

# 1 Introduction

In 2007 the Chittenden County Metropolitan Planning Organization (CCMPO) contracted with Wilbur Smith Associates to perform this update to the 2003 Bicycle and Pedestrian Plan. The plan serves as the bicycle and pedestrian component of the metropolitan long-range transportation plan and guides the implementation of an interconnected regional bicycle and pedestrian transportation network in Chittenden County.

The plan is regional in scope. As such, it may not include all the bicycle and pedestrian facilities within each community. Facilities that serve strictly local needs, fill an almost exclusively recreational purpose, or that do not provide regionally important connectivity have been left off the regional network maps.

Pedestrian and bicycle networks are important in and of themselves, but are also critical components of a complete multimodal transportation system that serves all citizens and visitors in Chittenden County. The success of these networks is measured by the degree to which they are integrated with the planning and design of other modes such as bus, train, and automobile, and the degree to which they are used.

This plan is organized into four sections:

- (a) Vision, Goals, and Objectives
- (b) Existing Conditions
- (c) Network & Program Recommendations
- (d) Implementation Plan

The Vision, Goals, and Objectives section is a new addition from the 2003 Plan; it provides a common vision of what the ideal bicycle and pedestrian transportation network should look like, and describes general goals and objectives on how to achieve that vision. The Existing Conditions section documents progress since the 2003 update as well as current planning efforts. The Network & Program Recommendations section identifies where the network should be expanded to provide complete coverage of the county. It also recommends educational and encouragement programs that would bolster use of the network, which was not discussed in the 2003 plan. The Implementation section identifies steps and policies that will mobilize the plan recommendations.

## **1.1 Why Plan for Bicycle & Pedestrian Facilities?**

Bicycle and pedestrian facilities include sidewalks, shared use paths, and on-road bicycle lanes and wide shoulders. These facilities make it possible for pedestrians and cyclists to get from one place to another via a safe and established route. In addition, there are many other benefits that these types of facilities provide, including:

**Transportation Choice:** As conditions for walking and bicycling improve more people may be willing to walk or bike short distances to shopping, school, work, or transit stations. Walking and biking can substitute for short car trips, which can help reduce traffic congestion.

**Economic Vitality:** A significant level of Chittenden County commerce takes place in historic downtowns and village centers. Sidewalks provide the pedestrian infrastructure that directly serves this commercial activity. Making these areas more walkable and bicycle-friendly directly benefits the businesses and the local economy. The quality of the pedestrian and biking environment can also improve tourism.

**Safe Neighborhoods:** Neighborhoods are friendlier and safer if residents and visitors walk and bicycle. Their presence strengthens neighborhood bonds through frequent personal interaction and also helps deter crime. More walking and bicycling can also reduce car trips within these neighborhoods thereby reducing the number of potential car/pedestrian and car/bicyclist conflicts.

**Cleaner Environment:** Changing the modal balance between cars and other modes—especially walking and biking—will benefit air quality by reducing vehicle emissions.

**Energy Efficiency:** Fewer motor vehicle trips means less fuel consumed and more energy conserved.

**Better Health:** Walking and bicycling can be keys to improving health and physical fitness. Regular walking and bicycling reduces the risks of many diseases, relieves stress, and improves mental health.

**Save Money:** Walking and bicycling not only expand travel choice, but when combined with transit, can significantly reduce individual and household transportation expenses.

**Social Equity:** Walking and bicycling expand personal mobility and choice for those who do not or can not drive—typically the young, seniors, the disabled, and those without cars. An improved pedestrian and bicycling system provides independent mobility and accessibility for more of our citizens.

## **1.2 Why Provide Education & Encouragement Programs?**

While the 2003 Plan Update was comprehensive with regards to design considerations and facility recommendations of the regional bicycle and pedestrian network, there was little reference to non-infrastructure programs. New facilities alone are not enough to increase the number of trips made by non-motorized modes such as walking and biking. It is important to balance education and encouragement programs with engineering and infrastructure measures in order to create a successful Bicycle and Pedestrian Plan.

