CITY OF BLOOMINGTON

BLOOMINGTON TRANSPORTATION PLAN

Approved:

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Executive Summary

In October of 2018 the Intergovernmental Panel on Climate Change (IPCC) reported that it is a necessity for the governments of the world to bring about a 45% reduction of greenhouse gas emissions by 2030 and a 100% reduction by 2050. If we do not hit these targets, the IPCC said we could start seeing "catastrophic" consequences as early as 2040 that will make the world uninhabitable for many species and do irreparable harm to our ecosystems.

Bloomington's B-Line Trail

The City of Bloomington is a government of the world, and we have to do our part to reduce emissions. According to the EPA, the Transportation sector accounts for 28% of US greenhouse gas emissions. Of Transportation emissions, 60% -- meaning 16.8% of total US emissions -- are caused by "light duty vehicles," meaning personal cars and trucks. The City of Bloomington can directly impact our transportation emissions through the infrastructure we build, the modes of transportation we prioritize, and the behaviors we incentivize.

As stated in the Comprehensive Master Plan goals, which were agreed upon after a thorough and lengthy public vetting process, the City must "Provide a safe, efficient, accessible, and connected system of transportation that emphasizes public transit, walking, and biking to enhance options to reduce our overall dependence on the automobile." This must be the guiding principle of our Transportation Plan.

Bloomington's growing population presents immense challenges to the city's transportation network. Even though residents are walking, bicycling, and taking transit at high rates, the existing transportation infrastructure was primarily designed to serve automobile transportation. We have renewed concerns about the link between transportation and healthy lifestyles. Meanwhile, the growing urgency of addressing climate change makes moving away from individual automobile use more imperative.

The Bloomington Transportation Plan (Plan) supports Bloomington's vision of a safe, efficient, accessible, and well-connected multimodal transportation system with enhanced transportation options and reduced dependence on the individual automobile; and, will guide the city as it continues to grow and face new transportation challenges.

This Plan fulfills the 2018 Comprehensive Plan requirement that calls for the development of an updated Master Thoroughfare Plan that includes elements of an active transportation plan. As an update to the 2002 Master Thoroughfare Plan, this Plan identifies new projects and programs as well as opportunities to coordinate their delivery for maximum benefit to community members. This Plan will be incorporated into the City's Comprehensive Plan, and it will guide the City's transportation investments, policies, and operations to achieve its 2040 vision.

This Plan recognizes the growing rates of walking, bicycling, and transit riding in Bloomington and the importance of planning for these active and healthy modes while continuing to maintain and improve the City's existing transportation infrastructure. The Plan achieves this shift by rethinking

street classifications and providing updated multimodal facility recommendations. As Bloomington has limited right-of-way (ROW) for new or expanded transportation infrastructure, the City must consider the needs of all travelers in various types of environments as it retrofits existing facilities. The City of Bloomington must carefully consider its space, funding, and time to prioritize infrastructure for people who take the bus, bicycle, or walk for transportation. Since some residents are not able to use these transportation modes, and electric cars are becoming a more feasible option (even powered by renewable energy), infrastructure for cars should not be neglected. However, as stated in our Comprehensive Plan, investment in nonautomotive modes must be prioritized. This multimodal and context-driven approach positions Bloomington to meet its current and future transportation needs and goals.

The project and program recommendations in this Plan were developed through a community engagement process, a review of the City's and region's adopted plans, and technical analysis. The community engagement process included public charrettes, an online survey, an online mapping tool, and one-on-one meetings with stakeholders and public officials. These in-depth engagements provided key insights into what community members value most in their transportation network, what is missing, what works, and what can be improved.

The Plan recommends 67 new street connections, 33 multimodal projects, and 7 policy recommendations. Below is a summary of the major sections of this Plan.

