CMAP

Village of Arlington Heights Draft Bicycle and Pedestrian Plan

April 2017

Acknowledgments

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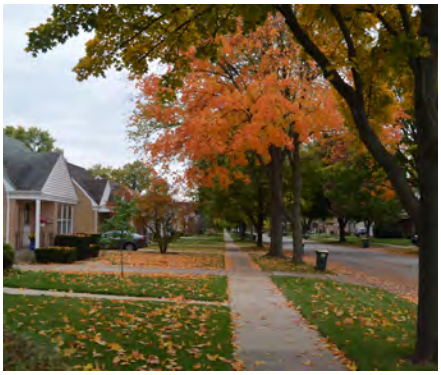
Unless otherwise specified, all maps and photos are by CMAP staff.



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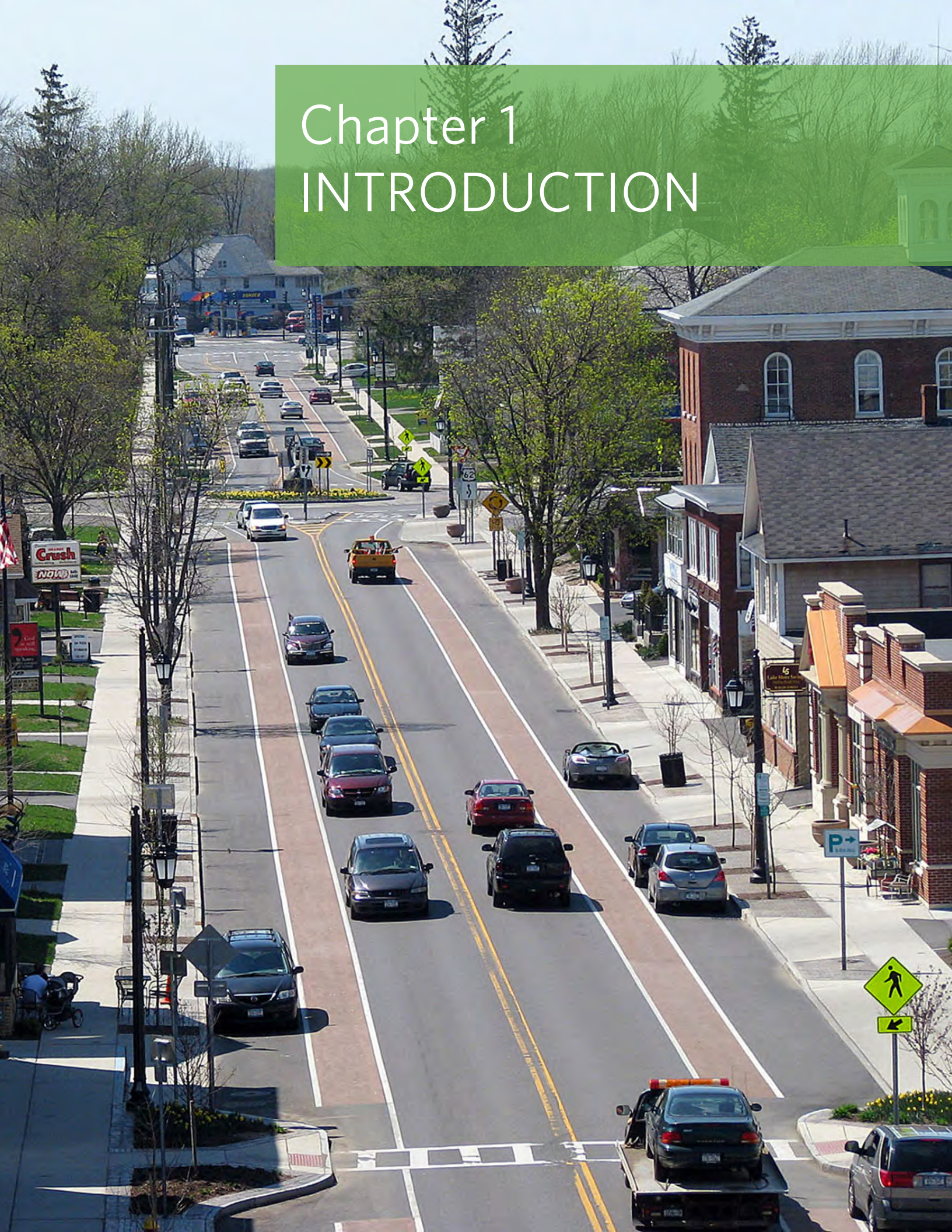


Chapter 1
INTRODUCTION

This Bicycle and Pedestrian Plan builds upon and advances successful efforts already completed or underway by the Village of Arlington Heights to cultivate a vibrant, lively downtown and safe, attractive, and livable neighborhoods where walking and bicycling are convenient ways to travel. It provides detailed recommendations for specific locations in Arlington Heights where bicycle and pedestrian infrastructure improvements are needed to achieve key, Village-wide goals related to access, mobility, health, and sustainability and identifies actions that the Village can take to improve and enhance its active transportation network, create safe and enjoyable bicycle and pedestrian routes, and encourage sustainable local transportation. While offering detailed, planning-level recommendations for particular locations, the ultimate purpose of this plan is to provide a vision – and guide to achieving that vision – of a Village-wide Complete Streets network that safely accommodates all users and connects to neighboring communities. The plan aims to improve conditions for bicycling and walking, improve traffic safety, enhance local businesses, and foster a healthier, more environmentally friendly community.

The creation of this plan was identified as a high priority for the Arlington Heights Bicycle and Pedestrian Advisory Commission (AH BPAC), Village staff, and Village Board. The Village considers it to be a crucial element in ongoing efforts to encourage bicycling and walking as transportation and recreation and to increase the safety and convenience of travel by these modes. The AH BPAC and the Village Board also recognize the important role that a comprehensive, up-to-date bicycle and pedestrian plan can play in helping to implement the Village's Complete Streets policy (adopted in 2013) and also in helping to achieve Bicycle Friendly Community status through the League of American Bicyclists.

As part of the planning process, the following vision statement was developed to guide both the development and implementation of the plan:

"The Village of Arlington Heights is a bicycle- and pedestrian-friendly community that strives through its policies, plans, and programs and in the design, construction, and operations of its roadways and related infrastructure, to ensure that residents and visitors of all ages and abilities are able to travel safely and conveniently to community destinations by walking and bicycling."

Bicycle and Pedestrian Advisory Commission

In 1985, the Village established a Bicycle Commission to help reduce congestion through the promotion of bicycle use. In 2009, this commission's scope was broadened to include pedestrian travel and it was renamed the Bicycle and Pedestrian Advisory Commission (AH BPAC). The Commission's purpose is, "to assist the Village in the development of comprehensive plans for bicycling and walking within Arlington Heights." The Commission consists of seven members, all residents of Arlington Heights, appointed by the Village President, with consent of the Village Board, to three-year terms.[1]

Arlington Heights' Engineering Department appoints an Administrative Liaison for AH BPAC. AH BPAC has been instrumental in advancing cycling and walking interests and developing and promoting activities to increase bicycling and walking in Arlington Heights. Their work has included publication of a bikeways map (first published in 1988), the installation of the Village's first and, at present, only on-street bike lane on Davis Street (in the mid-1990s), and organization of the Village's first community bike ride (June 2014).

[1] See Commssion webpage for current members and other information, at http://www.vah.com/government/commissions/bicycle_commission.aspx.

Guidance from Previous Plans

The Village of Arlington Heights has a history of creating long-range planning documents that have been used successfully to help guide growth and development. This Bicycle and Pedestrian Plan builds – and expands – upon many of the Village's current planning documents and policies, including the Village's 1988 Bicycle Plan, which was updated in 1996. Another key document that the plan builds upon is the Village's Bikeways map (2014). The map includes existing routes, planned routes, potential routes, Village roads, key destinations, and bicycle safety rules. The map is updated approximately every one to three years by the Village and AH BPAC.

In addition to the Village, a number of neighboring communities have created bicycle and trail plans. Moreover, the Northwest Municipal Conference and Chicago Metropolitan Agency for Planning (CMAP) have completed larger regional bikeway plans that include bikeway facilities or corridors that traverse the Village.

Guidance for this plan was also provided by CMAP's GO TO 2040 Comprehensive Regional Plan, which promotes investment in public transportation, walking, and biking as a key strategy to achieve the goals of livable communities and improved regional mobility. The plan recognizes that improvements to walking and biking are necessary to help improve safety, increase access and mobility, reduce air pollution, and decrease congestion on the region's roadways.

[2] Largest in terms of population - see http://chicagolandcommercial.com/arlington-heights-office-space.

[3] http://www.ahpd.org/about-ahpd.

[4] http://www.neighborhoodscout.com/neighborhoods/crime-rates/top100safest.

Regional Context

As the largest community in Chicago's northwestern suburban corridor, Arlington Heights is currently home to approximately 76,000 residents.[2] The Village was recognized by Newsweek Magazine as one of the "Top 100 U.S. Cities."[3] In addition, Arlington Heights was recognized in 2014 by Neighborhood Scout as one of the 100 safest cities in the country.[4] It is widely known as an attractive, relatively affluent, well-educated community with a lively downtown, whose population grew very rapidly after World War I and has remained relatively stable since 1990.

Arlington Heights is located in northern Cook County, adjacent to the border of Lake County, approximately 24 miles northwest of downtown Chicago and 8 miles from O'Hare International Airport. Like its neighbors, Arlington Heights is almost completely built-out, with very little unincorporated land left within its boundaries (***Figure 1.1***).

Arlington Heights has excellent access to many transportation amenities. Interstate 90 provides access to Elgin, O'Hare International Airport, and downtown Chicago. Illinois Route 53, which is planned to extend north into Lake County, provides easy motor vehicle access to Schaumburg and to communities further south (Interstate 290), as well as to the Elgin-O'Hare Expressway (Illinois Route 390), which is currently being extended east to O'Hare. Arlington Heights is also directly connected with other northwestern suburbs and downtown Chicago via Metra's Union Pacific Northwest (UP NW) rail line. There are two Metra stations in the Village – the Arlington Heights station, located downtown, and the Arlington Park station, which is on the western border of the Village at the Arlington Park International Race Course. Together, these stations see an average daily ridership of approximately 4,500 riders.

The Village abuts two Forest Preserve properties at its northern and southern borders. The Cook County Forest Preserve Ned Brown/Busse Woods Preserve lies southwest of the Village. This 3,558-acre preserve includes a very popular 10.8-mile paved trail, which can be accessed from Rolling Meadows and Arlington Heights at only one entry point: along Golf Road (at Wilke Road). At the northern border of the Village, across Lake Cook Road, is the Lake County Forest Preserve's Buffalo Creek Preserve. The 408-acre preserve has a network of four miles of crushed-gravel trails. Access is at the northwest corner of the intersection of Arlington Heights and Lake Cook Road, and also at the at-grade trail crossing over Schaeffer Road (north of Lake Cook Road).

In addition to the downtown civic, commercial, and entertainment core, Arlington Heights has large areas of retail and commercial development along Rand Road, and in the southern part of the Village, near Golf and Algonquin Roads. The areas were designed for easy access by automobile and are difficult to reach and traverse on foot or by bicycle. Active modes of transportation are discouraged in these areas due to their automobile-focused site designs and busy arterial roads, which may create a sense of unease for individuals who choose to walk or bike to these spaces.

Figure 1.1 - Village Boundary and Regional Setting

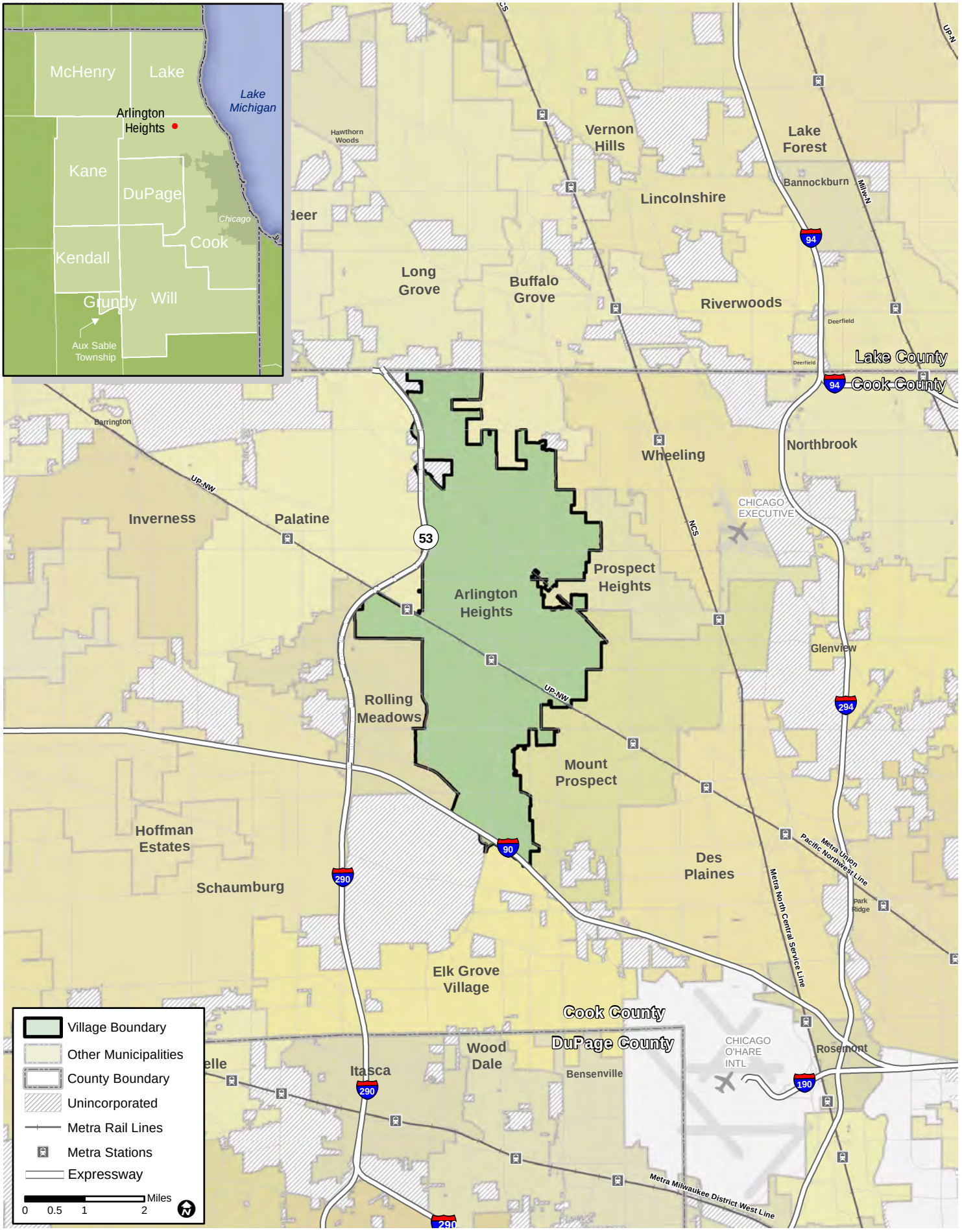
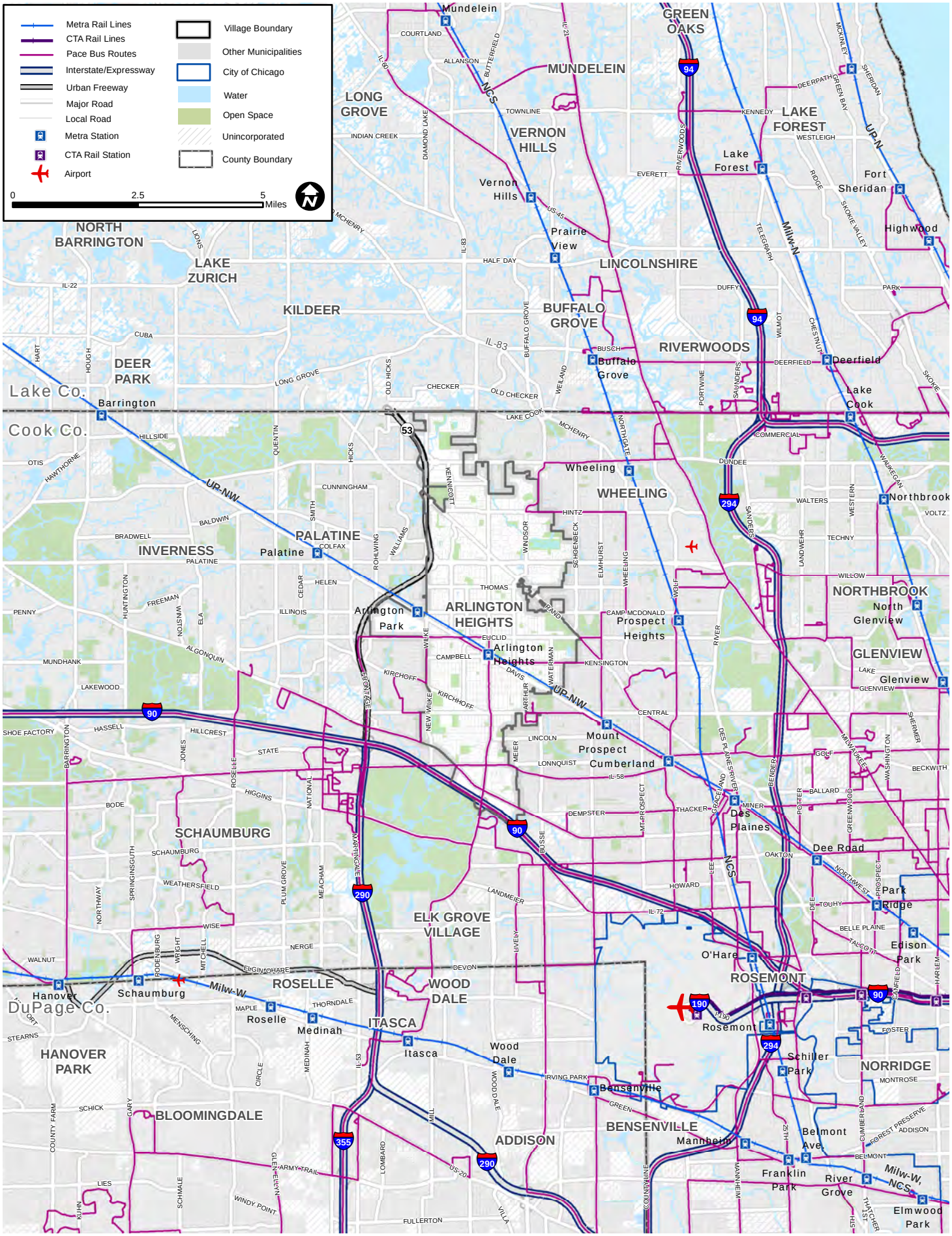
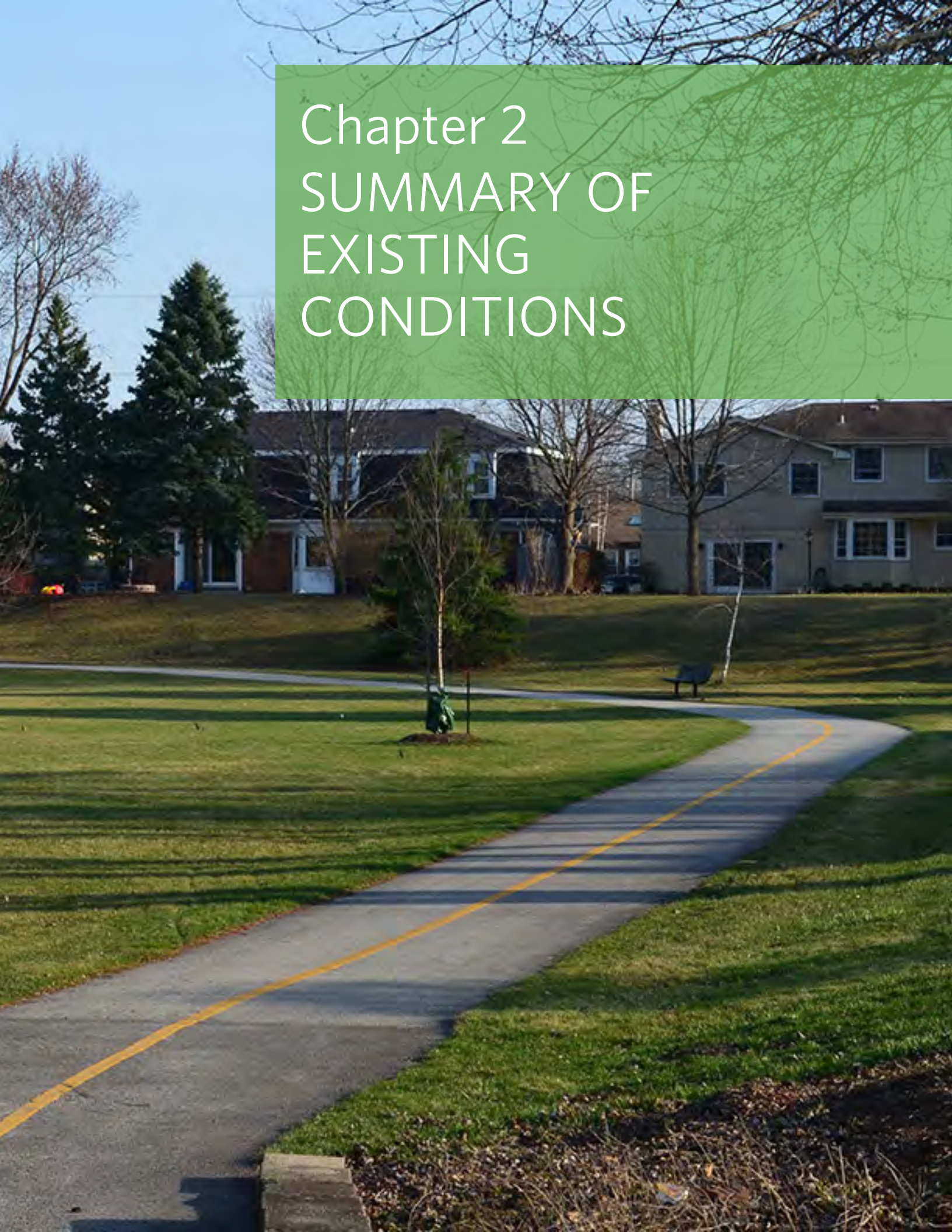


Figure 1.2 - Sub-Regional Transportation Infrastructure





Chapter 2 SUMMARY OF EXISTING CONDITIONS

This chapter summarizes the existing conditions relating to demographics, land use, transportation, employment, and infrastructure within Arlington Heights, which serves as a basis for the plan's recommendations. For a more detailed overview of existing conditions, please refer to the stand-alone Existing Conditions Report that was created as part of this planning process.

Demographics

To gain insight into the market and demographic dynamics that impact the Arlington Heights community, data from the U.S. Census Bureau was gathered for analysis.[5] The Village can be characterized generally as an affluent community that is older and more educated compared to both the County and the region.[6] Arlington Heights' housing stock consists primarily of single-family detached homes and large multifamily structures. Analysis of census data resulted in the following findings:

- Arlington Heights' population remained relatively constant in the last decade (1.2 percent decline vs. 3.4 percent decline for Cook County and 3.5 percent growth for the region). Arlington Heights' households are slightly smaller than regional averages (2.41 persons per household vs. 2.60 for Cook Count and 2.73 for the region).
- Arlington Heights has an older age profile compared to the County and Chicago region (17.2 percent of residents are over 65 vs. 11.9 percent for Cook County and 11.3 percent for the region). The median age in the Village is 42.7 vs. 35.3 for Cook County.
- Arlington Heights experienced little change in its racial and ethnic makeup in the last decade. Currently, white residents are the majority of Arlington Heights' population (84.6 percent), followed by Asian residents (7.1 percent) and Hispanic or Latino residents (5.7 percent).
- Arlington Heights' median income is above the County and regional averages ($77,121, vs. $54,648 for Cook County and $71,198 for the region).

[5] Data discussed in this section is drawn from the 2000 U.S. Census, 2010 U.S. Census, and the 2008-2012 American Community Survey.

[6] In this chapter, where demographic data and statistics are presented, "region" means the seven counties comprising the CMAP planning area (Cook, DuPage, Lake, McHenry, Kane, Kendall, and Will).

Land Use

Land use refers to the designation of land for various uses, including residential, commercial, industrial, office, and open space. ***Figure 2.1*** illustrates the distribution of land uses in the Village. Calculations of acreage are based on data in CMAP's 2010 Land Use Inventory, which is parcel-based and therefore excludes roads and public rights-of-way from calculations.

Residential

Residential areas account for the majority of land area in the Village, with single-family and multi-family residences making up nearly 41.3 percent and 5.7 percent of the land area, respectively. Single-family homes in the Village are typically detached homes of one to two stories tall. Over 55 percent of the homes in the Village are single-family detached, which is slightly higher than the regional average (50 percent).

Transportation/Communications/ Utilities/ROW

This category represents 24 percent of the land use in Arlington Heights (2,606 acres). The majority of the acreage is dedicated public right-of-way owned by the Village, the County, or the State. In addition to street rights-of-way, other uses in this category include rail lines, cell towers, and other utilities.

Commercial and Mixed Use

There are various scales of commercial development within Arlington Heights, including small commercial nodes within neighborhoods, downtown shops, and larger, auto-oriented commercial developments along major thoroughfares. Commercial properties account for 8.6 percent of total land use, falling generally into two categories: mixed-use and automobile-oriented. Although Downtown Arlington Heights includes a number of multi-family developments, the majority of its area is a pedestrian-oriented mixed-use shopping and entertainment district. Arlington Park Race Track is also included within the commercial land use classification.

Open Space

Nearly 5 percent of Arlington Heights is classified as public open space. The majority of the open space is owned and maintained by the Arlington Heights Park District. Most of the parks in the community have sidewalks and/or wider multi-use trails (typically of relatively short length and trails that form loops).

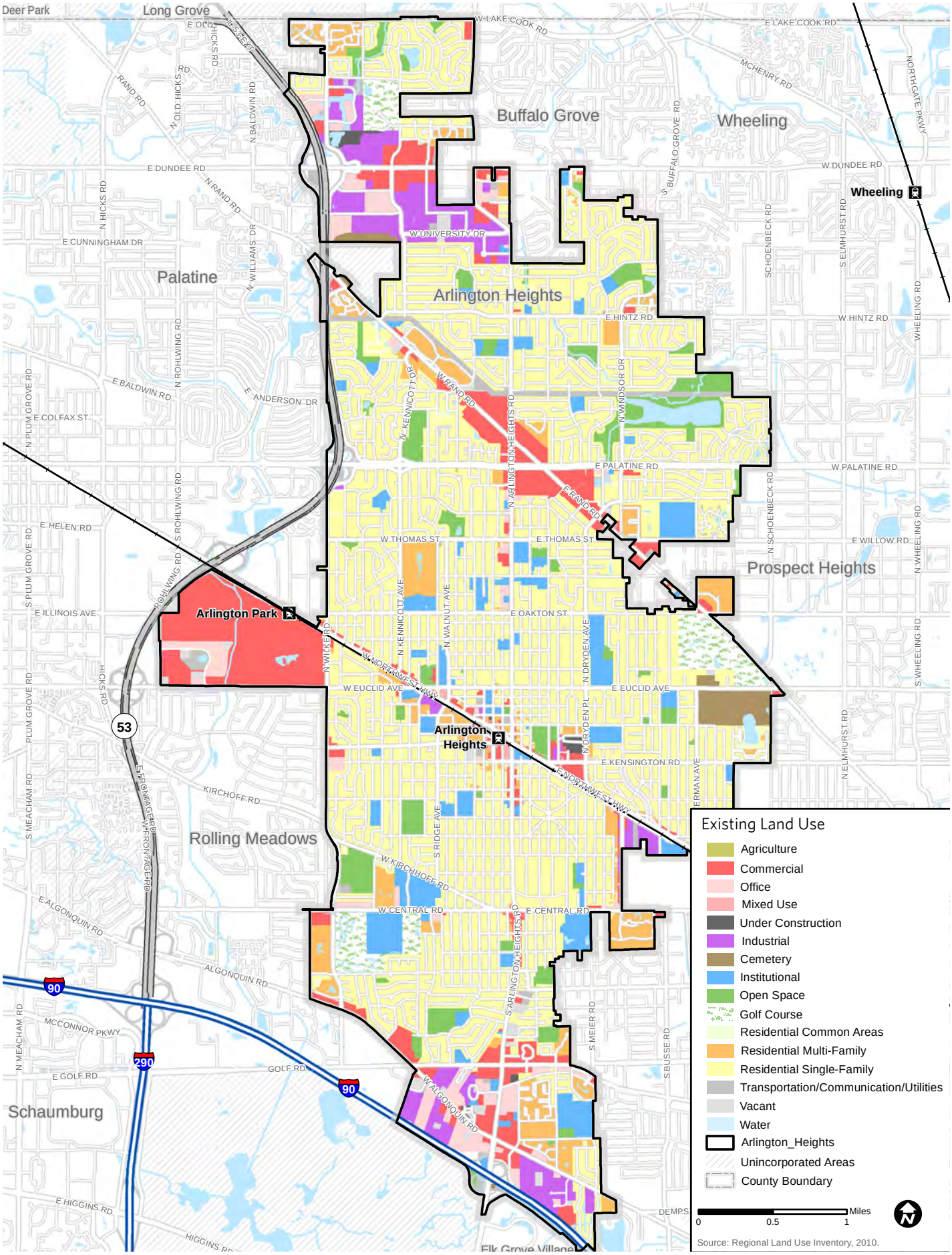
Institutional

Institutional uses, such as churches, schools, social services, and government, also make up nearly 5 percent of land use. Arlington Heights is home to public and private schools in three school districts, including Arlington Heights School District 25, Community School District 59, and Township High School District 214. Civic uses, including Village Hall and Recreation Park, are concentrated in the downtown area.

Industrial

Industrial development makes up 3.4 percent of Arlington Heights' land uses, and is concentrated in the southern and northern segments of the Village along I-90 and near Dundee Road and Illinois Route 53, respectively.

Figure 2.1 - Existing Land Use



Employment

Employment and Residential Locations

Arlington Heights residents are employed throughout the metropolitan region, with 87.3 percent of its residents working outside the Village. However, approximately 24 percent (7,934) of Arlington Heights commuters (32,804) work in adjacent or nearby municipalities. When combined with the Village residents who commute to work within Arlington Heights (1,874), the percentage of residents who work within relatively easy cycling distance (that is, within the Village or neighboring communities) is approximately 29.8 percent (9,808).

Persons employed in Arlington Heights (approximately 43,449) come from all parts of the seven-county Chicago metropolitan region. Just over 10 percent of the Arlington Heights workforce lives in the Village itself. As noted above, almost 30 percent of Arlington Heights workers reside in adjacent or nearby municipalities, including Palatine, Mount Prospect, Schaumburg, Hoffman Estates, Rolling Meadows, Des Plaines, Buffalo Grove, and Elk Grove Village. This presents an opportunity to increase the active transportation mode shares by improving, expanding, and connecting municipal bikeway networks, sidewalks, and public transportation routes.

Transportation and Affordability

Mode Share

Compared to Cook County and the region, a higher percentage of Arlington Heights residents drive alone to work (86.2 percent vs. 65.2 and 72.5 percent, respectively), while fewer walk or bike (2.1 percent vs. 5.5 percent for Cook County and 4.1 percent for the region). Compared to Cook County, Arlington Heights has a significantly lower proportion of transit users (6.2 vs. 18.4 percent).

Housing + Transportation Affordability Index

Residents with long commutes, particularly by automobile, often face high transportation costs that offset the gains of moving to communities with less expensive housing. ***Table 2.1*** shows the percentage of total income a household earning the region's Average Median Income would spend on housing plus transportation if that household lived in the average home in Arlington Heights, Cook County, or the Chicago metropolitan region. At 53.2 percent, Arlington Heights' combined housing and transportation cost is higher than both the County and the region, and it is above the 45 percent target that characterizes "affordability."

Table 2.1 - Housing and Transportation Costs, 2010

	ARLINGTON HEIGHTS	COOK COUNTY	CHICAGO REGION (MSA)
Housing Costs as percent of income	32.0%	30%	30%
Average Monthly Housing Cost per month	$1,679	$1,534	$1,534
Transportation Costs aspercent of income	20%	18%	20%
Annual Transportation Cost per year	$11,340	$11,046	$12,273
"H+T" Costs as percent of income	52%	48%	50%

Source: HUD "H+T Affordability Index": http://www.locationaffordability.info/lai.aspx

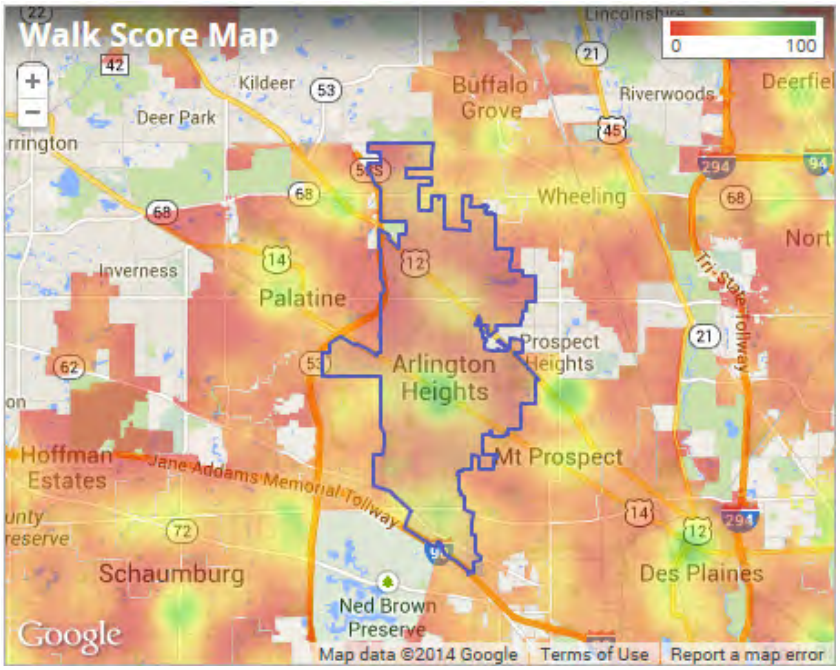
Note: Red text if the percentage exceeds the standard threshold of affordability: 30% for housing costs and 45% for housing and transportation costs combined.

Walking and Walkability

Walkability is an important factor in the health and vitality of our communities. Elements of a walkable neighborhood include: a central attraction; a main street, or public space; buildings close to the street; and "complete streets," designed for safe travel for all modes. Higher housing density and access to amenities, stores, parks, and places of work are also important. Planners refer to the "D's" of walkability: density, diversity, design, destination access, and distance to transit.

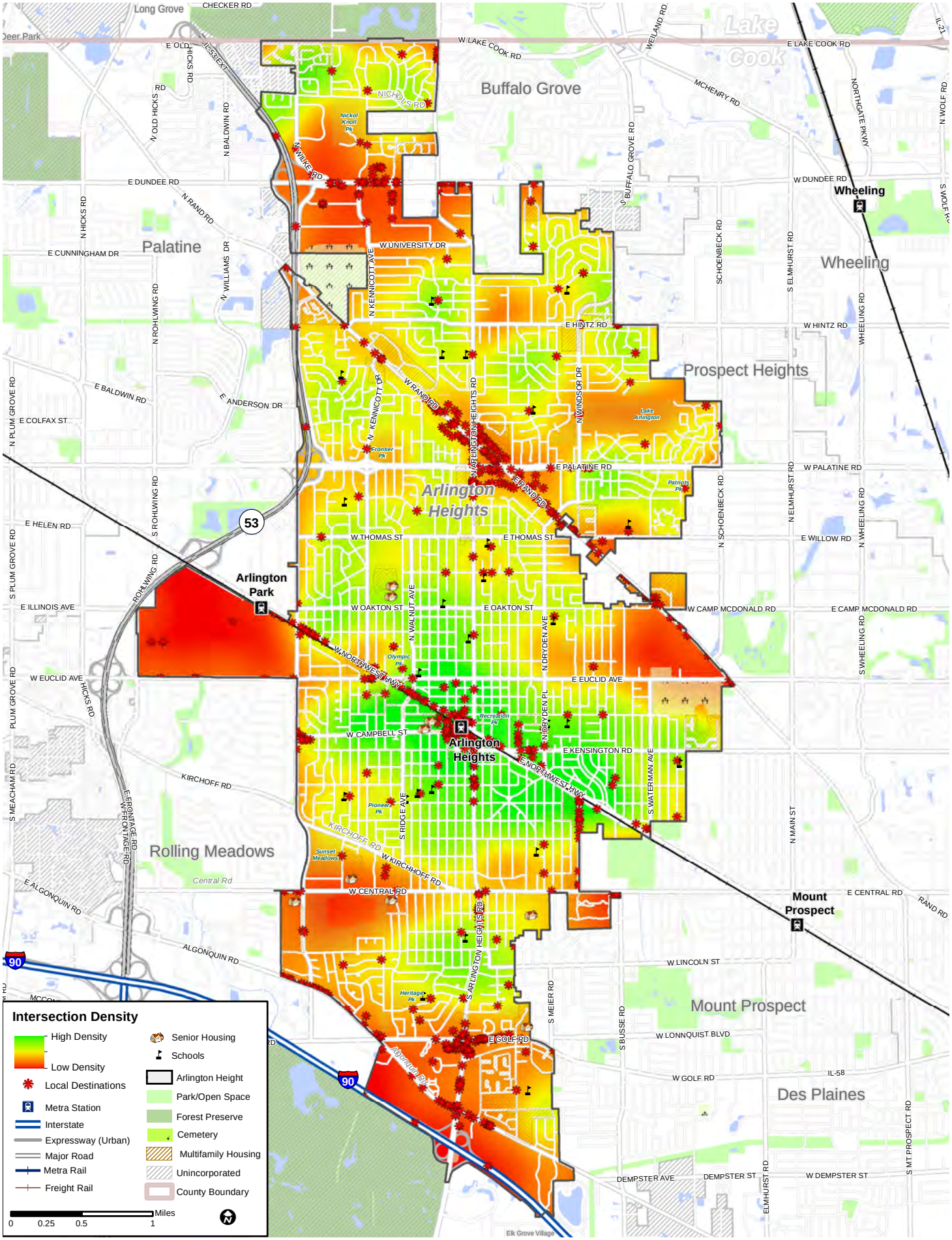
The average Walkscore for Arlington Heights is 45 / 100, classifying it as a "Car-Dependent City" or a place where "most errands require a car." However, Arlington Heights' downtown area scores 80-90 / 100, which places it in the range of "Very Walkable" to "Walker's Paradise." These high scores represent one of the many positive outcomes of Village efforts over the last three decades to revitalize and preserve the downtown through transit-oriented development.

