

Oak Ridge Bicycle and Pedestrian Plan
Draft 11-30-10

Overview

Oak Ridge is a city with a unique history. Carved out of the ridges and valleys of Anderson and Roane counties in the early 1940s, the city was built to house the workers and plants needed to produce materials for an atomic weapon.

This history has made a mark on the Oak Ridge of today. Many of the original neighborhoods designed for workers still remain, along with greenbelts and walking paths created for recreation, exercise and transportation.

New places have been built or redeveloped in Oak Ridge since the end of World War II, some with walkability and bicycle-friendly infrastructure in mind, while many others have been built without recognition of these concepts.

Much of the land in and around Oak Ridge remains property of the federal government. This layer of stakeholder involvement creates additional barriers to increased walking and bicycling improvements, but it also presents many opportunities.

This bicycle and pedestrian plan is not about the history of Oak Ridge, but about its present and most important, its future.

The plan describes the current state of walking and bicycling in the City of Oak Ridge, and it describes a plan for improving bicycling and walking conditions in the years to come.

Background

When Oak Ridge transitioned into civilian hands in the late 1940s, the city stretched east and west along the Oak Ridge Turnpike. This area included a mix of housing, schools, churches and commercial areas positioned between the Turnpike and Black Oak Ridge to the north. The older locations in Oak Ridge are still where the majority of the city's sidewalks and walking paths are concentrated. This location is also home to the greatest density and diversity of development found throughout the City, which also lends these parts of the City toward increased walking and bicycling options for transportation. As a result, this identified older portion of Oak Ridge is a focal point of many identified strategies throughout this plan. However, this plan's scope covers the entire City of Oak Ridge, and seeks to make walking and biking a city-wide transportation priority.

Plans dating back to the City's creation, have touched on bicycle and pedestrian issues.

The **1948 Master Plan** by Skidmore Owings & Merrill called for a new downtown with a pedestrian plaza as its "Main Street," with parking areas and circulation for cars, trucks and buses confined to the periphery of that downtown. It recognized that the City's existing greenbelts and ridges should be reserved for walking and bicycling trails and other recreational uses and also acknowledged the need for sidewalks on some streets, but, as was common at the time, devotes its analysis of transportation need to automobiles.

- The City’s **1978 Land Use Plan**’s transportation section, called for the “extension of sidewalks and bicycle paths throughout various sections of the city.”
- The City’s most recent **Comprehensive Plan**, created in 1985 and updated in 1988, describes pedestrian and bicycle facilities as peripheral to the City’s transportation network, and fails to include sidewalks or bicycle lanes in its Design Guidelines for Roadways. The 1988 update does include policy statements concerning the need to replace deteriorating sidewalks, to create a citywide bicycle system and to coordinate the City’s Transportation Plan with other elements of the Comprehensive Plan.
- In 1993, the Oak Ridge City Council adopted a **Greenways Oak Ridge Task Force Report** that expressed the need for a citywide greenway system. This report described proposed systems and mechanisms for implementation of a greenway network. The report planned a number of specific greenways, some of which have since been completed. For example:
 - The Emory Valley/Melton Lake Greenway shown in the plan has been partially completed. The unfinished portion shown in the report includes:
 - 1) a link along the CSX railroad line from the Emory Valley/Briarcliff intersection up to the existing Melton Lake Greenway;
 - 2) a continued westward link along Emory Valley and then south along Lafayette to Illinois; and
 - 3) a link from Lafayette/Emory Valley through the Woodlands neighborhood to the cluster of civic buildings in A.K. Bissell Park. These unbuilt portions were all mentioned during the public process for this report as needed bicycle and pedestrian connections and are again included among this plan’s suggested projects (see Chapter X).
 - A portion of the Edgemoor Road Greenway is being planned as Phases IV and V of the Melton Lake Greenway. Phase IV is funded by a Transportation Enhancement grant from TDOT, and Oak Ridge expects to complete construction in 2011. Phase V will be constructed as part of a TDOT road project on Edgemoor Road, The unbuilt and unfunded portion of the greenway, which loops around Haw Ridge Park, was mentioned in the public process for this plan and is included among the suggested projects (see Chapter X).
 - The section of Cedar Hill Greenway within Cedar Hill Park has been constructed, but the larger loop that would connect it through to the existing greenbelt at Blankenship Field and Jackson Square has been created, in part, only as an unpaved path. The need for greater bicycle/pedestrian connectivity to Jackson Square and other Central City locations was frequently cited in the public process for this plan, and continuation of this greenway would be one means for achieving that goal.
 - Greenways described in the plan that have not been funded or built include:
 - Illinois Avenue to Knox County Greenway: This link was identified in the original greenway report and was considered in order to connect Central Oak Ridge to the Solway area and then into the planned Knox

County greenway system. Several corridors and intersections along this route were identified in the public process for this plan as in need of bicycle and pedestrian accommodation and are included among the suggested projects (see Chapter X).