Education & Encouragement programs are designed to raise awareness of non-motorized travelers; connect current and future pedestrians and cyclists to existing resources; educate them about their rights and responsibilities; and encourage residents to walk and bicycle more often. In a culture where the majority of trips are made by automobile, people of all ages need to learn about transportation alternatives and how to use them. They need information about basic walking and bicycling safety; the best routes to walk or bicycle from one place to another; how to commute to work or school via bicycle and manage the necessary gear; how to ensure that children walk or bike to school safely; how to maintain a bicycle; as well as all the health, environmental, and other benefits that walking and bicycling provide to individuals and communities. The public also needs to know that people of various ages, interests, and skill levels can walk or bicycle safely as a mode of transportation.

## **1.3 Planning & Design Considerations**

### **1.3.1 Types of Bicyclists**

Planning for bicyclists involves providing bicycle facilities to meet the needs of bicyclists with various interests, ages, and skill levels. A three-tier classification of bicycle skill levels has been developed that approaches bicyclists primarily from their ability to interact with traffic. This system is used in the latest American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities*, the *de facto* standard for bicycle facility planning and design in the United States, and in the Vermont Agency of Transportation (VTTrans) *Pedestrian and Bicycle Facility Planning and Design Manual*, the current standard in Vermont. These classifications include Group A, Advanced Bicyclists; Group B, Basic Bicyclists; and Group C, Child Bicyclists. Table 1.1 describes the characteristics of each group.

**Table 1.1: Types of Bicyclists**

<b>Group</b>	<b>Characteristics</b>
A: Advanced Bicyclists	<ul style="list-style-type: none"> <li>• Adult bicyclists</li> <li>• Very experienced</li> <li>• Require less separation from traffic</li> <li>• Comfortable riding in most traffic conditions</li> <li>• Comfortable mixing with motorized traffic on lower speed and traffic roads</li> <li>• On higher speed traffic roadways they benefit from increased travel lane width (wide curb lanes), bicycle lanes on urban roadways or paved shoulders on rural roadways.</li> <li>• Typically prefer riding on-roads instead of shared use paths because they tend to be more direct</li> <li>• Travel at higher speeds and choose routes to minimize delays and for directness of travel.</li> </ul>
B: Basic Bicyclists	<ul style="list-style-type: none"> <li>• Adult or teenage bicyclists</li> <li>• Less skilled than Advanced Bicyclists</li> <li>• Less comfortable riding in traffic than Advanced Bicyclists</li> <li>• Prefer roadways with lower traffic volumes and speeds</li> <li>• Prefer greater separation from traffic with designated on-road bicycle facilities or shared use paths</li> </ul>
C: Child Bicyclists	<ul style="list-style-type: none"> <li>• Least skilled bicyclists</li> <li>• Require bicycle facilities that provide the greatest separation from traffic</li> <li>• Best accommodated on residential neighborhood streets with low traffic volumes and speeds or on shared use paths</li> </ul>

### 1.3.2 Types of Pedestrians

Unlike with bicycle planning, there is no tiered system of categorizing types of pedestrians, according to the VTrans *Pedestrian and Bicycle Facility Planning and Design Manual*. Everyone of all ages and abilities is a pedestrian for part of their daily trips and therefore have a wide range of needs and characteristics. The needs of most pedestrians should be met by ensuring that sidewalks are wide enough for a person in a wheelchair with a person walking next to them. Additional guidelines for pedestrian facilities are discussed in section 1.3.3.

### 1.3.3 Facility Design Guidelines

This report discusses two types of bicycle facilities: on-road bicycle facilities and shared use paths. A description of these facilities is provided below.

#### Types of Bicycle Facilities

##### *Shared Use Paths*

The VTrans *Pedestrian and Bicycle Facility Planning and Design Manual* defines shared use paths as “a facility for pedestrians, bicyclists and other users that is physically separated from motorized vehicular traffic by open space or barrier and either within the highway right-of-way or within an independent right-of-way. Shared use paths are typically used by more than one type of user, such as pedestrians, joggers, people in wheelchairs, skaters, bicyclists, cross-country skiers, and where permitted equestrians and snowmobiles.”