Figure 2.2 - Walkscore



Source: www.walkscore.com

Figure 2.3 - Pedestrian Amenities



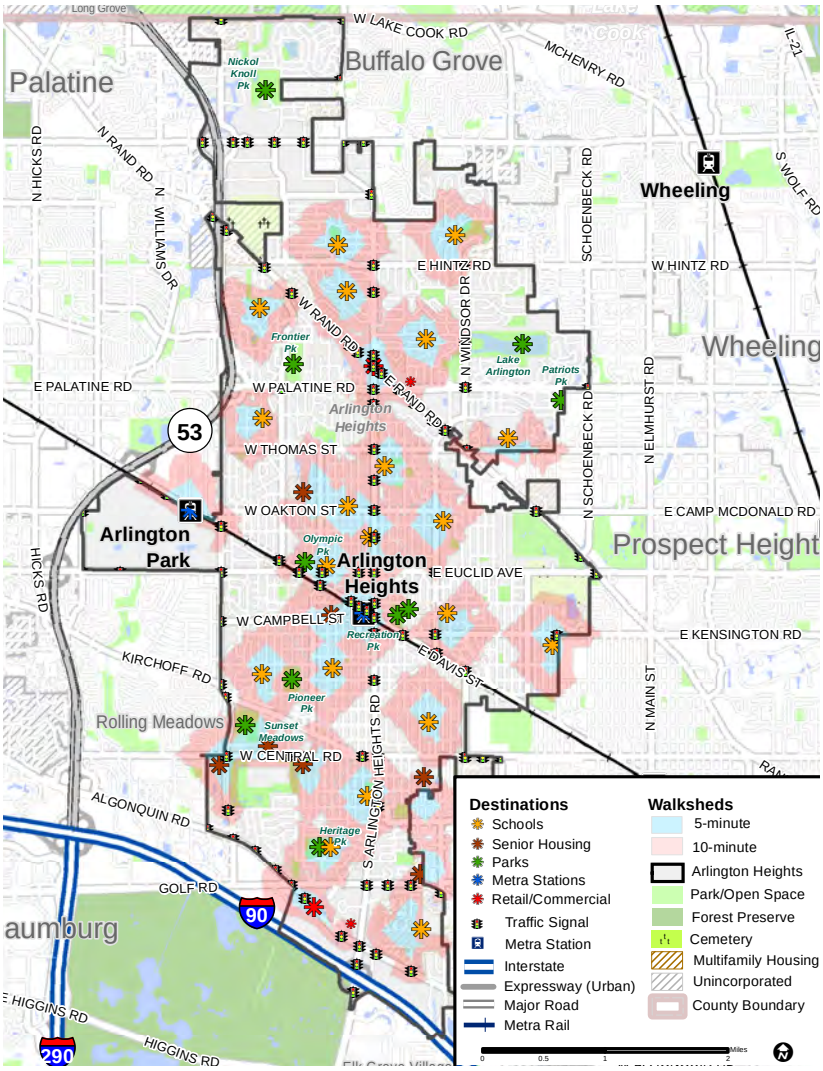
Sidewalks and Paths

There are approximately 393 miles of sidewalk throughout Arlington Heights, which cover most of the Village and support a high level of walkability. However, some issues and concerns about the sidewalks were raised by residents regarding: the maintenance and condition of sidewalks; the encroachment of vegetation; the presence of obstacles such as light poles or sign posts in the sidewalk; the absence of curb ramps and other accessibility features; and the difficulties encountered where sidewalks cross train tracks. Residents also expressed concerns with sidewalks located directly adjacent to travel lanes carrying high-speed and high-volume traffic.

To help visualize and assess overall walkability in the Village, ***Figure 2.3*** illustrates the relative density of intersections across the Village as a whole. In addition, to further assess walkability, ***Figure 2.4*** illustrates the five- and ten-minute "walk-sheds" to a selection of major, high-priority destinations for pedestrians, including schools, Metra stations, senior housing, and clusters of retail and commercial establishments.

The walkshed map, which is intended to give a general idea of walkability in different parts of the Village, reinforces the need to develop safe crossings of major arterials. Areas that lack pedestrian connectivity are located in the southern part of the Village; the "triangle" area around Rand, Arlington Heights, and Palatine Roads; and the industrial/commercial areas in the northern part of the Village.

Figure 2.4 - Five- and Ten-Minute Walkshed



Intersections and Streetscaping

While most of Arlington Heights' intersections are controlled by stop signs, there are approximately 80 signalized intersections in the Village, mostly along major arterial roads and in the downtown area. Pedestrian safety treatments at signalized intersections vary throughout the Village. Examples of existing pedestrian crossing features include enhanced crosswalk designs, longitudinally-striped crosswalks, pedestrian countdown signals, accessible curb cuts, advance stop bars, warning signage, and crossings marked by two parallel lines.

Intersections involving one or more of the large arterial roads present particular challenges. Long crossing distances, large traffic volumes (including trucks), high operating speeds, and complicated vehicular movements (double turn lanes, skewed intersections, etc.) all present difficulties for pedestrians. Especially challenging are intersections where two major arterials cross at a skewed angle. Crossing distances at such intersections, which exist at several locations in the Village, can extend to 200 feet or more.

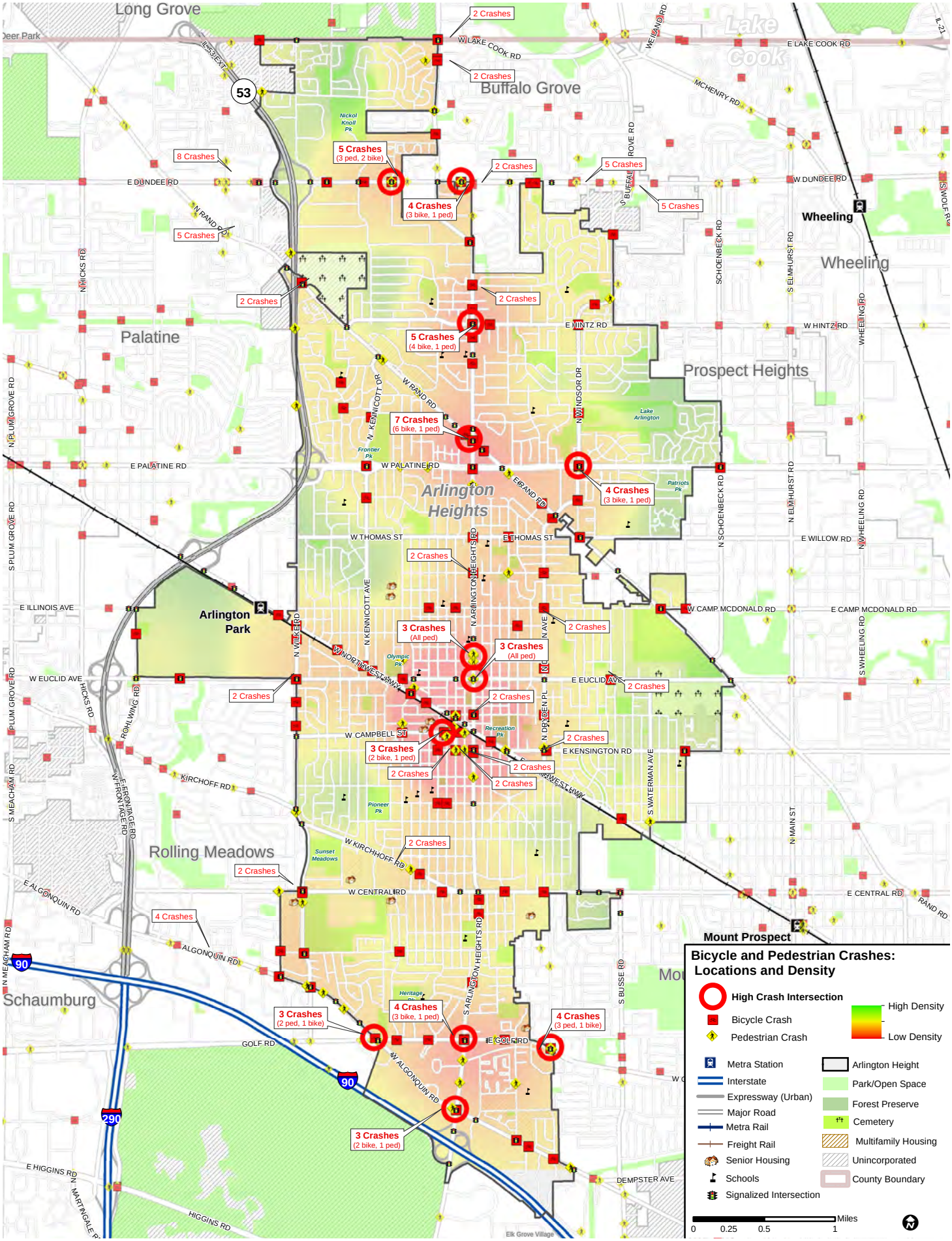
Major arterial roads in the Village carry average daily traffic volumes as high as 46,000 automobiles (Lake Cook Road). Many also carry significant truck traffic and, typically, have very large curb radii and/or slip lanes at intersections to accommodate such vehicles. These intersections can be particularly difficult for pedestrians and bicyclists to traverse.

Sections of Wilke Road, Rand Road, and Central Road are missing sidewalk segments on at least one side. In addition, sections of large arterial roads have the sidewalks directly adjacent to the parallel roadway (i.e. 'back-of-curb'), without a buffer, which creates an uncomfortable pedestrian environment. ***Figure 2.5*** shows locations of both pedestrian and bicyclist crashes, and highlights the intersections where three or more crashes took place during the years 2008 to 2012.

Pedestrian Safety

Large and busy arterial roads present the greatest potential dangers to pedestrians in Arlington Heights. According to a CMAP analysis of IDOT crash data, from 2008 to 2012, all fatal and incapacitating injury crashes (Types K and A, respectively) occurred along these large, high-volume, high-speed roads. Moreover, the majority of the other, less severe pedestrian crashes also occurred along these roads. Out of 65 pedestrian crashes for these five years, 47 (72 percent) occurred along major arterials. It should be noted that the concentration of pedestrian crashes in the downtown area – which is visible as red shading in ***Figure 2.5*** – reflects the high number of persons walking in the downtown area rather than high danger or risk.

Figure 2.5 - High Crash Locations



Bicycling

Routes and Trails

The Village's bikeway network consists of designated (both signed and unsigned) on-street bike routes throughout the Village, as well as planned and potential routes (***Figure 2.6***). Bikeway signage consists almost exclusively of guide signs (and plaques) but is incomplete, in some instances in poor condition, and does not generally represent current best practice in bikeway signage. The bikeway network includes one on-street bike lane along Davis/Sigwalt Streets between Pine Avenue (near Village Hall) and Cleveland Avenue. On the south side of the street, this facility becomes a shared bicycle-parking lane between Bristol Lane and Cleveland Avenue. The bikeway network also makes use of several multiuse paths (often in parks) and sidepaths.

Some issues and difficulties encountered by cyclists in Arlington Heights – as expressed in the surveys, interviews, and other public outreach activities undertaken as part of this planning process – echo concerns raised relating to pedestrian travel. Others, relating to the roadways and traffic control devices, are specific to bicycling.

Examples of issues and difficulties raised by cyclists include:

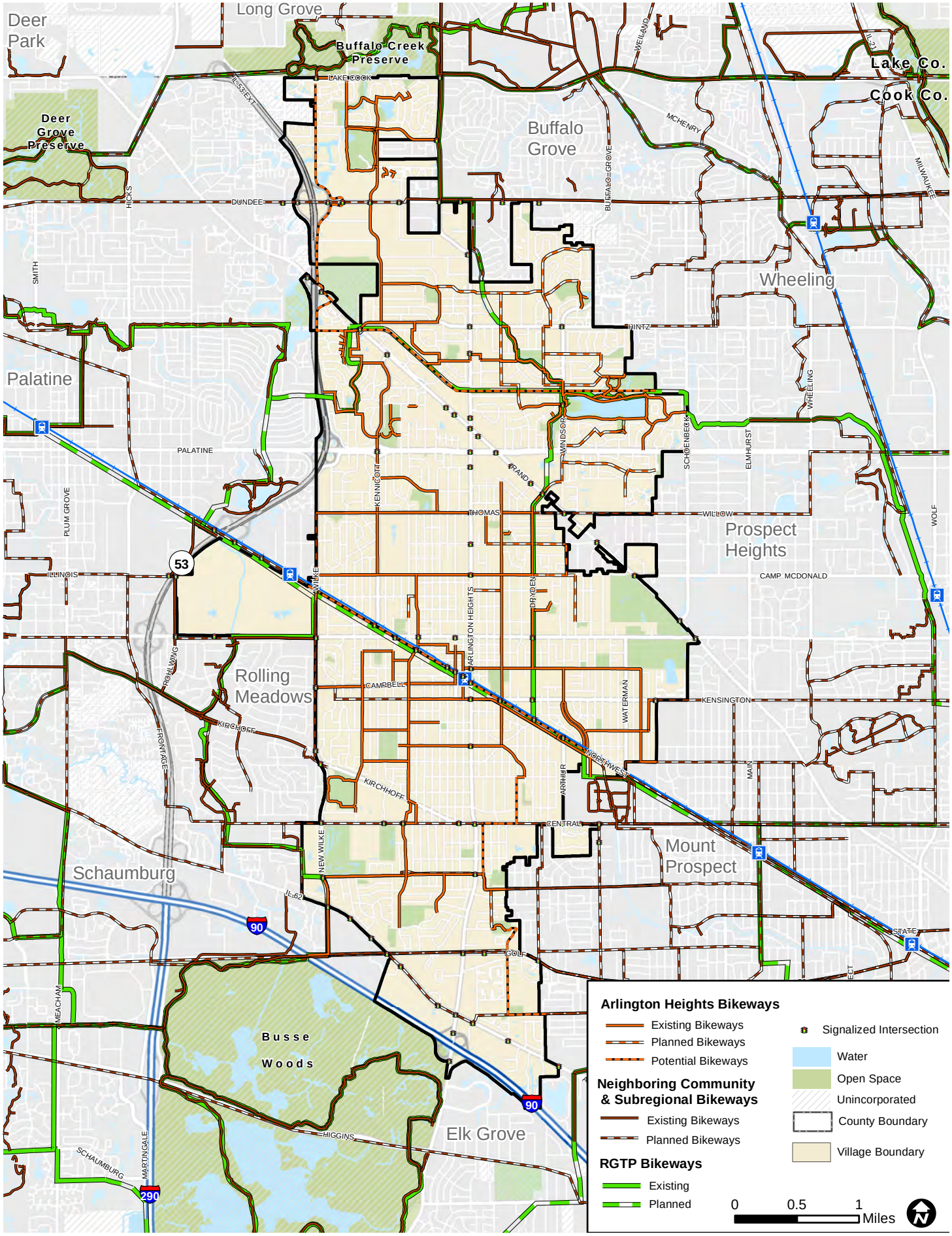
- Difficulties encountered in crossing large, arterial roads with high-speed, high-volume traffic;
- Difficulties encountered in crossing railroad tracks along Northwest Highway;
- Traffic signals that are not activated by bicycles waiting at the stop bar;
- Poor roadway surface conditions on some roads;
- Incomplete and poorly maintained bikeway signage along bicycle routes;
- Lack of on-street markings to indicate bicycle routes, presence of bicyclists, and bicyclist position in the roadway; and
- insufficient secure (lockable) bike parking provided in the downtown area.

In total, the Village bikeway network currently consists of approximately 44.5 miles of existing routes and trails, with another 2.2 miles of short paths and cut-throughs (mostly in parks and multi-family residential developments). There are another 10.1 miles of planned routes and 10.5 miles of potential routes. Several regional bikeway corridors – identified in the Northwest Municipal Conference Bicycle Plan – pass through Arlington Heights. These include the Northwest Highway corridor, the Dundee Road corridor, the Willow Road corridor (which utilizes Thomas Street and Wilke Road, in addition to Northwest Highway), the Glenview/Central/Algonquin Roads corridor (which utilizes Central Road), the Golf Road corridor, and Howard/Sibley corridor (which utilizes Falcon Dr., Tonne Dr., and Algonquin Rd.). Just north of the Village, the Deerfield Road bikeway corridor utilizes the path system in Buffalo Creek Forest Preserve.

CMAP's Regional Greenways and Trails Plan (RGTP) also includes planned (and existing) bikeways that traverse the Village, as shown in ***Figure 2.6***. These consist of:

- a trail/bikeway along Northwest Highway;
- a trail within the Commonwealth Edison right-of-way;
- a trail/bikeway along Wilke Road (from the Busse Woods trailhead, north through Rolling Meadows); and
- a north-south trail/bikeway, primarily in the eastern half of the Village, connecting the Northwest Highway trail/bikeway to the Buffalo Creek Forest Preserve.

Figure 2.6 - Existing and Planned Bicycle Network



Bicycle Parking

There are currently bike racks at locations throughout the Village, including high-quality covered bike parking at the downtown Metra station, and basic racks at the Arlington Park Metra station, schools, parks, the Public Library, Village Hall, inside the parking garages, and at other locations. Some racks are provided by the Village or the Park District, while others are provided by schools and other public and private entities. The approximate number of bike parking spots in the Village is estimated to be 2,500.

The quality of available bike parking varies from the high-quality covered parking at the downtown Metra station and the relatively secure parking in the downtown parking garage to sub-standard racks placed in poor locations. An example of sub-standard bicycle parking is "fence" or "ladder" style racks, consisting of vertical bars between two horizontal bars. Another example is the low "wheel-bender" style racks. These racks do not allow both the wheel and the frame to be locked, which increases the potential for bicycle theft. Poor placement could include locations at distances that are too far from the destination served, locations that are not visible, and locations that are not easily accessible (areas of grass or dirt, or that require climbing or descending stairs, etc.).

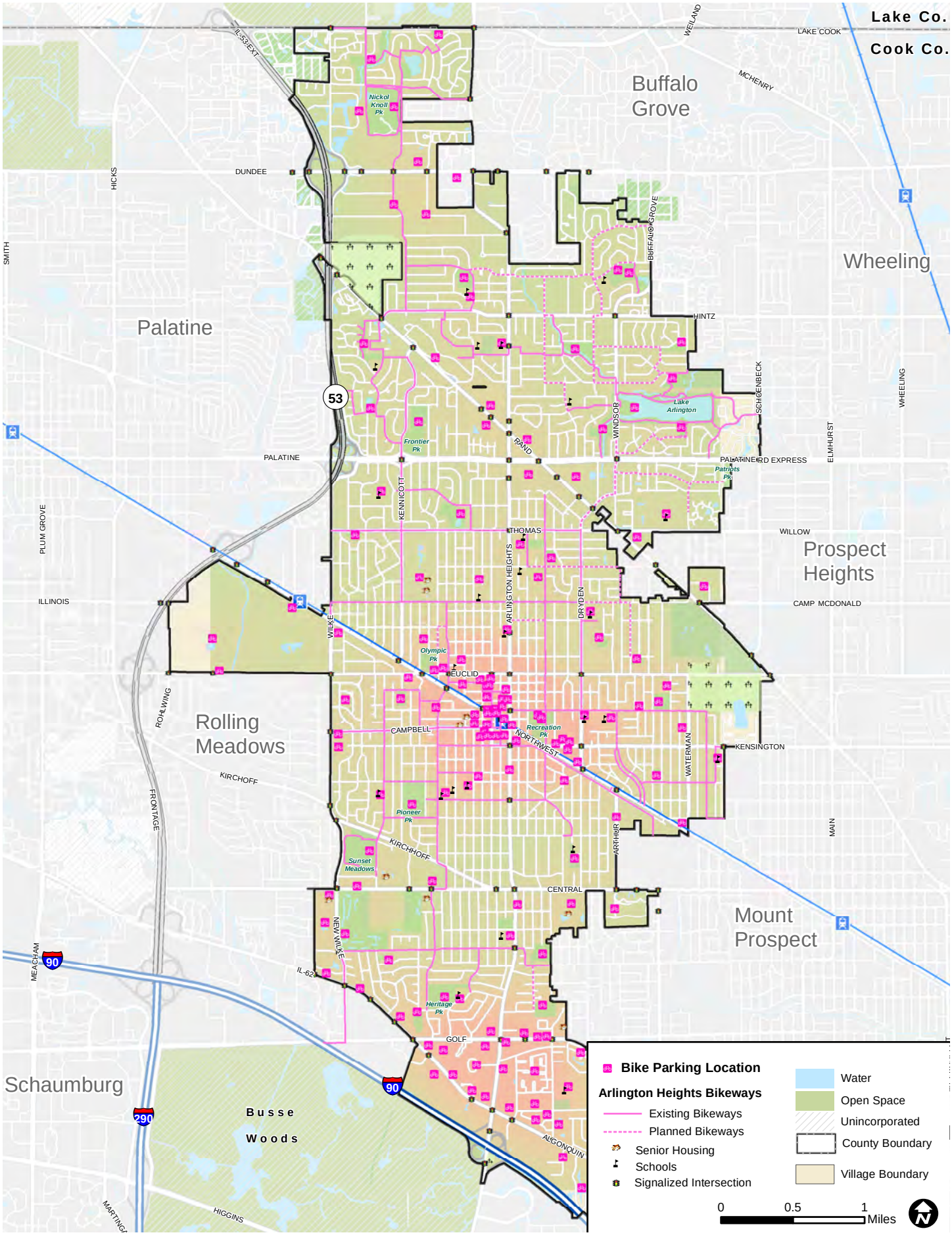
Bike Safety

When bicyclists and motor vehicle drivers share the road, many factors affect safety, including the speed and volume of traffic, width of the road, vehicle types, visibility, and vehicle operator expectations and education. The perception of safety is very important to developing a robust cycling community; most people will not ride a bicycle if they don't think that doing so – or riding a specific route – is safe. And the mere presence of bicyclists on the roadway, as a regular, ordinary feature of the road, can significantly increase overall safety, as drivers come to expect and anticipate bicyclists. When it is not feasible to create off-street paths, certain roadway designs and treatments can help to improve the safety of the road for cyclists and other users.

As was the case for pedestrians, the large and busy arterial roads present the greatest issues for cyclists. From 2008 to 2012, 10 out of 13 fatal and incapacitating injury bicycle crashes (Types K and A, respectively) occurred along arterial roads. The majority of the other, less severe bicycle crashes also occurred along arterials.

Figure 2.5 shows the locations and density of bicycle crashes in the Village of Arlington Heights. As was pointed out with the pedestrian crash map, the relative concentration of bicycle crashes in the downtown area – visible as red shading in ***Figure 2.5*** – reflects a higher number of persons bicycling in this area rather than the relative danger or risk.

Figure 2.7 - Bicycle Parking Locations

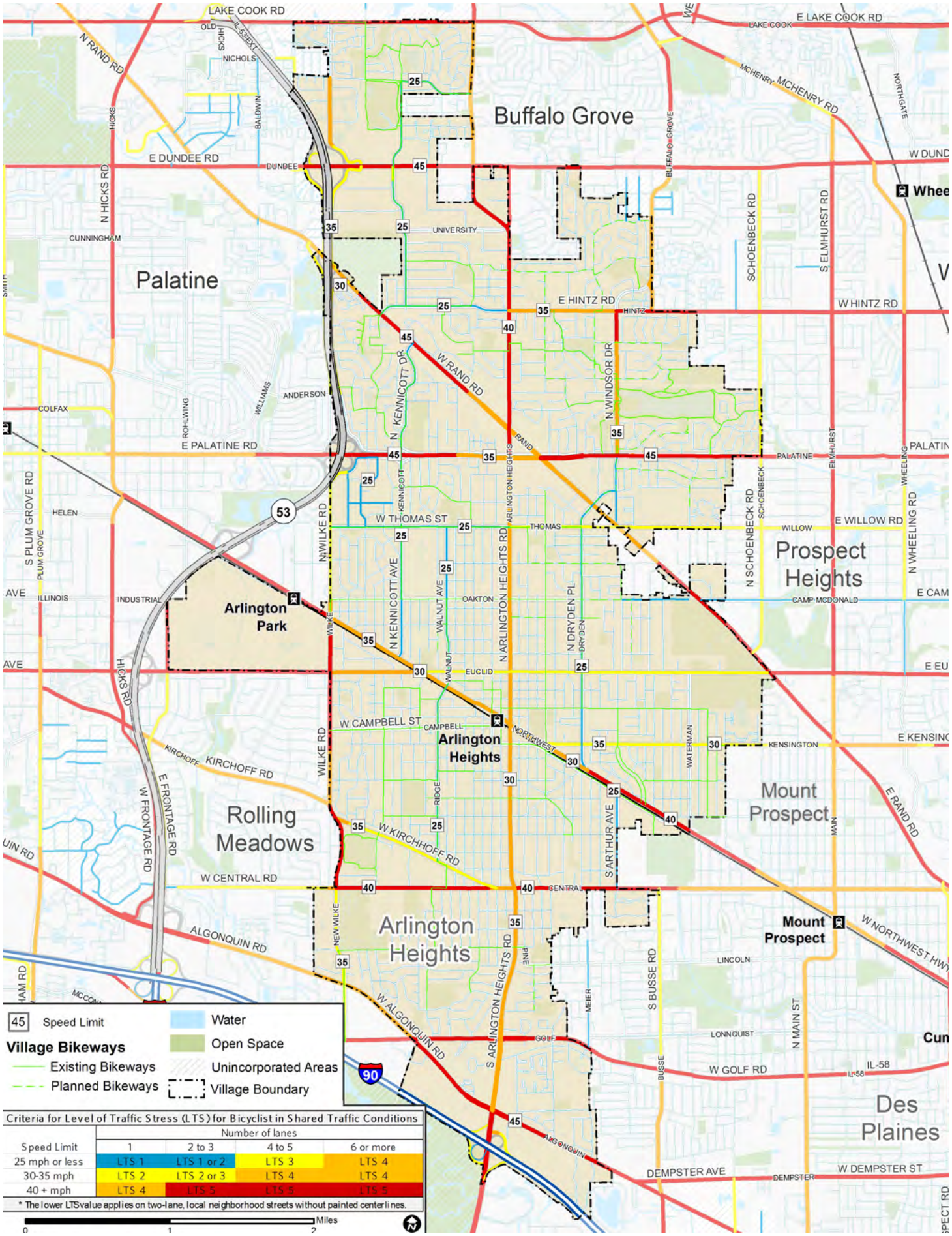


Level of Traffic Stress

According to a recent report from the Mineta Transportation Institute, a highly connected, low-stress network is fundamental to attract the highest numbers of bicyclists to the network. The method developed to measure traffic stress considers a number of factors, including the average daily traffic (ADT), the number of travel lanes, posted speed limits, and location of the center line. For streets where bicyclists and cars share the road, street width and speed limit are the primary factors affecting traffic stress. These ratings aim to estimate the level of stress that a bicyclist would feel while riding along different routes, without the need to survey every road in the study area. Using available data, ***Figure 2.8*** indicates the Level of Traffic Stress (LTS) on the roadways in Arlington Heights.

Most of the roads in Arlington Heights are low-stress (LTS 1 or 2), with exceptions being major arterial roadways and some collectors. For instance, Euclid Avenue between Rand Road and Northwest Highway is perceived by many residents as uncomfortable and unsafe for cycling even though it registers as LTS 3. This is likely due to a constrained ROW along various segments and motor vehicles traveling at speeds that are perceived to exceed the 25 mph posted speed limit (as well as high traffic volumes).

Figure 2.8 - Level of Traffic Stress



Transit

Regional public transportation options that serve the Village include Metra commuter train service and Pace suburban bus service (see ***Figure 2.9***). Pace provides both fixed route and demand-responsive service. Wheeling Township also provides senior and disabled service within a defined area that includes much of Arlington Heights.

Metra

Metra's Union Pacific Northwest line serves the Village of Arlington Heights at two stations: downtown Arlington Heights and the Arlington Park International Racecourse. The North Central Service line runs through communities to the east of Arlington Heights and has stations in Prospect Heights, Wheeling, and Buffalo Grove. The Metra UP-NW rail line connects Arlington Heights to downtown Chicago and to other suburbs along its 70.5 mile length.

The Arlington Park Metra station is less accessible (by pedestrians and bicyclists) due to the presence of Illinois Route 53, Northwest Highway, and Wilke Road. Enhanced pedestrian accommodations are lacking (at the time of this writing) at the intersection of Wilke Road and Northwest Highway, which is important given its function as the main entry-point to the Arlington Park Metra station. However, this intersection is scheduled to be improved (TIP ID 03-13-0003). IDOT has completed engineering and design and the project is expected to go out to bid for construction this year. According to the Village, improvements will include signal modernization (including pedestrian countdown signals), geometric modifications, new striping, and signage.

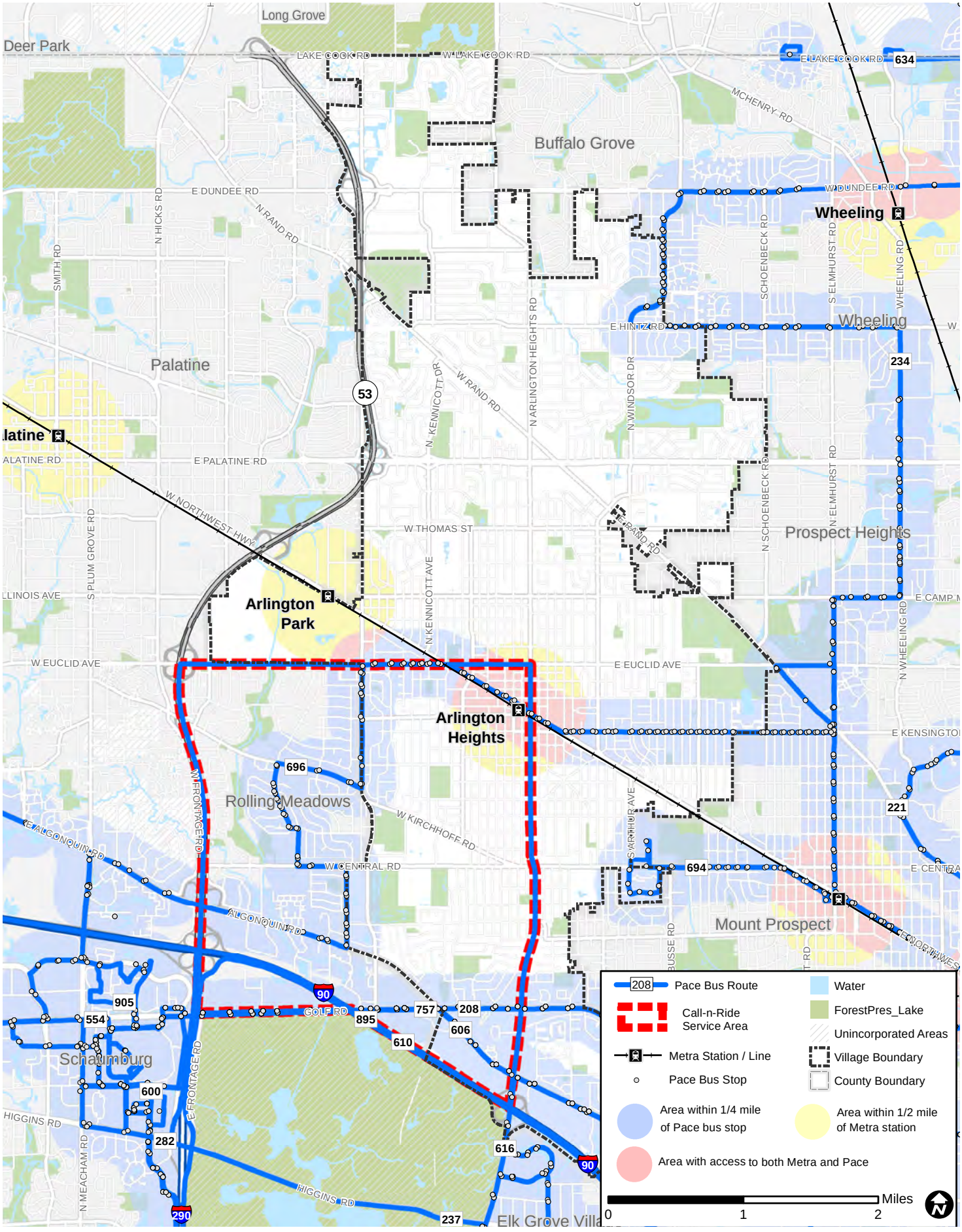
Pace Bus

As shown in ***Figure 2.9***, six Pace suburban bus routes (696, 208, 234, 606, 694, and 757) directly serve and have stops within Arlington Heights – though some just graze the borders of the Village. Overall, relatively little of the Village is within 0.25-mile of a (fixed route) Pace bus stop. The northern half of the Village in particular lacks transit service. The entire Pace vehicle fleet is Americans with Disabilities Act (ADA) compliant, and all full-size, fixed route buses are equipped with front-loading bike carriers so that Pace users can access the bus via bicycle.

Demand-Responsive Services

In addition to fixed route bus service, Pace provides a Call-n-Ride service – the Arlington Heights-Rolling Meadows Call-n-Ride – which offers reservation-based, curb-to-curb service in the designated service area (bounded by Euclid Avenue, Arlington Heights Road, I-90, Golf Road, and Highway 53). Pace also offers ADA Paratransit Services, Ride Share, and Vanpool service. Wheeling Township offers Call-a-Ride service for seniors and the disabled in an area that includes much of Arlington Heights, bounded by Central on the south, Lake Cook Road on the north, Wilke Road on the west and the Des Plaines River on the east.

Figure 2.9 - Access to Public Transit



Roadways

Functional Classification

Roads provide space for vital functions within a community – mobility, access, commerce, and civic life. Arlington Heights' street network, shown in ***Figure 2.10***, consists largely of local roadways that accommodate the Village's residential character. However, Arlington Heights does have a relatively high number of major arterial roads, which provide good access to community amenities but are often barriers to walking and bicycling because of high-speed, high-volume traffic and large roadway widths. East-west arterials occur approximately every mile. The Village is divided down the middle (north-south) by Arlington Heights Road. In addition, Arlington Heights is crossed by four diagonal arterials: Algonquin Road, Kirchhoff Road, Northwest Highway, and Rand Road. The Village is also bounded on its south and west sides by limited access freeways: Interstate 90 and Illinois Route 53, respectively.

Roadway Safety

Figure 2.11 illustrates the locations and severity of all automobile crashes that occurred in Arlington Heights between 2010 and 2012. It highlights intersections that have the highest numbers of crashes, according to the police and other sources. ***Figure 2.11*** was made by the Arlington Heights Police and show locations and density (per Village data) of motor vehicle crashes for January-June 2013 and 2014, respectively.

Figure 2.11 also shows the areas within the Village with the highest overall density of crashes, weighted by severity. As can be seen, major roadways – and above all, the intersections of major roadways – exhibit the highest concentrations of crashes. The "triangle" area, formed by the intersections of Arlington Heights, Palatine, and Rand Roads, consistently has the greatest number of crashes. According to the Arlington Heights police, these three intersections were among the top four crash locations in 2013 and 2012, as well as earlier years. The roads that the Police consider generally most dangerous and most difficult for pedestrians and bicyclists to cross are, in order: Palatine Road, Rand Road, Golf Road, Algonquin Road, and Dundee Road, all of which have sections consisting of six or more travel lanes. They also point to Lake Cook Road as presenting significant hazards for bicyclists and pedestrians, due to the high speed travel speeds (the posted limit is 45 mph) and the wide spacing of traffic controlled (signalized) intersections. Arlington Heights Road, which has high traffic volumes during rush hour periods, was also recognized as presenting safety issues and crossing difficulties for pedestrians and cyclists.