- DOE Reservation Greenway
- Tuskegee Drive Greenway
- Mississippi Creek Greenway
- East Fork Poplar Creek Greenway

Vision & Mission

The Bicycle/Pedestrian Advisory Committee for this plan, working with City staff and planners from the Knoxville Regional Transportation Organization (TPO), arrived at the following vision and mission statement to guide the development of this plan:

Vision — It is easy and safe to travel by foot and bicycle in and around Oak Ridge.

Mission — To develop a plan that will:

- identify and prioritize needed pedestrian and bicycle facilities;
- ensure that bicycle and pedestrian facilities are included in all new projects;
- develop programs through education and enforcement that promote walking and bicycling.

This vision and mission statement has guided the process by which the City's Bicycle and Pedestrian Advisory Committee oversaw the public process for this plan and selected the programs, policies and projects that the plan recommends.

Plan Process

The process of creating this plan began in the Fall of 2009, with meetings between the City of Oak Ridge staff and Knoxville Regional Transportation Planning Organization (TPO) staff and planners. The Oak Ridge staff recruited City residents to form a Bicycle and Pedestrian Advisory Team, which began meeting in October 2009 and has met regularly throughout the planning process.

A public meeting was held on January 5, 2010, at the Oak Ridge Civic Center, and was attended by (XXX) people. An overview of the planning process was presented, and attendees were provided maps and worked together in small groups with a facilitator to answer the following questions:

- What locations do you want to be able to reach by foot or bicycle, but can't right now? (e.g a park, a school, work)

- What are the most critical gaps in the bike and pedestrian system that should be filled, and what barriers that should be fixed (like an intersection that is unsafe for pedestrians)?

The first question determined whether any bicycle and pedestrian destinations had been overlooked. (Parks, school facilities, major employers, public buildings and other Oak Ridge landmarks were identified on the maps. See Appendix X for a complete list of destinations included on the maps.)

Responses to the second question were compiled and divided into two lists: 1) spot locations and 2) corridors. Spot locations are intersections that residents want to safely reach or cross on foot or by bicycle. Corridors are portions of street sections or other identified corridors that residents want to be able to travel along via foot or bicycle.

These public comments were refined and transformed into preliminary project lists by the Advisory Committee and Knoxville TPO staff. The projects were prioritized, resulting in the project list that appears later in this plan.

Why Walking and Bicycling Matter

At a time in our nation’s history when there are serious challenges to balancing our economy while protecting our environment and security, providing access for walking and bicycling throughout communities may seem like trivial issues for citizens and local government to address. However, improving the built environment for walking and bicycling can have a significant positive impact on all of these issues. Furthermore, advocating and implementing safe places for walking and bicycling is a way for citizens and local governments to have an impact on issues of national and global importance.

Economic Development

Pedestrian designed places are at a premium for both residential¹ and commercial² development. This means that the “walkability” of a location pays off for both the development community and for local governments collecting property and sales taxes. A recent report from the Urban Land Institute and PriceWaterhouseCoopers on the outlook of real estate paints a gloomy picture for the United States, with the exception of “walkable” urban places: “Road congestion, higher energy costs, and climate change concerns combine to alter people’s thinking about where they decide to live and work. It’s a fundamental shift.” The report also noted that “the lifestyle cost-of-living equation

¹ “How Walkability Raises Home Values in U.S. Cities,” CEOs for Cities, accessed online on xx/xx/2010 at http://blog.walkscore.com/wp-content/uploads/2009/08/WalkingTheWalk_CEOsforCities.pdf.

² “The Walkability Premium in Commercial Real Estate Investments,” Gary Pivo and Jeffrey D. Fisher, accessed online on xx/xx/2010 at http://www.u.arizona.edu/~gpivo/Walkability%20Paper%208_4%20draft.pdf.

starts to swing away more dramatically from bigger houses on bigger lots at the suburban edge to greater convenience and efficiencies gained from infill housing closer to work.”³

Public Health

We all know that the United States, including Tennessee, is dealing with skyrocketing numbers of people who are considered overweight and obese. In 2010, Tennessee was ranked second in the nation in adult obesity prevalence, and sixth in the nation for childhood obesity.⁴ Increasing physical activity is one way of reducing obesity, and having access to walking and bicycling options can boost a person’s likelihood of engaging in daily physical activity.⁵ Researchers at the University of Tennessee recently conducted a study in Knoxville finding that building a greenway in a neighborhood resulted in increased physical activity in vicinity of the greenway.⁶

Clean Air

Anderson County is currently in a “nonattainment” geographic region for federal air quality standards for both ground level ozone and particulate matter. Pollution from cars contributes significantly to both types of pollution, and also contributes to other known causes of air pollution. In the greater Knoxville Metropolitan region, 16 percent of the trips people take are less than a mile, and 44 percent are less than 3 miles. These distances are certainly walkable or bikeable for many people, especially if there is necessary infrastructure and safe places established specifically for biking and walking that connect citizens to locations where they work and visit. Yet more than 90 percent of those short trips are taken by car everyday.⁷ Identified locations where walking and bicycling can be a good substitute for car trips can help reduce air pollution that is damaging to Oak Ridge’s physical and economic health.