The Design Manual acknowledges that there is tremendous variety in paths and users of the paths, which “makes uniform standards elusive.” The Design Manual suggests that planners “consider the needs of all potential user groups when planning and designing a shared use path.”

##### *On-road Facilities*

There are several types of facilities that qualify as on-road bicycle facilities:

**Bicycle Lane** – A bicycle lane or bike lane is a portion of the roadway designated for preferential or exclusive use by bicyclists. It includes both roadway striping, pavement markings and signage to identify the presence of the facility. It should be a one-way facility except under special circumstances. Bike lanes are typically provided in an urban or village setting to provide more delineation between or channelization of vehicular and bicycle traffic. Parking should be banned in bicycle lanes. Another formerly used term for bicycle lane is Class II facility.



*Wide Paved Shoulder*



*Bike Lane by Bus Pull Off Area*

**Paved Shoulder** – A paved shoulder is additional width contiguous to the travel lane delineated by a white 6” wide stripe. Paved shoulders are typically provided on an uncurbed, rural roadway cross-section but may also be provided on an urban, curbed roadway cross-section.

Wide Curb Lane or Wide Outside Lane – A wide curb lane is a bicycle facility where additional width above a standard 11'-12' travel lane is provided in the travel lane closest to the curb. It is typically an urban or suburban bicycle facility on a curbed roadway but can be a rural roadway without curbing. Bicyclists and motorists share the lane but the additional width allows motorists to pass the bicyclist without changing lanes or crossing over the center line. No special signage or striping is required. Lanes wider than 15' should not be provided as they may encourage use as two travel lanes by motorists.



*Wide Curb Lane*

Shared Lane – A shared lane provides no additional travel lane width for the bicyclist but can accommodate bicyclists by virtue of lower traffic volumes and speeds. Motorists and bicyclists share the travel lane. No special signage or striping is provided. Ideally, these facilities are 11'-13' in width. However, most streets and roads in Vermont are considered shared lane facilities.

This Plan identifies Bicycle Routes that are part of the regional network. These Bicycle Routes are grouped into the following categories:

Designated On-Road Facility – These are preferred routes for bicyclists that have been designated for use by signs. These may contain a combination of any or all of the above mentioned bicycle facility types. See map 4.1-A

Common Routes Not Designated – Popular bicycling roadways that might include any or all of the facility types mentioned above but are not specifically designated for bicycle use by either signs or recognized as such by municipal governments. See Map 4.1-A.

### Types of Pedestrian Facilities

This Plan focuses on sidewalks and shared use paths for pedestrians but there are other important pedestrian facilities that complement these facilities. They include:

- Pedestrian malls
- Pedestrian trails or paths
- Crosswalks
- Pedestrian signals
- Curb extensions/bulb outs
- Pedestrian refuge islands
- Curb ramps
- Audible pedestrian signals at intersections



*Church Street Marketplace  
Pedestrian Mall*

In accordance with state law, the VTrans *Pedestrian and Bicycle Facility Planning and Design Manual* states that design for pedestrian facilities in Vermont within downtowns and commercial centers should be in accordance with the standards for signs, signals and pavement markings contained in the *Manual on Uniform Traffic Control Devices (MUTCD)*, and follow the Americans with Disabilities Act Accessible Guidelines (ADAAG). If the recommended guidelines are not possible due to geometric, environmental or other constraints variances may be acceptable, but there must be adequate documentation to justify the variance.

The MUTCD also recognizes that formal pedestrian facilities may be unnecessary in rural areas. Other strategies such as mowing grassy shoulders, providing paved shoulders, controlling dust, and enforcing speed limits may be sufficient.

As with bicyclists, the specific characteristics of pedestrians that will use a facility must be taken into account when selecting the facility and designing it. For instance, in areas with high populations of seniors or school age children it may be desirable for pedestrian signals to provide additional time during the pedestrian phase to cross the street. Areas with high numbers of pedestrians may warrant exclusive pedestrian phases (all traffic stops) rather than the more frequent concurrent pedestrian phases (vehicle traffic is allowed parallel to the pedestrian movement).



*Shared Use Path in South Burlington*



*Bike Lane in Winooski*



*Shared Use Path Crossing in Essex*