Figure 2.10 - Functional Road Classifications and AADT

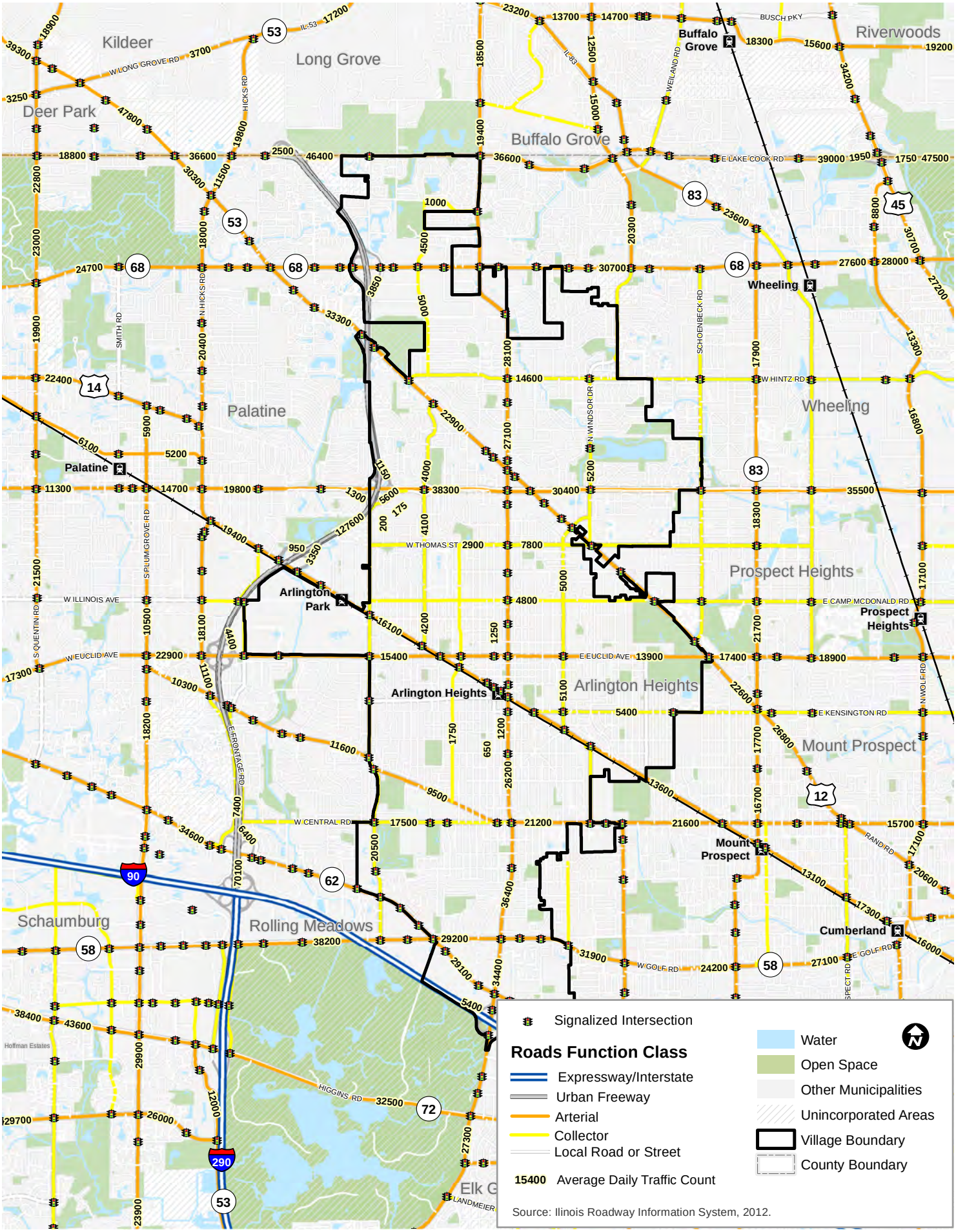
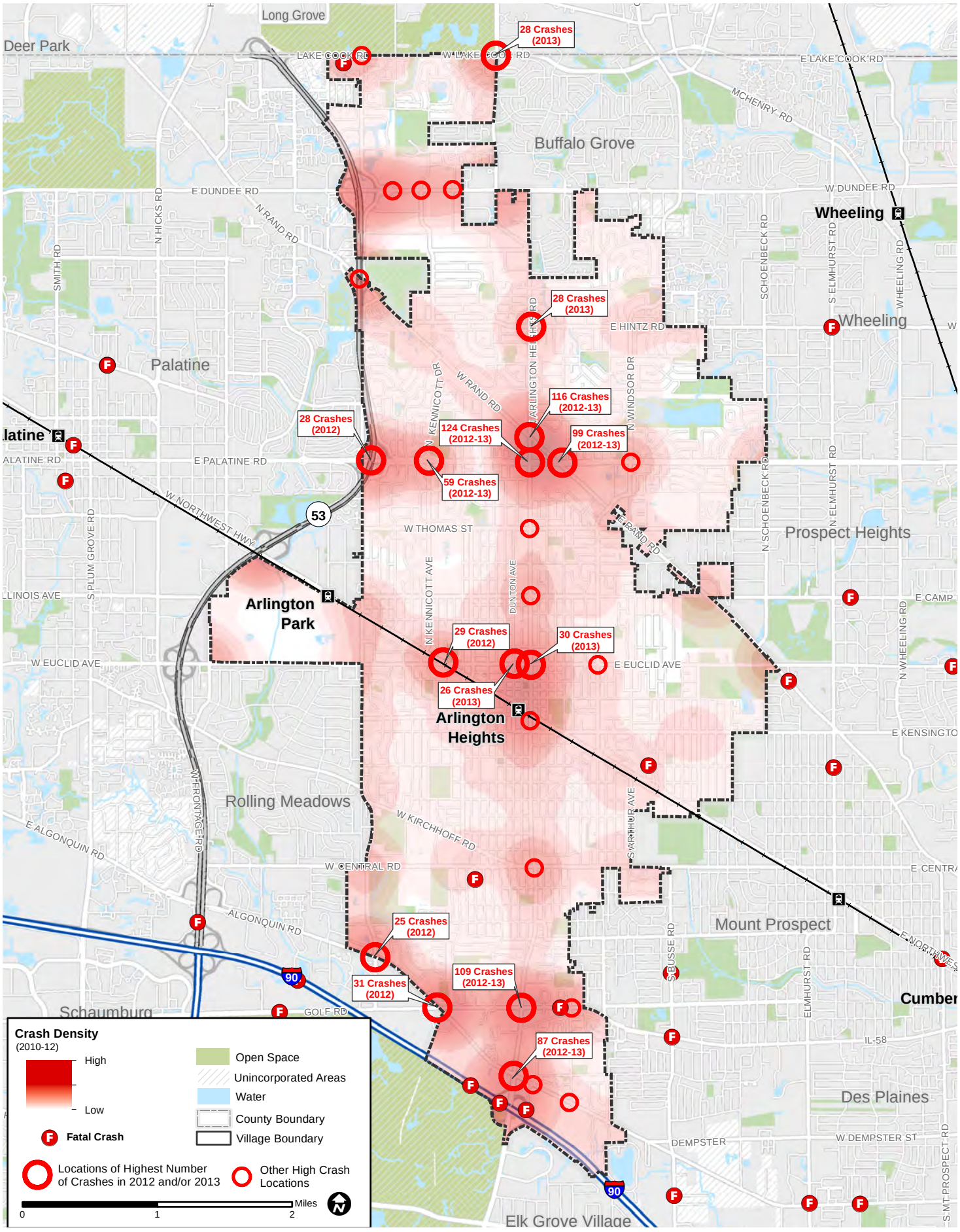


Figure 2.11 - Automobile Crashes



Chapter 3
COMMUNITY OUTREACH

A key goal and component in the development of the Arlington Heights Bicycle and Pedestrian Plan was to encourage comprehensive community engagement and participation throughout the entire plan-making process. Public outreach and engagement was undertaken to better understand community needs, challenges, and opportunities related to bicycling and walking, and to review and evaluate potential recommendations. Public outreach and input were crucial aspects of the planning process and fed directly into the structure and the content of the plan. Input and insights obtained through public outreach and engagement activities can also help the Village and the Bicycle and Pedestrian Advisory Commission to advance and implement proposed projects.

Public Engagement Activities

The development of the plan included broad community engagement with numerous opportunities for public input. Specific activities included an interactive online survey that included mapping input, small group workshops, key stakeholder interviews, and a community-wide workshop and charrette. Public engagement activities occurred throughout the planning process, targeting local residents and stakeholders and documenting the Village's unique strengths, challenges, and opportunities. An extensive review of the input received from outreach activities conducted during the early phase of the planning process is available in the stand-alone Existing Conditions Report.

Outreach activities were aimed broadly at helping answer the following four questions:

1. What are Arlington Heights' strengths as they relate to non-motorized transportation?
2. What are the main challenges to being a pedestrian and/or cyclist in Arlington Heights?
3. Aside from the work already planned, what projects or actions should the Village pursue to make Arlington Heights more bicycle- and pedestrian-friendly?
4. What is your vision for Arlington Heights' bicycle and pedestrian network?

Project Steering Committee Meeting

Kickoff Steering Committee Meeting

On June 16, 2014, the first steering committee meeting was held at Village Hall. The Project steering committee was responsible for providing guidance and feedback on existing issues and opportunities, revising project goals, reviewing plan documents, and identifying stakeholders who should be involved in the planning process. The committee was composed of the Village's established Bicycle and Pedestrian Advisory Committee.

The first meeting objective was to introduce the committee to the project and begin to catalog issues and opportunities in the Village as they relate to walking and biking. Participants were given a questionnaire asking them to identify the main challenges to bicyclists and pedestrians in Arlington Heights, specific projects that could address these challenges, and the general strengths of the community's bicycling and pedestrian environment.

Second Steering Committee Meeting

The second steering committee meeting was held on February 4, 2015 to review initial findings of the existing conditions report and draft a vision statement to guide the plan and plan implementation. After much discussion, the steering committee agreed on a draft vision statement that expresses the community's aspirations and future intentions around walking and bicycling. The final vision statement is provided in ***Chapter 1: Introduction***.

Third Steering Committee Meeting

The third steering committee was held on July 7, 2015 at Village Hall. The purpose of this meeting was to review preliminary ideas involving key corridors for biking and walking throughout the Village. At the meeting, steering committee members reviewed larger aerial maps of the Village by north, central, and south subareas. For each subarea, members identified and discussed important issues and opportunities. Because of the amount of discussion and input that arose from the meeting, the committee decided to continue to meet on their own to continue the activity. After a number of months working together, the steering committee provided CMAP staff a very detailed and thorough list of potential projects to improve walking and biking in each subarea. Many of the recommendations found in ***Chapter 4*** are based upon the thorough analysis and potential projects that were created by the steering committee in this step of the process.

Other Outreach Activities

Village-Wide Bicycling and Walking Audit

On September 8, 2014, CMAP staff along with several steering committee members and Village staff conducted a bicycle and walking audit of the existing conditions in Arlington Heights. The audit reviewed the existing trail and road bike network and the areas identified for improvement from prior meetings. Staff also visited a number of additional assets in the community — the downtown core, various shopping districts, Metra stations and station areas, and major parks.

Key Person Interviews

On September 9 and September 29, 2014, CMAP staff completed interviews with several key stakeholders. The list of key persons was compiled by Village staff and members of the steering committee. Through key person interviews, CMAP staff gathered a stronger and more nuanced understanding of the community and issues and opportunities related to bicycling and walking.

Bicycle Club Workshop

A meeting was held with the Village of Arlington Heights Bicycle Club on September 17, 2014 at the Recreation Center during a regularly held monthly meeting. Attendees included CMAP staff, members of the BPAC, and the Bicycle Club. The meeting allowed CMAP staff to describe the planning process as well as to solicit input from the Club regarding perceived issues, desired projects, and the current strengths/assets of the Village regarding bicycling and walking.

Figure 3.1 - Arlington Heights Bicycling and Walking Audit

Figure 3.2 - Arlington Heights Bicycle Club Workshop

Senior Citizens Commission Workshop

On October 20, 2014, CMAP staff introduced the project to members of the Senior Citizens Commission and engaged them in the planning process during their regularly scheduled monthly meeting. Attendees were given a one-page questionnaire and were asked to indicate their top issues and challenges for walking and biking in the Village of Arlington Heights. Eight questionnaires were collected, with two surveys submitted indicating there were no major problems with bicycle and pedestrian travel in the Village.

Online Survey

CMAP developed an interactive online survey to engage a broad audience, particularly people who are harder to reach or people who are not able to attend the workshops. This online tool served to educate the community about the purpose of the project and identify community priorities to address in the bicycle and pedestrian plan. The online survey was launched on October 1, 2014 and remained active until December 3, 2014. During this time, 2,131 people visited the site and 1,091 people gave feedback on top priorities and areas for improvement. For a full summary of the feedback received, see the Existing Conditions Report.

Community-wide Visioning Workshop

A community-wide public visioning workshop was held on Thursday, March 12, 2015 at the Public Works Department. There were approximately 55 residents, business leaders, government representatives, and elected and appointed officials in attendance. At the workshop, attendees learned about the project and the existing conditions in the Village through a brief presentation by CMAP staff which highlighted key issues and opportunities.

Next, participants were divided into smaller working groups to work with maps of the Village and its surrounding area to discuss how they would improve walking and biking throughout Arlington Heights. The following is a comprehensive summary of the group's ideas and recommendations per topic. A more detailed summary including images of each smaller group's maps can be found in ***Appendix A***.

Destinations

The larger group identified several key pedestrian destinations in Arlington Heights, such as Arlington Park, Lake Arlington, Recreation Park, Busse Woods, the Metra Station, downtown Arlington Heights, the various schools in town, and Arlington Heights Memorial Library, among many others.

Safety

There was a general consensus among participants on several key issues regarding bicycle and pedestrian safety. Workshop participants expressed the need for increased traffic control by reducing traffic speed, better signage, more designated and better-marked bicycle lanes and paths, and increased non-motorist features such as crosswalk buttons.

Figure 3.3 - Visioning Workshop

Barriers

The meeting attendees were asked to think about any barriers that might prevent them from biking or walking in the community. The majority of workshop participants identified the lack of crosswalks and crosswalk markings, in addition to missing sidewalks as major barriers. Further, the lack of snow plowing and snow build up along major routes was a concern to many residents.

Missing Gaps or Links

The group identified poor, or lack of, connections to Busse Woods, Lake Arlington, and Des Plaines River Trail. Additionally, residents would like to see increased sidewalks along major streets such as Palatine Road and Arlington Heights Road to increase connectivity and access to major destinations in and around town.

Bicycle Parking

Attendees were asked to share where they would like to see increased bicycle parking. The majority of the comments denoted that additional parking racks and facilities should be installed in the downtown area, library, Arlington Park, schools, and shopping areas. A suggestion made was to develop a map of available bicycle parking in the community.

Education, Encouragement, and Enforcement Programs

There was an overall consensus among community stakeholders for increased education and awareness for bicycle and pedestrian safety among all road users. Specifically, workshop attendees expressed support for informational workshops to learn about the rules of the road, non-motorist safety, and educational campaigns about the benefits of biking and walking.

Big Ideas

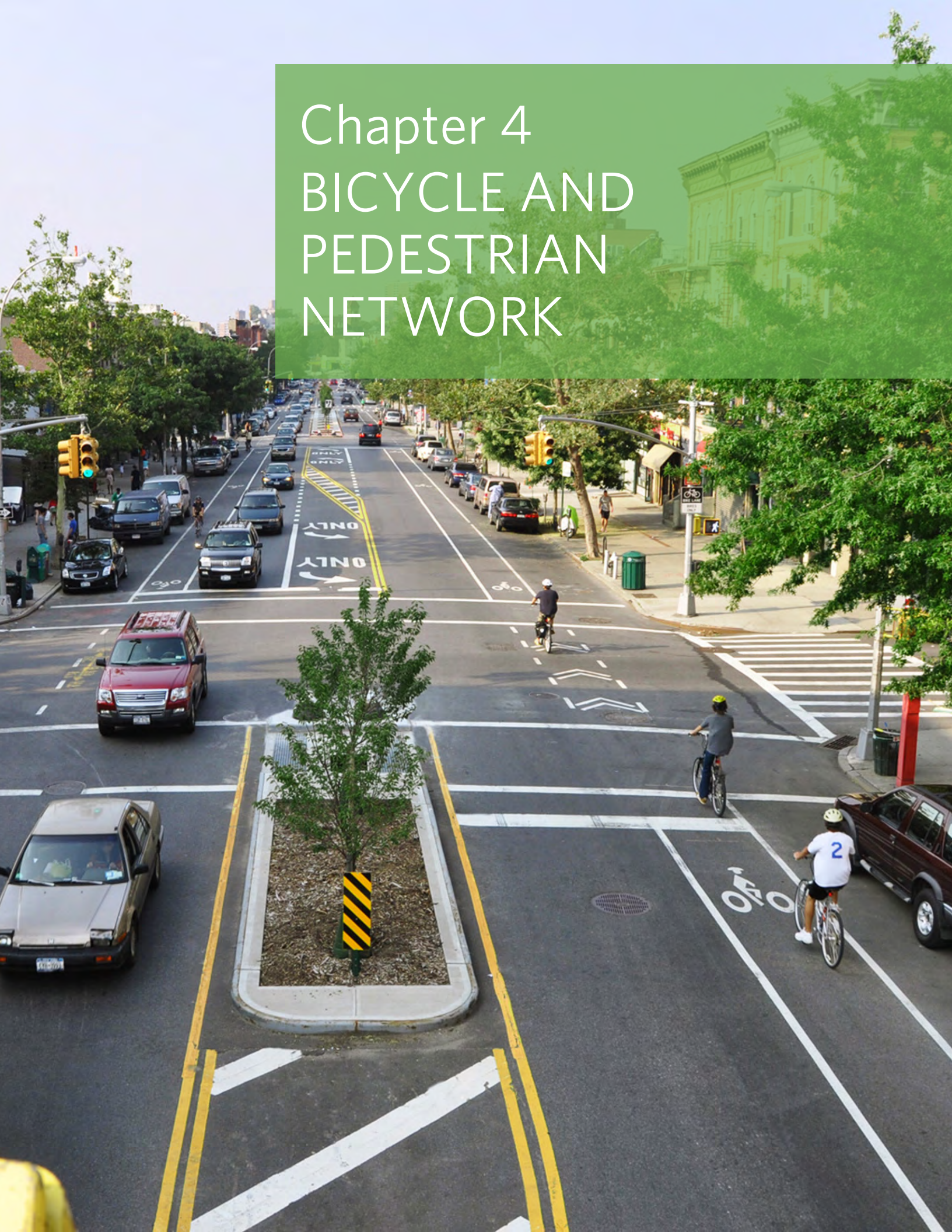
After working in smaller groups to create their unique vision for how to improve walking and biking in Arlington Heights, each group presented their key ideas and recommendations to the larger group. Then the larger group was asked to vote (using electronic, real time key pad polling) for their top three ideas (in order of importance) from each of the smaller groups. The following table summarizes the results of the voting.

Table 3.1 - Visioning Workshop

BIG IDEA	PERCENT	COUNT
Network connectivity and linkages to open space (parks, Forest Preserves, Des Plaines River Trial)	23.9%	168
Improved signage and on-street bikeway markings/striping (visible)	23.5%	165
Major barriers - UP overpass/underpass (Northwest Highway/"Trianlge District," I-90)	15.4%	108
Education and enforcement (online, workshops)	11.9%	84
Linkages to important destinations (home, work) throughout Village	11.1%	78
Intersection improvements (countdown signals, bicycle detection, markings, beacons, etc.)	9.4%	66
Improved/increased bike parking and bike parking phone app (portable bicycle racks)	2.7%	18
Safety programming (sale/donation of bike lights, helmets, etc.)	2.1%	15
Totals	**100%**	**702**

The most popular "big idea" among workshop attendees – approximately 24 percent – indicated that their most preferred idea was to improve the bikeway network connectivity and expand linkages to open space, including neighborhood parks, Forest Preserves, and the Des Plaines River Trail. The next popular big idea, which came in very close to the first idea with 23 percent of the votes, was the need for increased signage and visible bicycle striping throughout the Village. As the third top big idea, approximately 15 percent of the participants voted for the need of overpasses and underpasses along Northwest Highway, Palatine Road, Rand Road, and Arlington Heights Road commonly referred to as the "Rand-Palatine-Arlington Heights Road Triangle," and Interstate 90.

Chapter 4
BICYCLE AND PEDESTRIAN NETWORK



This chapter focuses on ways to build upon and enhance the Village of Arlington Heights' existing bicycle and pedestrian network and related infrastructure to create a more complete, interconnected, and robust system, which provides access to important destinations, neighboring communities, and bikeways. The chapter provides examples of potential bicycle and pedestrian facilities and treatments to help achieve a complete, connected system of bikeways and pedestrian routes. Village planners, engineers, public works and other staff, as well as elected officials, should reference this chapter to address gaps and inadequacies in the proposed active transportation network and at other locations throughout the Village, using the described or similar facilities and treatments. The recommended network and infrastructure modifications presented here consist of a variety of facility types and corresponding improvements to enhance circulation and safety for bicyclists and pedestrians, as well as motorists.

Recommendations Framework

Infrastructure and engineering improvements – combined with educational, encouragement, and enforcement policies and programs to promote bicycling and walking (see ***Chapter 5***) – are a necessary part of any comprehensive strategy to become more bicycle- and walk-friendly. Specific network recommendations for new and enhanced facilities and associated infrastructure are aimed at upgrading and expanding the existing system of signed on-street bike routes and existing bike parking. Recommendations are also made for adding new pedestrian and bicycle connections and for improving difficult crossings, to provide better access and mobility and to increase the safety, comfort, and convenience of people walking and bicycling. Another important goal for the network is to improve conditions for bicycling and walking within and between Village neighborhoods and key destinations, which include schools, Village services, shopping, employment, public transit, residential neighborhoods, parks and forest preserves, neighboring communities, and regional trails. Those linkages are reflected in the proposed network, which will aid the Village in directing infrastructure investments.

Together, these recommendations will help the Village increase bicycling and walking both for transportation and for recreation, obtain Bicycle Friendly Community status (in the League of American Bicyclists program), and achieve key municipal goals related to sustainability, equity, safety, health, community character, and economic development. It should be noted that all of the infrastructure recommendations presented here are planning-level and conceptual in nature and will require further engineering study in order to determine potential constraints, feasibility, design details, and full traffic impacts, as well as the costs associated with engineering, construction, and maintenance.

Overarching Goals

Two overarching goals and associated objectives have been identified for the recommendations of this chapter. These goals are intended to guide the Village in making modifications and improvements to the transportation system and are highlighted here to ensure that changes made at specific locations reflect and advance the purpose and vision of the plan.

Goal 1: Improve safety for all pedestrians, cyclists, and motorists within the Village.

- Increase motorists' awareness of designated bicycle and pedestrian routes, crossing locations, and conflict points through improved visibility and enhanced traffic control devices.
- Provide and clearly mark adequate space for bicyclists and pedestrians.
- Slow traffic in locations where higher speeds can endanger cyclists and pedestrians.

Goal 2: Increase the convenience, comfort, and ease of cycling and walking in the Village.

- Improve existing and add new bicycle parking facilities.
- Improve signalized intersections with bicycle and pedestrian detection / signals.
- Improve wayfinding and signage for bicyclists and pedestrians.
- Ensure that bicycle and pedestrian routes that are safe for all users connect all parts of the Village.

Past Plans and Studies

The goals and supporting recommendations were created based upon public input received during the planning process, analysis of existing conditions, and previous planning and policy documents including the Village of Arlington Heights':

- Bikeways Map (last updated, 2014);
- Bicycle Policy Plan (1996);
- Thoroughfare and Transportation Policy Plan (2012);
- Comprehensive Plan (1997)
- Future Land Use Map Update (2013)
- Complete Streets Policy (2013); and
- Capital Improvement Program (2016-2020).

Proposed Bicycle and Pedestrian Network

The proposed bicycle and pedestrian network (***Figure 4.1***) aims to create a safe and efficient system that connects residents with key community destinations. It consists of existing, planned, and potential bicycle routes as indicated in the Village Bikeways Map, as well as new or altered routes and connections to improve access to important destinations. The proposed bikeways consist of both on-street and off-street facilities. Proposed pedestrian facilities consist of new sidewalks at select locations. Improvements at intersections and other "spot" locations are also proposed and discussed below.

Using steering committee and focus group input, feedback received through the plan's public outreach and engagement process, Existing Conditions Report analysis, and Strava data, ***Figure 4.1*** also identifies a network of "framework" routes intended to serve as the core, or "backbone," of the larger bikeway network. The framework routes, which make important connections to neighboring communities and key bikeways outside Arlington Heights, also link shorter, more localized routes. There are two north-south framework routes (the "Kennicott Route" and the "Dryden/Douglas Route,") and nine east-west framework routes. The framework routes should be seen as priorities for investment and intensified efforts to improve conditions for cycling (and walking). In a few instances, potential alternate framework routes are provided. Final routing, as well as facility type, will be determined by Village and the BPAC through further engineering studies and by the implementation of associated improvements.

One way to think of the proposed framework routes is as a network of bicycle boulevards or neighborhood greenways[7], which are relatively low-speed, low-volume streets that are designed to calm traffic, discourage cut-through motor-vehicle traffic, and prioritize bicycling. Bicycle boulevards are typically signed and branded, and include a variety of traffic calming treatments such as speed humps, medians, diverters, in-street stop-for-pedestrians signs, and/or lower speed limits. They also include crossing improvements to increase the safety, comfort, and convenience of cyclists and pedestrians at intersections, including bicyclist detection technology at signal-controlled locations. The framework routes should be prioritized for

[7] More information on bicycle boulevards can be found in NACTO's Urban Bikeway Design Guide, at http://nacto.org/publication/urban-bikeway-design-guide/bicycle-boulevards/. See also the City of Berkeley, CA Bicycle Boulevard program webpage, at https://www.cityofberkeley.info/bicycleboulevards/. Portland State University's Initiative for Bicycle and Pedestrian Innovation has produced a Bicycle Boulevard Planning & Design Guidebook, at https://www.pdx.edu/ibpi/bicycle-boulevard-planning-design-guidebook.

Facility Types

The recommended bicycle and pedestrian network includes a variety of facility types, including both on-street and off-street facilities, as illustrated on ***Figure 4.1***.

Off-street facilities include:

- multi-use paths (trails, sidepaths, and short cut-throughs or connectors); and
- sidewalks.

On-street facility types include:

- bike lanes (traditional, buffered/protected, advisory);
- marked shared lanes (sharrows);
- combination bicycle-parking lanes; and
- signed bicycle routes.

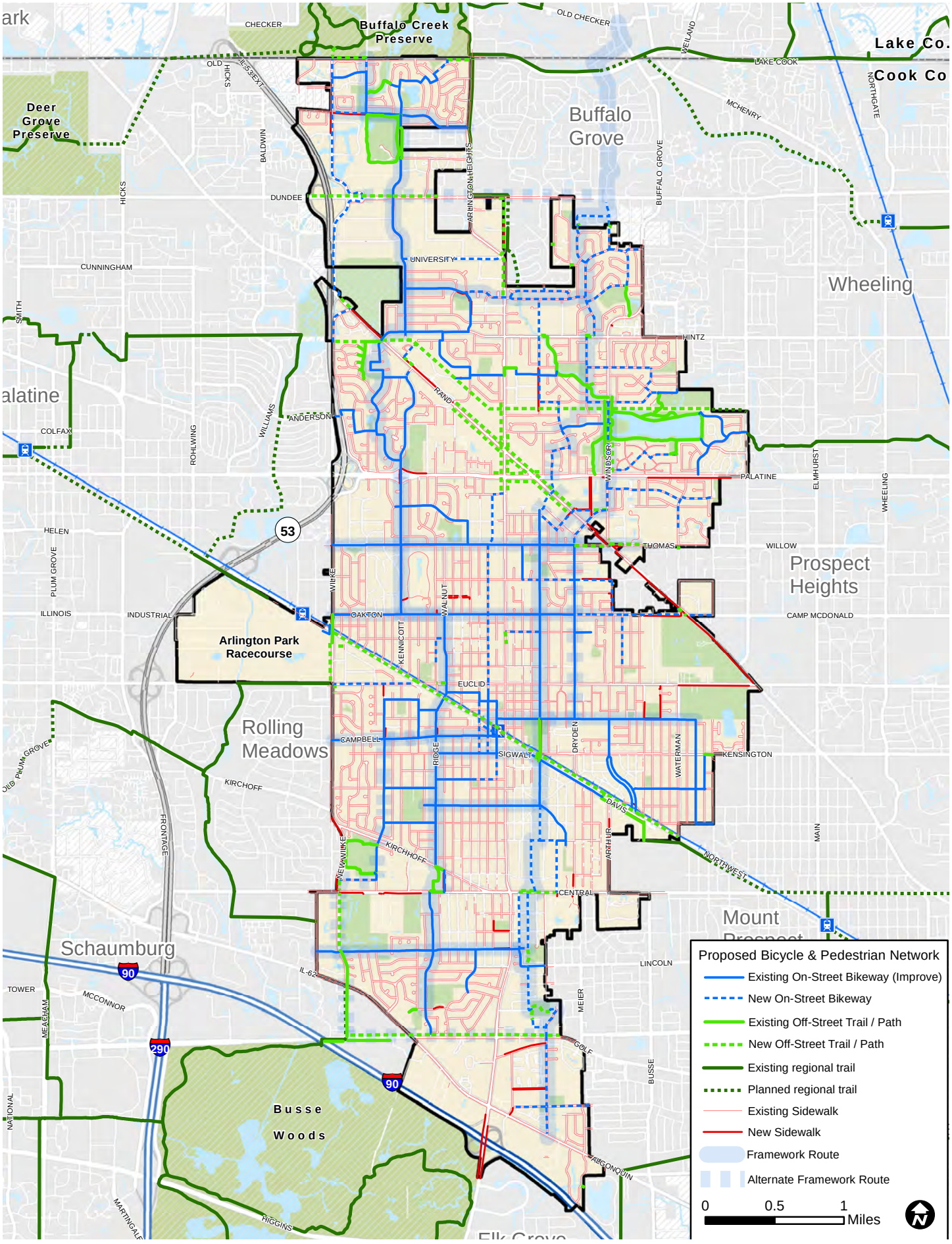
In addition to (linear) bicycle, walking, and multi-use facilities, spot improvements (primarily at intersections), as well as traffic calming treatments are recommended for locations along the proposed network routes.

In the pages that follow, information and recommendations for these three main facility types – on- and off-street bicycle and pedestrian facilities, and intersection improvements and traffic calming treatments – are described in greater detail, sub-divided when necessary, with definitions, design guidelines, typical cross sections, illustrations, examples, and maps of recommended potential locations provided. Facility recommendations will require engineering studies to determine feasibility.

Typical cross-sections and illustrations

Cross-sections provided throughout this plan are intended as general guidance for creating new or retrofitting existing facilities to more fully accommodate bicyclists and pedestrians. Whenever possible, locations of specific plan recommendations are used.

Figure 4.1 - Proposed Bicycle and Pedestrian Network (On-street and Off-street) and Framework Routes



Multi-use Path Definitions and Design Guidelines

Multi-use paths are off-street facilities that are shared by multiple users. For bicyclists, multi-use paths can enhance network connectivity, filling in gaps where the street network is not complete or cannot accommodate bike facilities. For pedestrians, bicyclists, and other users, multi-use paths serve both recreational and transportation purposes.

Trails

Trails are typically associated with open space and recreational use, and are intended to bring users into contact with nature, while sidepaths are strongly connected with the adjacent roadway and are, in essence, a kind of a hybrid between a sidewalk and a trail. Sidepaths, as well as short trail segments, often serve as both local access routes and as links in a larger trail network.

Design Guidelines

Trails should be at least ten feet wide and include a two foot graded area (on each side) for clearance from lateral obstructions such as vegetation and poles. Trails and sidepaths should be paved asphalt or smooth concrete to accommodate a variety of users. Multi-use trails and sidepaths should be designed to accommodate two-way travel. Depending on path usage and volumes, a painted center stripe may be used to demark two-way travel.

Cross-sections

Figure 4.2 offers typical cross-sections (existing and recommended) for multi-use trails. ***Figures 4.3-4.4*** show examples of existing trails in Arlington Heights and illustrate typical issues and opportunities for recommended trail improvements.

- ***Existing Conditions:*** This cross-section illustrates the current multi-use trails that exist in various locations in the Village. The trails vary in width from six to eight feet. The asphalt trails, in some cases, are in poor condition.
- ***Recommendation:*** The existing trails owned by the Village should be widened, whenever possible, to a minimum of ten feet with two foot clearance zones on each side.

Figure 4.2 - Trail cross-sections

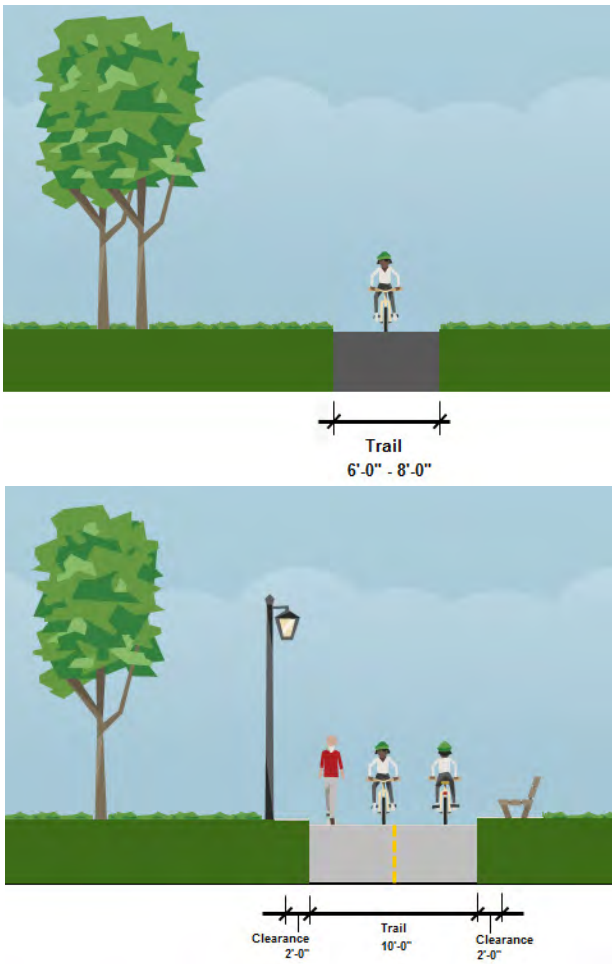


Figure 4.3 - Existing Willow Park trails

Figure 4.4 - Existing Centennial Park trail

Sidepaths

Sidepaths, generally, are a good option along high-speed, high-volume corridors with wide block/driveway spacing. Here, they provide access for pedestrians and for bicyclists who are not comfortable riding in heavy traffic. Whenever possible, sidepaths (like sidewalks) should be separated from the roadway by a vegetated buffer strip.

Sidepaths are most successfully implemented as part of new development, where access management can be implemented at the same time that development occurs. In mature, built-out communities like Arlington Heights, constructing sidepaths (or widening sidewalks) can be difficult, due to right-of-way constraints, the presence of utilities, and high number of driveways. In such contexts, sidepaths typically work best as short segments along and at crossings of busy streets, which connect to lower-stress bike routes along local streets. A number of short sidepaths that function in this manner are recommended, including at locations at which proposed bikeways cross Hintz and Central Roads.

Design Guidelines

Sidepaths should be a minimum of eight feet wide; however, ten feet or wider is recommended. A minimum planted buffer strip of five feet between path and roadway is recommended. If this buffer space is not available, then a striped shoulder or parking lane can provide separation from traffic. In constrained contexts, a barrier wall, may be necessary. If a shared-use path is on one side of the street only, safe, adequate, and adequately-spaced crossing accommodations must be provided to access land uses on the other side of the roadway. Special care should be taken to design driveway and intersection crossings – and to minimize their number, to the extent possible – in order to reduce potential conflicts.

Sidepaths should be utilized and promoted as bikeways only where the volume and speeds on the adjacent roadway would discourage the majority of bicyclists from riding in traffic, and where there are no practical alternatives for either improving the adjacent roadway or accommodating bicyclists on nearby parallel streets. In addition, it is important that sidepaths functioning as designated bikeways lead cyclists directly to streets that safely accommodate bicyclists, to another multi-use path, and/or to an intersection or other crossing locations where bicyclists crossings, queuing requirements, and detection are provided.

Cross-sections

Figures 4.5-4.6 provide examples of two existing cross-sections along Rand Road, which are typical of large arterials throughout Arlington Heights, as well as potential reconfigurations that include sidepaths and buffered parkways. In the first proposed reconfiguration, minimal-width sidepaths and planted buffer strips would be achieved by narrowing travel lanes.

In the second, a potential road diet provides space for sidepaths and buffer areas, as well as other amenities. The latter would improve livability and safety, and provide opportunities for place-making along Rand Road. It is provided here merely as an example of such a treatment.

Figure 4.5 (a) - Existing Cross-section: Typical Large Arterial (Arlington Heights Rd. near Golf Rd.)

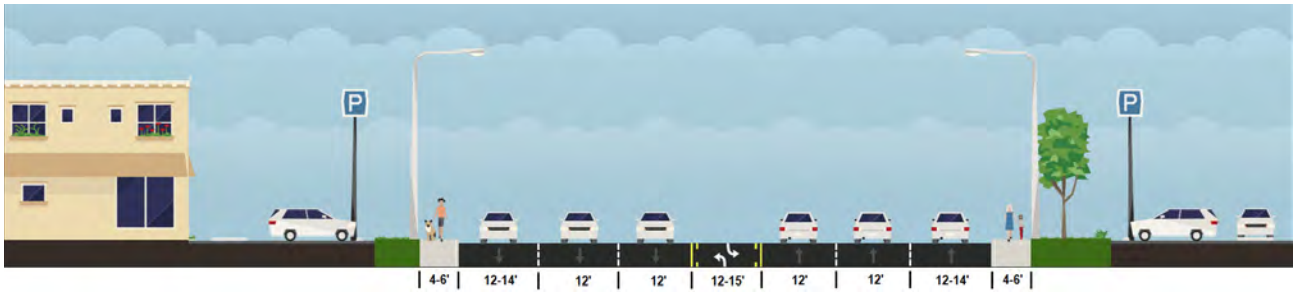


Figure 4.5 (b) - Existing Cross-section: Typical Large Arterial (Rand Rd. near "Triangle District")

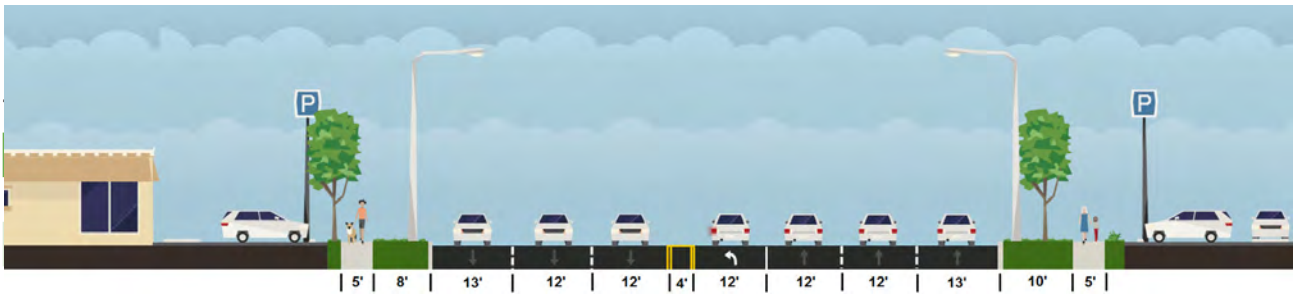


Figure 4.6 (a) - Proposed Cross-section: Arterial Buffered Sidepath (Rand Rd.)

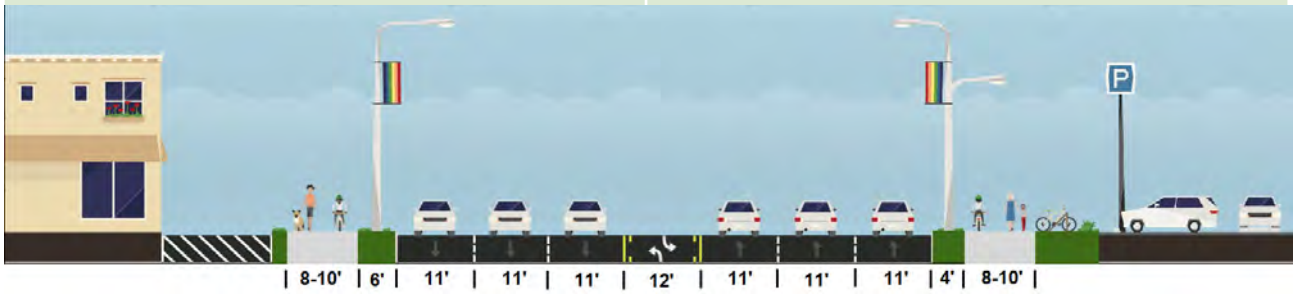


Figure 4.6 (b) - Proposed Cross-section: Arterial Buffered Sidepath and Road Diet (Rand Rd.)

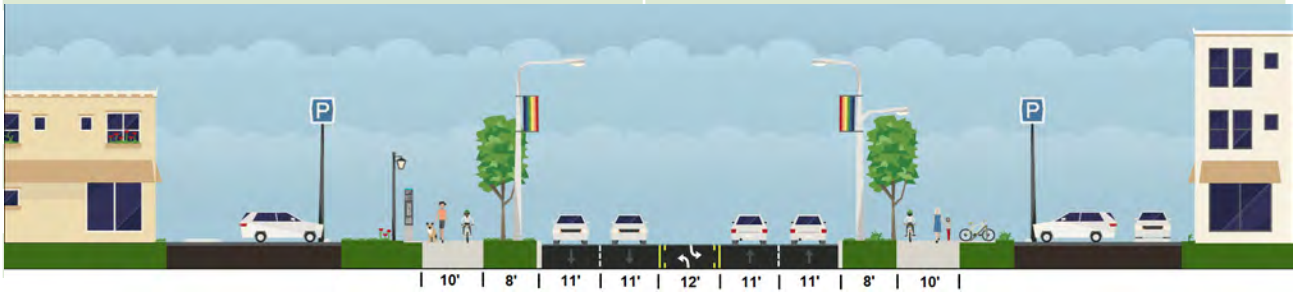


Figure 4.7 shows existing and proposed cross-sections for a sidepath (upgraded from the existing sidewalk) on one side of Hintz Road, where a raised center median and other improvements are recommended. This sidepath provides a short, safe connection along a proposed bikeway at the crossing of a busy arterial.