Safety and Security

³ “Emerging Trends in Real Estate 2010,” p. 32, Urban Land Institute and PriceWaterhouseCoopers, accessed online on xx/xx/2010 at <http://www.uli.org/~media/Documents/ResearchAndPublications/EmergingTrends/Americas/2010/2010EmergTrends.ashx>.

⁴ “F as in Fat: How Obesity Threatens America’s Future 2010,” Trust for America’s Health, accessed online on xx/xx/2010 at <http://healthyamericans.org/reports/obesity2010>.

⁵ “New Urban Community Promotes Social Networks and Walking,” New Urban News, accessed online on xx/xx/2010 at <http://www.newurbannews.com/14.6/sep09newurban.html>.

⁶ “Urban Trails and Physical Activity: A Natural Experiment,” Fitzhugh et al., publication pending in the American Journal of Preventive Medicine.

⁷ Knoxville Regional TPO travel modeling data.

Pedestrians and bicyclists are more likely to be involved in fatal crashes than any other road users, relative to the number of pedestrians and cyclists on the road.⁸ Projects that accommodate pedestrians and cyclists along and across roads can help reduce the rate of these crashes. Programs that look to increase the number of bicyclists and pedestrian on the road can increase the safety of this travel as well, possibly by making these road users more visible to drivers.⁹

Walking and bicycling can even play a role in disaster preparedness. Many localities have chosen to include walking and bicycling routes in their emergency evacuation plans for incidents that are “small in scale,” yet large enough where roads may not be adequate to allow everyone to evacuate locations by car.¹⁰

⁸ Pedestrians account for 12 percent of crash fatalities, but only 9 percent of all trips. Bicyclists are 2 percent of all crash fatalities, even though less than 1 percent of trips are made by bike. Statistics from the Pedestrian and Bicycle Information Center website, accessed online on xx/xx/2010 at <http://www.pedbikeinfo.org>.

⁹ “Safety in Number: More Walkers and Bicyclists, Safer Walking and Bicycling,” Injury Prevention, Jacobsen, accessed online on xx/xx/2010 at <http://injuryprevention.bmj.com/content/9/3/205>.

¹⁰ Integrating Pedestrian Disaster Preparedness and Mass Evacuations on Foot Into Emergency Evacuation Operations, Local Infrastructure Needs & Long Range Transportation Planning,” James M. Ercolano, accessed online on xx/xx/2010 at http://www.walk21.com/papers/James_Ercolano.pdf.

Existing Conditions

Sidewalks

Oak Ridge has an existing network of sidewalks that provide pedestrian accommodation for most of the older locations in the City. The City completed an inventory of its sidewalks as well as its greenways in 2009. They mapped 57 miles of standard concrete sidewalks, in addition to 45 miles of asphalt sidewalks during their inventory process. (By way of comparison, the City maintains 230 miles of surface streets.)

Some of the existing inventoried sidewalks are in disrepair, especially the older asphalt ones. As in most cities, some of the existing sidewalks are not accessible under the regulations of the Americans With Disabilities Act (ADA) because of missing ramps, inadequate width, excessive slopes, or other reasons.

Oak Ridge also has a network of unpaved walking paths that are not classified as greenways because of their narrow width. These are found in Elm Grove Park and A.K. Bissell Park, and total 1.75 miles of in length.

Sidewalks have recently been constructed on both sides of the Oak Ridge Turnpike (SR95) between Illinois Avenue and Wisconsin Avenue as part of a road widening by the Tennessee Department of Transportation (TDOT). It adds approximately 8.5 miles of sidewalks to the City's inventory.

Greenways

The City also has an extensive network of greenway trails; paths designed for shared use by bicyclists, pedestrians, skaters and others. Oak Ridge's paved greenways total 7 miles, with dozens of additional miles unpaved, with some designed primarily for recreational use. As noted above in the Background section of Chapter 1, two additional phases of the Melton Lake Greenway are planned and funded.

Bicycle Lanes

Oak Ridge currently only has one stretch of road designated for on-street bicycle lanes on the section of Oak Ridge Turnpike mentioned above. These lanes will eventually be extended from where they current stop just east of Westover Drive to the SR95/SR58 intersection, for a total of about 15 miles of bicycle lane.

Policy and Ordinance Recommendations

Complete Streets Policy: Bicycle and pedestrian accommodation should be included as part of all projects unless there is a compelling reason not to include them.¹¹ Judging the need for facilities based on current bicycle or pedestrian counts or even projected levels of bicycle and pedestrian activity is often unreliable due to existing disincentives for engaging in that activity. Since facilities are constructed on a project-by-project basis, bicycle and pedestrian facilities should also be provided even for short sections of infrastructure improvements (like intersection improvements or bridges).

Development policy revisions:

Examine the City's development standards for policies that do not encourage walking and bicycling. Consider the use of urban design overlays, form-based codes and other tools to create development patterns that are more conducive to walking and bicycling as a means of transportation.

