Story Mill Road)** – Upgrade to 3-lane urban arterial.

4. **MSN-5: College Street (Main Street to 19th Avenue)** – Upgrade to 5-lane urban arterial.
5. **MSN-14: W. Babcock Street (11th Avenue to 19th Avenue)** – Upgrade to 2-lane collector.
6. **MSN-17: Frontage Road (N. 7th Avenue to Belgrade)** – Upgrade to 3-lane rural arterial.
7. **MSN-20: East Belgrade Interchange** – Construct a new I-90 interchange to serve the airport and Belgrade areas.
8. **MSN-21: Gallatin Road (Gallatin Gateway to Four Corners)** – Upgrade to 3-lane rural arterial.
9. **MSN-22: Jackrabbit Lane (Four Corners to Frank Road)** – Upgrade to 5-lane arterial.
10. **MSN-26: Highland Boulevard (Main Street to Kagy Boulevard)** – Upgrade to 5-lane urban arterial north of Ellis Street, upgrade to 3-lane urban arterial south of Ellis Street.

It needs to be expressed that this plan has a primary focus on non-motorized as well as vehicular projects. Although the “top ten” projects listed earlier are vehicular projects, every effort needs to be made to implement non-motorized projects whenever possible.

Lastly, although this Transportation Plan is a tool that can be used to guide development of the transportation system in the future, local and state planners must continually re-evaluate the findings and recommendations in this document as growth is realized and development occurs. If higher than anticipated growth is realized in the community, or if growth occurs in areas not originally planned for, transportation needs may be different from those analyzed in this plan. An update and re-evaluation of this document should occur every five years, at a minimum, for at least a cursory review to determine how implementation of the community’s transportation system is progressing.

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DEFINITIONS

Access Management/Control – Controlling or limiting the types of access or the locations of access on major roadways to help improve the carrying capacity of a roadway, reduce potential conflicts, and facilitate proper land usage.

Average Daily Traffic (ADT) – The total amount of traffic observed, counted or estimated during a single, 24-hour period.

Annual Average Daily Traffic (AADT) – The average daily traffic averaged over a full year.

Americans with Disabilities Act (ADA) – The Federal regulations which govern minimum requirements for ensuring that transportation facilities and buildings are accessible to individuals with disabilities.

Bikeway – Any road, path, or way which in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Bike Path – A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right of way or within an independent right of way.

Bike Lane – A portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

Bike Route – A segment of a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational markers, with or without a specific bicycle route number.

Capacity – The maximum sustainable flow rate at which vehicles can be expected to traverse a roadway during a specific time period given roadway, geometric, traffic, environmental, and control conditions. Capacity is usually expressed in vehicles per day (vpd) or vehicles per hour (vph).

Collector Street – Provides for land access and traffic circulation within and between residential neighborhoods, and commercial and industrial areas. It provides for the equal priority of the movement of traffic, coupled with access to residential, business and industrial areas. A collector roadway may at times traverse residential neighborhoods. Posted speed limits on collectors typically range from 25 mph to 45 mph and can carry between 2,000 and 10,000 vehicles per day.

Congested Flow – A traffic flow condition caused by a downstream bottleneck.

Context Sensitive Design (CSD) – A fairly new concept in transportation planning and highway design that integrates transportation infrastructure improvements to the context of

the adjacent land uses and functions, with a greater sensitivity to transportation impacts on the environment and communities being realized.

Delay – The additional travel time experienced by a driver, passenger, or pedestrian.

Facility – A length of highway composed of connected section, segments, and points.

Level of Service (LOS) – A qualitative measure of how well an intersection or road segment is operating based on traffic volume and geometric conditions. The level of service “scale” represents the full range of operating conditions. The scale is based on the ability of an intersection or street segment to accommodate the amount of traffic using it, and can be used for both existing and projected conditions. The scale ranges from “A” which indicates little, if any, vehicle delay, to “F” which indicates significant vehicle delay and traffic congestion.

Local Street – Comprises all facilities not included in a higher system. Its primary purpose is to permit direct access to abutting lands and connections to higher systems. Usually through-traffic movements are intentionally discouraged. Posted speed limits on local roads typically range from 25 mph to 35 mph and designed for less than 3000 vehicles per day.

Major Street Network (MSN) – The network of roadways defined for the Transportation Plan effort that include the interstate, principal arterials, minor arterials, collectors and some local streets.

Minor Arterial Street – Interconnects with and augments the Principal Arterial system. It also provides access to lower classifications of roads on the system and may allow for traffic to directly access destinations. They provide for movement within sub-areas of the city, whose boundaries are largely defined by the Principal Arterial road system. They serve through traffic, while at the same time providing direct access for commercial, industrial, office and multifamily development but, generally, not for single-family residential properties. The purpose of this classification of road is to increase traffic mobility by connecting to both the Principal Arterial system and also providing access to adjacent land uses. Posted speed limits on minor arterials typically range from 25 mph to 55 mph and can carry between 5,000 and 15,000 vehicles per day.

Multi-modal – A transportation facility for different types of users or vehicles, including passenger cars and trucks, transit vehicles, bicycles, and pedestrians.

Oversaturation – A traffic condition in which the arrival flow rate exceeds capacity on a roadway lane or segment.

Peak Hour – The hour of greatest traffic flow at an intersection or on a road segment. Typically broken down into AM and PM peak hours.

Road Failure – A condition by which a road has reached maximum capacity or has experienced structural failure.

Principal Arterial Street - Is the basic element of a city's road system. All other functional classifications supplement the Principal Arterial network. Direct access is minimal and controlled. The purpose of a principal arterial is to serve the major centers of activity, the highest traffic volume corridors, and the longest trip distances in an urbanized area. This classification of roads carries a high proportion of the total traffic within an urban area. The major purpose is to provide for the expedient movement of traffic. Posted speed limits on principal arterials typically range from 25 mph to 70 mph and typically carry between 10,000 vehicles per day and 35,000 vehicles per day.

Running speed - The actual vehicle speed while the vehicle is in motion (travel speed minus delay).

Service Life - The design life span of roadway based on capacity or physical characteristics.

Transportation Coordinating Committee (TCC) - The oversight committee that guided the development of this Transportation Plan Update. The committee is comprised of a multitude of individuals representing various departments of Gallatin County, the city of Bozeman, and the Montana Department of Transportation. The committee is a standing committee in the community that is generally responsible for overseeing transportation planning efforts.

Transportation Analysis Zone (TAZ) - Geographical zones identified throughout the study area based on land use characteristics and natural physical features for use in the traffic model developed for this project.

Transportation Demand Management (TDM) - Programs designed to maximize the people-moving capability of the transportation system by increasing the number of persons in a vehicle, or by influencing the time of, or need to, travel.

Travel speed - The speed at which a vehicle travels between two points including all intersection delay.

Volume to Capacity (V/C) Ratio - A qualitative measure comparing a roads theoretical maximum capacity to the existing (or future) volumes. Commonly described as the result of the flow rate of a roadway lane divided by the capacity of the roadway lane.

ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
CFR	Code of Federal Regulations
CIP	Capital Improvement Program
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
ISTEA	Intermodal Surface Transportation Efficiency Act
ITE	Institute of Transportation Engineers
MDT	Montana Department of Transportation
MPO	Metropolitan Planning Organization
MUTCD	Manual on Uniform Traffic Control Devices
TEA-21	Transportation Efficiency Act for the 21st Century
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
TIP	Transportation Improvement Program