Figure 4.7 (a) - Existing Cross-section: Hintz Rd.

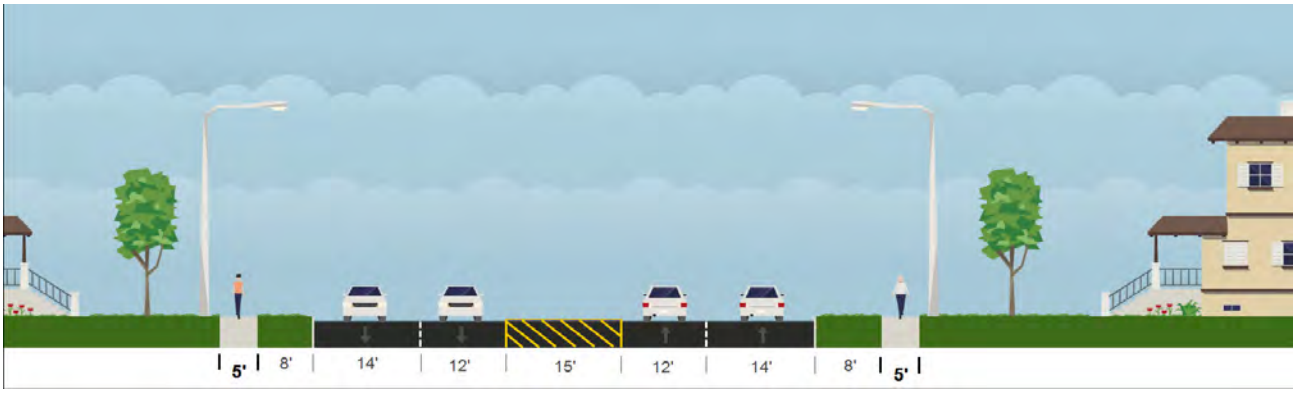
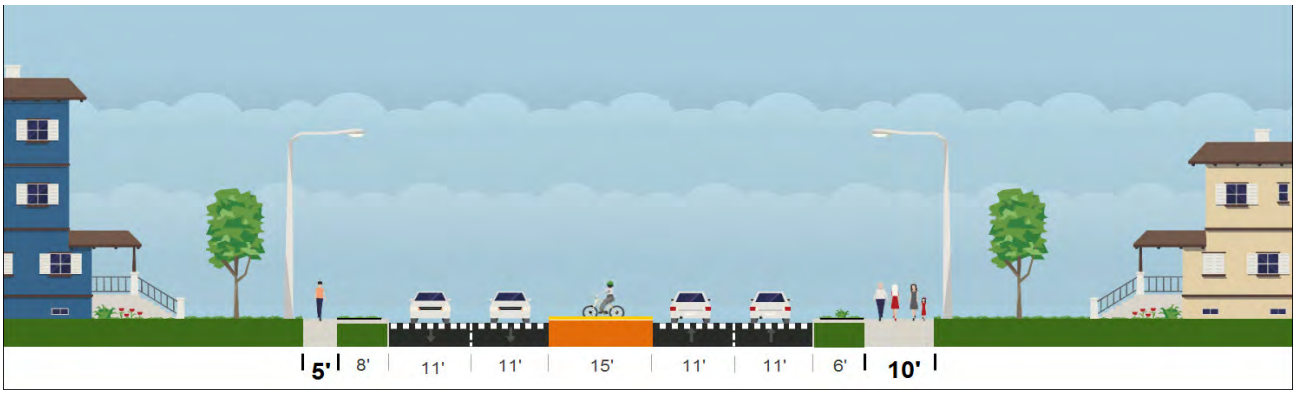


Figure 4.7 (b) - Proposed Cross-section: Hintz Rd. with Sidepath and Median Refuge Island



Cut-throughs

Cut-throughs are relatively short multi-use paths between roadways, utilizing easements between homes, utility ROW, small parks, and other available spaces and/or infrastructure. Connectors are short links between a roadway and an adjacent or nearby path. Existing cut-throughs and connectors range from formal (essentially, part of the Village sidewalk network) to informal (e.g. open gates or walkways between private properties). Some run between two residential streets or subdivisions; others connect to community destinations or retail areas. Cut-throughs are maintained by various entities, including the Village, the Park District, homeowners associations, and private businesses. Several existing and proposed cut-throughs and connectors are located on the border of Arlington Heights and neighboring communities. More formal cut-throughs include the underpass at Douglas and the Union Pacific rail line, as well as the bridge between Brookwood Drive and Camelot Park.

Examples of less formal cut-throughs include:

- Sidewalk off of Dorothy Ave./Charles St., leading to a shopping center along Rand Road
- Gate/pathway from the end of Grindel Drive to the Central Park East apartments
- Driveway along N. Harvard Avenue, at Thurston Pl., which leads to a path in Creekside Park.

Design Guidelines

Existing **cut-throughs** typically consist of four to five-foot wide concrete sidewalks, often within wider easements; when functioning solely as sidewalks, cut-throughs should be a minimum of five feet wide. Cut-throughs that form part of the bikeway network should be renovated and upgraded to eight to ten-foot wide asphalt or concrete pathways. In some cases, such as at the Douglas Ave/UP-NW rail line underpass or along Kennicott Avenue at Nichol Knoll Park, broader intersection and roadway reconfiguration, including the addition of new crossings, queuing areas, curb ramps and other design treatments may be necessary. At all cut-through, connector, or transition locations that are part of designated bike routes, bike route signage should be included to provide clear, convenient wayfinding and navigation.

Cross-sections

Although there is substantial variation in the nature, function, and design of cut-throughs, ***Figure 4.8*** offers typical cross-sections (existing and proposed) for cut-throughs between two residential properties.

Figure 4.8 (a) - Existing Cross-section: Cut-through Sidewalk

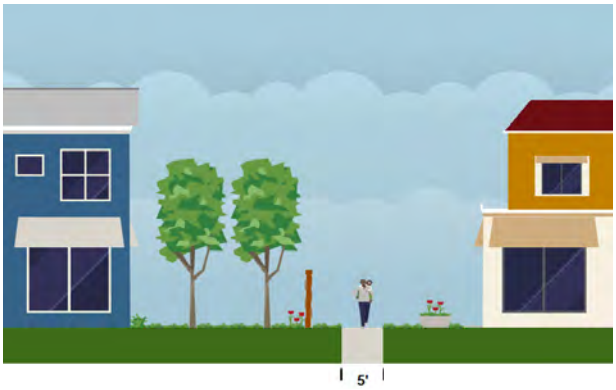


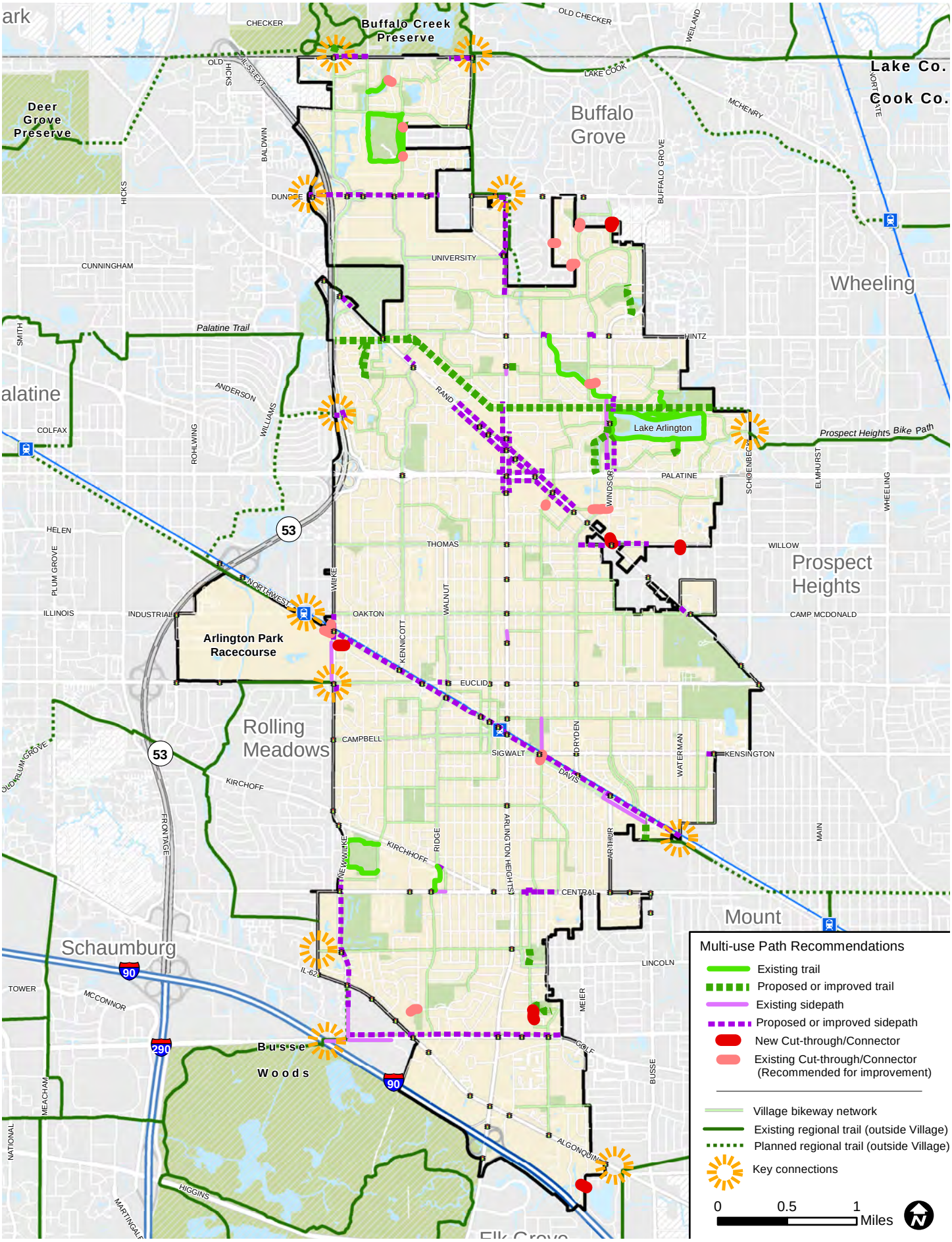
Figure 4.8 (b) - Proposed Cross-section: Cut-through Bikeway

Multi-use Path Recommendations

Figure 4.9 shows all multi-use path recommendations – including trails, sidepaths, and cut-throughs and connectors. As is shown on the map, a number of these facility types already exist throughout the Village. While some of the existing paths may adhere to recommended design guidelines for each facility type, many do not. A medium- to long-term goal for the Village and the Park District, therefore, should be to improve and widen existing paths and sidewalks that form part of the bikeway network or that provide key access to it. Improved – as well as new – multi-use paths should be designed and constructed to meet the design standards provided for each facility type in order to safely and comfortably accommodate all users, including bicyclists. Reconstruction also provides the opportunity to ensure that shared-use paths comply with ADA requirements.

In addition to widening and related improvements, a commitment to path maintenance (crack-sealing, resurfacing, sweeping, plowing, vegetation control) is important. Off-street multi-use paths that serve as bicycle routes and connect to on-street facilities should include ramps at all access or transition points, which can accommodate the typical speeds, volumes, and angles of approach used by cyclists. In addition, bikeway signage should be installed, especially at points where off-street paths connect to on-street facilities and/or to regional trails at the Village border.

Figure 4.9 - Multi-use path recommendations



Trails

The plan identifies three high priority multi-use trail projects. One entails construction of a new trail in the ComEd ROW (north of Rand Road), while the remaining two involve access to existing, popular regional trails (Buffalo Creek and Busse Woods). These projects are recommended for mid- to long-term implementation. All involve roadway crossings that would include intersection improvements requiring more detailed engineering studies to implement.

Trail in ComEd ROW

We recommend that the Village pursue construction of a trail in the ComEd right-of-way, north of Rand Road, between Schoenbeck Road and Hintz/Rand Road. This trail was identified as a high priority by AH BPAC and other stakeholders. The trail is indicated on Arlington Heights 2014 Bikeways Map as a "Potential Bikeway" and also identified as a regional trail corridor in CMAP's Regional Greenways and Trails Plan. This trail, while conceptually straight-forward and clearly of high value for regional connectivity, would entail significant investment on the part of the Village and should therefore be thought of as long-term in nature.

While the project would be eligible for funding under federal programs such as Transportation Alternative Program (TAP), Congestion Mitigation & Air Quality Improvement Program (CMAQ), Surface Transportation Program (STP), and Illinois Transportation Enhancement Program (ITEP), the Village would likely need fund for Phase 1 engineering and/or the 20 percent local match for construction costs, as well as obtain a lease or easement from ComEd. The state ITEP program could be a potential source of funding for Phase 1.

The eastern end of the proposed trail would connect to the Lake Arlington (loop) Trail and to the Prospect Heights Bike Path. At its western end, it would connect to the Palatine Trail. Both the Prospect Heights Bike Path and the Palatine Trail utilize the same ComEd ROW as is proposed for the Arlington Heights trail. These existing facilities constitute major regional trails that provide access to multiple communities, destinations, and other regional bikeways, and serve both recreational and transportation purposes. The proposed ComEd trail in Arlington Heights would, therefore, fill a major "gap" in the regional network. Within the boundaries of Arlington Heights itself, the proposed trail would provide a cross-Village route linking numerous parks, schools, neighborhoods, commercial areas (along and near Rand Road), as well as other existing and proposed bikeways.

As illustrated in ***Figure 4.10***, the ComEd trail will involve crossings (either at-grade or separated) of several major and minor roads; each crossing will need to be carefully analyzed and engineered to ensure the safety and comfort of all trail users.

Figure 4.10 - Trail in ComEd ROW

Buffalo Creek Preserve Trail Access

There is currently no safe and convenient crossing of Lake Cook Road for cyclists utilizing the popular Kennicott (framework) bike route to access the Buffalo Creek Forest Preserve, its trail, and/or points further north and west. This route is very popular with cyclists and was identified as a high priority project by the Arlington Heights Bicycle Club and other bicycling (and pedestrian) stakeholders. Existing conditions are illustrated in ***Figure 4.11***.

We recommend that the Village work with the Cook County Department of Transportation and Highways (DOTH), which has jurisdiction over Lake Cook Road in this area, and the Lake County Forest Preserve District, in order to identify and implement a safe crossing and connection to the Buffalo Creek Preserve, either at the existing signalized intersection (Wilke and Lake Cook Road) or at Schaefer Road, where many cyclists currently, and with substantial risk, cross Lake Cook Road in order to access Buffalo Creek Preserve and points beyond.

The simplest, preferred option for achieving this connection would be to relocate the signal from Wilke to Schaefer Road, installing bicycle-friendly actuation and other related safety treatments at the new signalized intersection. This option would require approval and programming by Cook County DOTH and IDOT, with input from Lake County DOT and surrounding municipalities.

Other options for creating this connection include:

- Installation of a Pedestrian Hybrid Beacon (PHB) at Schaefer Road. Note that additional associated safety treatments should be included as part of PHB installation, including, if feasible, a raised center median.
- Creation of a multi-use path connection at the existing signalized intersection (at Wilke). This connection could take the form of a trail running from the north side of the intersection to the existing Buffalo Creek Trail, or of a sidepath, on the north side of Lake Cook Road, running from the the intersection back to the Schaefer Road bikeway.
- Installation of a new signal at Schaefer Road, while maintaining the existing signal at Wilke. This, and other options, would require an engineering study to determine impacts and feasibility. The distance between Wilke and Schaefer Raods is approximately 0.25 miles. Nearby signals, approximately 2 miles east along Lake Cook Road at McHenry and Buffalo Grove Roads, are spaced 0.14 miles apart.

Conceptual illustrations of these options are provided in *Appendix C*.

Figure 4.11 - Existing conditions at Wilke/Schaefer and Lake-Cook Roads

Busse Woods Trail Access

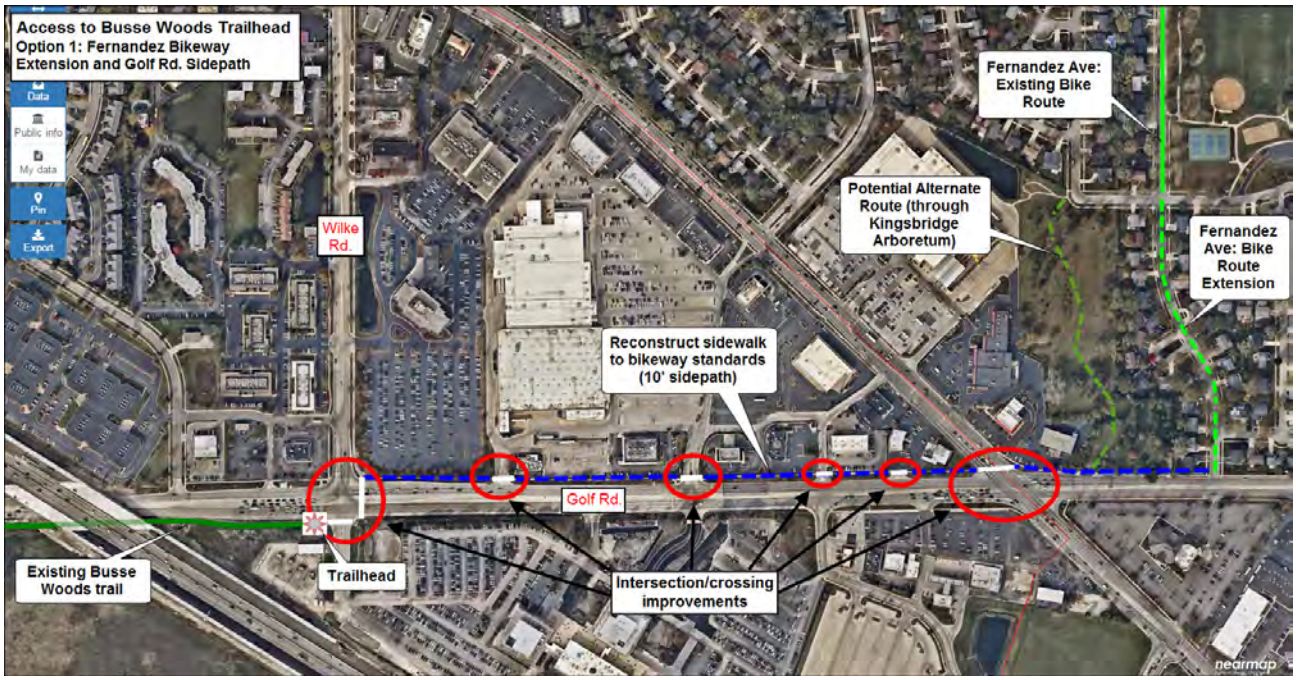
A safe and convenient bicycle route from the Village of Arlington Heights to the Busse Woods Trail was identified by the BPAC, the Arlington Heights Bicycle Club, other stakeholders, and the public at large as a high priority. The trail's regional importance as both a recreational amenity and a transportation facility, the access it provides to key destinations, and its popularity with Arlington Heights residents and bicyclists emerged clearly during the existing conditions analysis and public engagement processes. The primary trailhead serving Arlington Heights residents is located just outside the Village, in Rolling Meadows, at the southwest corner of Golf and Wilke Roads. The plan recommends, therefore, that the Village work with the City of Rolling Meadows – as well as IDOT, who has jurisdiction over both Golf and Algonquin Roads – to create this connection, which would increase safe access to shopping and dining destinations.

The preferred option for this connection entails extending the existing signed on-street bike route along Fernandez Avenue south to Golf Road.

From there, the existing sidewalk along the north side of Golf would be widened and improved to bikeway standards (eight to ten foot wide sidepath) to the intersection of Golf and Wilke, where the Busse Woods Trail begins. Several crossings of major roads (Algonquin, Golf, and Wilke) and shopping center entrance drives would need to be improved in order to increase safety, visibility, and wayfinding for cyclists (and pedestrians). Information on design guidance and best practices for the accommodation of shared use paths at signalized intersections can be found in ***Appendix D***. Examples/photographs of bicycle and pedestrian accommodation at intersections of large, multi-lane, high-speed, high-volume roads are provided in ***Appendix E***. ***Figure 4.12*** illustrates the proposed route and improvements. An alternative route (also shown in ***Figure 4.12***) would entail construction of a new trail in the Kingsbridge Arboretum.

Other potential options for providing bicycle access to the Busse Woods trailhead at Golf and Wilke are discussed in ***Appendix F***. All options – including the preferred option presented above – will require study by engineers in order to determine potential trade-offs (in traffic flows), safety concerns, and costs. Planning-level analysis indicates that the preferred option may be the least costly and most feasible of alternatives.

Figure 4.12 - Proposed bike route to Busse Woods trailhead



Sidepaths

Sidepaths are recommended along several arterial corridors, including Golf Road, Northwest Highway, and Dundee Road (indicated in the Northwest Municipal Conference "2010 Bicycle Plan"), as well as for segments of Windsor, Wilke, Rand, and Arlington Heights Roads in the "Triangle District". Relatively short segments of sidepath, that provide a connection (at crossing locations of larger, high-volume roads along framework bicycle routes) or a spur route to important destinations that can otherwise be reached by bicyclists only by riding on sidewalks are also recommended. ***Appendix G*** provides detailed information on additional sidepath recommendations not illustrated here.

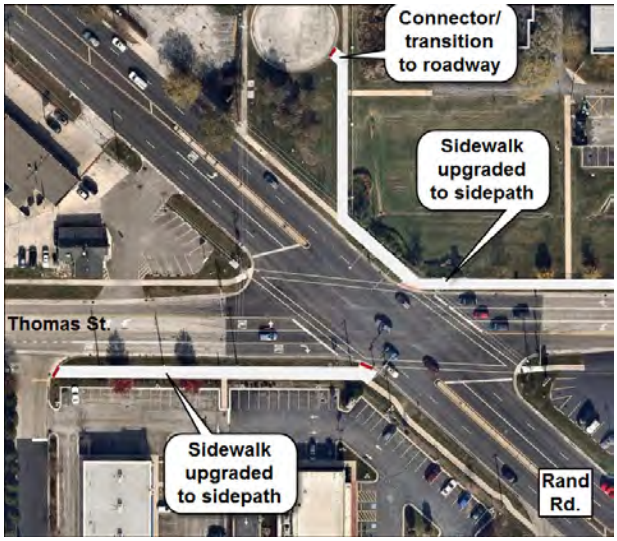
The majority of proposed sidepaths are located along IDOT and Cook County roads. At least two – Windsor Drive and Wilke Road – are under local jurisdiction, while Kirchhoff and Old Arlington Heights Roads are under joint state/local jurisdiction. Prioritizing and advancing sidepath construction along roadways under IDOT and Cook County jurisdiction is a challenge since these agencies control the right-of-way and the programming of projects on their facilities. It should be noted, however, that both the state and Cook County have adopted Complete Streets policies, which express a commitment to designing and constructing roads and associated rights-of-way to accommodate all roadway users in all projects they undertake.

Because most of the roads, along which sidepaths are recommended, are under IDOT or Cook County jurisdiction, the Village should actively monitor these agencies' multi-year programs and, when projects are being planned or advanced, the Village should work closely with these agencies' staff to ensure that sidepaths are included in project scoping and design. The Village should initiate discussions with IDOT and Cook County regarding state and county roads along which sidepaths are prioritized. That discussion should include the identification of locations where there is need for safer, more visible pedestrian and bicycle crossings, as well as what potential treatments and designs would be most effective for achieving pedestrian and bicycle safety, mobility, and access (at signalized, stop-controlled, and uncontrolled intersections). It should be noted that when reconstruction of a roadway corridor is programmed, sidepaths of suitable width with protective buffers may be achieved by narrowing travel lanes or by a reduction in the number of lanes.

Beyond issues related to roadway jurisdiction, the feasibility and the cost of upgrading sidewalks to sidepaths or of constructing new sidepaths can be significantly influenced by the need for right-of-way acquisition, utility relocation, removal of trees and other vegetation, stormwater management, and environmental mitigation. For this reason, feasibility studies or preliminary engineering, as well as public outreach and engagement targeted at affected property owners, must be carried out for each project in order to determine all constraints, trade-offs, and costs.

Figure 4.13 illustrates the recommendation for upgrading sidewalks along Thomas Street at Rand Road to sidepaths, as well as creating a new cut-through connection from an existing cul-de-sac (to improve bicycle and pedestrian access to John Hersey High School, located just east of the intersection).

Figure 4.13 - Sidepaths and connector at Thomas and Rand (in Arlington Heights and Prospect Heights)



Sidepaths at Uncontrolled Crossings

A significant number of proposed sidepaths consist of fairly short segments located along framework bicycle routes. These sidepaths can be achieved by upgrading existing standard sidewalks and are designed, in most cases, to provide safe access from an (improved) bicycle and pedestrian crossing location (over multilane, high-volume, high-speed roads) to the low-volume neighborhood streets along which the framework bicycle route continues. Some of the proposed sidepaths lead cyclists to signalized intersections in order to safely cross a busy road; others lead to uncontrolled crossings. In cases of the latter, short sidepath installations are typically combined with the construction of a raised center median to increase the safety of the crossing. At such locations, additional safety treatments, including the installation of a pedestrian hybrid or rectangular rapid flashing beacon, enhanced crosswalk markings, and appropriate warning, regulatory, and wayfinding signage are typically required. Conceptual illustrations of recommendations for two locations, along Hintz Road and one along Central Road, are provided below (*Figures 4.14 to 4.16*).

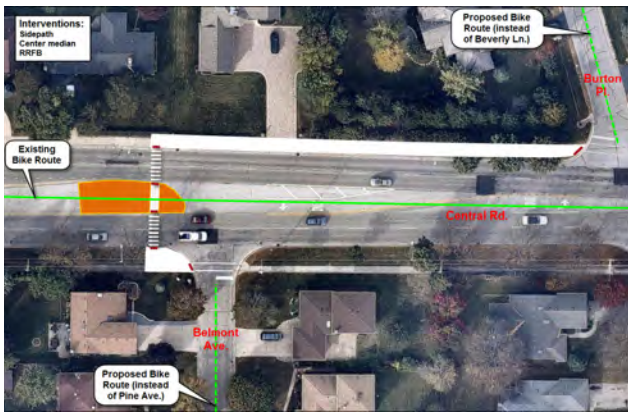
Figure 4.14 - Sidepath (and center refuge island) on Hintz at Brighton/Windsor

*Hintz at Brighton-Windsor - Sidepath on south side, with raised center median (Note: See **Appendix H** for illustration of alternate design concept, with sidepath along north side of Hintz).*

Figure 4.15 - Sidepaths (and center refuge island) on Hintz at Bradford/Vista

Hintz crossing at Vista-Bradford

Figure 4.16 - Sidepath (and center refuge island) on Central at Belmont/Burton



*Central at Burton-Belmont - Sidepath on north side, with raised center median (Note: See **Appendix H** for illustration of alternate design concept, with sidepath along south side of Central).*

Triangle District

A number of sidepaths are proposed in the Triangle District (the area formed by the intersections of Arlington Heights, Palatine, and Rand Roads). All proposed sidepaths would be created by widening existing standard-width sidewalks. ADA-compliance should be adhered to in all new construction and in retrofits. Triangle District improvements (sidepaths and associated intersection improvements) were identified by the BPAC as a high priority, with a goal of creating safer, more convenient bicyclist and pedestrian access to this busy commercial area.

The challenges that the Triangle District presents to bicyclists and pedestrians are the result of development patterns (large, auto-oriented "strip style" shopping centers) and the nexus of wide, high-speed, high-volume roads (conditions similar to those found in the southern part of the Village where Golf, Algonquin, and Arlington Heights Roads converge). For pedestrians, the main issues are safe crossings of arterial roads and ADA accessibility. For cyclists, the main issue is lack of comfortable routes to, from, and within the Triangle area (which do not utilize the existing standard-width sidewalks). While the construction of accessible sidepaths and improved crossings will address these key issues, wayfinding signage and bicycle detection technology at signalized intersections along bicycle routes leading to the Triangle area are also important. For more information on bicycle detection technology, see ***Appendix I***.

The locations of proposed sidepaths are determined by the need to connect existing or planned bikeways on lower volume, lower speed local streets to the retail area bounded by large, busy arterials that are not suitable for on-street cycling. The installation of sidepaths should be accompanied by bicycle- and pedestrian-friendly intersection improvements and by new or improved wayfinding signage. (For additional information on typical intersection improvements, see the section on intersection improvements, below, as well as ***Appendix A***. More information on bikeway signage is provided in the section on signed bike routes).

Taken together, the proposed sidepaths and associated intersection improvements in the Triangle District represent a substantial, long-term investment. Engineering analysis would need to be undertaken to determine the feasibility and cost of widening the sidewalks to sidepaths. Existing landscaping, trees, signage, property encroachments, utilities, drainage infrastructure, and other roadside infrastructure and appurtenances may need to be moved, removed, or may in some other way be affected by the construction of sidepaths. ***Figure 4.17*** schematically illustrates the suggested improvements in the Triangle District.

Figure 4.17 - Triangle District improvements

Kennicott and Palatine

Sidepaths (new and upgraded existing sidewalks), together with associated intersection improvements, are also recommended along Kennicott Avenue at Palatine Road. This intersection is on the popular segment of the Kennicott bicycle framework route and is currently signed as a bike route (although signage is lacking in places, in poor condition in others, and does not consistently provide destination or distance information). This crossing was identified as a major barrier by the BPAC. The challenges to creating a safe crossing here are compounded by the width of Palatine Road, signal timing, lack of sidewalks (and signal actuation) on the west side of Kennicott, and the presence of service roads and ramps.

The proposed design concept calls for sidepaths to be constructed on the east and west sides of Kennicott (at Palatine Road). ***Figure 4.18*** provides a schematic illustration and ***Figure 4.19*** provides a more detailed version of this concept, with additional safety treatments (widened center medians on Palatine Rd, raised corner ("pork chop") islands, additional high-visibility crosswalks on the north and south legs and at the ramps to/from the frontage roads).

Examples of large, arterial intersections where similar design treatments and concepts (aimed at accommodating bicyclists and pedestrians) are provided in ***Appendix E***.

Figure 4.18 - Kennicott-Palatine improvements

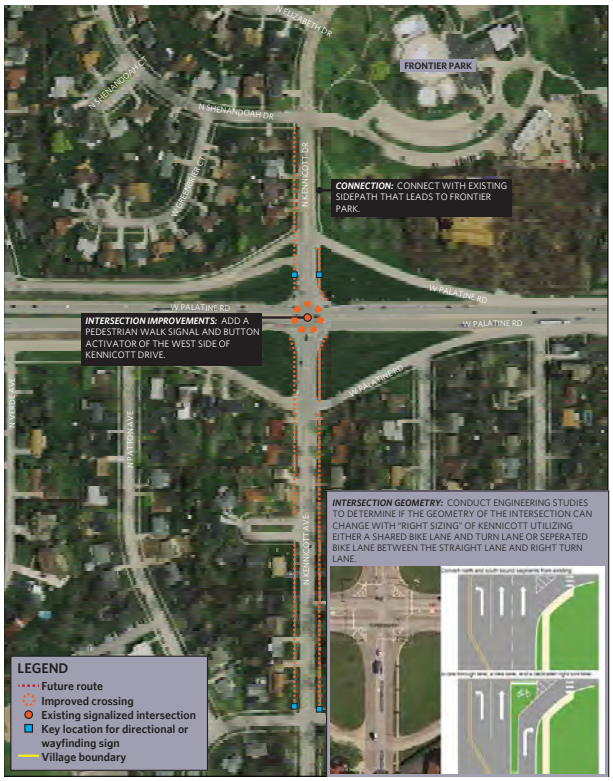


Figure 4.19 - Sidepaths on Kennicott at Palatine

Two alternative design concepts for this intersection, both of which maintain an on-road position for cyclists traveling along Kennicott, are shown in ***Figures 4.20 and 4.21***. One concept utilizes green-backed sharrow markings, while the other calls for buffered bike lanes, on approaches, with bike lane markings continuing through the intersection. Room for the buffered bike lanes is created by eliminating one of the two through-lanes in each direction on Kennicott (i.e. through implementation of a road diet on the approaches to Palatine Road).

A road diet at this location appears to be feasible, given the low ADT (2,600 to 3,700) and the fact that Kennicott narrows to a two lane road beyond this intersection, although an engineering study would need to be undertaken to determine feasibility. Both design concepts include installation of sidewalks on the west side of Kennicott, as well as other improvements to increase the safety and comfort of both bicyclists and pedestrians. Both sidepaths and on-street bikeways at this location would help to accommodate cyclists of differing abilities and levels of confidence.

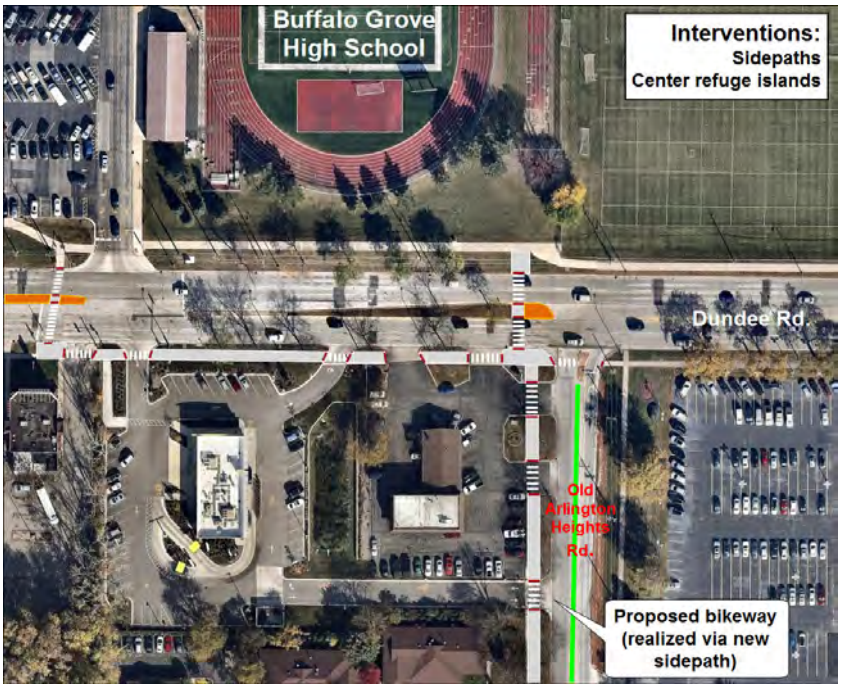
Figure 4.20 - Sharrows at Kennicott and Palatine

Figure 4.21 - Buffered bike lanes at Kennicott and Palatine

Sidepaths to Key Destinations

Other proposed sidepaths and associated crossing treatments are intended to provide safer bicycle and pedestrian access to important destinations along key bikeways. An example is the recommendation to widen – and fill the gaps in – existing sidewalks on Old Arlington Heights and Dundee Roads (and improve crossings) near Buffalo Grove High School (***Figure 4.22***). ***Figure 4.13***, located on page 57, illustrates another such example along Thomas Street, near John Hersey High School.

Figure 4.22 - Proposed sidepaths and crossing islands at Dundee and Old Arlington Heights Road



Cut-throughs and Connectors

Several new cut-throughs and connectors are recommended, as well as improvements to existing connectors located along current or proposed bicycle routes (primarily, along framework routes). The Village should prioritize cut-throughs, connectors, and transitions along the framework bicycle routes.

Clarence to Windsor (at Dryden)

High priority should be given to the improved cut-through at Dryden and Windsor (illustrated to the right, ***Figures 4.23 and 4.24***), due to the popularity of this north-south route and the destinations it serves.

A number of proposed improvements would consist primarily of the installation curb ramps designed to accommodate bicyclists (as well as pedestrians) at the transition points between on-street bike routes and off-street multiuse trails and paths. Generally, improvements to existing cut-throughs and connectors will consist of widening, wherever feasible, standard sidewalks to eight to ten feet in width, together with installation of bike-friendly ramps, bike route signage, and (where needed) enhanced pedestrian-scale lighting. Some connectors and cut-throughs may also be part of larger intersection or spot improvements, which are discussed in the following section.

Figure 4.23 - Existing conditions at Dryden and Windsor

Figure 4.24 - Propose bikeway connection at Dryden and Windsor

Nichol Knoll Park Transitions

Another high priority project and one that should be relatively easy and low cost is the improvement of the transitions between Kennicott Avenue and the multi-use path in Nichol Knoll Park (illustrated below, ***Figures 4.25 and 4.26***). This location is along a framework route segment and, at present, the transitions between the on-street bikeway and the off-street path are not constructed to bikeway standards and are difficult for cyclists to navigate. The Village reports that a transition ramp at the north end (illustrated to the right) has been constructed.

Arlington Park Metra Station

High priority should also be given to the provision of convenient bicycle access to the Arlington Park Metra station at the southwest corner of Wilke and Northwest Highway. This connection is discussed in Appendix F in relation to multiuse paths and bikeways routed through parking lots. As noted there, the Wilke-Northwest Highway intersection is currently being reconstructed by IDOT. The Village should work with IDOT designers to ensure that this important access point accommodates persons arriving at the station by bicycle, as well as on foot.

Figure 4.25 - Concept for transition at north end of Nichol Knoll Park Path

Figure 4.26 - Concept for transition at south end of Nichol Knoll Park Path

Douglas / UP Underpass

Another high-priority connector project involves improvements to the underpass beneath the UP-NW rail line, between Davis and Northwest Highway at Douglas Avenue. Improvements to this location were identified by the BPAC as one of six high-priority projects. Various – in some cases interdependent – potential treatments for this location are illustrated below. Short-term, the installation of bicycle-friendly curb ramps on both the south and north sides, convex mirrors at the entrances to allow users to see around corners, signs indicating that cyclists should dismount, and other warning, regulatory, and wayfinding signage should be installed. Medium-term, an enlarged queuing area on the north side at the signalized crossing of Northwest Highway / Kensington Road should be constructed.