Street design guidelines:

Review the City's street design standards for opportunities to improve safety and accessibility for bicyclists and pedestrians.

Maintenance Policy

It is common practice for public roads and on-street bikeways to be maintained by a combination of state, county and municipal resources.

Sidewalks are often built by either public or private sector resources and maintained by adjacent property owners. This can create difficult conditions for pedestrians when individual sections of sidewalks are not well maintained. For bicyclists, maintaining smooth, well marked pavement conditions are important to ensure safe travel. Based on these conditions the following policy is recommended:

Oak Ridge is a pedestrian and bicyclist friendly community, and will provide and maintain facilities as an integrated part of managing our public infrastructure. Property owners and agencies are expected to construct and maintain facilities in accordance with this policy. Pedestrian facilities include sidewalks, traffic calming features, crossings and accessibility features such as signals, curb ramps and signage.

1. *Sidewalks:* Sidewalks shall be concrete, five (5') feet wide with a five (5') foot planting strip (with widened sidewalks on Main Street) unless prohibited by documented exceptions. Exceptions may include historic preservation designation of existing stone or

¹¹ US DOT Policy Statement on Bicycle and Pedestrian Accommodation (2010) http://www.fhwa.dot.gov/environment/bikeped/policy_accom.htm, TDOT Bicycle and Pedestrian Policy (2004) <http://www.tdot.state.tn.us/bikeped/pdfs/policy.pdf>, Knoxville Regional TPO Bicycle and Pedestrian Accommodation Policy (2002) <http://www.knoxtrans.org/plans/bikeplan/policy.htm#accom>

brick sidewalks if they are in good repair. Sidewalks will be constructed continuously or delineated across all driveways.

2. *Crossings*: Safe crossings shall be provided at all locations identified in the Pedestrian and Bicycle Master Plan. All crosswalk, signal and curb ramp features shall comply with the minimum guidelines established in the *Manual of Uniform Traffic Control Devices* (MUTCD) by the Federal Highway Administration (FHWA). Traffic calming features will be provided where necessary to balance pedestrian safety with vehicular speeds and volumes.

3. *Accessibility*: all pedestrian facilities will comply with the Americans with Disability Act (ADA) guidelines.

4. *Bicycle Facilities*: Streets will be in a state of good repair, with appropriate signage and pavement markings and kept clear of debris on a regular basis. Bicyclists have the legal right to use all streets, unless prohibited by state policy.

5. *Maintenance*: Each owner or occupant of any house or other building, and any owner or person entitled to possession of any vacant lot, and any person having charge of any facility or public building shall be responsible for maintaining the pedestrian facilities adjacent to their property. This shall include keeping the sidewalk in good and safe repair in a clean condition, free from obstructions or encumbrances.

The following schedule summarizes the frequency of key maintenance tasks that are required to ensure safe conditions for pedestrians and bicyclists:

Maintenance Task Frequency

Inspections	Seasonal - at both beginning and end of summer
Signage replacement	10-15 years
Site furnishings; replace damaged components	As needed
Sidewalk repair	As needed
Pavement markings replacement	1-3 years
Pavement and sidewalk sweeping/blowing	As needed
Pavement sealing; pothole repair	5-15 years
Winter snow removal	As needed
Lighting repair	As needed
Introduced tree and shrub plantings, trimming	1-3 years
Shrub/tree irrigation for introduced planting areas established	Weekly during summer months until plants are established
Shoulder plant trimming (weeds, trees, branches)	Twice a year; middle of growing season
Major damage response (fallen trees, washouts, flooding)	Schedule based on priorities
Trash disposal	Weekly during high use; twice monthly during low use
Litter pick-up	Weekly during high use; twice monthly during low use
Graffiti removal	Weekly; as needed

Programs

Share the Road Campaign

Educate motorists, bicyclists and pedestrians about sharing the road and the laws related to bicycling and walking. There are many methods of education. The Knoxville Regional TPO Bicycle Program uses Bicycling Ambassadors to conduct one-on-one outreach via booths at community events. The Bicycle Program has also started an “An We Bike” awareness campaign using banner displays featuring local bicyclists at locations such as malls and movie theaters to reach the general public with tips on sharing the road.

Well-designed and distributed public information can vastly increase the community’s awareness and use of bicycling and walking. It can also help modify behavior of motorists, pedestrians and bicyclists.

Safe Routes to Schools

Develop a community-wide Safe Routes to Schools program to encourage physical activity and increased walking and bicycling to and from schools. This program would assess what the current best walking and biking routes to schools are, encourage programs like a Walking School Bus where parents leads groups of kids to school, and identify needed improvements (like a gap in the sidewalk system near a school, or a dangerous intersection). Encouragement programs where children get points for each day they walk or bike to school and classes compete against each other for prizes can also be used.

Bike Rack and Greenway Amenities Program

It is important to have places for people to lock their bicycles throughout the community. It is also important to provide things like water fountains and automobile parking at trailheads along bike routes and greenways. This program would analyze where such things are needed and oversee installation and continued maintenance.