Overarching Goals and Approaches

- Plan for future street connections
- Integrate transportation and land use
- Maintain the street grid network and expand it to new developments
- Adopt a Complete Streets policy

Specific Suggestions for Improvement

- Redesign Kirkwood Avenue as a shared street with focus on pedestrians
- Improve multimodal travel along major E-W and N-S corridors
  - This mainly focuses on two pairs of one-way street corridors: College Avenue and Walnut Street, and 3rd Street and Atwater Avenue
- Extend the B-Line and invest in high-priority multimodal routes
- Expand the neighborhood greenway network with resident input
- Update the neighborhood traffic calming policy and procedures

Integrate New Trends and Transit Expansion

- Place a high priority on public transit
- Work on curbside management
- Plan for dockless mobility options
- Integrate ride-hailing services in the transportation system
- Plan for the use of autonomous vehicles

The Bloomington Transportation Plan responds to existing and future transportation needs and reflects the community's shared vision, values, and goals. The Plan is a roadmap for a more connected and multimodal Bloomington.

Community members participating in the first planning charrette (January 2018)

1. Introduction

The City of Bloomington's population growth since the 1990s has put pressure on its transportation system, making it increasingly difficult to provide mobility within existing and often constrained streets. Fortunately, the City's recently updated 2018 Comprehensive Plan provides Bloomington with a clear vision for a safe, efficient, accessible, and connected transportation system.

The Bloomington Transportation Plan (Plan) takes into consideration the City's existing transportation studies, the existing state of the system, and policy analyses and builds upon the Comprehensive Plan's multimodal transportation vision and goals. This Plan will help the City realize the Comprehensive Plan's vision by defining the necessary steps to build a transportation system that works for all roadway users, regardless of age, income, mobility, or transportation mode. This Plan will also help the City improve and maintain its existing transportation system, implement new projects, and establish transportation priorities for the next 20 years. Although the Plan has a 20-year horizon, the City intends for it to be reviewed, and possibly amended, every 5 years to remain current.

Benefits of multimodal transportation planning

1.1 Vision and Planning Approach

The City's focus on multimodal transportation planning is outlined in the City's Comprehensive Plan and the Vision Statement included within that Plan. The Vision Statement comprises 16 principles that were drafted through a public engagement process and adopted by City Council on January 16, 2013. This Plan will help the City of Bloomington work towards its vision of achieving excellence through *collaboration, creativity, cultural vitality, inclusion and sustainability*.[1] The Plan supports the City's vision by implementing one of the 16 identified Vision Statement Principles:

> Provide a safe, efficient, accessible and connected system of transportation that emphasizes public transit, walking, and biking to enhance options to reduce our overall dependence on the automobile.

In addition to this transportation-focused Vision Statement Principle, this Plan also supports the following six guiding principles from the Comprehensive Plan:

- Nurture a resilient, environmentally responsible community by judiciously using our scarce resources, enhancing our natural assets, protecting our historic resources, and supporting a vital local food system.

[1] City of Bloomington. 2018 Comprehensive Plan.

    - In particular, the goal "reduce greenhouse gas emissions" from Chapter 3 of the Comprehensive Plan is relevant.
- Nurture our vibrant and historic downtown as the flourishing center of the community
- Ensure all land development activity makes a positive and lasting community contribution
- Embrace all of our neighborhoods as active and vital community assets that need essential services, infrastructure, assistance, historic protection and access to small-scaled mixed-use centers
- Enhance the community's role as a regional economic hub
- Encourage healthy lifestyles by providing high quality public places, greenspaces, and parks and an array of recreational activities and events

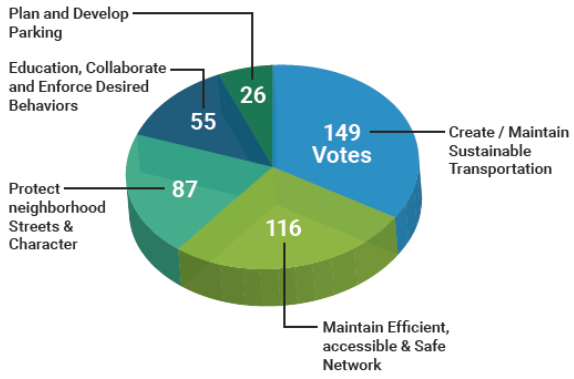
In responding to the Comprehensive Plan's call for the development of a truly multimodal transportation system, this Plan takes a place-based approach to developing the transportation network. This approach is shaped by the City's recognition of the community-wide costs of unequal planning and programming among different modes of travel. It also highlights the congestion management and long-term transportation planning benefits of a multimodal approach. Increases in inequality, emissions, transportation maintenance costs, obesity rates, physical inactivity levels, and roadway crashes are some of the costs of not taking a multimodal planning approach.