Figure 4.27 - Proposed improvements at south end of RR underpass

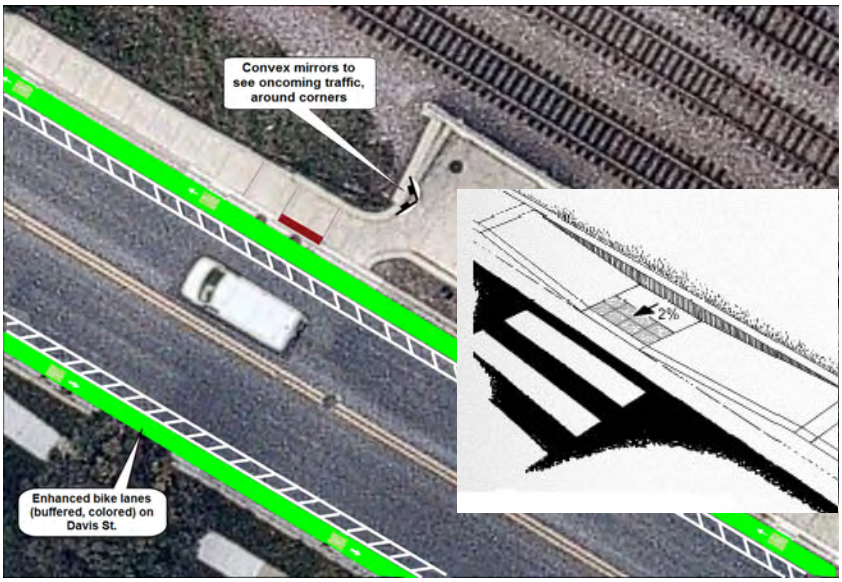
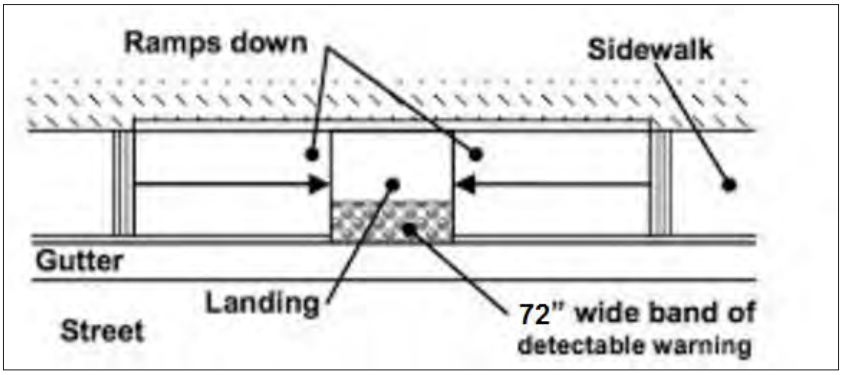


Figure 4.28 - Federal Highway Administration (FHWA) guidance on ADA-compliant parallel curb ramps



Over the long-term, the complex intersection of Northwest Highway, Kensington, and Douglas should be analyzed and improved to provide easier access for bicyclists using the Douglas street sidepath and for the large volumes of pedestrians and bicyclists who are present at rush hours. One potential design concept includes installation of a new bicycle and pedestrian crossing on the west leg, "extending" the existing sidepath along Douglas directly across the intersection to an enlarged landing and queuing area on the north side of the underpass. This concept would likely involve a new signal phase, which would require actuation (either manual or automated). The Village should also consider enlarging the raised medians and other curbside waiting areas at this intersection, along with other treatments, to improve pedestrian and bicycle safety (***Figures 4.29 and 4.30***).

The underpass at Douglas/Davis and the UP-NW rail line is a good example of a situation when a cut-through (and/or associated multi-usepaths) needs to accommodate significant numbers of both pedestrians and bicyclists. Both signage and on-pavement markings can help clarify that the route is used by both cyclists and pedestrians and indicate regulations and/or positioning for different users (when space allows). See ***Figure 4.30***. Such treatments are most appropriate for relatively short segments of pathway where no feasible alternative for providing separate facilities exists.

Figure 4.29 - Intersection improvement concept at north end of RR underpass

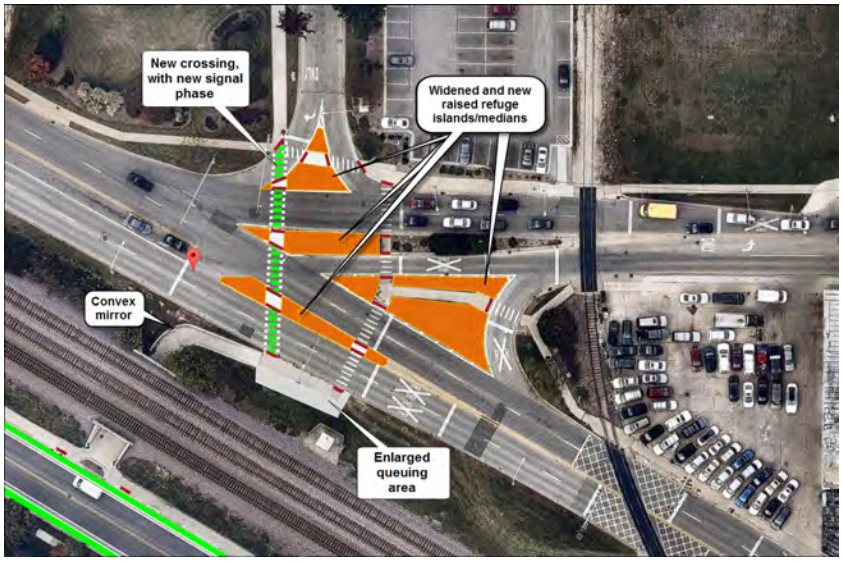


Figure 4.30 - Shared space for bicycles and pedestrians

Other Cut-throughs and Connectors

Figures 4.31 and 4.32 illustrate design concepts for upgrading existing connectors or cut-throughs from Dorothy Ave. / Charles St. to Town & Country Shopping Center and between Harvard Ave. and Creekside Park.

Figure 4.31 - Dorothy Ave. / Charles St.: Existing and proposed

Figure 4.32 - Harvard Ave. / Creekside Park: Existing and proposed

Sidewalk Definitions and Design Guidelines

Sidewalks and crosswalks are the most basic pedestrian facilities. Sidewalks or walkways provide pedestrian access to adjacent areas. Sidewalks of standard width (five feet) should not be considered or designated as bikeways. Arlington Heights has approximately 393 miles of sidewalks, allowing residents and visitors to walk between homes, places of employment, and other amenities. In general, sidewalks have been constructed within the street right-of-way on both sides of the street throughout most of the Village.

Crosswalks are defined as the marked or unmarked extension of the sidewalk or shoulder where pedestrians cross a vehicular way. At intersections, crosswalks may be marked or unmarked but mid-block crosswalks must be marked (for pedestrians to have the right-of-way).

Design Guidelines

Arlington Heights' Municipal Code (Section 20-107) outlines the conditions under which installation of sidewalks is required in order to receive a building permit. Sidewalks are required along all designated thoroughfares and as part of all development, except in cases where 80 percent of all lots within 600 feet are already developed and the general pattern of development in the area does not include sidewalks.

Village code also specifies elements related to sidewalk design. Sidewalks are required, to the extent possible, to be a minimum of four feet from the roadway curb and a minimum of five feet in width. The Code also states that if a development is located in an area where sidewalks are greater in width than five feet, then the new sidewalk shall be constructed to conform with the greater width.

Figure 4.33 - Sidewalk Zone System

1. Frontage Zone, 2. Pedestrian Through Zone, 3. Street Furniture/Curb Zone, 4. Enhancement/Buffer Zone

Source: FHWA

Best practice in sidewalk design calls for an approach referred to as the "sidewalk zone system." This approach treats the area between the edge of the roadway and edge of the right-of-way as its own "corridor," dividing it into four zones to ensure that pedestrians have a sufficient amount of clear space to travel (see ***Figure 4.33***). For more information on the sidewalk zone system, see ***Appendix J***.

Cross-sections

Figure 4.34 shows typical cross-sections (existing and recommended) for sidewalks (on Clarence Avenue). ***Figure 4.35*** illustrates the existing and recommended cross-section for Wilke Road, between Kirchhoff and Orchard, where a new sidewalk on the west and a sidepath (upgraded from an existing sidewalk) on the east is recommended.

Figure 4.34 (a) - Existing Cross-section: Clarence Ave.

Figure 4.34 (b) - Proposed Cross-section: Clarence Ave.

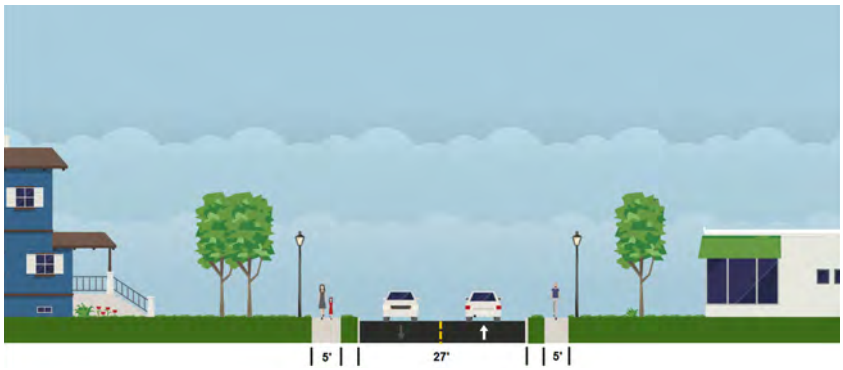


Figure 4.35 (a) - Existing Cross-section: Wilke Rd.

Figure 4.35 (b) - Proposed Cross-section: Wilke Rd.

Sidewalk Recommendations

Overall, the Village has very good sidewalk coverage. The majority of existing sidewalks are of sufficient width and are buffered from moving vehicles by the existence of a planted buffer strip. The main issues uncovered through outreach and field surveys are poor pavement condition and encroachment of vegetation. The Village should undertake a GIS-based survey and inventory of sidewalk pavement conditions and vegetation encroachment in order to address these issues in a systematic way.

Generally, Village areas that lack sidewalks are 1) older, often historic, residential neighborhoods where streets carry low volume, low speed traffic, and sidewalks are not in high demand (according to Village staff); 2) industrial areas (mostly in the far north and far south of the Village); and 3) automobile-oriented "big-box" or "strip" style commercial development, mostly in the south of the Village and along Rand Road. These last two area types not only lack sidewalks, but are also lacking the fine-grained street network that, together with sidewalks, contributes to walkability and bikeability. In these areas, it is recommended that the Village work with private property owners to develop safe, visible bicycle and pedestrian routes through the parking lots that are associated with large retail and industrial buildings in these areas.

High priority for installation of missing segments of sidewalks are along major arterials, roadways near parks, schools, and multi-family residential developments, and, broadly, where surrounding land use and the characteristics of adjacent streets and traffic point to the need for separated pedestrian facilities. In addition, improvements to existing substandard or insufficient sidewalks, and those in poor condition, should be prioritized at similar locations as well as where short segments of sidewalk function as a bikeway.

Examples of high priority locations are:

- Along Arlington Heights Road at Interstate 90, where no pedestrian way exists on either side of Arlington Heights Road;
- On the west leg of the intersection of Palatine Road and Kennicott Boulevard, where existing sidewalks end at the service road ramps;
- Various locations along Rand Road (where sidewalk installation should be combined with access management and improved crossings);
- On Wilke Road, near the Arlington Park Metra station;[8]
- On Olive Street, east of Dryden, where the narrow road provides access to commercial areas along Rand Road; and
- Along Central Road, near the Arlington Lakes Golf Club and the Army Reserve/Defense Contract Management Agency (DCMA).[9]

[8] Improvements to the intersection of Wilke and Northwest Highway were made in 2015-16. Project scope consisted of intersection reconstruction and widening to add dedicated turning lanes, drainage improvements, sidewalk construction and traffic signal modernization.

[9] Although we recommend sidewalk, a sidepath along Central would serve to implement a segment along the Northwest Municipal Conference Glenview/Central/Algonquin regional corridor.

Lower priority should be given to "infill" of short stretches of missing sidewalks in neighborhoods that otherwise are equipped with sidewalks, where a sidepath exists on one side of the road, and where adjacent land uses (cemeteries, golf courses, etc.) are not expected to generate significant numbers of pedestrian trips. We have not recommended installing sidewalks in residential neighborhoods that currently lack sidewalks, since the roads serving these areas are typically very low volume and low speed, and because of potential resistance by residents. However, should residents support the installation of sidewalks, we recommend that the Village pursue opportunities in these locations as well.

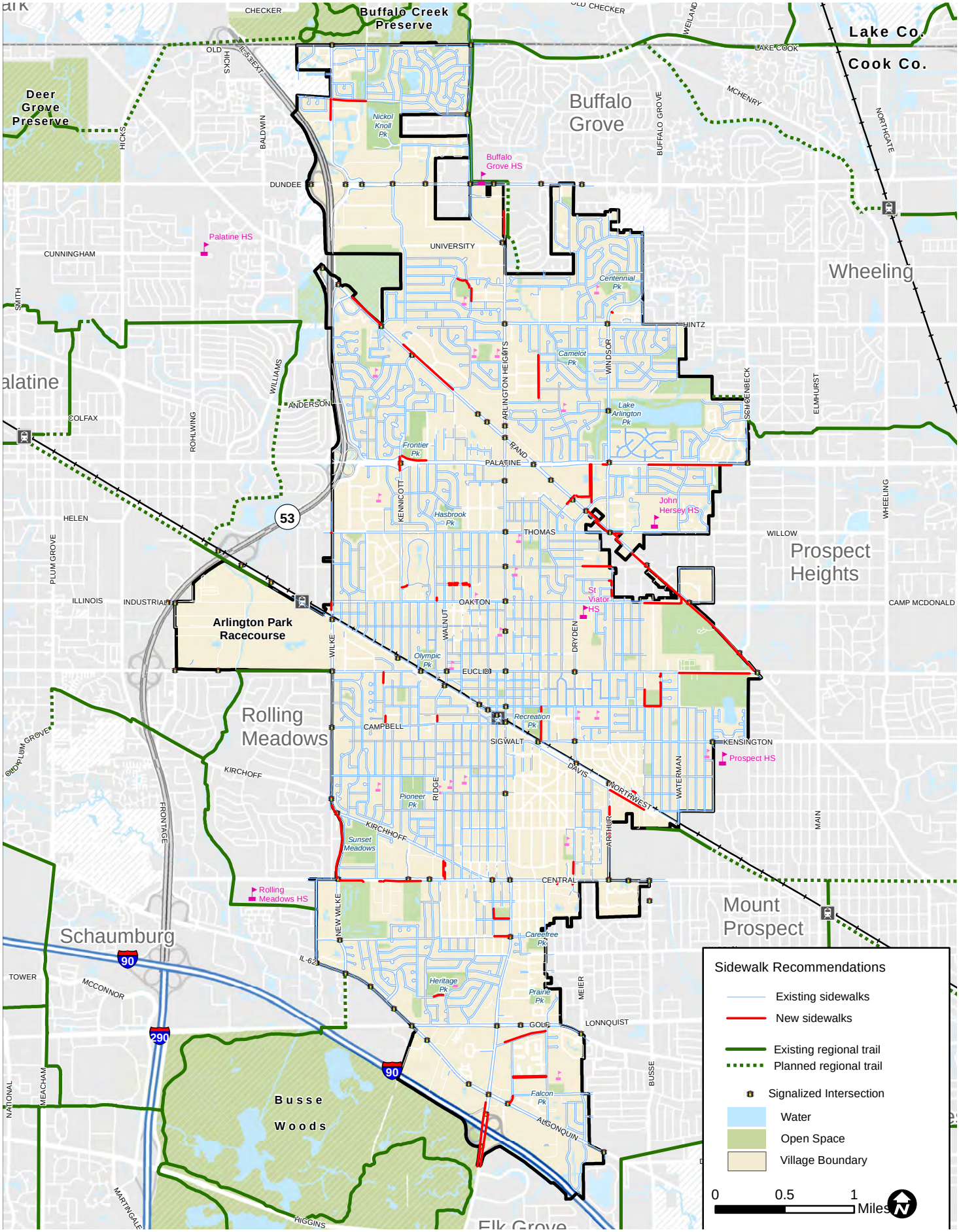
In places where sidewalks are placed directly adjacent to the curb and/or are of insufficient width, we recommend that the Village pursue strategies to provide a buffer area and/or to widen the sidewalks. The majority of locations where we find these conditions are along roads under IDOT jurisdiction. Many State routes in Arlington Heights have been widened over the years to the maximum extent possible, compromising the pedestrian environment. It is recommended that the Village work with IDOT on developing solutions to this problem as opportunities for reconstruction and/or simple restriping arise. Narrowing travel lanes in these areas – as well as reducing the number of lanes – is one way to acquire more space for buffer areas and/or wider sidewalks. Recent studies[10] have demonstrated that 10-11 foot lanes, even on major arterial roads, are as safe – or even safer – than 12 or 12-plus foot lanes.

Figure 4.36 illustrates current conditions along Clarence Avenue (without sidewalks), and what it would look like with sidewalks installed. *Figure 4.37* shows priority locations proposed for sidewalk installation.

[10] See Dewan Karim, "Narrower Lanes, Safer Streets" (https://www.academia.edu/12488747/Narrower_Lanes_Safer_Streets_Accepted_Paper_for_CITE_Conference_Regina_June_2015_). See also T. Petritsch, "The Influence of Lane Widths on Safety and Capacity: A Summary of the Latest Findings" (http://nacto.org/docs/usdg/lane_widths_on_safety_and_capacity_petritsch.pdf), and I. Potts, et al., "Relationship of land width to safety for urban and suburban arterials" (http://www.smartgrowthamerica.org/documents/cs/resources/lanewidth-safety.pdf). Finally, see Jeff Speck's article, "Why 12-foot Traffic Lanes are Disastrous for Safety and Must be Replaced Now" (http://www.citylab.com/design/2014/10/why-12-foot-traffic-lanes-are-disastrous-for-safety-and-must-be-replaced-now/381117/).

Figure 4.36 - Clarence Ave., Existing and Proposed

Figure 4.37 - Sidewalk Recommendations



Bicycle Lane Definitions and Design Guidelines

Bike lanes – traditional, buffer- and-barrier-protected, and advisory – involve assigning dedicated space along a roadway for the use of cyclists. This fact distinguishes these facilities from other on-street bikeways (in which bicyclists share space with motor vehicles). While ADT, average speeds, parking utilization, and other operational characteristics of roadways proposed for bikeways are important factors for all types of facilities, the width of a roadway – curb-to-curb – is especially crucial for evaluating the feasibility of bike lanes. While planners and engineers can "gain" roadway (or roadside) width in a number of ways – including reducing the number of lanes (road diet), reducing the width of lanes (lane diet), and/or by removing parking – curb-to-curb width remains constant (unless a project includes road reconstruction, which is expensive and therefore rare).

Removing on-street parking is often difficult due to the resistance of residents and businesses. While comprehensive, detailed information on on-street parking regulations for all roads in Arlington Heights was not available, aerial photography (and Google Streetview) were used to identify, to the extent possible, current parking regulations and conditions. This exercise revealed very low utilization rates for on-street parking on the majority of the streets on which existing and proposed bikeways are located. It is recommended, therefore, that the Village consider the removal of on-street parking in a limited number of cases where the impact would be minimal and the importance of a bikeway corridor calls for such measures. A cross-section of a typical residential street in Arlington Heights shown with parking removed on one side – and another with parking removed from the one side on which it is currently allowed – are provided to illustrate the potential for creating space needed for traditional and, in the latter case, buffered bike lanes (***Figures 4.40 and 4.45***). Both streets are key framework bike routes. In addition to the typical cross-sections shown for each facility type, additional cross-sections illustrating potential on-street bikeways can be found in ***Appendix K***.

The majority of the roads for which bike lanes (as well as other types of on-street bikeways) are recommended are undivided, two-lane streets (although some add turn lanes at major intersections). In order to assess general feasibility, the following guidelines (***Table 4.1***) on the roadway widths typically needed for different types of bike lanes are provided. Shared lane facilities do not have the same width constraints. Each bike lane type is matched to the widths generally required for roads with 1) no on-street parking, 2) parking on one side, and 3) parking on both sides. As stated above, comprehensive, detailed data on Village parking regulations was not available. It should be noted that widths (or rather ranges of widths) given here are "ideal" or typical. In specific situations, installation may be feasible with one or two feet less – or more – than is indicated.

Table 4.1 - Bicycle Facilities and Curb-to-Curb

BIKE LANE TYPE	TYPICAL WIDTH (CURB-TO-CURB)
Traditional Bike Lanes	
No Parking	30′ - 36′
Parking One Side	38′ - 44′
Parking Both Sides	46′ - 52′
Buffered Bike Lanes	
No Parking	33′ - 42′
Parking One Side	40′ - 48′
Parking Both Sides	50′ - 58′
Advisory Bike Lanes	
No Parking	26′ - 29′
Parking One Side	34′ - 37′
Parking Both Sides	41′ - 44′

Traditional Bike Lanes

Traditional or standard bike lanes are a portion of the roadway designated for preferential use by bicyclists. The bike lane is delineated by a solid striped line or a dashed line (in merging zones). Bike lanes are appropriate on streets with moderate traffic[18] and along major bikeway corridors. Like other on-street bikeway markings, bike lanes reinforce proper roadway etiquette, raise the visibility of bicyclists, and help both bicyclists and drivers behave predictably when sharing road space. Lanes can also increase the sense of safety for less experienced or confident cyclists, encouraging them to bicycle or to bicycle more often. Bike lanes can be enhanced by the use of green pavement, either for the length of the lane or in intersections and other conflict points.

Design Guidelines

The typical minimum width of a bike lane is five feet; six to seven foot lanes (or buffered bike lanes) are recommended for higher speed (and higher volume roads). On streets where the bike lane is adjacent to the curb (i.e. without parking), bike lanes can be as narrow as four feet from the curb face if there is no gutter (i.e. the full four feet is a smooth, rideable surface). Bike lanes are marked by a solid line separating the bike lane from adjacent travel lanes. Various designs and treatments exist for traditional and other bike lane types as they approach an intersection (discussed and illustrated in more detail later in this chapter).

Figure 4.38 - Traditional bike lanes

Cross-sections

Figures 4.39 and 4.40 illustrate current road conditions and potential or conceptual cross-sections for University Drive, Davis Street and other roads for which traditional bike lanes are recommended.

Figure 4.39 (a) - Existing Cross-section: University Drive

Figure 4.39 (b) - Proposed Cross-section: University Drive Bike Lane Concept

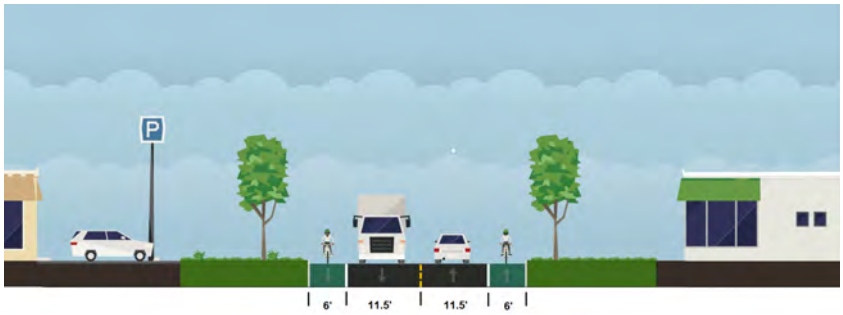


Figure 4.40 (a) - Proposed Cross-section: Davis Street Bike Lane Concept (On-street parking retained)

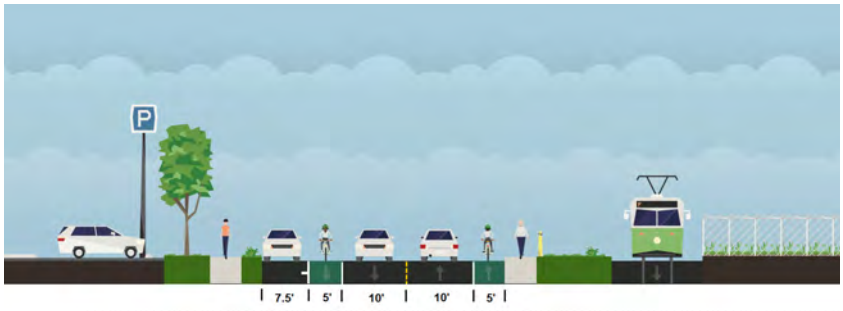
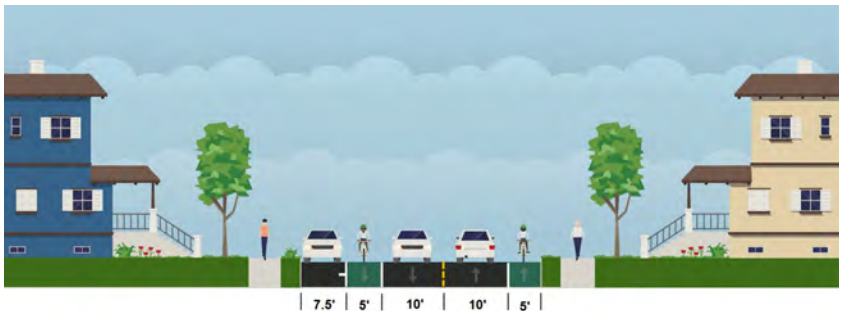


Figure 4.40 (b) - Proposed Cross-section: Thomas Street Bike Lane Concept (On-street parking removed on one side)



Buffer-protected Bike Lanes

Buffer-protected bike lanes use a painted (striped) buffer area to separate the vehicle travel and/or the parking lane from the bike lane. This buffer, typically one and one-half to three feet wide, provides additional separation to improve cyclists' comfort and safety on more heavily traveled arterial corridors. Buffer areas can be painted between the bike lane and the on-street parallel parking – to separate the bike lane from the door zone – and/or between the bike lane and the adjacent travel lane. Buffered bike lanes can also be enhanced by the use of green pavement, either for the length of the lane or at intersections and other conflict points.

Figure 4.41 - Buffered Bike Lane

Source: Active Transportation Alliance

Design guidelines

The combined width of the buffer(s) and bike lane should be considered "bike lane width," with guidance for traditional bike lanes applying. However, buffered bike lanes are typically wider overall than traditional bike lanes. Where buffers are used, the bike lanes themselves can be narrower because the shy distance function – that is, space required to create a perception of a safe distance between cyclists and the passing cars – is assumed by the buffer. For example, a two-foot buffer and four-foot bike lane next to a curb is considered a six-foot bike lane. If a five-foot buffered lane is installed next to on-street parking, the buffer (two foot) should be between the lane and the parked cars to encourage bicyclists to ride outside of the door zone.

Figure 4.42 - Buffered Bike Lane (Green)

Source: Andrew Boone

Cross-sections

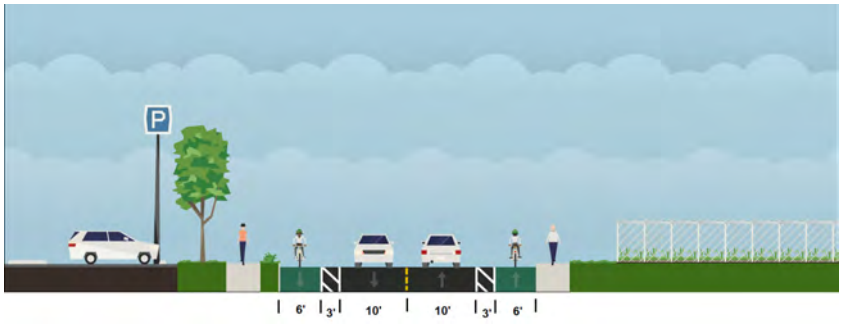
Figures 4.43 to 4.45 illustrate current road conditions and a potential or conceptual cross-section for Goebbert Road and other roads for which buffered bike lanes are recommended. Additional cross sections illustrating buffered bike lanes and other on-street bikeway facility types can be found in *Appendix K*.

Figure 4.43 (a) - Existing Cross-section: South Goebbert Road

Figure 4.43 (b) - Proposed Cross Section: South Goebbert Road Buffered Bike Lane Concept

Figure 4.44 - Proposed Cross-section: Goebbert Road Buffered Bike Lane Concept (with bikeway signage)

Figure 4.45 - Proposed Cross-section: Davis Street Buffered Bike Lane Concept (on-street parking removed)



Advisory bike lanes

Advisory bike lanes (a.k.a. dashed bicycle lanes) are marked by dashed white lines on both sides of a two-way roadway, creating a single unmarked center lane for motor vehicles traveling in both directions. This unmarked center lane is purposefully designed to be slightly too narrow for cars moving in opposite directions to pass each other without one moving (partially) into the bike lane. When oncoming cars approach each other, one or both motorists move carefully into bike lanes to pass one another. Advisory bike lanes are typically installed on narrower roadways with two-way vehicle traffic, low volume, and very low speeds. They may be installed on roads with or without on-street parking and may include use of colored pavement.[11]

Design Guidelines

Since advisory bike lanes are still subject to FHWA regulations governing experimentation, no formal design guidance or standards currently exist. However, studies have shown that advisory bicycle lanes appear to function best when the following operational and geometric conditions are present:

- Traffic volume is less than 6,000 ADT.
- Minimum lateral width of 16 feet for the center space between dashed bicycle lanes.
- The street is not a designated truck or bus route, nor would the street be expected to typically be used by these vehicle types.

Figure 4.46 - Advisory Bike Lanes

[11] Advisory bike lanes are not included in the current edition of the MUTCD and therefore require a permit for experimentation from FHWA. For more information on advisory bike lanes, see FHWA's website, https://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/mutcd/dashed_bike_lanes.cfm. The City of Bloomington, IN has produced a handout describing advisory bike lanes, available at https://bloomington.in.gov/media/media/application/pdf/16373.pdf.

[12] More information can be found in FHWA's Separated Bike Lane Planning and Design Guide, at http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/, and NACTO's Urban Bikeway Design Guide, at http://nacto.org/publication/urban-bikeway-design-guide/cycle-tracks/. See also the Massachusetts DOT "Separated Bike Lane Planning & Design Guide," at https://www.massdot.state.ma.us/highway/DoingBusinessWithUs/ManualsPublicationsForms/SeparatedBikeLanePlanningDesignGuide.aspx.

Cross-sections

Figure 4.47 illustrates current road conditions and a potential or conceptual cross-section for Oakton Street and other roads for which advisory bike lanes are proposed. *Figure 4.48* illustrates a concept, in plan view, for advisory bike lanes on Hintz Road, with on-street parking retained. The cross-section would entail two seven-foot parking lanes, two six-foot advisory bike lanes, and a single 15-foot travel lane. Additional cross sections illustrating advisory bike lanes and other on-street bikeway facility types can be found in ***Appendix K***.

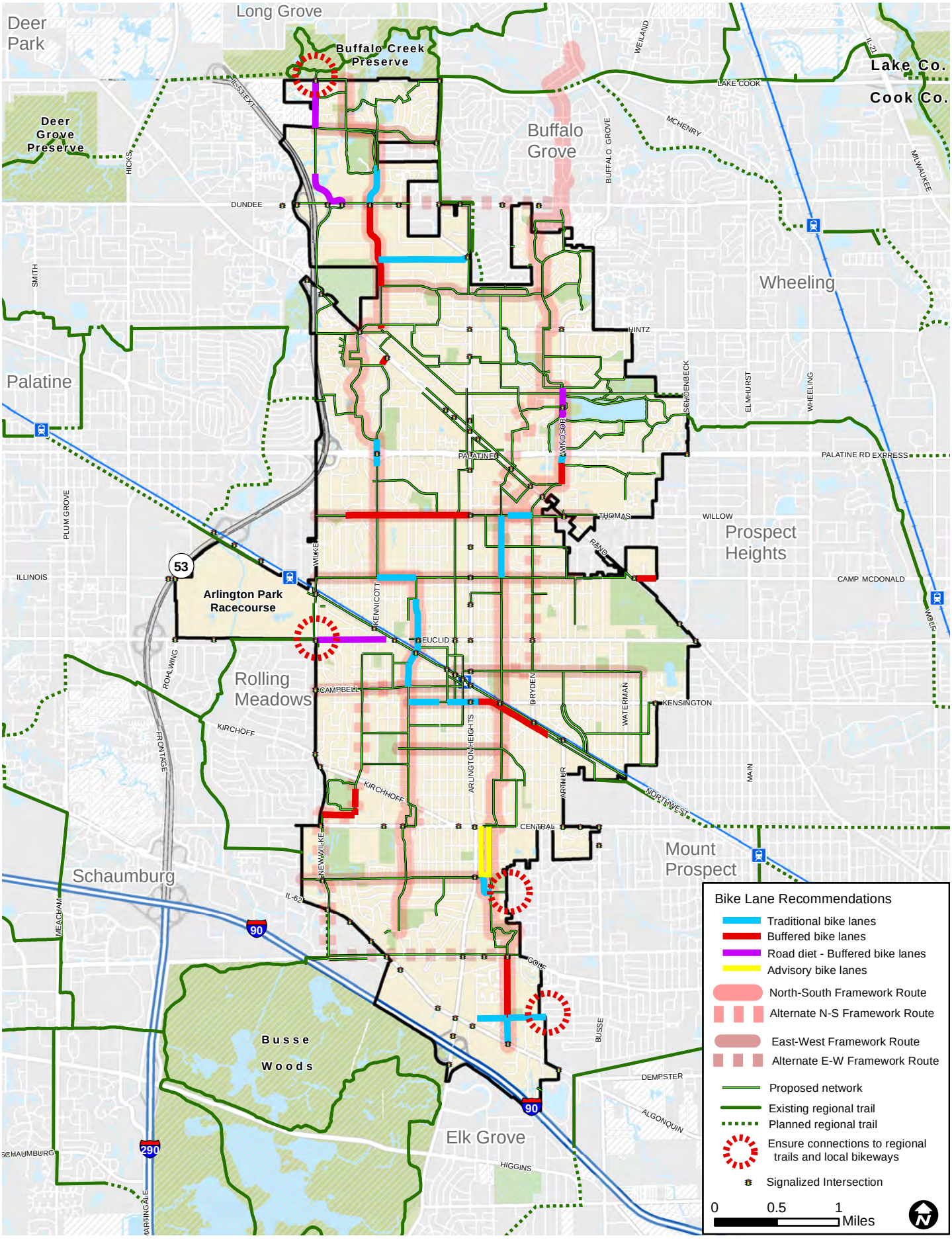
Separated, or barrier-protected, bike lanes (a.k.a. cycle tracks) are bike lanes that are physically separated from vehicle traffic by a curb, parked cars, a rail, bollards, poles, or other element. Although they are not specifically called for in this plan, they may be feasible and appropriate in some locations, long-term, including those where buffered bike lanes are recommended.[12]

Figure 4.47 (a) - Existing Cross-section: Oakton Street

Figure 4.47 (b) - Proposed Cross-section: Oakton Street Advisory Bike Lane Concept

Figure 4.48 - Proposed Cross-section: Hintz Road Advisory Bike Lane Concept

Figure 4.49 - Bike Lane Recommendations and Framework Bicycle Routes



Bicycle Lane Recommendations

Overall Network

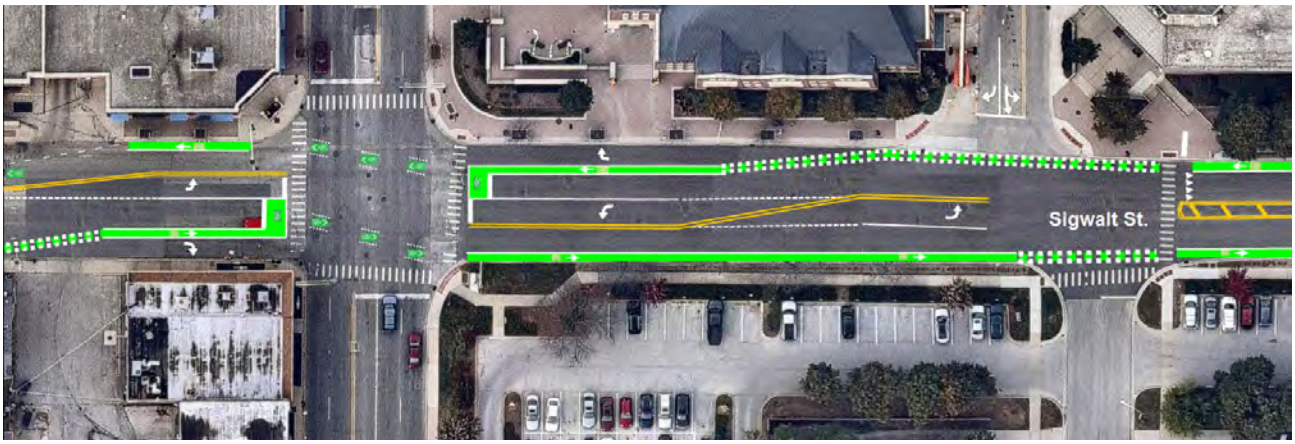
Figure 4.49 shows all bike lane recommendations by facility type, along with the framework routes (highlighted). In general, priority should be given to facilities along the framework bicycle routes. These include traditional and buffered lanes along Kennicott, Windsor, Thomas, Douglas, Oakton/Camp McDonald, Walnut, Ridge, Sigwalt, Belmont (or Pine), and Goebbert Road. In addition, University and Falcon Drives may offer relatively easy-to-achieve bike lane projects, given current roadway characteristics and surrounding land use. Several locations are proposed for road diets, which are discussed in more detail below. Intersection treatments at major crossing locations are an important part of achieving a safe, low-stress bikeway network. Examples of these treatments are discussed and illustrated below in the section on intersection and spot location improvements.

Davis/Sigwalt Bike Lane

Currently, the only existing bike lane in the Village is on Davis/Sigwalt Streets between Belmont and Cleveland Avenues. On the southwest side of Davis, however, between Bristol Lane and Cleveland Avenue, this bike lane becomes a 10.5-11 foot shared bike-parking lane.

Between Pine and Bristol Lane, the existing bike lanes are approximately four feet wide, while the adjacent travel lanes are 14-15 feet or more. This section (Pine to Bristol) should be reconfigured with narrowed travel lanes and wider, buffered bike lanes, roughly as illustrated in a cross-section drawing of Davis ("Davis (& Sigwalt), Pine to Cleveland") in ***Figure 4.45*** (five and one-half to six-foot bike lanes; three-foot buffers; ten-foot travel lanes). In the segment from Bristol to Cleveland, buffered bike lanes could be maintained if the on-street parking, which appears to be highly underutilized, is removed. However, if parking remains (on the southwest side of Davis), then the roadway should be reconfigured as shown in ***Figure 4.40*** (seven and one-half-foot parking lane; five-foot bike lanes; 10' travel lanes). Bike lanes may continue into the downtown area along Sigwalt to Ridge, with the exception of one block, between Vail and Highland, where existing on-street parking on the north side would entail the implementation of shared lane markings. ***Figure 4.50*** illustrates the conceptual bike lane treatment for Sigwalt Street between Pine and Arlington Heights Road. Bike lanes are achieved here by narrowing travel lanes and clarifying lane positions. The design includes through-intersection shared lane markings and bike boxes at Arlington Heights Road.

Figure 4.50 - Conceptual design for bike lanes along Sigwalt/Davis at Arlington Heights Road



Goebbert Road

Goebbert Road, from Golf to Falcon Drive, was identified by the BPAC as a high priority corridor for the installation of an on-street bicycle facility. The corridor serves as the southern segment of the Dryden/Douglas north-south framework route and provides unique access to single- and multi-family residential developments, the Forest View Education Center, Robert Morris University Gym and Stadium, the Forest View Racquet & Fitness Club, and other destinations in the southeast part of the Village. It also provides an important connection, via the proposed bikeway on Falcon Drive/Willow Lane, to the Village of Mount Prospect and to the Kopp/High Ridge Knolls Park Trail.

Goebbert Road's current configuration consists of a two-lane roadway, approximately 38 feet wide, with a posted speed of 25 mph and low ADT. On-street parking does not seem to be allowed, or – if it is – it appears to be highly underutilized. Given these characteristics, and its importance as a proposed framework route, it is recommended that the Village study the feasibility of installing buffered bike lanes along Goebbert from Golf to Falcon Drive, and traditional bike lanes from Falcon to Algonquin. Traditional bike lanes are also recommended on Falcon Drive, from Tonne to the Village border at Tamarack Drive. This proposal is illustrated in ***Figure 4.51*** (and in ***Figures 4.43 and 4.44***).