Targeted Enforcement

Work with law enforcement to identify key locations where motorists do not comply with laws related to pedestrians and bicyclists and periodically conduct enforcement operations. This would include yielding to pedestrians in crosswalks, passing bicyclists with at least 3’ of space, not parking on sidewalks, and leash laws for dogs.

Annual Community Bike Ride

Plan, organize and promote a family-oriented community bike ride around Oak Ridge as a way to encourage physical activity and cycling. This would be modeled after the popular Neighborhood Bike Ride or Tour de Lights ride, both co-sponsored by the City of Knoxville and the Bicycle Program. The rides are designed to be for beginners, with a slow pace and distance less than 15 miles.

Active Living Club (ALC)

The community can establish a club that encourages walking and bicycling, with a regular schedule of events to promote both activities, incentives such as discounts at local

businesses, and a system for monitoring health and fitness. The City of Oak Ridge could work with the Knoxville Transportation Planning Organization's Smart Trips to help set up initial incentives and rewards for choosing to commute by walking or cycling. The ALC could also... coordinate with Secret City Trekker. Could also get input from the Knox County Health Department on their successful Active-8 program which had many events and promotions during an eight-week period.)

Recommended Projects

Prioritization process

Potential projects identified for Oak Ridge will be implemented in phases over time. To assist in establishing a rational process for prioritization, criteria were developed and used to rank the recommended projects. Each project received points based on these criteria. The criteria were developed from the priority statements, which were ranked by the Bicycle Pedestrian Technical Advisory Committee after public input. These tools will help the community to understand the relative value of potential projects so that facilities can be developed in a manner appropriate to local issues. The identified project prioritization listings should be considered as a flexible guideline that will be used in combination with professional judgment, available resources and opportunities for developing the recommended improvements.

Within ½ mile of a school	1 point per school
Within ½ mile of community center	1 point per center
Within ½ mile of park	1 point per park
Within ½ mile of major employer	1 point per worksite
Within ½ mile of major residential	1 - 3 points, depending on zoning (density)
Fills in gap in system	10 points
Within high health impact area ¹²	up to 5 points
Ease of construction	up to 5 points

¹² Areas that are considered high risk health areas, which typically have a higher percentage of people that are low-income, minority, or elderly (over the age of 65).

Corridor projects			destinations within 1/2 mile -- 1 point each									
Project location	Preliminary project description	Corridor length (in miles)	school facility (1 each)	community facility (1 each)	park facility (1 each)	major employer (1 each)	residential (1-3)	network gap (10 points)	high health impact (up to 5 points)	ease of implementation (up to 5 points)	total score	
ORTP-between Illinois and Florida	Need bicycle lanes and sidewalks where there are gaps.	1.0	7	25	5	9	3	10	2	3	64	
East-West bicycle route (follows Jefferson Ave., Robertsville Rd., Providence Rd., Pennsylvania Ave., Tennessee Ave., Florida Ave., Fairbanks Rd., Coalyard Rd., Warehouse Rd.)	Define route and create directional and other signage.	2.7	8	24	8	9	3	0	2	5	59	
Illinois Avenue	Sidewalks needed where missing.	1.2	2	13	2	2	3	10	2	3	37	
Lafayette DR	Sidewalk with curb (on west side) and bicycle lanes needed.	1.0	2	5	3	8	3	10	2	3	36	
Melton Lake to Y-12 rail line	Create rail-to-trail greenway.	2.0	3	9	7	11	3	0	2	1	36	
ORTP-between Florida and Melton Lake Drive	Need bicycle lanes and sidewalks.	1.5	2	5	3	4	3	10	2	1	30	
Tuskegee DR-Illinois to Tempura DR	Bicycle facilities needed.	1.9	0	8	3	0	3	10	2	3	29	
Emory Valley greenway	Where the greenway is along the road, install rumble strip or physical barrier. Rumble strip will be short-term fix, physical barrier long-term solution.	0.3	1	3	2	2	3	10	2	5 (rumble strip); 1 (physical barrier)	28 (rumble) or 24 (barrier)	
Emory Valley RD-Lafayette to Donner RD	Add bicycle lanes or extend greenway.	2.0	3	9	3	4	3	0	2	1	25	
Illinois Avenue	Bicycle lanes needed.	5.6	2	13	2	2	3	0	2	1	25	
Hendrix Drive	Pedestrian facility or traffic calming needed.	1.7	2	4	2	6	3	0	2	1	20	
95/58 Interchange	Signs and markings needed for bicycle safety around interchange.	2.0	0	1	0	0	0	10	0	5	16	
Scarboro RD	Shoulders or another form of bicycle & pedestrian accommodation facility needed.	1.8	0	3	2	5	1	0	2	3	16	
Gum Hollow RD	Bicycle and pedestrian facilities needed.	4.7	0	1	0	0	3	10	0	1	15	
Outer and West Outer Drives-east of Illinois	Need bicycle lanes and sidewalks.	3.0	2	3	1	2	3	0	2	1	14	
Edgemore RD	Bicycle facilities needed. This is expected to be part of TDOT's SR 170 widening project, which should include bicycle and pedestrian facilities.	2.0	0	1	3	2	1	0	2	1	10	
Bethel Valley RD-Scarboro RD to Checkpoint	Shoulders or another form of bicycle & pedestrian accommodation facility needed.	4.0	0	0	1	1	0	0	2	3	7	
West Outer Drive-west of Illinois	Need bicycle lanes and sidewalks.	5.0	1	0	0	0	1	0	2	1	5	