1.2 Purpose

The City's transportation plans must reflect its evolving vision and policies, land use profile, and future needs. Bloomington's transportation and land use policies must be aligned and updated on a regular basis because the public right-of-way (ROW) connects all land uses to people, goods, services, and utilities. Not considering transportation and land use policies in tandem, or not updating these policies on a regular basis, can lead to imbalanced growth, service delivery disruption, and expanding and inequitable public-sector costs. Through coordinated, context-sensitive planning, the City can leverage its growth and work towards its vision of achieving excellence through collaboration, creativity, cultural vitality, inclusion, and sustainability. The character of streets often change from block to block. As new streets are designed and existing streets are redesigned with various projects, the focus should be on livability and the pivotal role streets play in social, public, and economic vitality.

The City is required by Indiana Code 36-7-4-502 to develop and maintain a master thoroughfare plan, as part of a comprehensive plan, to provide guidance on the public ROW development. This Plan fulfills that requirement by providing general guidance to the City on the design, operations, and maintenance of the public right-of-way. Furthermore, in accordance with Indiana Code 36-7-4-506, this Plan provides guidance on, 1) the public ROW's preservation, 2) the implementation of the Comprehensive Plan's transportation-focused Vision Principle, and 3) the interdepartmental coordination within the City administration.

Figure 1. Public Input on Transportation Planning Goals



In addition to the state requirements, this Plan reflects the City's focus on multimodal transportation planning and context-based design

approaches. This Plan combines elements that have traditionally been presented separately in a thoroughfare plan and an active transportation plan. This combined approach provides significant benefits to the City as it establishes a comprehensive planning approach for developing, prioritizing, and implementing the City's various transportation needs. This approach also assists the City in identifying opportunities to improve project coordination, to maximize benefits to residents, and to improve project delivery efficiencies.

1.3 Development of the Plan

This Plan's development was guided by a review of past transportation studies and adopted plans, dialogue and input from two charrettes with community stakeholders, review of national best practice design guidelines, analysis of crash data and traffic volume data, and a geographic analysis of the existing network. Studies and plans reviewed include the 2018 Bloomington Comprehensive Plan, the 2012 Monroe County Comprehensive Plan, the 2010 Indiana University Bloomington Campus Master Plan, 2015 Indiana University Bicycle Master Plan, the 2011 Breaking Away: Journey to Platinum report, the 2008 Bicycle and Pedestrian Transportation and Greenways System Plan, and the 2002 Growth Policies Plan- Part 5: Master Thoroughfare Plan. The review's findings are discussed in Section 2.4 and provided in Appendix A.

Planning Charrettes

The first of the two planning charrettes was 4-days long in January 2018 and included two public meetings and numerous one-on-one meetings with elected officials, chamber of commerce representatives, Monroe County planning and public works officials, Bloomington Transit representatives, Stone Belt representatives, and many more residents. Approximately 80 and 40 residents attended the first and the second public meetings, respectively. The planning charrettes included presentations, small group discussions, and dot matrix voting to encourage participants to engage with the Plan's development. The charrette participants shared their perspectives on what they like and dislike most about the city's transportation network, what values should be included in Bloomington's street design, and what the transportation network is missing.

Additionally, the participants voted on what transportation planning goals they agreed with most. From the five options that were presented, "Create/Maintain Sustainable Transportation" received the most votes during the charrette, and the option "Plan and Develop Parking" received the least number of votes. Figure 1 shows the results of the public input on goals and values.