Road Diets

Road diets are recommended as a potential treatment in three key locations. The reconfiguration that is proposed in all three cases is a reduction in the number of travel lanes from four to three (two through-travel lanes and 1 two-way center turn lane), which will allow for the addition of traditional or protected bicycle lanes. In addition to creating space for bicycle and/or pedestrian facilities, benefits of road diets can include lower travel speeds, increased safety, and promotion of a more livable, family-friendly environment.

As with other on-street bicycle facilities, recommendations for road diets and bike lanes should be understood as being dependent upon and in need of coordination with improvements at intersections along proposed routes. For example, the road diet recommended for Windsor Drive should be planned and designed in conjunction with improvements at the Windsor-Palatine and the Windsor-Crabtree intersections (for which conceptual illustrations are given), as well as the other segments of the Dryden/Douglas framework route. Enhanced markings at crossings, warning and regulatory signage, through-intersection bike route markings, bike boxes, narrowed travel lanes, and refuge islands are all typical, potential intersection enhancements and improvements.

Road diets are discussed in greater detail in ***Appendix F*** in relation to potential bicycle routes to Busse Woods Forest Preserve Trail. Information and links to additional resources on this treatment are provided there.

Wilke Road, from Nichol Road to Lake-Cook Road

This segment is approximately 0.38 miles in length. The width, curb to curb, is approximately 46 feet. ADT is not known, but is likely to be under 10,000. Posted speed limit is 30 mph. Another, lower priority road diet segment on Wilke, runs from Dundee Road to the point at which the road's cross-section changes to include center medians (at the Marriott Courtyard Hotel, 3700 N. Wilke Rd.).

This segment of Wilke Road is indicated as a potential bike route on the 2014 Arlington Heights Bicycle Map. A bikeway here would serve the large multi-family developments in this area. However, as discussed above, the T-intersection at Wilke and Lake-Cook Road (although signalized) currently lacks a connection across Lake-Cook Road (see ***Figure 4.11***). Therefore, this road diet/bike lane project depends upon, and should be carried out in coordination with, intersection improvements and the creation of a safe connection to the Buffalo Creek Forest Preserve by one of the options discussed in Appendix C. The connection would entail working with the Lake County Forest Preserve District. ***Figure 4.52*** illustrates the northern limit of the proposed buffered bike lane resulting from the road diet on Wilke north of Nichols.

Figure 4.51 - Goebbert Road, Bike Lane Concept

Windsor Drive, from Dryden Road to Crabtree Drive

This segment is approximately 0.52 miles in length. The width, curb to curb, is approximately 52 feet; ADT is 9,500 (IDOT, 2014); and the posted speed limit is 35 mph.

This road segment is indicated as a planned bike route on the 2014 Arlington Heights Bicycle Map. It is part of the proposed framework bikeway network (the north-south "Dryden/Douglas Route"), CMAP's 2009 Regional Greenways and Trails Plan, and is currently (per Strava data) heavily used by cyclists. It is also one of six high-priority projects identified by the BPAC. The route directly serves one of the Village's most popular parks and multiuse paths (Lake Arlington Park and Trail) and provides, at the signalized intersection at Palatine Road, one of the few relatively safe crossings of this Palatine Road in this part of the Village. At the northern end of the proposed project, the facility would connect to the McDonald Creek pathway, and at the south, to the point at which the Dryden/Douglas framework bike route crosses Rand Road. Both of these corridors are specified as regional bikeways in the Regional Greenways and Trails Plan.

In addition to providing space for the installation of buffered bike lanes, implementing a road diet along Windsor Drive can help to improve safety and livability around Lake Arlington Park and the nearby existing greenways, which are heavily used by many types of residents, including families with children, youth, and seniors. The proposed reconfiguration would also allow for the installation of a raised center median where a turn lanes are not called for.

Figure 4.52 - Wilke Road (at Lake Cook Road), Road diet / buffered bike lanes concept

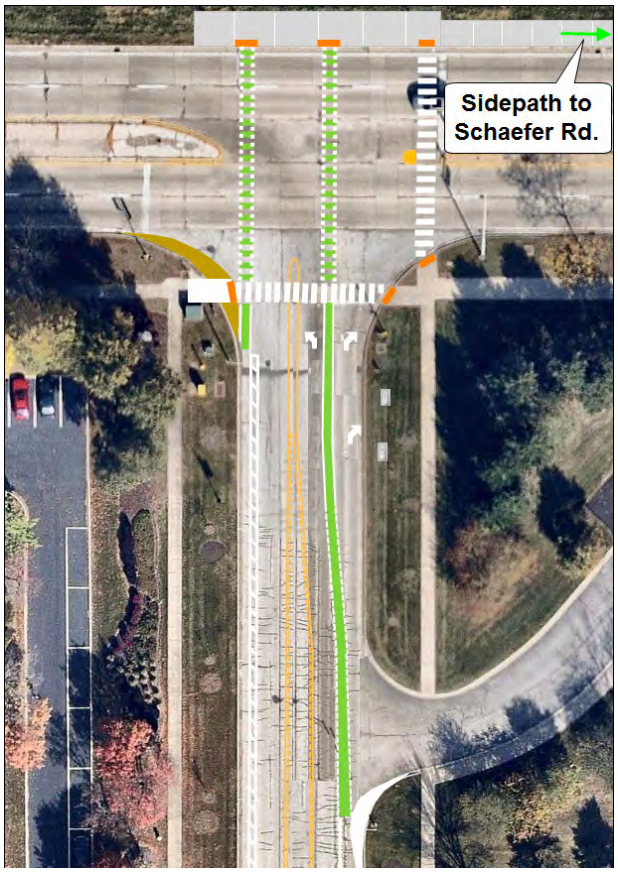
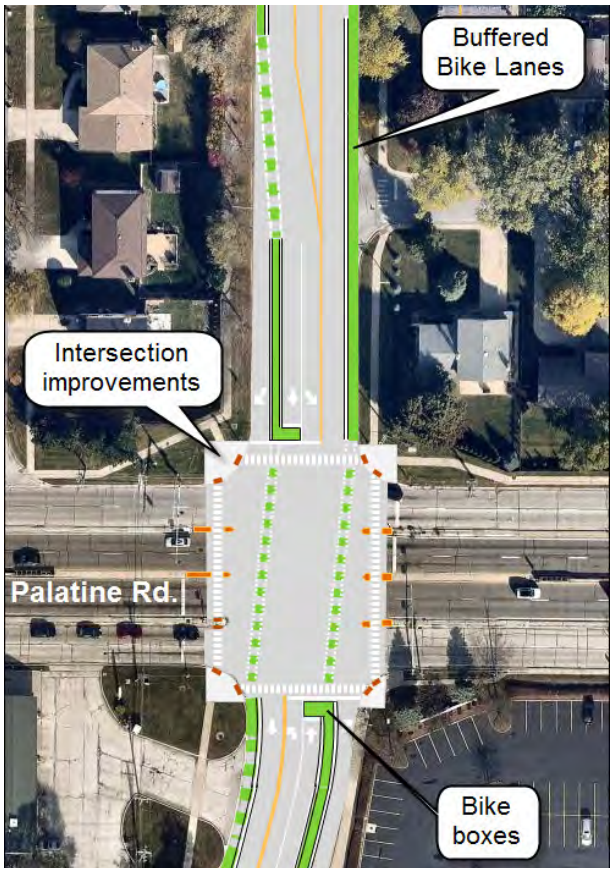


Figure 4.53 - Windsor at Palatine



This median would contribute to the safety and aesthetics of the corridor, at the main entrance to Arlington Heights' most popular park. Both road diets and median islands are, it should be noted, among the FHWA's nine proven safety countermeasures.[13] ***Figures 4.53 and 4.54*** illustrate the concept of the Windsor Drive road diet and potential associated intersection improvements at Palatine Road and Crabtree Drive, respectively.

Potential intersection improvements at Palatine Road include improved crossings on all legs, green-colored through-intersection bikeway markings, and bike boxes. The bike lanes are placed to the left of the right-turn lanes in order to minimize conflicts and improve visibility. The illustration of potential improvements at Crabtree Drive include buffered green-colored buffered bike lanes along Windsor Drive (near Lake Arlington Park), a two-stage left-turn bike box, and a raised center median island and high-visibility crosswalk on the north leg (to improve safety for bicyclists and pedestrians). ***Figures 4.55 and 4.56*** provide conceptual cross-sections at Palatine and for the segment north to Crabtree.

The proposed road diet on Windsor Drive makes up one segment of a larger project identified by the BPAC as a high priority.

[13] See http://safety.fhwa.dot.gov/provencountermeasures/.

Figure 4.54 - Windsor at Crabtree

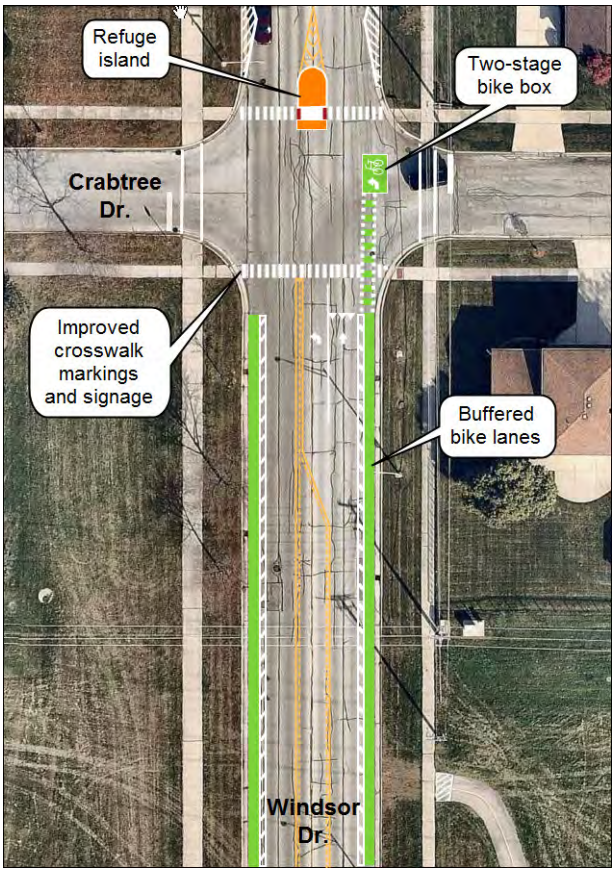


Figure 4.55 - Road Diet / Buffered Bike Lane Concept, Intersection of Windsor Drive and Palatine Road

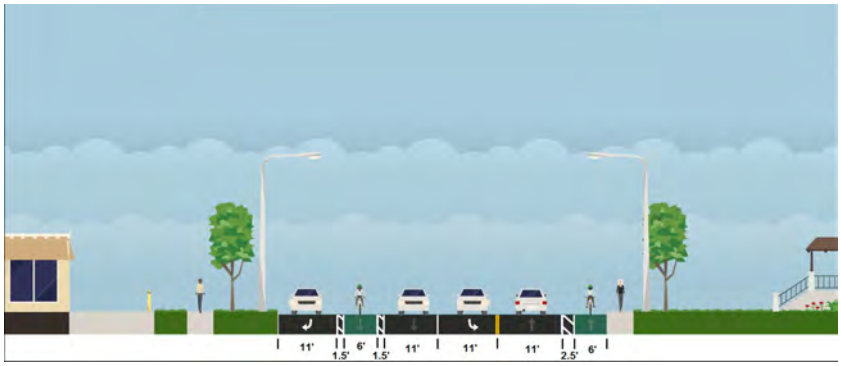
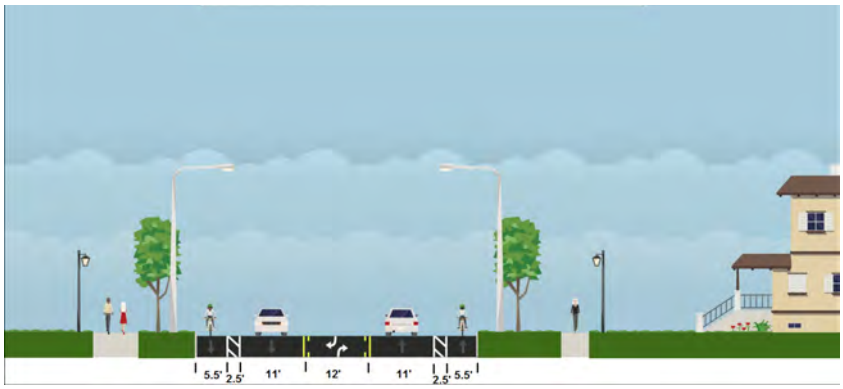


Figure 4.56 - Road Diet / Buffered Bike Lane Concept, Windor Drive, between Palatine and Crabtree Drive



The larger project encompasses improvements to the Dryden/Douglas-Windsor framework route between Thomas Street and Lake Arlington Park. Another segment of this project is the Clarence to Windsor cut-through discussed previously (and illustrated in ***Figures 4.23 and 4.24***).

One of the key destinations along the "Dryden/Douglas" framework bike route in the northern part of the Village is Lake Arlington Park. However, reaching the park from points south is challenging due to traffic volumes, speeds, and roadway configurations on Dryden and Windsor, as well as the difficult crossing at Palatine Road. The proposed road diet/ bike lanes on Windsor (from Dryden to Crabtree), the cut-through from Clarence to Windsor, and on-street, signed combined bicycle-parking lanes (discussed below) on Jane, Beverly, Dorothy, and Douglas represent the preferred framework route and facility types through this difficult area.[14] ***Figure 4.57*** illustrates this routing.

Another alternative for achieving this connection, which moves the framework route to Dryden, entails upgrading existing sidewalks to sidepaths on the south side of Dryden from Thomas to Windsor, and on the west side of Windsor, from Dryden to the existing multi-use path just north of Carlyle Place. This concept is illustrated in ***Figure 4.58***.

[14] This new alignment for the "Dryden Framework Route" was preferred by the BPAC, and is referred to throughout this document as the "Dryden/Douglas" route.

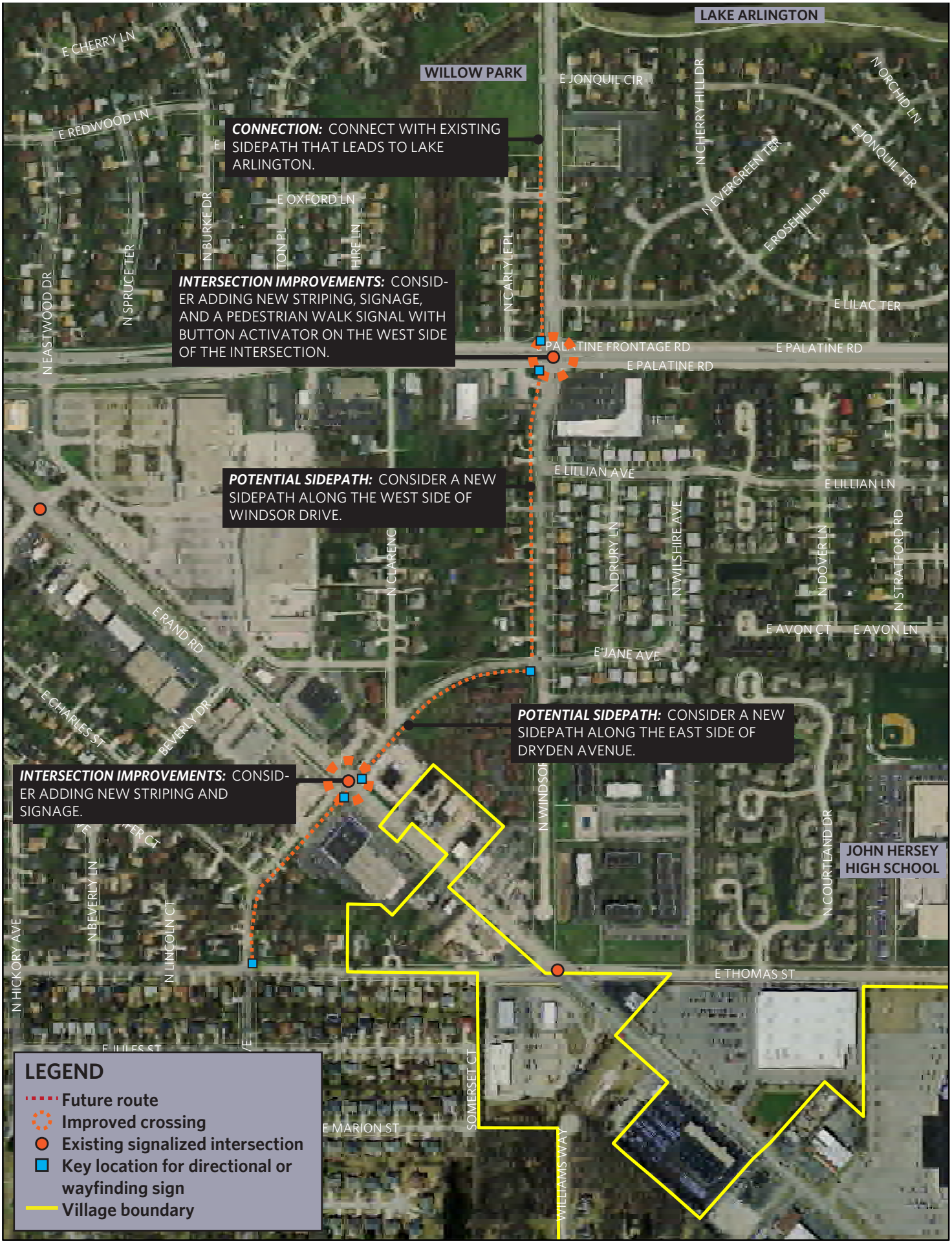
Figure 4.57 - Proposed Dryden-Douglas Framework Routing across Rand Road

This alternative separates bicyclists from automobiles through the narrow, curved section of Dryden, where the ADT is approximately 5,500 and posted speed limit is 30 mph – conditions which are challenging for the majority of cyclists. However, constrained right-of-way along Dryden between Thomas and Windsor may limit the feasibility of this option.

While a sidepath on Dryden may not be achievable, a combination or hybrid of the on-street (road diet/ bike lane) design option and the off-street (sidepath) option may be possible – and desirable. This hybrid alternative would include on-street bike lanes along Windsor, from Dryden to Crabtree, together with the installation of a sidepath (by widening the existing sidewalk) on the west side of Windsor, between Dryden and the existing sidepath (north of Carlyle Place).

Providing both on-street and off-street facilities along this important bikeway corridor would offer a low-stress route for children and less experienced cyclists, as well as a quicker, more direct, and dedicated on-street facility for more experienced and confident cyclists who want to access Lake Arlington Park and destinations beyond. The BPAC-proposed sidepath along the narrow, curving section of Dryden would not be necessary if the framework route follows Douglas and the local roads as described above (and is well signed). Improved crossings at key intersections – utilizing treatments described above, below in the Intersections and Crossing Locations section, and in *Appendix I* – as well as wayfinding signage, should be included in both the sidepath and/or the on-street bike lane option.

Figure 4.58 - Dryden-Douglas Framework Route, Original Alignment (Alternate)



Euclid Avenue, from Wilke Road to Northwest Highway

The third road diet project would be along Euclid Avenue from Wilke to Northwest Highway. This segment is approximately 0.54 miles in length. The width, curb to curb, is approximately 48 feet; ADT is 12,550 (IDOT, 2014); and the posted speed limit is 30 mph.

This road segment is not indicated as a planned bike route on the 2014 Arlington Heights Bicycle Map. However, it would link residential neighborhoods and destinations south of Euclid to the existing sidepaths along Euclid (west of Wilke) and along Wilke (north of Euclid), which provide access to the Arlington Park Metra station and which are both regional trails (as indicated in the Regional Greenways and Trails Plan).

It would afford more comfortable, convenient, and safe bicycle access to the U.S. Post Office at 909 W. Euclid. The road diet would also provide for a (future) connection to the planned regional bikeway corridor along Northwest Highway. Finally, a road diet on this stretch of Euclid would provide a more appropriate and gradual transition between the differing roadway characteristics of Euclid Avenue, east of Northwest Highway (lower speed, two-lane, more pedestrian- and bicycle-friendly), and those of Euclid, west of Wilke, in Rolling Meadows (higher-speed, high volume, 5 lane road). ***Figure 4.59*** provides conceptual cross-sections for this segment of Euclid.

Figure 4.59 (a) - Existing Cross-section: Euclid Avenue

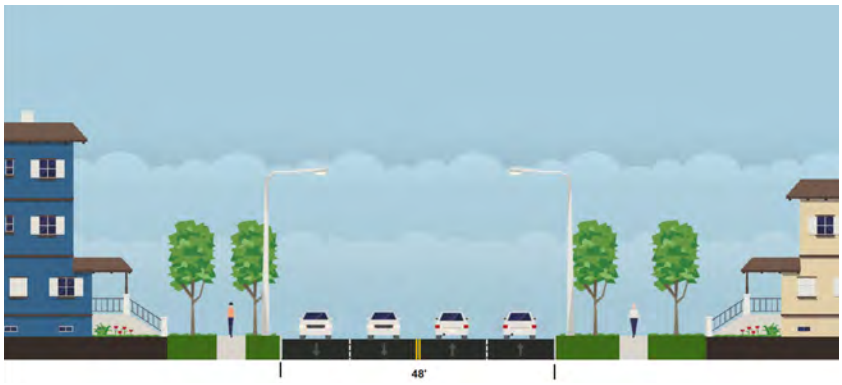
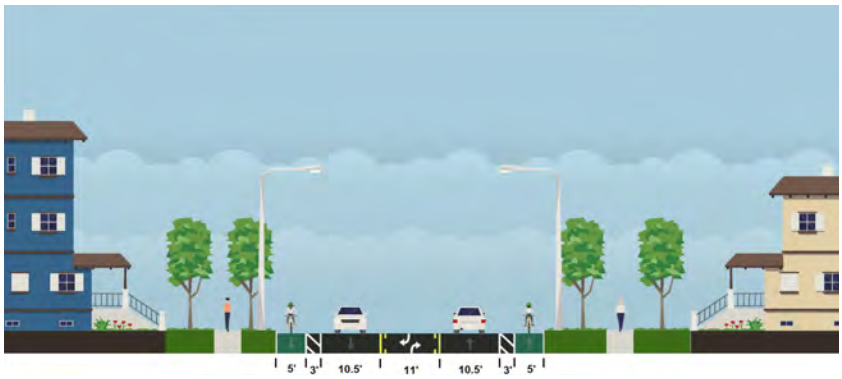


Figure 4.59 (b) - Proposed Cross-section: Euclid Avenue Buffered Bike Lane Concept



Marked Shared Lanes (Sharrow) Definition and Design Guidelines

Marked shared lanes, or "sharrows," use the Shared Lane Marking (Manual on Uniform Traffic Control Devices (MUTCD), Section 9C.07) in a general-use lane to indicate a context in which bicycles and vehicles share the lane. They are useful in locations where there is insufficient width to provide bicycle lanes. Shared lane markings alert drivers to the presence of bicyclists, reinforce the legitimacy of bicycle use on the street, and provide a general wayfinding function. The markings also direct bicyclists to maintain proper positioning and ride in the safest location within the lane, as well as encourage safer passing by motorists. Shared lane markings may have a green-colored background (***Figure 4.64***).[15] Shared lane markings should not be used on shoulders, in designated bike lanes, or to indicate bicycle detection areas at signalized intersections.[16]

[15] See https://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/mutcd/gcp_slm.cfm.

[16] A special symbol exists to indicate bicycle detection areas at signalized intersections (see MUTCD, Section 9C.05).

Design Guidelines

Shared lane markings should be placed so that the centers of the markings are at least four feet from the curb on streets without on-street parallel parking and a minimum of 11 feet from the curb on streets with parallel parking. Markings should be placed further into the lane whenever appropriate, such as when the lane is too narrow for safe side-by-side operation of a bicycle and a motor vehicle. Lateral placement is critical to encourage riders to avoid the "door zone" and to encourage safe passing behavior.

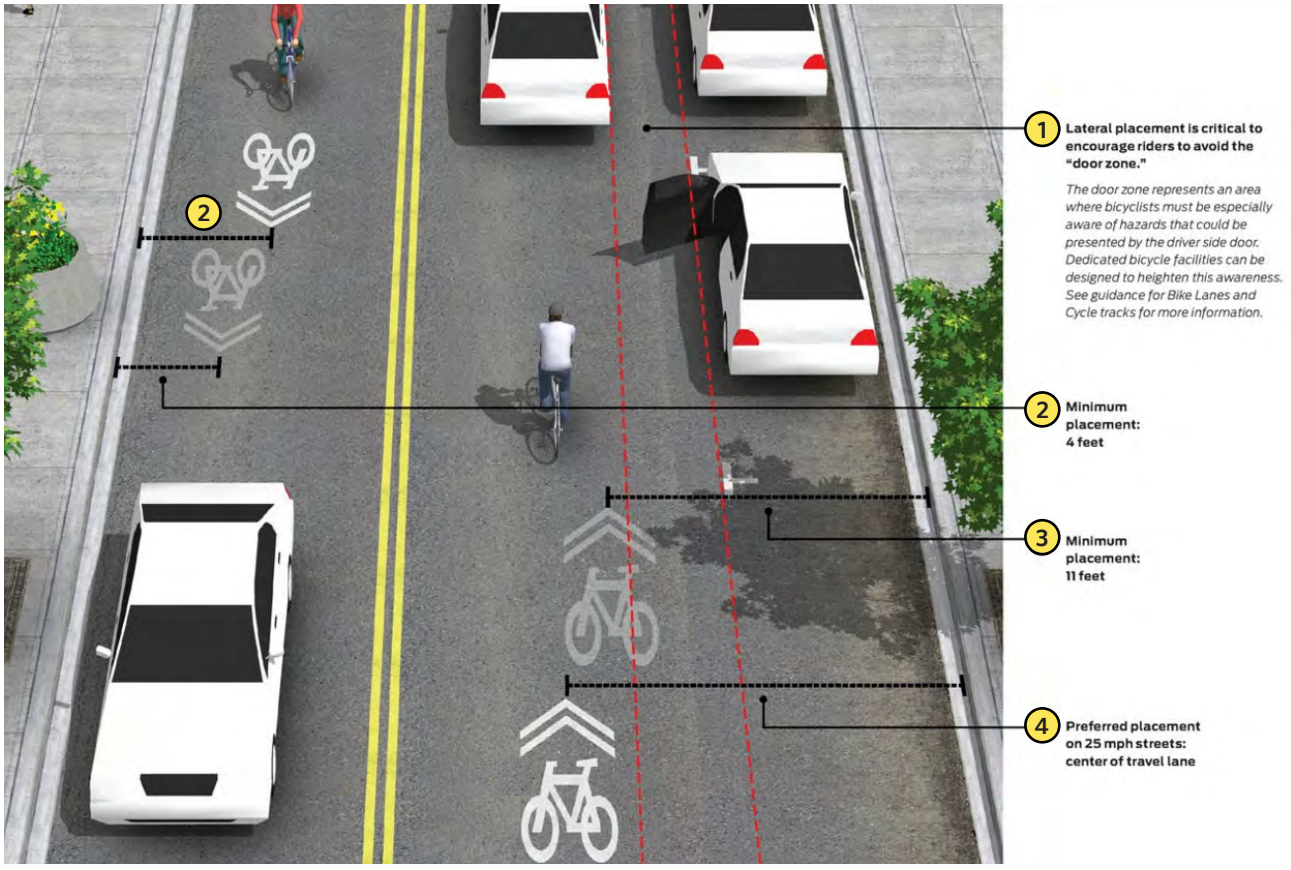
Figure 4.60 - Marked shared lanes

Frequent, visible placement of markings is essential, but varies per roadway characteristics. When used to bridge discontinuous bicycle lanes or paths, at intersections, or along busier streets, sharrows should be placed more frequently (every 50 to 100 feet) than along low traffic bicycle routes (every 200-250 feet or more). Sharrows used along low volume routes can be staggered by direction to provide more frequent markings (albeit in opposite directions).

Sharrows are a relatively low-cost treatment suitable for local roads, collectors, and low-volume, low-speed arterials where constrained ROW will not allow the installation of bike lanes. They are often used at intersections where turn lanes limit right-of-way, as a means of "bridging" segments of bike lanes.

Sharrows are not recommended where posted speed is 35 mph or greater ***and*** ADT is higher than 3,000, nor should they be used on roads that have a speed limit of 40 mph or greater. On streets with posted speeds of 25 mph or slower, preferred placement is in the center of the travel lane. The addition of bike route signage and of regulatory signage, such "Bicycles May Use Full Lane," compliments and strengthens the effectiveness of shared lane markings.

Figure 4.61 - Marked shared lane design guidance



Cross-sections

Figures 4.62 and 4.63 provide a typical cross-section (existing and proposed), as well as a conceptual design proposal for marked shared lanes on Park Street. The illustration of the design proposal includes a complementary traffic calming and safety treatments (mini traffic circle and enhanced crosswalks on all legs of the intersection).

Figure 4.62 - Existing Cross-section: Park Street (26 ft.)

Figure 4.62 - Proposed Cross-section: Park Street Sharrows Concept (26 ft.)

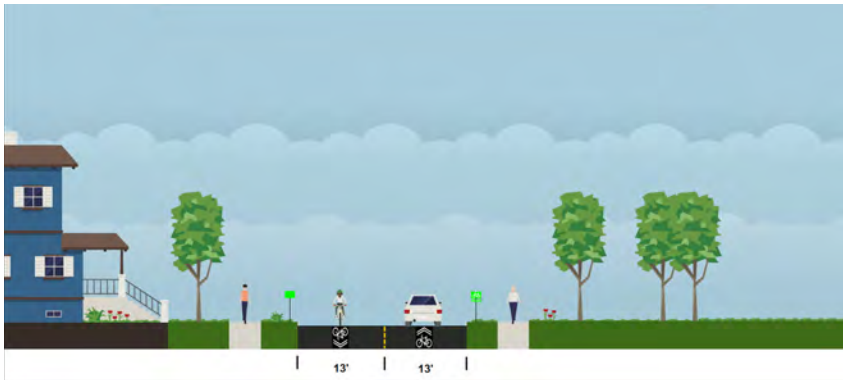
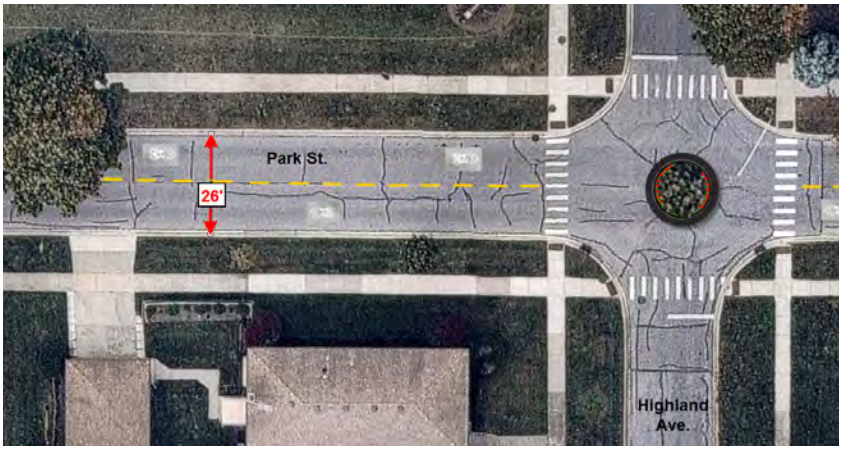


Figure 4.63 - Proposed Cross-section: Park Street at Highland Avenue Sharrows and Traffic Calming Concept



Marked Shared Lane Recommendations

Many of the roadway segments for which marked shared lanes are proposed, are located along framework (or alternative framework) bike routes, on streets that are too narrow to allow bike lanes. These framework routes should be prioritized for implementation (see ***Figure 4.65***).

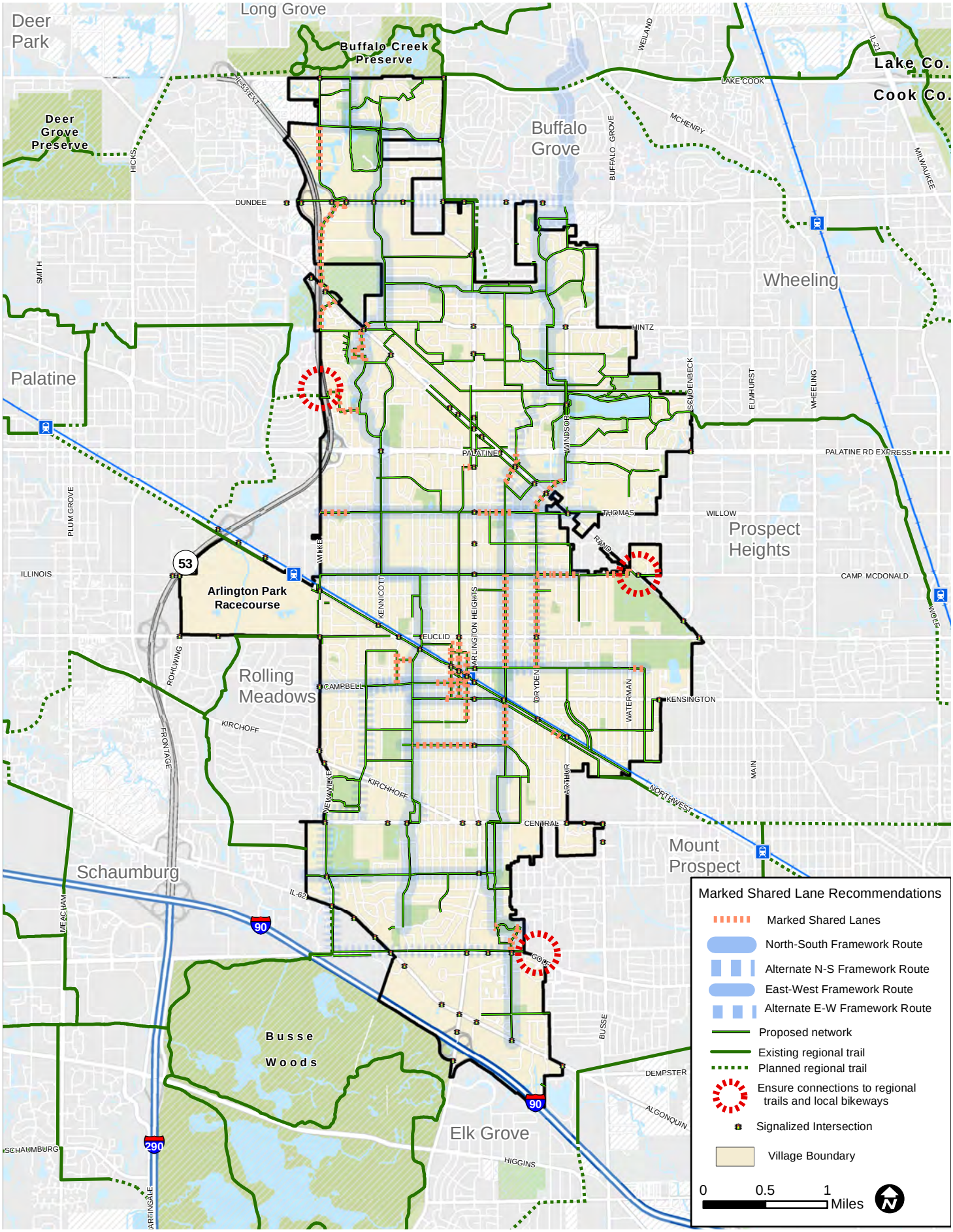
Recommended marked shared lane routes include several streets in Arlington Heights' downtown core – Evergreen, Dunton, Vail, Campbell, and a short segment of Sigwalt – where parking utilization appears to be relatively high and ROW is often constrained. Here, the sharrow markings should be installed in the center of the lanes. While these streets are currently relatively low speed, the Village should consider the implementation of additional traffic calming measures, such as in-street "Stop for Pedestrians" signs, raised intersections, speed tables, additional curb bump-outs, pavement treatments, and landscaping, as well as gateway and "shared streets" concepts, which will help make cycling safer and more comfortable. Lowering the posted speed limit to 20 mph or less in the downtown area should also be considered. See ***Appendix I*** for additional intersection and traffic calming treatments.

Shorter segments of marked shared lanes are also called for on intersection approaches along key bike routes, where the addition of turn lanes restricts available right-of-way. Examples of these locations include Hintz and Rand, Dryden and Rand, and Davis at Cleveland/Chatham Place/Arthur Avenue. This last intersection presents special difficulties (due to the adjacent rail crossing and the need to access the existing shared use path along the northeast side of Davis). The complex intersection should be further studied for possible solutions to bicycle accommodation and routing.

Finally, a few of the locations for which sharrows are being recommended are short segments through parking lots. As with all of the recommended on-street bikeways, these routes should include bicycle wayfinding signage with directions and distances to key destinations. See ***Appendix F*** for information and examples of bikeways routed through parking lots.

Figure 4.64 - High-visibility, green-backed sharrows (currently experimental)

Figure 4.65 - Marked Shared Lanes Recommendations and Framework Bicycle Routes



Combined Bicycle-Parking Lanes Definition and Design Guidelines

Combined bicycle-parking lanes consist of striped on-street parallel parking lanes, paired with MUTCD-compliant bike route wayfinding (as well as warning, and regulatory) signage.[17] This facility type represents an excellent option for relatively wide, low volume (< 6,000 ADT), low speed (< 35 mph) local and collector streets in residential neighborhoods, where on-street parking is allowed but highly underutilized (under 10 percent occupancy under "normal" conditions). The latter condition – very low parking utilization – is crucial to the acceptance, effectiveness, and success of this treatment. Judging from aerial photography, field observations, and community input, low rates of parking utilization are very common in residential neighborhoods throughout the Village and, for this reason, combined bicycle-parking lanes are recommended for a substantial number of the proposed bikeway network routes, especially along framework routes (see ***Figure 4.69***).

[17] For the difference between and examples of warning signage, see the MUTCD, Section 2A.01.

Combined bicycle-parking lanes are not dedicated bike lanes. For this reason, it is important that they are supplemented and enhanced with high-quality, well-installed bike route signage and, in areas where on-street parking occurs on a regular basis, with shared lane markings to direct cyclists around parked cars and to increase driver awareness of the presence of cyclists. This hybrid or "compromise" facility type – when used in appropriate locations – provides a viable alternative to the removal of on-street parking, while retaining benefits for cyclists and other roadway users.

Combined bicycle-parking lanes are called for where the use of sharrows might confuse bicyclists and motorists. This can occur when sharrows are placed at the MUTCD-recommended distance of 11 feet from the curb in an area of low parking utilization, as markings may appear to be "in the middle of the road," defeating the symbol's purpose of positioning the cyclist in the appropriate and safest position. In these situations (low parking utilization, relatively low-volume, low-speed roads), combined bicycle-parking lanes typically work better than sharrows. However, when parking is able to be removed from one or both sides of the street, traditional, buffered, or advisory bike lanes, or even marked shared lanes with symbols located for correct and expected bicyclist positioning (i.e. 4 feet from the face of curb), would typically be preferred treatments, since they communicate more clearly the legitimacy of on-street cycling. As a general principle – especially along framework routes – the Village should aim for installation of the most protective on-street bicycle facility type that the context and conditions permit.