This is a DRAFT corridor project prioritization. Project descriptions are subject to change as further analysis is done. Prioritization of projects is based on estimated potential demand. Projects may be implemented in a different order, or not implemented at all, based on other factors, including project cost.

Spot Location projects		destinations within 1/2 mile -- 1 point each								
Project location	Preliminary project description	school facility (1 each)	community facility (1 each)	park facility (1 each)	major employer (1 each)	residential (1-3 points)	network gap (10 points)	high health impact (up to 5 points)	ease of implementation (up to 5 points)	total score
Turnpike & Georgia	Critical crossing. Enhanced pavement markings, countdown timers, signage needed. Check signal timing for pedestrian and bicycle crossings.	2	9	3	3	3	10	2	5	37
Rutgers & Northwestern	Enhance existing unsignalized crossing of Rutgers.	2	9	1	2	3	10	2	5	34
Turnpike & Tyler	Critical crossing. Enhanced pavement markings, countdown timers, signage needed. Check signal timing for pedestrian and bicycle crossings.	1	8	3	5	0	10	2	5	34
Emory Valley RD near the Senior Center	Icy sidewalk is often a problem. Enhanced crossing of Emory Valley needed to access the Senior Center.	1	6	2	3	3	10	2	5	32
Turnpike & Lafayette	Critical crossing. Enhanced pavement markings, countdown timers, signage needed. Check signal timing for pedestrian and bicycle crossings.	2	4	3	4	2	10	2	5	32
ORTP between Tulane and Robertsville	Critical crossing between high school and Civic Center. Enhanced crossing treatments needed for unsignalized location.	1	11	1	1	0	10	2	5	31
Rutgers & Manhattan	Critical crossing. Enhanced pavement markings, countdown timers, signage needed. Check signal timing for pedestrian and bicycle crossings.	1	6	2	0	3	10	2	5	29
Turnpike & Illinois	Critical crossing. Enhanced pavement markings, countdown timers, signage needed. Check signal timing for pedestrian and bicycle crossings.	1	5	1	1	3	10	2	5	28
Illinois & Robertsville	Critical crossing. Enhanced pavement markings needed.	2	3	1	0	3	10	2	5	26
Illinois & Rutgers	Critical crossing. Enhanced pavement markings, countdown timers, signage needed. Check signal timing for pedestrian and bicycle crossings.	0	5	1	0	3	10	2	5	26
Illinois & Tulane	Critical crossing. Enhanced pavement markings, countdown timers, signage needed. Check signal timing for pedestrian and bicycle crossings.	0	8	2	1	0	10	0	5	26
Vermont & Pennsylvania	Marked crosswalk needed to ease crossing of Vermont.	3	3	1	2	2	10	0	5	26
Florida/Olney/Outer intersection	Enhancements needed to create safer pedestrian crossings.	1	1	1	2	1	10	0	5	21
Lafayette & Hendrix	Critical crossing. Enhanced pavement markings, countdown timers, signage needed. Check signal timing for pedestrian and bicycle crossings.	1	0	0	4	1	10	0	5	21
Cedar Hill Park	Establish safe crossings for access to park.	1	1	2	0	1	10	0	5	20
Melton Lake DR crossing/Amanda DR	Enhanced crossing of Melton Lake DR needed.	0	1	1	0	1	10	2	5	20
Turnpike & Montana	Critical crossing for access to Big Turtle Park; countdown timers may be needed.	0	0	1	0	1	10	2	5	19
Melton Lake DR crossing/Emory Valley RD	Enhanced crossing of Melton Lake DR needed.	0	1	1	0	1	10	0	5	18
Solway Bridge	Bicycle and pedestrian accommodation needed.	0	0	1	0	0	10	0	1	12
Lafayette/Illinois/Scarboro intersection	Critical crossing, especially for bicyclists. Provides access to ORNL and Y-12. Enhanced pavement markings, countdown times, signage needed. Check signal timing for pedestrian and bicycle crossings.	0	1	1	1	0	0	2	5	10
Illinois & Bethel Valley RD	Can't turn left from Bethel Valley to Illinois (this is to be corrected with signage and may be part of a bike route project).	0	0	1	1	0	0	2	5	9
Edgemoor Bridge	Bicycle and pedestrian accommodation needed. This bridge is part of TDOT's SR 170 widening project, which should include bicycle and pedestrian facilities.	0	0	4	0	0	0	2	1	7
Emory Valley Greenway access	Enhanced crossing(s) needed for access from neighborhoods to greenway.	0	1	2	0	1	0	0	3	7
Melton Lake DR crossing/Rivers Run BLVD	Enhanced crossing of Melton Lake DR needed.	0	0	0	0	1	0	0	5	6

This is a DRAFT prioritization of spot location projects. Project descriptions are subject to change as further analysis is done. Prioritization of projects is based on estimated potential demand. Projects may be implemented in a different order, or not implemented at all, based on other factors, including project cost.