The second planning charrette was 3-days long in July 2018 and was designed to obtain valuable input from community stakeholders on the draft of the Plan. Over 100 people attended the public meeting held at the end of the charrette. Stakeholders and the public provided feedback on the Plan's recommendations including two-way restoration, the Kirkwood shared street, public transportation improvements, and new roadway connections.

2. The State of Transportation in Bloomington

2.1 City Transportation History

Transportation has played an important role in Bloomington's history. As the city's economic engine grew, so did its needs and desire to connect to regional markets. Connections to the railroad

in 1853-1854 significantly improved the transport of people and limestone, and led to the establishment of new communities along the lines and growth in the region.

While Bloomington and Monroe County enjoyed significant success immediately following World War II, the region went through an economic downturn in the late 1950s and through the 1970s. During this period multiple long-time businesses, including limestone companies, closed and travel behavior shifted as the opening of College Mall in 1965 reflected changing tastes in retail shopping. Bloomington's transportation network continued to grow during the early 1990s as additional roads, railroads, city sewers, paved streets, and sidewalks emerged along the City's public right-of-way.

Today, Bloomington continues to experience economic growth as the high tech, business, education, non-profit, public, and artisan sectors further mature and develop in the region.[2] For example, from 2014 to 2015 the employment rate grew by 3.46 percent in Bloomington, while the state of Indiana only saw 0.65 percent growth.[3] This trajectory began in the 1980s and has led to significant land use developments and population growth since the 1990s. However, it should be noted that the employment growth has not led to wage growth which has negatively impacted housing and transportation affordability.

Table 1. Commute Mode Share in Bloomington, 2010 and 2016

	Drive Alone	Walk	Carpool	Public Transit	Bike
2010	66.30%	11.10%	9.00%	5.70%	2.30%
2016	62.80%	13.60%	8.70%	6.50%	3.90%
Percent Change	-5.30%	22.50%	-3.30%	14.00%	69.60%

As Bloomington's population, economy, and land use has grown and developed over the past 20 years, so too have individual transportation habits across the community. From 2010 to 2016, it is estimated that the percentage of Bloomingtonians who drove alone to work decreased 5.3 percent, from 66.3 percent to 62.8 percent. During this period the number of car-free employees in Bloomington increased 1.4 percent from 4.7 percent in 2010 to 6.1 percent in 2016.[4]

From 2010 to 2016, walking, public transit, and bicycling commute mode shares significantly increased, with bicycling experiencing the greatest change of almost 70 percent. Walking, public transit, and bicycling mode shares also grew in Monroe County from 2010 to 2016, while staying relatively stagnant across Indiana and the U.S. However, transit ridership in Bloomington decreased between 2016 and 2017. This may be attributed, in part, to the popularity of transportation network companies (TNCs) such as Uber and Lyft.

2.2 Bloomington Today

At just over 23 square miles and with an estimated population of over 83,000, Bloomington's 2016 population density is significantly higher—nearly 10 times—than Monroe County's, as well as Fort Wayne's and Indianapolis's. Higher population density helps support multimodal transportation and accessibility. In comparison to all of Monroe County in 2016, Bloomington had a lower median household income ($31,254 compared to $43,389); and median age (23.7 years old compared to 28.6 years old). Additionally, Bloomington had a higher poverty rate than Monroe County at 38

[2] City of Bloomington. "History of Bloomington and Monroe County." Accessed 4/10/2018. https://bloomington.in.gov/about/history.

[3] U.S. Census Bureau. American Community Survey 2015 1-Year Estimates.

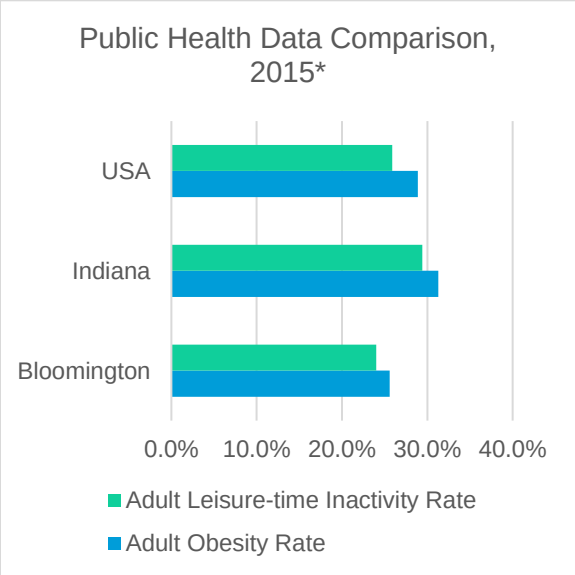
[4] U.S. Census Bureau. American Community Survey 2016 and 2010 5-Year Estimates.