Design Guidelines

Because this facility type is a hybrid of two different treatments or interventions – marked parking lanes along the curb and installation of bicycle route signage – design guidelines for these two elements should be followed. A solid white stripe, parallel to and seven to eight feet from the curb, should define the parking lane; it can be continuous, dashed, or dropped altogether where it crosses driveways. In addition, appropriate, visible bike route signage should be installed. Combined bicycle-parking lanes may also include signage indicating parking. Installation should not include any dedicated bike lane signage or MUTCD bike lane markings. Occasional sharrows markings are used only along specific stretches where parked cars are regularly present on-street due to adjacent land use.

Cross-sections

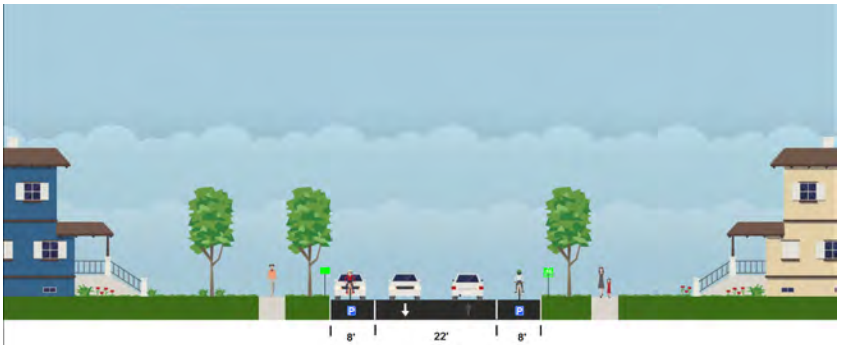
Figure 4.67 illustrates typical cross-sections (existing and proposed) for combined bicycle-parking lanes (on Burr Oak Street). These cross-sections can be used as a guide for reconfiguring existing streets in Arlington Heights. *Figure 4.68* offers a photograph of existing conditions on Burr Oak and a perspective rendering of the proposed facility. For additional examples/illustrations, see *Appendix K.*

Figure 4.66 - Combined bicycle-parking lane in Warrenville, IL

Source: Ed Barsotti, Ride Illinois

Figure 4.67 (a) - Existing Cross-section: Burr Oak Street

Figure 4.67 (b) - Proposed Cross-section: Burr Oak Street



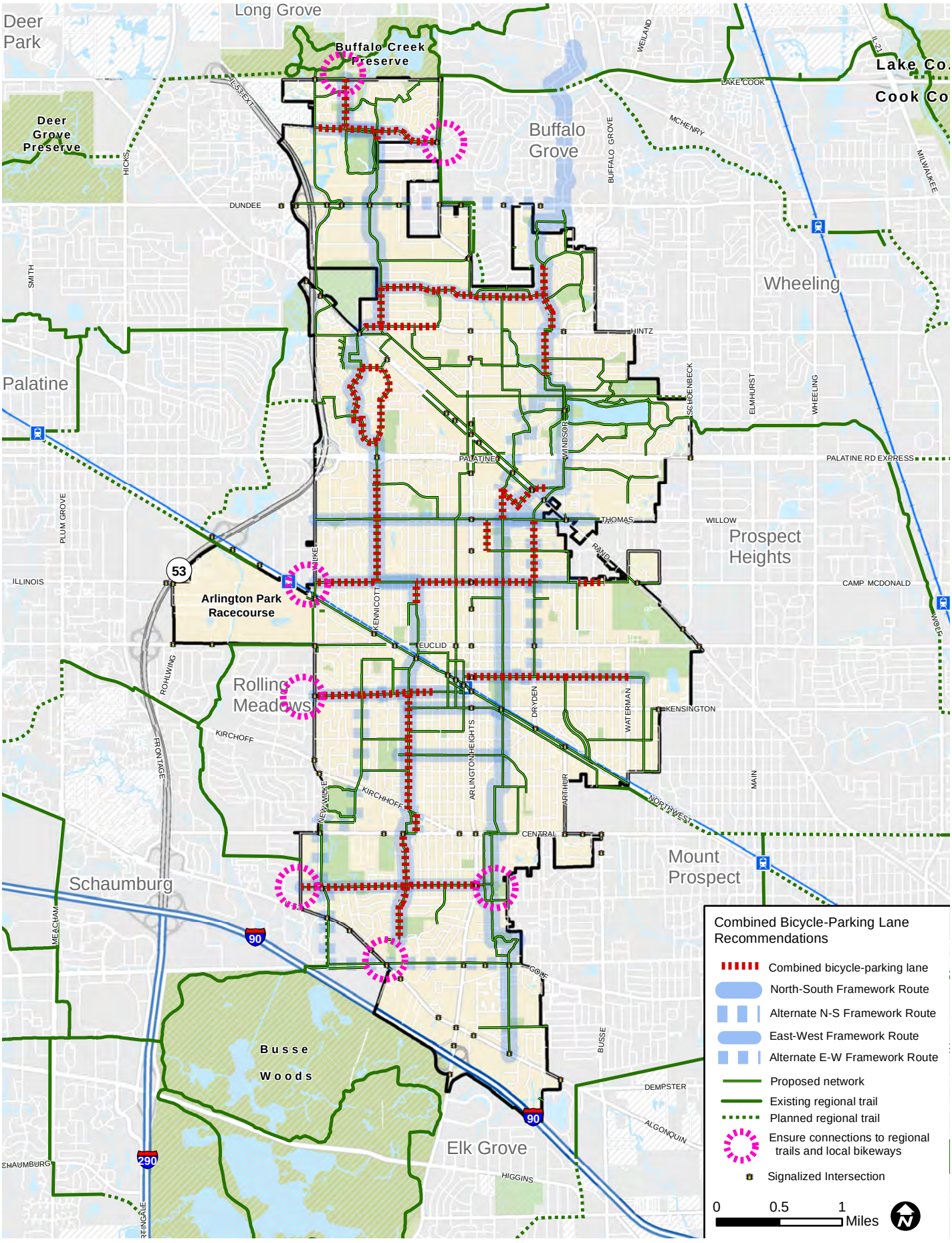
Combined Bicycle-Parking Lane Recommendations

It is recommended that the Village focus on combined bicycle-parking lanes that form key segments in the framework bike route network. The relatively low cost of implementation for these facilities should make them near- to mid-term priorities. Choosing one east-west framework route in the northern part of the Village (such as Burr Oak or Oakton) and one in the central or southern part (such as White Oak or Campbell) to implement would be a logical and feasible way to begin. In addition, segments along the two north-south framework routes should also be prioritized (for example, Kennicott, Ridge, Fernandez, Brighton, Jane/Douglas). It should be noted that recommended bicycle routes, like other bikeway facility types, typically entail intersection improvements in order to maximize the safety and comfort of crossings. Such improvements, when located at intersections with state or county roads, will require coordination and interagency cooperation. Implementation of such crossing improvements may therefore occur incrementally, as reconstruction and repaving projects arise.

[18] See MUTCD, Section 9B.01, at http://mutcd.fhwa.dot.gov/htm/2009/part9/part9b.htm.

Figure 4.68 - Burr Oak Street, Proposed and Existing (Perspective)

Figure 4.69 - Combined Bicycle-Parking Lane Recommendations and Framework Routes



Signed Bicycle Routes Definition and Design Guidelines

Signed bicycle routes are streets that are signed for bicycle use (bicyclist wayfinding and safety), but do not have other on-street bicycle-specific markings (such as bike lanes, sharrows, etc.). They are located, typically, along local neighborhood streets that carry relatively low traffic volumes and operate at low speeds. Bicycle guide signs[18] designate the route and help bicyclists navigate to destinations. Warning and regulatory signage is aimed at improving bicyclist safety. Signage not only serves bicyclists and pedestrians, but motorists as well, who use the signs to identify the locations of community destinations and to remain alert to the potential for bicyclists to be present. Signing the bicycle network can encourage more people to bicycle and, more broadly, raises awareness and acceptance of bicycling among all residents.

To maximize the usefulness of route signage, destinations, distances, and directional arrows should be included wherever needed. Bike route signage consists of three main sign types, which can be combined on single posts:

- Confirmation signs – The purpose of confirmation signage is to indicate to cyclists and drivers that the roadway is a designated bikeway. Confirmation signs are usually located mid-block or on the far-side of intersections. Placement should be every block or two, unless another type of sign is used. Often, other types of signs (turn or destination) can serve as confirmation signs in addition to their other functions. Confirmation signs may be as simple as a standard Bike Route Guide Sign (MUTCD, D11-1) or they may include a trail, municipal, or program brand or graphic.
- Action (turn) signs – These signs indicate that a bikeway turns from one street to another. Turn signs are typically located on the near side of intersections, and include a Bike Route Guide Sign (D11-1) and the appropriate directional arrow supplemental sign. Turn signs should not be used at the junction of intersection bikeways.
- Decision signs – These signs mark the junction of two or more bikeways, where a decision is made by the cyclist as to which route they will follow. They are intended to clarify route options for reaching certain destinations and are comprised of a Bicycle Route Guide Sign (D11-1) and plaques with important destinations, directional arrows, and mileage to those destinations. Decision signs are typically located on the nearside of intersections, in advance of the junction with another bikeway(s).

Design guidelines

The Village should follow MUTCD standards when designing and installing directional and wayfinding signage. Signs should be repeated at regular intervals so that bicyclists entering from off-route streets will know that they are on a bicycle route and where it goes. In addition to MUTCD bikeway signs, other supplemental wayfinding and informational signage formats may be considered in the downtown area, including kiosks, customized and decorative signs, and art installations. If kiosks are used, a variety of information (such as maps, rules and regulations, community events, regional trail connections, Pace bus routes, Metra Stations, and local businesses) can be included. Decorative signs and art installations may take a variety of forms, and their broad purpose should be to "brand" or identify the community as being "bicycle-friendly."

Cross-sections

No typical cross-section is provided since bikeway signage alone is used to create this type of facility. The facility type is dependent not so much on roadway cross-section as on road traffic characteristics (speed, volume) and surrounding land use (residential neighborhoods, low traffic areas). Dunton Avenue (between Thomas and Euclid), shown below with signage drawn in, is an example of a typical street for which the signed bicycle route treatment is proposed. Additional illustrations of this

Signed Bicycle Route Recommendations

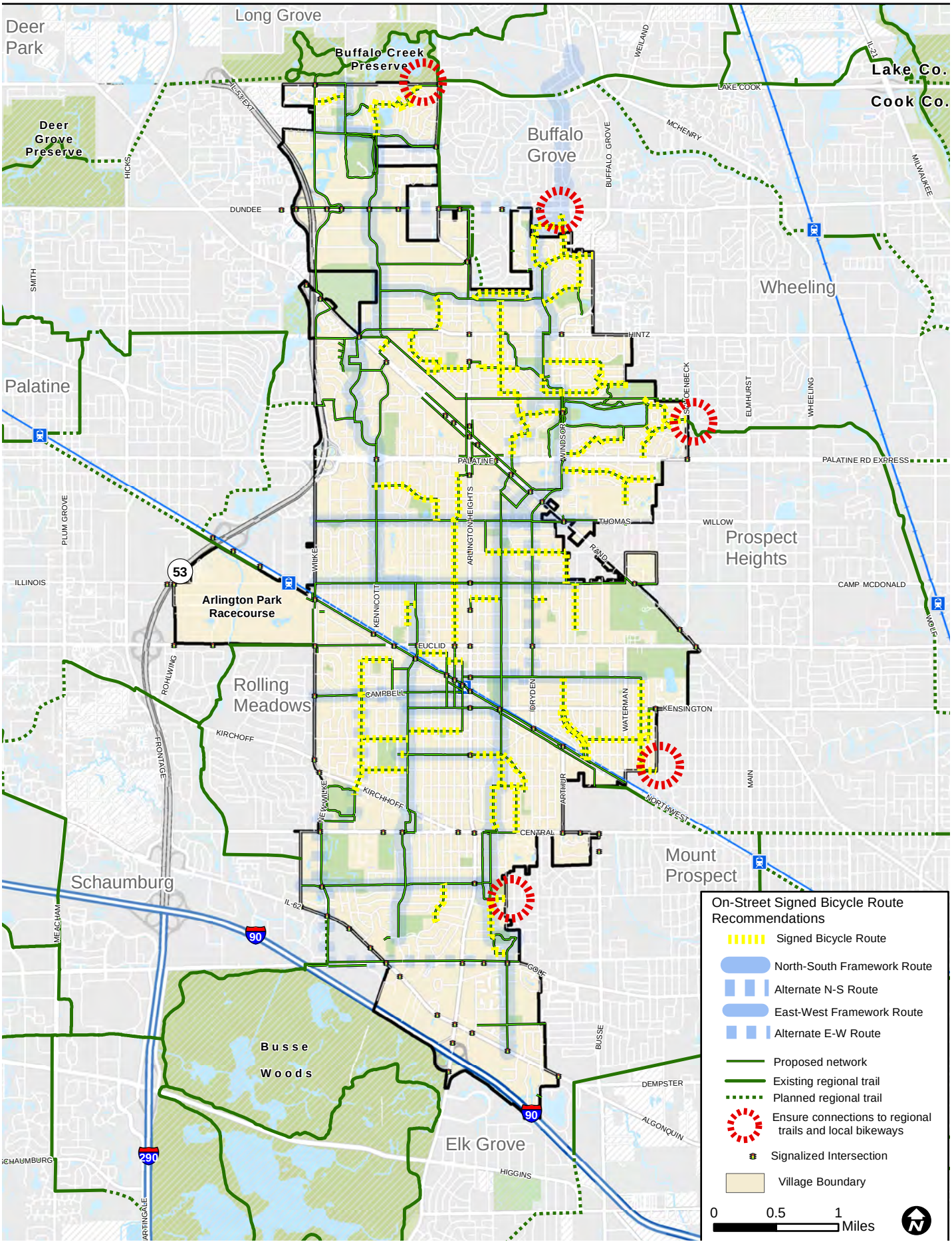
The Village should prioritize on-street signed bike routes that make important network connections or provide links to key community and neighborhood destinations. Although there are relatively few segments of the bicycle framework network that call for route signage without other treatments/facility types, those that do should be a high priority for implementation. On these framework routes, we recommend that the Village consider bicycle boulevard treatments, which typically include enhanced, branded signage and pavement markings, along with traffic calming and traffic diversion.[19] It should be noted that, while proposed signed routes consist of signage alone, signage should be installed and/or improved along all Village bikeways.[20]

In general, proposed on-street signed bike routes function largely as "spur" routes off of the framework system leading to neighborhood schools, parks, or residential areas or as relatively short links between framework routes. In order to reach destinations, these routes are often combined with short segments of sidepath, cut-throughs, and/or intersection crossing improvements.

[19] See section on "Recommended Network" and Footnote 1, above.

[20] More information on bicycle signage and wayfinding can be found in NACTO's Urban Bikeways Design Guide webpage on bike route wayfinding and signage, at http://nacto.org/publication/urban-bikeway-design-guide/bikeway-signing-marking/bike-route-wayfinding-signage-and-markings-system. AASHTO's Guide for the Development of Bicycle Facilities, 4th Edition, has guide signage and wayfinding information in Section 4.11. The Pedestrian and Bicycle Information Center (PBIC) has information at http://www.pedbikeinfo.org/planning/facilities_bike_wayfinding.cfm. The MUTCD has standards and guidance for directional, regulatory, and warning bicycle signs at http://mutcd.fhwa.dot.gov/htm/2009/part9/part9b.htm#figure9B04. It should be noted that the NWMC, of which Arlington Heights is a member, had developed the "North and Northwest Cook County Regional Corridor Bicycle Signage Plan" (2012), which illustrated best practices in bicycle route signage and is intended to provide general guidance on signage design. The plan is at http://www.nwmc-cog.org/Transportation/Documents/BicycleSignagePlan.aspx. Useful information on bicycle wayfinding can be found in the recently published best practices report produced by Alta Planning + Design for the City of Wichita, KS, available at https://www.wichita.gov/Government/Departments/Planning/PlanningDocument/Bicycle%20Wayfinding%20System%20Plan%20Technical%20Report%20No1-Best%20Practices.pdf.

Figure 4.70 - On-Street Signed Bicycle Route Recommendations and Framework Routes



Intersections and Crossing Location Improvement

The majority of locations recommended for spot improvements are intersections. All intersection improvements – like other infrastructure projects in the public ROW – will require further engineering study and analysis. Effects on overall traffic movement and control, safety for all roadway users, drainage and other environmental issues, right-of-way availability, location of utilities and roadside equipment, and costs will all need to be evaluated and potential trade-offs defined and assessed. Intersection improvements may involve different treatments or combinations of treatments depending on context. Key potential intersection and crossing location treatments[31] aimed at improving conditions for pedestrian and bicycle travel include:

- Traffic signals
- Pedestrian crossing beacons (Rectangular Rapid Flash Beacons and Pedestrian Hybrid Beacons)
- High-visibility crosswalks
- Pedestrian countdown signals
- Accessible pedestrian signals
- Signal adjustments (more walk time, leading pedestrian intervals) or turn restrictions
- Warning, regulatory, and/or wayfinding signage
- Enhanced lighting
- Bicycle detection technology
- Through-intersection, on-pavement bike route markings, and other changes in striping/marking
- Traffic calming treatments, such as mini-traffic circles or in-street "stop-for-pedestrians-in-crosswalk" signs
- Raised medians (pedestrian refuge islands)

Full intersection reconstruction, which in some cases may be desirable, typically involves major changes to the configuration or geometry of the intersection. Reconstruction aimed at improving conditions for pedestrians and bicyclists may include such treatments as curb extensions, raised medians (refuge islands), tightened curb radii, and/or the installation of accessible sidewalks or sidepaths with ADA-compliant curb ramps and landings.

Generally, the design of intersections to accommodate bicyclists and pedestrians should aim at reducing conflicts with motor vehicles by heightening visibility, indicating a clear right-of-way, and facilitating eye contact and awareness among different roadway users. Intersections, through which bike facilities pass, should include treatments to resolve queuing and merging maneuvers for bicyclists, and can be coordinated with specialized signals and/or signal timing or phasing.

Design Guidelines

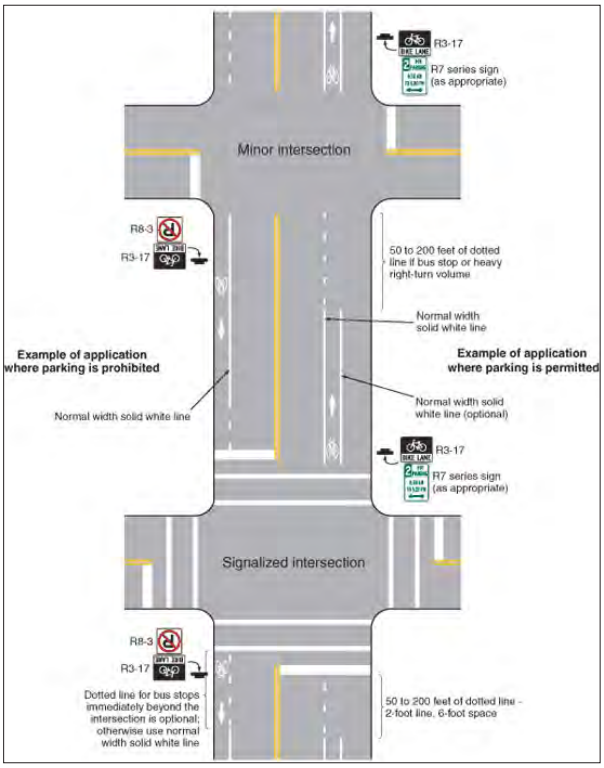
The design of intersections and crossing locations is heavily dependent on the context and the specific characteristics and details of a given site. Broadly, intersection design includes elements such as roadway configuration and geometry, textured materials, pavement markings, signage, signals and beacons, detection technologies, and lighting. The design of intersections and crossings for multiple modes is complex and requires a balance of different goals and objectives. Design must take all existing and anticipated movements into consideration. In such cases, the manner and extent to which vulnerable users (bicyclists and pedestrians) and motor vehicles are intended to mix or be separated is defined by the need to reduce the risk of crashes and to increase bicyclist and pedestrian comfort and convenience. The level and the type of treatment(s) called for at any given intersection depends on the existing or desired facilities (bicycle, pedestrian, motorized) at and near the intersection, the presence and configuration of the intersecting streets and driveways, operational characteristics such as traffic volumes, speeds, turning movements, and adjacent land use.

In general, in multimodal urban and suburban contexts, intersection design and choice of treatment(s) should aim at assisting and ensuring the safety of slower, less experienced, skilled, and/or mobility-challenged pedestrians and bicyclists (children, seniors, persons with disabilities, parents with strollers, etc.) at designated crossing locations. Compliance with the ADA laws and recommended best practices for the design of public rights-of-way, while adhering to a Complete Streets approach, is the best way to achieve this. Treatments and operational techniques that are especially effective at helping vulnerable and mobility-challenged individuals at designated crossing locations include:

- Lengthening the WALK/flashing DON'T WALK signal phase, allowing more time for crossing
- Installing medians/refuge islands, so that slower persons can cross in stages
- Installation of accessible pedestrian signals to assist people with vision impairments
- Adjusting signals to provide leading pedestrian intervals and/or restricting turning movements
- Reducing crossing distances
- Enhancing the visibility of crossing locations through lighting, crosswalk markings, signage, and/or raised crosswalks
- Reducing traffic speed

Treatments and design guidance aimed at improving the safety and comfort of bicyclists at intersections is different from that focused on pedestrians, since bicyclists typically move in and with traffic, while pedestrians are separated from it. In addition, bicyclists typically move at higher speeds than pedestrians. There is, however, substantial overlap and synergy between accommodation and treatments for both modes. We later provide information and select guidance for the design of bike lanes and other bicycle facility types at intersections and also for crosswalks and other treatments intended to improve the safety and comfort of pedestrians.

Figure 4.71 - Typical bike lane markings at intersections



Source: MUTCD

On-Street Bike Lanes at Intersections

While all bicycle facility types (trails, multiuse paths, lanes, sharrows, signed routes) may require special treatments at intersection locations, on-street dedicated bicycle lanes present specific challenges. Various designs and treatments exist for bike lanes as they approach (and pass through) an intersection (where most conflicts with automobiles occur). It is important that bicyclists are provided an opportunity to correctly position themselves to avoid or minimize conflicts, particularly with turning vehicles.

General design principles include: designing the bicycle route through the intersection to be direct, logical, and similar to the path of vehicles; ensuring the visibility of the route by providing pavement markings and lighting; and at signalized intersections, using technology that detects the presence of bicyclists and ensures appropriate signal timing.

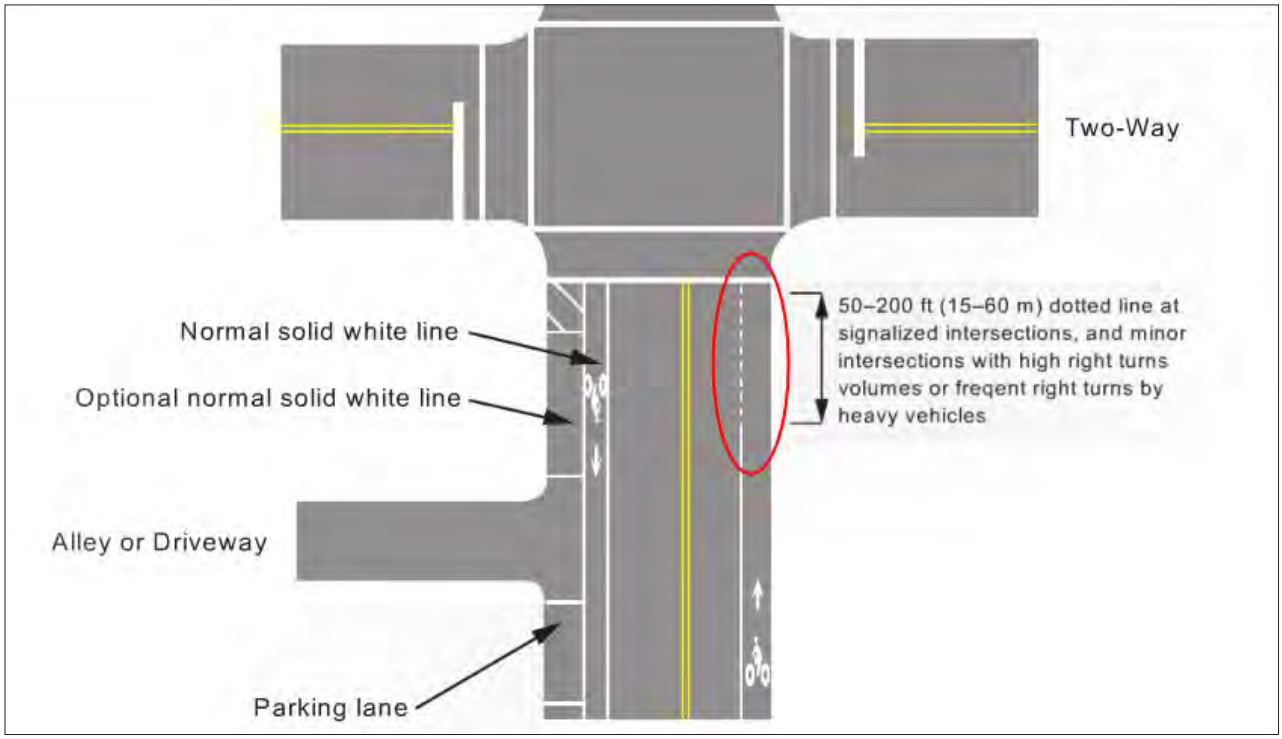
Right turns are relatively easy for bicyclists because they usually ride on the right hand side of the road. At intersection approaches that do not have right-turn only lanes, bike lanes should be defined by a dashed line (separating it from the travel lane to the left), beginning 50 to 200 feet in advance of the intersection. This encourages merging of right-turning vehicles in advance of the intersection and helps avoid "right-hook" crashes.

For streets with right-turn only lanes, bike lanes should cross the right-turning traffic (in a merging or mixing zone) to a position left of the right-turn lane. When there is not enough room for this, the bike lane should be dropped and shared lane markings should be installed on the left-hand side of the right-turn lane (a combined bike/right turn lane). Through bike lanes should be a minimum of four feet wide (five or more feet preferred).

Intersection Treatments: Through-Intersection Bikeway Markings

For bicyclists traveling in a conventional bike lane, the approach to an intersection with vehicular turn lanes presents a significant challenge. It is vital that bicyclists are provided with an opportunity to correctly position themselves to avoid conflicts with turning vehicles. ***Figure 4.72*** illustrates options for a through bicycle lane (or 'bicycle pocket' lane), as well as an MUTCD-compliant design for a combined bicycle-right turn lane.

Figure 4.72 - Intersection Treatments: Bike Lane Pavement Markings for Through Bike Lane without Right Turn Only Lane



Through Bike Lane Option A

For intersections that have sufficient width, separate through lanes for bicycles should be created. Dashed lines are used to signify the merge area. Dashed lines should start a minimum of 50 feet from the intersection. Markings are also used to clarify bicycle positioning. An on-street parking lane becomes the right turn only lane in this example.

Through Bike Lane Option B

This example illustrates a through bicycle lane at an intersection from a street with no on-street parking. Dashed lines are used to signify the merge area, and should start a minimum of 50 feet from the intersection. Markings are also used to clarify bicycle positioning. A right turn only lane is added by throat widening in this example.

Through Bike Lane Option C

In this example, the merging or mixing zone is painted green to increase visibility and awareness. Both the painted area and the dashed lines should start a minimum of 50' from the intersection. An on-street parking lane becomes the right turn only lane in this example.

Figure 4.73 - Through Bike Lane Option A

Figure 4.74 - Through Bike Lane Option B

Through Bike Lane Option D

In this example, the through general-purpose travel lane becomes a right turn only lane. Bicyclists need to move laterally to weave across the travel lane. Therefore, the bike lane along the curb should be dropped, and a bike lane introduced on the left side of the right turn lane. In this situation, the bike lane line should not be striped diagonally across the travel lane, as this inappropriately suggests to bicyclists that they do not need to yield to motorists when moving laterally. This option/scenario, although required in many suburban locations, is the least preferred and should be used only when no other option is practicable.

Through Bike Lane Option E

In this example the through general-purpose travel lane becomes a right turn only lane, but the bicycle lane remains on the right hand side of the right turn lane. This configuration requires the installation of a bicycle signal giving bicyclists an exclusive phase to separate conflicting movements. Like Option D, this option/scenario is not preferred and should be used only if Options A-C are not possible.

Figure 4.75 - Through Bike Lane Option C

Figure 4.76 - Through Bike Lane Option D

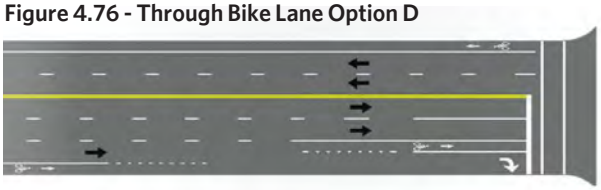
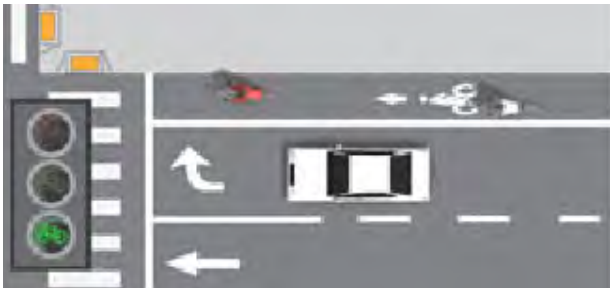


Figure 4.77 - Through Bike Lane Option E

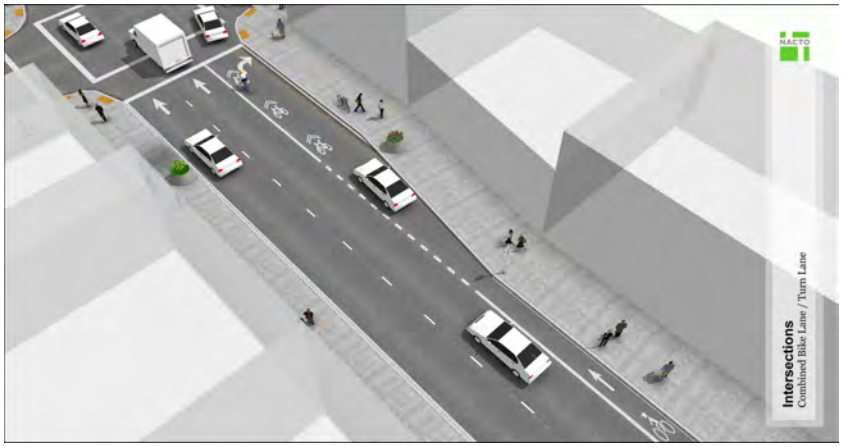


Intersection Treatments: Combined Bike Lane / Right-Turn Lane

A combined bicycle/turn lane (or shared lane) utilizes shared lane markings within the right turn only lane, typically positioned toward the left side of the lane. Shared lane markings help delineate space and indicate the proper positioning for through bicyclists within the shared lane. This treatment may include signage indicating that vehicles in the lane must turn right, except bicycles. In order to indicate a merging/mixing zone, a dashed line is used on the intersection approach, at least 50 feet in advance of the stop line. No on-street parking is shown in this example, though the treatment can also be used when a parking lane transitions to a right turn lane and in other situations as well.

For left turns, bicyclists – moving in the manner of other vehicles – may merge left in advance of the intersection to turn from the same location as other left-turning vehicles. This maneuver requires no special treatment, though in some situations, a standard bike box[21] can help bicyclists obtain proper positioning for a "vehicular" left turn. However, a "two-stage left turn" offers cyclists an alternative to following vehicular movements for a left turn. This alternative requires that bicyclists proceed straight through the intersection – to the far corner of the cross street – where they then wait to cross in the direction of travel of that cross street. This type of turn is formalized by the installation of a "two-stage left-turn box" and appropriate signage.[22] The first option, following vehicular movements, works well on low-volume, low-speed streets, while the latter option (two-stage turn) is preferred on multi-lane, high volume, or high speed roadways.

Figure 4.78 - Intersection Treatments: Combined Bike Lane / Right-Turn Lane



Source: NACTO

[32] See http://nacto.org/publication/urban-bikeway-design-guide/intersection-treatments/bike-boxes/

[33] See http://nacto.org/publication/urban-bikeway-design-guide/intersection-treatments/two-stage-turn-queue-boxes/. See also, http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/mutcd/turn_box.cfm.

Intersection Treatments: Through-Intersection Bikeway Markings

Through-intersection markings should be installed to indicate the intended path of bicyclists. The markings guide bicyclists on a safe and direct path through intersections and increase awareness and visibility. The examples shown in ***Figure 4.79*** illustrate different types/options for through-intersection markings for typical bicyclist movements.

Through-intersection bikeway markings can be combined with the various types of pedestrian crosswalk markings (***Figure 4.79***), based upon unique site characteristics, safety objectives, and community goals/desires.

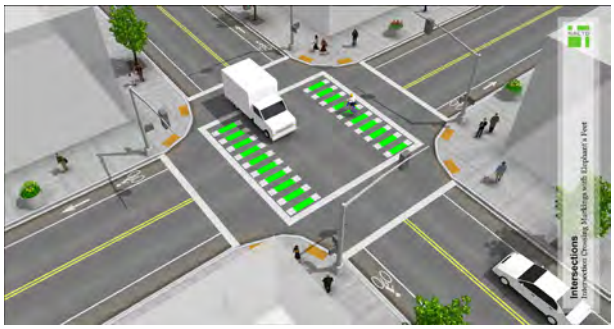
Figure 4.79 – Intersection Treatments: Through-Intersection Bikeway Markings

Dashed white lines

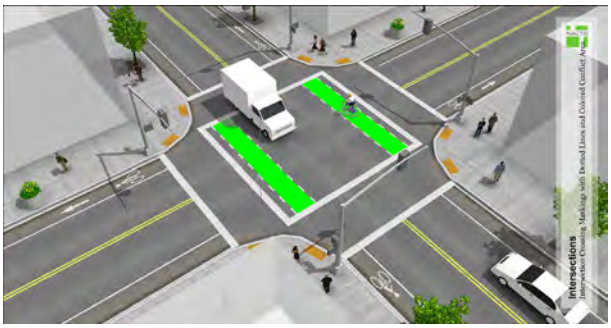
Shared lane markings outlined by continuous dashed white lines

Thick, dotted lines (called "elephant's feet")

Green striping outlined by thick, dotted lines (elephant's feet")



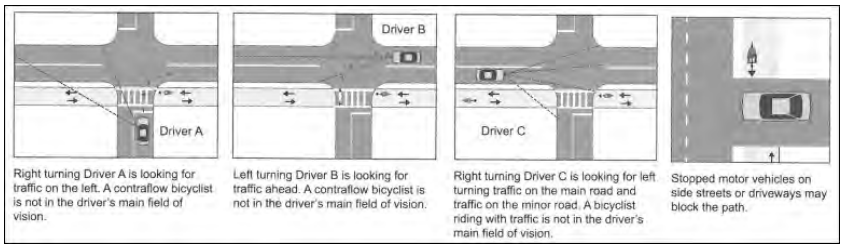
Continuous, solid colored pavement, outlined with the dashed white lines (or "elephant's feet")



Off-Street Bikeways (Sidepaths/Multiuse paths)

Intersection design and treatments are also important for the safety and success of off-street facilities (sidewalks, sidepaths, and multiuse trails). Once again, designs must address all potential conflicts. In the case of off-street facilities, understanding turning movements and typical cones of vision becomes especially important. Design principles that should be applied when creating off-street facilities include reducing the number of driveway crossings; reducing driver speeds at conflict points; and heightening driver and trail user awareness at intersections and driveways. Strategies to heighten awareness include: installing signage, enhanced lighting, ensuring adequate sight lines, and creating highly visible crossings through the use of pavement color, striping, and/or surface texture.

Figure 4.80 - Examples of typical sidepath conflicts / issues:



Source: FHWA/AASHTO

Intersection and Crossing Treatments for Pedestrians

A pedestrian crossing can be defined as any location where the pedestrian leaves the sidewalk and enters the roadway. However, pedestrians do not have the right-of-way at all such crossings. Pedestrian crossings where the pedestrian does have the right-of-way include (marked) midblock crossings and crossings at intersections. Crosswalks are implied at all intersections whether or not they are marked. Midblock crossings are only created if a marked crosswalk is provided. All marked and unmarked crosswalks and midblock crossings should be designed for the safety and accessibility of all pedestrians.

Crosswalk markings, if provided, are used to define the pedestrian path of travel across the roadway, to increase visibility, and to alert drivers to the presence of the crosswalk. Marked crosswalks should be designed in accordance with the MUTCD, Section 3B.18, and the proposed Public Rights of Way Accessibility Guidelines.[23] The minimum width for a crosswalk, per the MUTCD, is six feet, though eight feet or more is preferred.

In addition to crosswalks, certain traffic calming features – some of which have been mentioned above and for which more information can be found in ***Appendix I*** – are recommended to assist pedestrians (and bicyclists) at intersections and other crossing locations. See also, CMAP's Complete Streets Toolkit, at http://www.cmap.illinois.gov/programs-and-resources/local-ordinances-toolkits/complete-streets.

[23] For more information on crosswalks, see http://www.pedbikeinfo.org/planning/facilities_crossings_crosswalks.cfm.

The following examples illustrate typical intersection treatments that can be used by the Village to create safe and efficient intersections and crossing locations for pedestrians. (All images from CMAP staff.)

Pedestrian Crossing Example A – Parallel Lines Crosswalk

This example illustrates a pedestrian crossing that is identified by two parallel solid white lines through the intersection. Although crosswalks with parallel markings are permitted by the MUTCD, they are less visible to motorists than crosswalks with ladder striping, and are therefore not recommended except for low volume local streets.

Pedestrian Crossing Example B – Continental Crosswalk

This example, called the "continental" or "high visibility" (longitudinally striped) crosswalk design consists of wide striped white lines, parallel to the direction of traffic, that define the pedestrian route. The lines should be 12 to 24 inches wide, separated by gaps of 12 to 60 inches. The design of the lines and gaps should, if possible, be placed so that the lines avoid wheel paths.

Pedestrian Crossing Example C – Texture/Color Crosswalk

Different surface materials, such as brick, concrete pavers, and stamped asphalt, and/or colors can be used to increase awareness and visibility of pedestrian crossings, as well as contribute to the aesthetics of the streetscape. However, care should be taken to ensure that materials do not hinder or cause discomfort for persons using wheelchairs, walkers, strollers, or other mobility-assist devices. In addition, crosswalks should meet visibility, non-slip, and retroreflective – the ability to reflect light back – standards, as specified in the MUTCD.