Design

Design Principles

The built environment must be well designed for pedestrians and bicyclists in order for these modes of travel to achieve their potential as an integral element of a community's transportation system. The primary elements essential for pedestrians are sidewalks and safe crossings.

For bicyclists, the necessary street improvements are similar. They require safe, user-friendly streets, intersections, and parking facilities. Trails and shared use paths are also important facilities for both pedestrians and bicyclists. On streets and roadways, compatible vehicular traffic speeds, volumes and behavior of motorists on the streets are essential. In addition, facilities must be well maintained for bicyclist and pedestrian safety and utility.

Suggested road design features are summarized as follows:

1. The pedestrian / bicyclist environment should be safe, secure and user friendly.
2. The pedestrian network should be accessible for all ages and abilities.
3. Sidewalks should be continuous, concrete or similar material, 5' minimum width in residential areas, with wider sidewalks in commercial areas.
4. Provide a network of shared-use paths and trails.
5. Provide on street bikeways including bike lanes, signed routes and shared lanes.
6. Provide bicycle parking as a standard part of the streetscape and new development.
7. Provide safe pedestrian crossings, with Manual of Uniform Traffic Control Devices (MUTCD) compliant pavement markings and signage.
8. Ensure that urban streetscapes include pedestrian-scaled facades, lighting, benches, signage and amenities.
9. Pedestrian right-of-way laws must be enforced.
10. Speed limits should be appropriate for pedestrian and bicyclist safety.

Design Guidelines

The design of pedestrian and bicycle facilities should be based on current state and national guidelines, including the AASHTO Guide for Development of Bicycle Facilities, (AASHTO, 1999), the AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities (AASHTO, 2004) the USDOT Manual for Uniform Traffic Control Devices (MUTCD, 2009). These documents are a baseline for minimum conditions, and provide solutions for the majority of facility types. It is recognized that on facilities maintained by TDOT, the State's design guidelines will apply, and that Oak Ridge has the potential to exceed these minimum guidelines where conditions warrant for facilities within their jurisdiction.

Pedestrian facilities include sidewalks, traffic signals, crosswalks, refuge islands, pedestrian-scale illumination and benches.

"Walkways" include:

Sidewalks: Located along roadways, separated with a curb and/or planting strip or swale, sidewalks have a hard, smooth surface.

Shared-Use Path (also called trail, greenway or multi-use path): A facility separated from motor vehicle traffic by an open space or barrier, either within the roadway right-of-way or within an independent right-of-way. These are typically used by pedestrians, joggers, skaters and bicyclists. Shared-use paths are appropriate in corridors not well served by the street system, to create short cuts that link origin and destination points, and as elements of a community trail plan. Paths may be unpaved (packed gravel), if they are smooth and firm enough to meet ADA requirements.

Shoulders: In rural/residential areas where population densities are too low to justify sidewalks, shoulders should be wide enough (6 feet) to accommodate pedestrian and bicycle traffic. See shoulder width table in Chapter 1 for shoulder width guidelines

Road Rules

Bicycles are legally classified as vehicles and are ridden on most public roads in Tennessee, which are open to bicycle traffic with a few exceptions (interstates). Roadways must be designed to allow bicyclists to ride in a manner consistent with the vehicle code.

Shared Roadway: Bicyclists and motorists ride in the same travel lanes. There are no specific dimensions for shared roadways. They are usually narrow, so a motorist has to cross over into the adjacent travel lane to pass a cyclist. Shared roadways are common on neighborhood residential streets, on rural roads and low-volume highways.

Bicycle Boulevards: The operation of a local street is modified to function as a through street for bicyclists while maintaining local access for automobiles. Traffic calming devices control traffic speeds and discourage through trips by automobiles. Traffic controls limit conflicts between automobiles and bicyclists and give priority to through bicycle movement.

Shoulder Bikeway: A shoulder bikeway is a paved shoulder that provides a suitable area for bicycling, reducing conflicts with faster moving motor vehicle traffic. Most bicycle travel on the rural state highway system, and on many county roads, is accommodated on shoulder bikeways.

Bike Lane: A portion of the roadway designated for preferential use by bicyclists. Bike lanes are appropriate on busy urban thoroughfares. They may be used on other streets where bicycle travel and demand is substantial. Bike lanes are marked to call attention to their preferential use by bicyclists.