Figure 4.81 - Example A: Parallel Lines Crosswalk

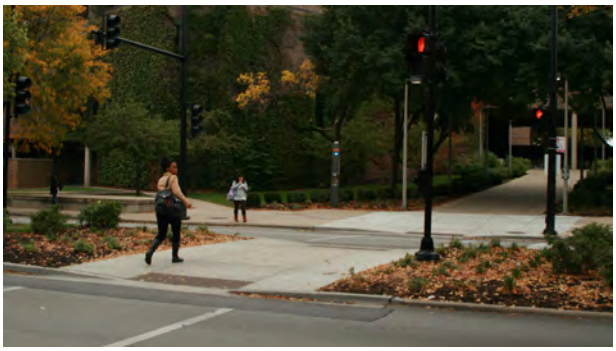
Figure 4.82 - Example B: Continental Crosswalk

Figure 4.83 - Example C: Texture/Color Crosswalk

Pedestrian Crossing Example D – Pedestrian Refuge Island (Median)

Medians, or refuge islands, assist pedestrians (and bicyclists) in crossing both at intersections and at mid-block locations. On large, multi-lane roads, medians can be designed (in conjunction with signal timing and equipment) to divide a crossing into stages, or they can simply provide a refuge area should a pedestrian need or want a safe place to stop. Whenever possible, medians should be raised to provide a protected space, separated from traffic. Raised medians can also be easier for people with vision impairments who use a cane to detect and should be designed with a cut-through at street level or accessible ramps.

Figure 4.84 - Example D: Pedestrian Refuge Island (Median)



Pedestrian Crossing Example E (Traffic Calming) – In-street Pedestrian Crossing Signs

In addition to crosswalk markings, in-street pedestrian crossing signs may be installed at unsignalized intersections and midblock crossings to remind road users of the law regarding right-of-way at crosswalks and to alert drivers to use caution. In addition, in-street signs function as traffic-calming devices, reducing vehicle speeds by narrowing the travel way.

Figure 4.85 - Example E: In-street Pedestrian Crossing Signs (Traffic Calming)

Pedestrian Crossing Example F (Traffic Calming) – Mini Traffic Circle

Mini traffic circles are raised small circular islands constructed in the center of relatively low-volume, low-speed residential street intersections. They are generally not intended for use where either street is an arterial, although they can be used along collector roads. Mini traffic circles reduce vehicle speeds by forcing drivers to change their travel path to maneuver around the circle, and can also be seen as an aesthetic enhancement, contributing positively to the quality of the streetscape.

Figure 4.86 - Example F: Mini Traffic Circle (Traffic Calming)

Intersection and Crossing Location Recommendations

Currently, major arterials along bikeway corridors are challenging to cross by bicycle or on foot. ***Figure 4.88*** identifies proposed intersection, crossing, and other spot location improvements. High priority improvements are located, in most cases, along existing and proposed bikeways and at or near the crossings of major arterial roads. A number of priority locations have been discussed above, in relation to multi-use paths and on-street bikeways.

It is recommended that the Village focus initially on short-term, relatively easy improvements (repainting/ restriping, signal adjustments, bike route signage) at the intersections and other locations shown on ***Figure 4.88***. Over the long-term, when intersections undergo reconstruction or major upgrades, the Village should incorporate more complex and long-term solutions and treatments to improve pedestrian and bicyclist safety and comfort (see below and ***Appendix K***). It should be noted, however, that many of the recommended intersections to be improved are under IDOT (or Cook County's) jurisdiction. The Village should therefore closely and continuously monitor those agencies' annual and multi-year programs and, when projects within the Village are scheduled or indicated, the Village should coordinate with the appropriate entities to ensure that effective, robust pedestrian and bicycle accommodations are included as part of project purpose-and-need, scope, and design.

Walnut-Ridge at Northwest Highway

The north-south "Kennicott" bicycle framework route diverges from Kennicott at Oakton Street in order to utilize Walnut/Ridge Avenue to cross Northwest Highway and the UP tracks. This intersection/crossing was identified by the BPAC as a high priority project, where bicycle improvements are needed. Along the "Kennicott" framework route, the intersection is heavily utilized as one of very few safe (signalized) crossings of Northwest Highway in this part of the Village. Given the importance of this crossing, it is recommended that the Village consider engineering and design treatments to carry the proposed bikeway on Walnut/Ridge (on-street bike lanes from Elm to Campbell) through the intersection of Northwest Highway. Improvements for this intersection are schematically represented in ***Figure 4.83*** . The proposed bike lanes, as well as potential treatments at the intersection – including bike boxes, route signage, enhanced crosswalk and through-intersection bikeway markings, curb ramps, enlarged queuing areas, etc. – are conceptually illustrated in ***Figure 4.87***. Installation of bike lanes may entail the removal of underutilized on-street parking on Walnut and the enforcement of restrictions against sidewalk parking at automobile repair businesses along the route near Northwest Highway.

Figure 4.87 - Walnut/Ridge at Northwest Highway, Intersection / Bikeway Design Concept

Figure 4.88 - Proposed intersection and spot location improvements

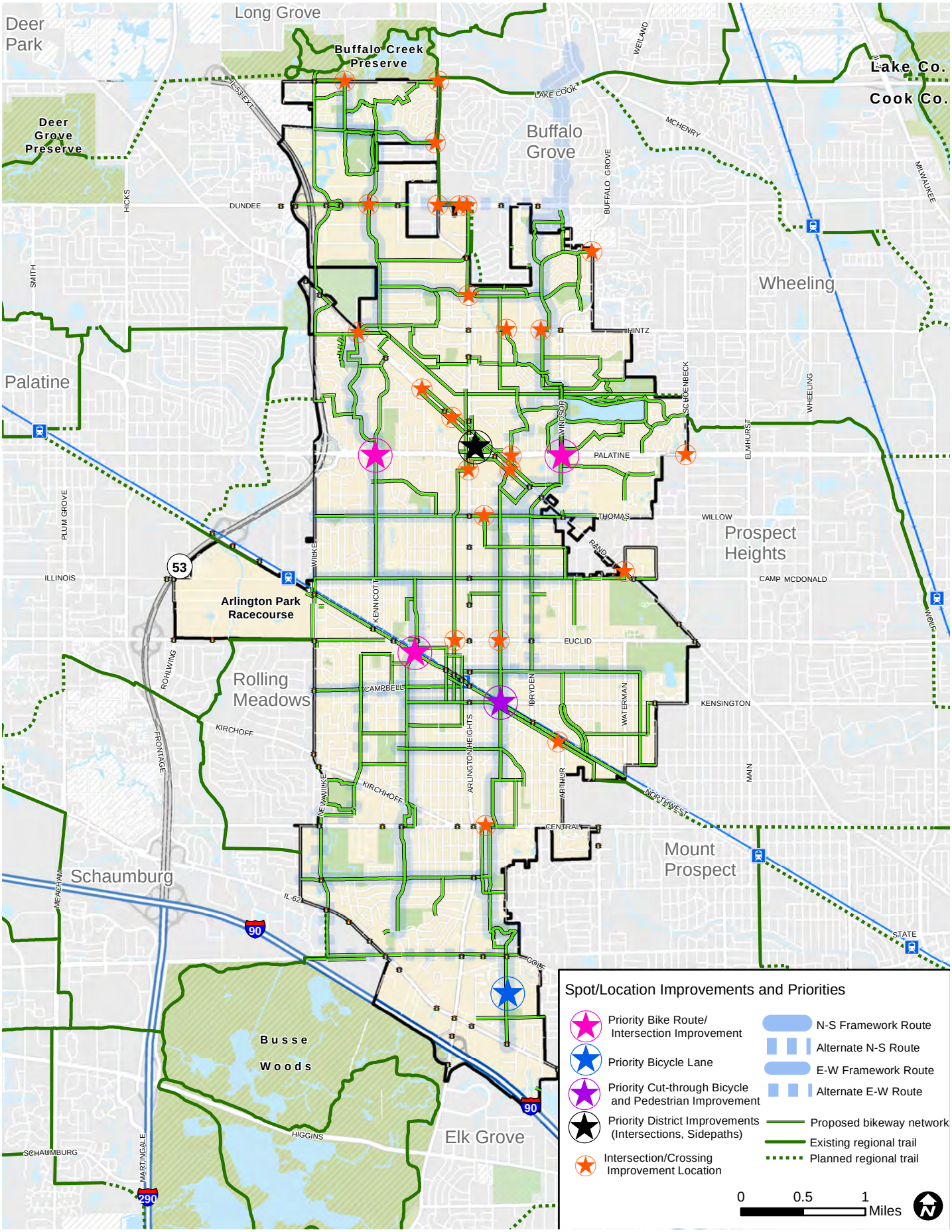


Figure 4.89 - Walnut-Ridge at Northwest Highway, Intersection / Bikeway

Euclid Avenue, traffic calming

Figure 4.86 provides a conceptual design for bicycle and pedestrian enhancements in the form, primarily, of traffic calming (mini traffic circle and high visibility crosswalks) at the intersection of Douglas and Euclid, which is located along the Dryden/Douglas framework route and which was identified by the BPAC and other stakeholders as a difficult crossing for bicyclists. (See *Figure 4.86* and ***Appendix K*** for more information on mini traffic circles.)

Mini traffic circles function most effectively when deployed along a corridor or throughout a neighborhood. Potential high priority corridors in the Village for this and other traffic calming treatments include Euclid, Thomas, and other two-lane framework bike routes that pass through residential neighborhoods on low-speed, low-volume streets. Segments of Oakton, Park, Sigwalt, and Campbell, White Oak, and other framework routes may also be appropriate locations/corridors.

Figure 4.90 - Mini traffic circle at Euclid and Douglas

Figure 4.91 - Potential corridors / locations for installation of mini traffic circles

Euclid Avenue, between Chestnut and Douglas (top image); Thomas Street, between Yale and Ridge (bottom image)

Additional Intersection and Spot Improvement Location Examples

In addition to spot location improvements identified by the BPAC as high priorities, a number of other important locations have been identified through existing conditions analysis and stakeholder engagement, either as in need of enhancements to increase safety and comfort for pedestrians and bicyclists (especially along popular framework routes), and/or because they offer an appropriate context and unique opportunity to implement and test design treatments that – should they prove useful, effective, and popular – may be utilized on a wider scale in other locations throughout the Village. They are intended, therefore, as examples of "typical" intersection treatments and also of the type of locations where such treatments may be most effective.

Hintz Road at Rand

Figure 4.92 illustrates a conceptual design for the signalized intersection of Hintz and Rand Road (here, five lanes), along the Kennicott framework route. The treatment consists of heightened, enhanced on-street markings through the intersection (and on approaches). These include green-backed shared lane markings (currently requiring FHWA permission to experiment), bike boxes, and through-intersections markings.

Dunton at Euclid

Bike boxes are bicycle-specific intersection treatment that can be used to enhance framework routes and improve bicyclist safety and visibility. Bicycle boxes are a common feature of bicycle boulevards. *Figure 4.93* provides a conceptual illustration of this treatment at the signalized intersection of Dunton and Euclid, which is located along a proposed bike route (on Dunton Avenue) and adjacent to important bicycle destinations (the Arlington Heights Memorial Library and the downtown Metra station).

Figure 4.92 - Hintz Road at Rand Road

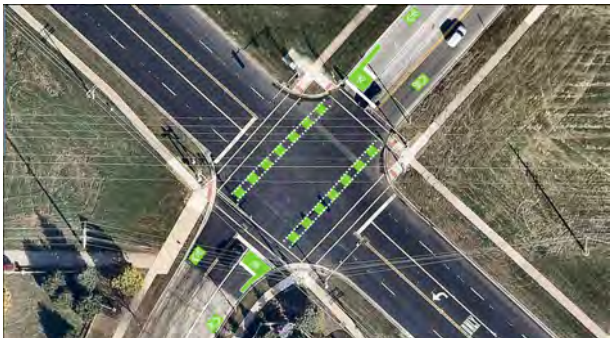


Figure 4.93 - Dunton and Euclid, Bicycle Boxes

Thomas at Belmont

Figure 4.94 offers a conceptual illustration for the installation of raised center medians at the intersection of Belmont and Thomas, which are both bicycle routes, and which was identified by the BPAC and through the plan's public engagement process as a difficult crossing for both pedestrians and bicyclists.

Rand at Waterman

Figure 4.95 provides another example of conceptual design improvements for an uncontrolled crossing location (along a high volume, high speed road), to improve safety. This location, at Rand and Waterman – also along a proposed bikeway providing access to John Hersey High School from the south,includes installation of a raised center median, a pedestrian hybrid beacon, new sidewalk connections and marked crosswalks, and enhanced lighting.

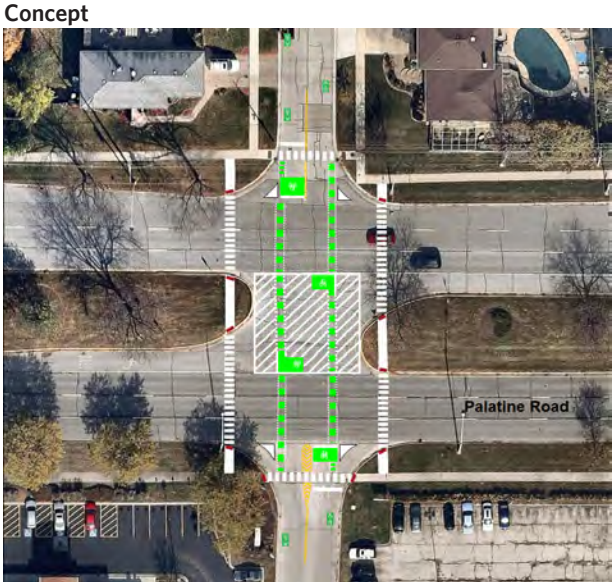
Palatine at Eastwood

Figure 4.96 illustrates potential improvements aimed at increasing safety (primarily through enhanced visibility) for bicyclists and pedestrians at crossings of large, multi-lane roadways (here, Palatine Road) at uncontrolled locations. The intersection/crossing is in the 'Triangle District' and along a proposed bicycle route. The design concept presented here takes advantage of the existing wide raised median, as well as nearby signalized intersections (which help slow and create gaps in traffic). The design should include installation of either a pedestrian hybrid beacon or RRFB to enhance awareness and increase compliance with stopping laws.

Figure 4.94 - Thomas and Belmont, Center Refuge Islands

Figure 4.95 - Rand at Waterman, Crossing Improvements Concept

Figure 4.96 - Palatine at Eastwood, Crossing Improvements Concept



Chapter 5
POLICIES, PROGRAMS, CULTURE AND IMPLEMENTATION

This chapter supplements the physical improvements recommended in the previous chapter with education, enforcement, and regulatory policies and programs that the Village and others should consider. The chapter ends with prioritized implementation strategies to assist with developing the interconnected bicycle and pedestrian system envisioned in this plan.

Policies

Incorporate Projects into the Village's Capital Improvement Program

Many of the recommendations of the Bicycle and Pedestrian Plan require infrastructure investments that should be added into the Village's Capital Improvement Program (CIP).[24] As streets are improved or resurfaced, the Village should implement projects to improve pedestrian and bicyclist safety and circulation, including on-street pavement markings, new or improved signage, and intersection improvements. Funds for the maintenance of facilities should also be budgeted.[25]

Implement the Village's Complete Streets Policy

With the adoption of Arlington Heights' Complete Streets Policy (2013), the Village made a commitment to ensuring that all streets and rights-of-way are designed and operated to enable appropriate and safe access for all users. Improvements to the streets and public rights-of-way should advance the Complete Streets Policy goal of making the street network better and safer for all users. This plan provides specific projects at specific locations, which will help the Village achieve this goal. Although what constitutes a Complete Street varies according to context (surrounding land use, roadway functions and typology, existing and future travel needs, and community desires as expressed in plans and policies), pedestrian and bicycle elements that should be considered in all street improvement projects include: new or improved sidewalks and bicycle facilities; enhanced, safer crossings; and intersection improvements.

[24] A copy of the current CIP is posted on the Village's website at http://www.vah.com/assets/1/finance_department/2016-2020_CIP_Executive_Summary.pdf.

[25] U.S. DOT's Federal Highway Administration recently published the workbook, "Incorporating On-Road Bicycle Networks into Resurfacing Projects." The workbook provides step-by-step instructions for how agencies and communities can integrate bicycle facilities into their resurfacing programs. See http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/.

Coordinate with the Village's Development and Regulations Processes

Adopt a bicycle parking ordinance

The Village should continue to refine and further develop its proposed bicycle parking ordinance to ensure that it meets the various needs and goals of the community. The Village should require that convenient, functional bicycle parking is incorporated as part of new development projects, particularly for commercial and multi-family residential uses. Not only should the number of bicycle parking spaces required per land use or development type be provided, but the regulations should also include information and requirements on the type(s) of bicycle racks that should be used for different contexts/locations and on the distance(s) from primary entrances. In addition, the ordinance should provide details on how the Village will monitor and enforce the ordinance (i.e. plan review, field audits, etc.).[26]

Provide adequate bicycle parking

Regardless of adoption of a bicycle parking ordinance, the Village should continue and expand efforts to provide adequate bicycle parking. Currently there are bike racks at locations throughout the Village, including schools, parks, Metra stations, the Public Library, Village Hall, and other downtown locations, as well as outlying commercial districts, installed by various public and private entities. High-quality, covered parking exists at the downtown Metra station and in nearby parking garages. However, not all destinations are equally well-served, nor are all racks of high quality or utility. The Village should install and/or upgrade bicycle parking infrastructure at destinations along bike routes and at important destinations where the existing bike racks are sub-standard or non-existent. In addition to Metra stations, the downtown area, and schools, important destinations include major employment centers, commercial districts, community facilities, multi-family developments, and recreational destinations.

Support walkability through design and development processes

The Village Planning and Community Development department, which oversees and administers development regulations, permitting, site and building plans, signage, and beautification projects, should continue to support walkability and require safe and convenient pedestrian access to buildings and developments through the design and development review process and the encouragement of high-quality, pedestrian- and bicycle-friendly design. The recent Hickory/Kensington Area Design Guidelines (2014) provide an example of the type of document that can help to ensure walkability.

[26] The Association of Bicycle and Pedestrian Professionals has produced a very useful guide, Bicycle parking Guidelines, 2nd Edition (2010) and the Essentials of Bike Parking: Selecting and Installing Bike Parking that Works, both available at http://www.apbp.org/?page=publications. In addition, several communities from around the country have adopted robust policies that may serve as models, including Cambridge, MA (http://www.cambridgema.gov/~/media/Files/CDD/Transportation/Bike/Bicycle_Parking_Guide_20130926.ashx and http://www.cambridgema.gov/CDD/externallinks/zoningordinance/article6), San Francisco, CA (http://www.sf-planning.org/index.aspx?page=3470), Washington DC (http://ddot.dc.gov/page/bicycle-parking-regulations), and Meridian Charter Township, MI (http://ecode360.com/28784097). See ***Appendix M*** for some important issues in in bicycle parking regulations identified by APBP members in a recent exchange on the Associations Discussion Forum.

Strengthen interdepartmental cooperation and coordination

Coordination between Arlington Heights' Planning and Community Development Department and the Engineering and Public Works Departments is crucial to the successful implementation of this plan and to advancing bicycling and walking as transportation. Coordination on all development projects must begin early, in the concept development stage, and should continue through the financial, budget, cost estimation, design, and construction phases. Design review for architecture, urban design, and beautification projects should be coordinated between departments to achieve outcomes that improve conditions for bicycling and walking.[27] In addition, the Village should also continue to work with adjacent communities, County government, regional agencies, IDOT, and other partners/stakeholders to cooperate on planning and implementation efforts.

[27] http://www.vah.com/departments/planning_and_community_development/design.aspx

Consider pedestrian access to buildings and developments

To encourage walking by all types of pedestrians, walking must be safe, comfortable, and enjoyable. New developments should be required to include new or improved sidewalks. In addition, consideration of the first 30 feet in front of the building and its relationship to a new or existing sidewalk is important, including materials and textures used, architectural details, window coverage (amount of transparent glass), and amenities such as seating, shade, and landscaping. Street trees planted along parkways, with buildings fronting the street, and parking lots in the rear, give pedestrians a more enjoyable experience. Consolidating and limiting the number of driveways along mixed-use or commercial corridors can help create a safer pedestrian environment by reducing the number of conflict locations.

Pedestrian travel in and through parking lots should also be considered in development regulations and design review. Landscaping and shading, breaks in fencing along parking lots/property lines, curb bumpers along sidewalks, pedestrian-scale lighting, and protected walkways between parking rows should all be considered. Use or so-called "goat-paths" indicate desired routes for pedestrians, and can help the Village retrofit areas to better accommodate pedestrians.

Figure 5.1 - Commercial center at the heart of a walkable neighborhood

Source: Dover Kohl Planners

Encourage pedestrian-friendly land use and development patterns

Mixed-use development – where different land uses are in close proximity (typically vertically mixed) and which generally make use of good urban design principles – encourages walking. Allowing retail establishments within residential districts at "neighborhood centers" helps support walking and walkability. Narrow streets and short blocks also help create a pedestrian-friendly environment. In a community like Arlington Heights, which is largely built-out, narrower streets (or the perception of narrower streets) can be achieved through road diets and/or narrowed lanes and addition of bike lanes. In areas with large blocks or cul-de-sacs, the roadway network can be supplemented with pedestrian and bicycle cut-through paths. For future developments, road connectivity and pedestrian friendly design features should be assessed as part of the development or subdivision review processes.

Arlington Heights has already implemented these practices in the downtown area with great success. A rule of thumb for successful, pedestrian-friendly commercial development is that streets should be "busy with traffic, yet narrow enough that pedestrians on one side of the street can see storefronts on the other side."[28] This is typically achieved by having one travel lane in either direction, on-street parking, and (when along a bikeway) bicycle lanes.

Figure 5.2 - Pedestrian access at shopping centers

Source: Human Transit

[28] Tumlin, Jeffrey, ed., Sustainable Transportation Planning: Tools for Creating Vibrant, Healthy, and Resilient Communities (Hoboken, NJ: Wiley & Sons, 2012).

[29] For more information on parking, see CMAP's guide, Parking Strategies to Support Livable Communities, at http://www.cmap.illinois.gov/programs-and-resources/local-ordinances-toolkits/parking.

Allow for reductions in parking requirements

Minimum parking requirements should be evaluated for their efficacy and appropriateness – especially in mixed-use and transit-oriented areas – since there are many factors that affect mode choice and one size may not fit every situation. In addition, private developers are well equipped to determine how much parking is required by the market. Some suburban communities in the Chicago area (such as Glen Ellyn and Elmhurst) have eliminated parking requirements in their downtown areas to promote development of small-parcel businesses and walkability. In cases where a community wants to keep requirements, there will typically still be opportunities for lowering the overall quantity of parking and promoting design that encourages and welcomes other modes of transportation. Some communities create parking maximums to prevent auto-oriented development in pedestrian zones.[29]

Undertake Bicycle and Pedestrian Counts

The Village should develop a program to count bicyclists and pedestrians at key locations throughout the Village. The information gathered can help the Village determine the need for bicycle and pedestrian accommodations and the types of accommodations that may be most appropriate for the numbers and types of users observed. In addition, agencies and communities who can show clear evidence of use are more likely to receive funding for projects through competitive federal and state grant programs.[30]

Implement Existing Plans

The Village of Arlington Heights has a number of existing plans and studies that include recommendations for improving pedestrian and bicycle circulation. Examples of key plans include the Comprehensive Plan, Downtown Master Plan, Thoroughfare and Transportation Policy Plan, and the Hickory/Kensington Area Plan. The Village should continue to implement relevant recommendations in these plans whenever feasible.

[30] More information on bicycle and pedestrian count program and how to set up a robust program can be found in the online Guide to Bicycle & Pedestrian Count Programs (developed by Portland State University's Initiative for Bicycle & Pedestrian Innovation), at https://www.pdx.edu/ibpi/count. See also the recently published white paper by Alta Planning + Design, "Innovation in Bicycle and Pedestrian Counts: A Review of Emerging Technology," at http://altaplanning.com/wp-content/uploads/Innovative-Ped-and-Bike-Counts-White-Paper_Alta-Planning-Design.pdf. Additional information and resources can be obtained through the National Bicycle and Pedestrian Documentation Program (http://bikepeddocumentation.org/). TRB's National Cooperative Highway Research Program (NCHRP) Report 797: Guidebook on Pedestrian and Bicycle Volume Data Collection describes methods and technologies for counting pedestrians and bicyclists, offers guidance on developing a non-motorized count program, gives suggestions on selecting appropriate counting methods and technologies, and provides examples of how organizations have used non-motorized count data to fulfill their missions. It is available at http://www.trb.org/Main/Blurbs/171973.aspx.

Programs

Create Program and Events that Foster Active Transportation

To help strengthen the culture for bicycle use and walking within Arlington Heights, while continuing to build a safe network of transportation options, the Village and its partners should create and administer the following programs and events: educating residents about rules of the road and how to interact with other modes is essential for safe travel, regardless of which mode is chosen; educational opportunities targeted towards both children and adults can promote safer interactions between road users; and encourage more walking and bicycling.

Encourage students and adults to walk and bike to school and work

The Village should continue to host and participate in special events that encourage walking and biking for all age groups and levels of mobility. Suggestions for encouraging walking and biking in Arlington Heights include special events such as "bike to work week "and "walk/ride to school days." International Walk to School Day is the first Wednesday in October and Bike to School Day is in early May.[31]

A common action that is often undertaken as part of a Safe Routes to School program – either as a one time or ongoing event – is a "walking school bus." A walking school bus is essentially a group of children walking to school with one or more adults; some programs include signs, banners, and other accoutrements to make the event more fun and to communicate it to others. The walking school bus can be as simple as two families taking turns accompanying the children as they walk to school or be more structured with designated routes, schedules, and meeting points.[32] Similar to a walking school bus is a bicycle train, where a group of interested students ride bikes to school in an organized and safe way.[33]

For adults, formal and informal programs organized by employers or groups of employees to encourage walking at work – usually in small groups and at lunchtime – are popular and provide proven health and morale benefits.[34] National Walk @ Lunch Day is in late April. These and other special events should be organized and promoted by the Village through collaborations between Village departments (Manager's and President's Office, Police, Health Services, etc.), the School and Park Districts, or partnerships with not-for-profit private sector health or active transportation organizations, and for-profit businesses, like bicycle shops, health care providers, sporting goods and outdoor product stores, etc.

[31] More information about walking and biking to school can be found at http://www.walkbiketoschool.org/.

[32] Additional resources and a guide to starting a walking school bus program are available: http://www.walkingschoolbus.org/.

[33] Maine DOT has published a guide to creating a Bicycle Train: http://www.maine.gov/tools/whatsnew/attach.php?id=362609&an=1.

[34] See California's "Guide to Establishing Worksite Walking Clubs," at https://www.cdph.ca.gov/programs/cpns/ Documents/Network-FV-WP-WalkingClubTool.pdf.

[35] For more information on the Community Bike Rides, see the BPAC website, at http://www.vah.com/government/commissions/bicycle_commission.aspx.

Continue and expand community biking and walking events

The AH BPAC held three Community Bike Rides in 2015, under the brand name "Bike Arlington Heights," to explore Village bike routes and neighborhoods.[35] However, these events (and others of the type) also help raise awareness of bicycling, introduce cyclists to each other, encourage more people to bicycle (for transportation and recreation), and provide an opportunity for teaching safe cycling techniques. Broadly, they help develop a supportive environment and culture for bicycling (and walking, when that is the focus). Such events are also opportunities for disseminating informational materials that communicate the benefits of walking and bicycling.

The Village should participate in and be supportive of special community events designed to encourage walking and biking for all age groups and levels of mobility. Events may be organized by the Village, BPAC, the Park District, the School District(s), or through a partnership between these and/or other entities. Events should be organized and advertised in such a way as to engage a variety of residents. For example, advertisements can be published in multiple languages to engage immigrant or non-English-speaking residents or communities.

Open Streets Events

Open Streets events, which are known by many different names and take many different forms, are growing in popularity around the country and the world. An Open Streets event typically consists of a temporary closure of a street, a section of a street, or a network of streets to vehicular traffic in order to allow unrestricted walking, bicycling, and other active, recreational activities (dancing, exercise classes, etc.). Open Streets events can be annual events or occur more often, such as once a week. The Village should consider such an event in the downtown area and work with the BPAC and other interested commissions or groups, local businesses, and residents to determine the appropriate location and format for the event.[36]

Figure 5.2 - Open Streets event

Source: MN Bike Trail Navigator

[36] See http://openstreetsproject.org/.

Support bicycle riding education

Programs aimed at increasing knowledge, visibility, or enthusiasm for riding bicycles can help change the travel behavior of individuals and make active transportation safer. The Village can carry out such programs out on its own or in collaboration with other entities, including police and fire departments, transportation agencies, a local school or university, the Active Transportation Alliance, private companies, non-profit organizations, and other stakeholder groups interested in promoting sustainable and active transportation.[37]

- The Village, through a partnership with the Township and Park District, currently offers Safety Town education for young children, which includes bicycle and pedestrian safety. In addition, the BPAC and Arlington Heights Cycling Club conduct bicycle safety training for adults. In addition to these activities, the Village should partner with the Police Department and School District(s) to ensure that the driver education curriculum includes material on how to safely share the road with cyclists and pedestrians.
- The Village should also promote and utilize the Ride Illinois' (formerly League of Illinois Bicyclists) online Bike Safety Quizzes for children, adult cyclists, and motorists.[38] To encourage taking the quizzes, the Village or other entities publicizing or utilizing the quizzes could offer promotional materials to anyone who completes a quiz and presents the completion certificate (which the website provides), and/or enter the successful quiz takers in a prize drawing.
- The BPAC should consider creating an ambassador program to promote walking and biking safely. Ambassadors could be members of the Commission, members of the Arlington Heights Cycling Club, local members of the Active Transportation Alliance, Police Department officers, or other volunteers. Ambassadors would attend events and visit local schools and community centers to provide information about walking and biking.

Figure 5.3 - Elk Grove Township Safety Town

Source: Elk Grove Township

[37] For more ideas on youth and teen bicycle and pedestrian education programs and curricula, see Walk Bike to School's list of resources at http://www.walkbiketoschool.org/keep-going/ongoing-activities/classroom-curricula, as well as page 71 of Wheeling's Active Transportation Plan13, completed by the Active Transportation Alliance in 2013, at http://www.cmap.illinois.gov/programs-and-resources/lta/wheeling.

[38] See http://www.bikelib.org/safety-education/online-bike-safety-quizzes/.

Develop and Make Materials Available About Walking and Bicycling in Arlington Heights

The BPAC produces the Village of Arlington Heights Bikeways Map, an online bicycle planning and bicyclist's user map. The Village should consider separate maps for users (navigation) and bikeway planning, as they serve different purposes. Both maps should be made available to the public online, but the user map should also be available as a paper copy and, potentially, as an app. The map should include bike parking locations and bicycle shops, as well as important destinations. It should also be advertised and disseminated widely, through the Village administration, police, Park District, schools (at school assemblies, etc.), and at farmers markets and other community events.

Other materials that the Village should consider to advance safe bicycling and walking include: walking maps, safety pamphlets, tips for commuters, school walking route maps, Arlington Heights-specific information on public transit (including bikes-on-transit rules and procedures), and flyers or brochures covering relevant state and municipal laws, regulations, and policies. For an example of both an effective means of dissemination and of good content for a safety brochure (safe driving and share the road tips), see the City of Chicago Department of Transportation pamphlet, which was mailed to 1.5 million car owners with their annual registration renewal papers.[39]

Examples of walking maps and other useful resources, materials, and ideas to promote walking are available at Feet First: Promoting Walkable Communities, at http://www.feetfirst.org/. A resource for piloting walking and other signage at low costs is Walk Your City, at https://walkyourcity.org/.[40]

[39] See http://1.usa.gov/1BmUBDe.

[40] Additional resources are available at the Walkable and Livable Communities Institute, at http://www.walklive.org

Source: CDOT

Improve enforcement around school zones and at crosswalks

The best way to reduce speed and increase safety is to design streets that calm traffic, rather than searching for and penalizing dangerous roadway users. Nevertheless, enforcement that targets illegal motorist behaviors that especially endanger pedestrians and bicyclists can also be helpful in creating a safer community. The Village should work with the Police Department and local School Districts to ensure that vehicles obey posted speed limits, stop at crosswalks when required (especially near schools and other priority locations), pass bicyclists in a safe manner, and do not use handheld devices while driving. This will not only help to keep students and residents safe, but will also reinforce a safe environment for walking and biking and help create a culture of road safety.

Provide training to police on bicycle and pedestrian safety issues and enforcement activities

In order to maximize the effectiveness of enforcement efforts, we recommend that police officers receive training on typical motorist behaviors that endanger pedestrians and bicyclists. Other training topics that can improve interactions between pedestrians and bicyclists and motorists and increase overall safety include: the common causes of bicycle and pedestrian crashes, dangerous bicycling behavior, how to handle investigations of bike and pedestrian crashes, and the rules of the road for people walking or biking.

In addition to these training programs, continuing and enlarging the Village's bicycle police patrol program will lead to improved officer understanding of local travel conditions and sources of conflicts between modes, as well as more common and friendlier interaction between residents and officers. It also provides officers a healthy form of exercise.

Pursue grants and alternative funding sources

The Village should continue to seek and pursue opportunities for grants and other funding sources to assist with plan implementation. The following are key examples of potential funding sources that should be monitored and pursued accordingly. For a number of programs (TAP, CMAQ, STP), the Village must complete Phase 1 engineering on its own, or obtain a Categorical Exclusion from IDOT, which allows them to conduct a simplified Phase 1 engineering study, or conduct no study at all. On-street projects that do not substantially alter the existing roadway may be eligible for Categorical Exclusion status.

Illinois Transportation Enhancement Program (ITEP)[41]

ITEP, administered by IDOT and consisting of the state's Transportation Alternatives Program funds (see below), provides funding for community-based projects that expand travel choices and enhance the transportation experience in communities. ITEP is designed to promote bike and pedestrian travel and streetscape projects and may be best used for the implementation of the bicycle and pedestrian infrastructure recommendations for both on-road and off-street facilities. Local match is required at levels that differ depending on the project type, and other federal transportation funds cannot be used as local match. For more information about ITEP, visit http://1.usa.gov/1Bnxf0o.

Transportation Alternatives Program (TAP)[42]

TAP is a federal funding program that focuses on non-motorized transportation projects. TAP funds are administered by CMAP, and may be a good fit for Arlington Heights bicycle infrastructure projects. Among the criteria used to evaluate funding applications is a project's ability to either complete a segment or link to one or more (conceptual) trail alignments shown in CMAP's RGTP.[43] Phase 1 engineering is not, under most conditions, eligible for funding. Funded projects require a 20 percent local match, and other federal transportation funds cannot be used as local match. For more information about TAP, visit http://www.cmap.illinois.gov/mobility/strategic-investment/transportation-alternatives and http://www.fhwa.dot.gov/map21/guidance/guidetap.cfm.

Congestion Mitigation & Air Quality Improvement Program (CMAQ)

CMAQ is a federally funded program for surface transportation improvements designed to address air quality improvement and to mitigate congestion. The Village should consider CMAQ funding for multimodal intersection improvements, bicycle facility projects, multimodal/access-to-transit improvements (perhaps in partnership with Metra and/or Pace), bicycle parking, bike share, and other projects that can effectively replace motor vehicle trips and reduce congestion and/or air pollution. As with TAP, Phase 1 engineering is not normally eligible for funding; funded projects require a 20 percent local match, and other federal transportation funds cannot be used as local match. For more information about CMAP, visit http://www.cmap.illinois.gov/mobility/strategic-investment/cmaq.

[41] See http://1.usa.gov/1Bnxf0o

[42] See http://www.cmap.illinois.gov/mobility/strategic-investment/transportation-alternatives and http://www.fhwa.dot.gov/map21/guidance/guidetap.cfm.

[43] The RGTP is currently being updated. The plan update is expected to run through fall 2016. The existing plan shows several (conceptual) facilities passing through the Village of Arlington Heights.

Safe Routes to School

The Safe Routes to School Program (SRTS) is administered by IDOT. Illinois SRTS funds both infrastructure improvements to the physical environment as well as non-infrastructure projects, which will improve conditions for students who walk or bike to school (K-8). Eligible project sponsors include schools and school districts, governmental entities, and non-profit organizations. The program is a reimbursement program. Funded projects require a 20 percent local match. For more information about SRTS, visit http://go.usa.gov/.cvkYH.

Surface Transportation Program (STP)

STP provides flexible funding that may be used for projects to preserve and improve the conditions and performance on any Federal-aid highway (i.e. all public roads except local roads and rural minor collectors, per IDOT's functional classification system[45]). However, it should be noted that certain project types, including pedestrian and bicycle infrastructure projects, bridge and tunnel projects, and transit capital projects (including intercity bus terminals) are not restricted by location. Local agencies that wish to participate in the Local STP (as opposed to State STP) must do so through their designated sub-regional council, according to the methodology of that council.[46] For more information about STP, visit https://www.fhwa.dot.gov/specialfunding/stp/.

Recreational Trails Program and Illinois Bicycle Path Program[47]

The federal Recreational Trails Program is administered through the Illinois Department of Natural Resources to provide funding assistance for acquisition, development, rehabilitation, and maintenance of both motorized and non-motorized recreation trails. The RTP program can provide up to 80 percent federal funding on approved projects and requires a minimum 20 percent non-federal funding match. It is a reimbursement program and has a maximum grant award of $200,000. No maximum grant award amount is set for acquisition projects and for motorized projects.

The Illinois Bicycle Path Grant Program was created in 1990 to assist in the acquisition, construction, and rehabilitation of public, non-motorized bicycle paths, and directly related support facilities. The program provides financial assistance up to 50 percent of approved project costs. Maximum grant awards for development projects are limited to $200,000 per annual request; no maximum exists for acquisition projects. The Illinois Bicycle Path Grant Program is, at present, suspended until further notice due to state budget issues.

[45] For a map showing functional class, see http://www.dot.illinois.gov/gettingaroundillinois/gai.htm?mt=fc.

[46] Information on STP and sub-regional Councils of Mayors methodologies can be found at http://www.cmap.illinois.gov/about/involvement/committees/advisory-committees/council-of-mayors/surface-transportation-program.

[47] See http://www.dnr.illinois.gov/AEG/Pages/FederalRecreationalTrailsProgram.aspx and http://www.dnr.illinois.gov/AEG/Pages/BikePathProgram.aspx.

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Destinations

Recommended On- & Off-Street Facilities

Roads, Paths, and Cut-Throughs

Referenced Resources & Organizations

Neighboring Communities

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Agency for Planning

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The Chicago Metropolitan Agency for Planning (CMAP) is our region's comprehensive planning organization. The agency and its partners are developing ON TO 2050, a new comprehensive regional plan to help the seven counties and 284 communities of northeastern Illinois implement strategies that address transportation, housing, economic development, open space, the environment, and other quality-of-life issues. See www.cmap.illinois.gov for more information.

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