Shared-Use Path (also called trail, greenway or multi-use path): A facility separated from motor vehicle traffic by an open space or barrier, either within the roadway right-of-way or within an independent right-of-way. These are typically used by pedestrians, joggers, skaters and bicyclists. Shared-use paths are appropriate in corridors not well served by

the street system, to create short cuts that link origin and destination points, and as elements of a community trail plan.

The Americans with Disabilities Act

The Americans with Disabilities Act (ADA) is a federal law that was signed on July 26, 1990. The ADA prohibits discrimination on the basis of disability and mandates that all disabled persons be provided full access to all public facilities in the country. Designing and constructing public facilities that are not usable by people with disabilities is a violation of the ADA.

Current ADA standards, which are contained in the 2002 edition of the Americans with Disabilities Act Accessibility Guidelines (ADAAG), thoroughly outline requirements for building design. However, ADAAG provides little guidance regarding the design of facilities in public right-of-way. The U.S. Access Board is the federal agency that is responsible for the development of minimum accessibility guidelines to assist the Department of Transportation (DOT) and the Department of Justice (DOJ) in establishing design standards for the ADA. This board released a draft update of the ADA guidelines on June 17, 2002. The draft update was revised on November 23, 2005 and is entitled Accessible Public Rights-of-Way Planning and Designing for Alterations. This document provides more specific guidance for public right-of-way and includes provisions for sidewalks, sidewalk ramps, street crossings, and related pedestrian facilities. Although these guidelines have not yet been adopted, the Federal Highway Administration (FHWA) and the U.S. Access Board encourage their use since they offer the most authoritative guidance available regarding accessible design in public right-of-way.

The current and proposed ADA guidelines provide minimum design standards for ensuring accessibility. Alternate standards may be applied provided that the alternate standards meet or exceed the minimum ADA guidelines. The recommendations presented in the pedestrian facilities design guidelines section are consistent with, and in some cases exceed, the standards presented in Accessible Public Rights-of-Way Planning and Designing for Alterations (refer to the US Access Board's website – <http://www.access-board.gov/prowac/> for the most up to date ADA accessibility guidelines).

Next Steps/Implementation

The City of Oak Ridge (and the Bicycle Pedestrian Technical Advisory Committee) will oversee implementation of this plan. The first, and most vital, step is to establish roles and responsibilities within City staff to implement and coordinate elements of the plan.

Suggested sections:

1. Cost Estimates for each project recommendation with approximate time phasing plan see example below:

Summary of Project Cost Estimates for Proposed Bicycle & Pedestrian Planned Improvements					
	Sidewalks	Bike Lanes	Bike Routes	Greenways	Total
Existing	47	-	-	2	49
Planned	-	-	-	3	3
Needs/Concepts	178	-	-	16	194
Phase 1	-	7	47	-	54
Phase 2 (Vision)	-	6	169	-	175
Total (Miles)	178	13	216	21	475
Total (New Miles)	178	13	217	19	427
Total - Costs	\$41.81 Mil	\$16.36 Mil	\$0.95 Mil	\$16.73 Mil	\$75.85 Mil

This example is from the Cleveland Area Metropolitan Planning Organization's Bike & Ped. Plan (prepared by a private co. – but if we could ball park some of these estimates, it might make it easier for finding funding and near term implementation)

Link to plan:

[http://www.cityofclevelandtn.com/MPO/Cleveland%20Area%20MPO%20Bicycle%20and%20Pedestrian%20Plan%20-%20Draft%20081208%20\(LowRes\).pdf](http://www.cityofclevelandtn.com/MPO/Cleveland%20Area%20MPO%20Bicycle%20and%20Pedestrian%20Plan%20-%20Draft%20081208%20(LowRes).pdf)

Find funding for projects. Sort projects into near term, short term and long term?

After that, it will take great cooperation and commitment to accomplish the recommendations and projects put forth in this plan. Every step forward is an investment in a future where bicycling and walking are safe and convenient, giving people another choice for how they get around their communities.

Appendix A

The following locations were considered community facilities for the purpose of prioritizing the projects in this plan.

A&W Plaza
American Museum of Science and Energy
Big Ed's Pizza
Briarcliff Square
Central Services Complex
Civic Center
Chamber of Commerce
Children's Museum
Convention & Visitors Bureau
Fairbanks Plaza
Federal Building
Four Oak Center
Frank Callaghan Towers
Girls Inc.
Grove Center
Horizon Center
Jackson Plaza
Jackson Square
Jefferson Center
K-25 Overlook
Manhattan Place
Municipal Building
New Hope Center
Oak Ridge Boys & Girls Club
Oak Ridge Golf and Country Club
Oak Ridge Mall
Oak Ridge Marina
Office Park
ORAU Center for Science Educations
Outdoor Pool
Post Office at 301 S. Tulane Ave.
Post Office at 108 Administration Road
Public Library
Ridgeway Center
Roane State Community College
Rogers Group
Scarboro Community Center
Security Square
Senior Center
Skate Park
Tennessee Centennial Golf Course
UT Arboretum

West Side Plaza
Woodland View Apartments
YWCA