percent, compared to 25 percent.[5] A further discussion on Bloomington's demographic profile is provided in Appendix B.

Public Health

In addition to Bloomington's general demographics and transportation profile, local public health data was analyzed during the Plan's development to understand current conditions. Common health metrics, such as average amount of leisure-time physical activity and obesity rates, for Bloomington were reviewed to gauge the impact of the transportation network's quality on public health. Leisure-time physical activity is just one measure of health, and this Plan recognizes that the amount of leisure time available depends on each person's circumstances. Bloomington residents with little or no leisure time can integrate physical activity into their commute by walking or bicycling.

Figure 2. Public Health Data Comparison



*National level data is from 2016

In comparison to national averages, Bloomington has a more active and less obese population. As of 2016, about 24 percent of adults in Bloomington are not physically active (i.e., 24 percent of Bloomington respondents answered "no" to the following question from the Behavioral Risk Factor Surveillance System survey: "During the past month, other than your regular job, did you participate in any physical activities or exercise, such as running, calisthenics, golf, gardening, or walking for exercise?") and about 26 percent of adults are obese.[6] While these numbers fall far below the national average, there is still opportunity for improvement and for ensuring that all residents, regardless of socioeconomic status, have access to safe and reliable opportunities for physical activity.[7, 8]

The level of physical inactivity among adults varies across the City of Bloomington. In reviewing data at the census tract level, adults that live north of 3rd Street, west of Rogers Street, and south of the SR 45/46 Bypass are less likely to participate in leisure-time physical activities than adults in other parts of the city. See Appendix C. This data aligns with the findings from the Bicycle Network Analysis (BNA) that was conducted as part of this Plan's development. The BNA and its findings are discussed in Section 2.4E.

Access to Active Transportation Facilities

Providing multimodal infrastructure and promoting active transportation is a combined public health and planning approach to improve community health. In addition to providing open spaces, building pedestrian and bicycle infrastructure that is accessible to all users is an effective way to

[5] U.S. Census Bureau. American Community Survey 2016 5-Year Estimates.
[6] 500 Cities Project. Center for Disease Control and Prevention.
[7] 500 Cities Project. Center for Disease Control and Prevention.
[8] The Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, "Nutrition, Physical Activity, and Obesity: Data, Trends and Map." https://www.cdc.gov/nccdphp/dnpao/data-trends-maps/index.html.

promote physical activity. Proximity to walking facilities impacts the physical activity levels of communities. A study of five community clinics that provide health services to underserved populations found that clinical patients who lived near a trail were more likely to walk at least 30 minutes five times per week, compared to those patients who did not have a trail near their home.[9]

Bloomington's current pedestrian and bicycle network connects to many popular destinations in the Downtown area, including schools, grocery stores, retail shops, and the farmers' market. However, there are also several gaps in the city's active transportation network due to barriers from highways, railroads, and lack of adequate public right-of-way that continue to impact community members' access, ability, and comfort in walking and bicycling to destinations. Appendix C provides a map of the current pedestrian and bicycle network and destinations.

Access to Transit

Reliable, connected, and high-quality transit service is important to supporting Bloomington's continued growth. As identified in the 2018 Comprehensive Plan,

> *Efficient and frequent public transit allows residents of all ages and abilities to function independently, avoid isolation, and access destinations around town.*[10]

Several studies found that public transit use is associated with less obesity, lower stress levels, and improved air quality. Additionally, public transit use (even as little as once per week) is associated with fewer car trips and more active trips, including walking and biking.[11]

Bloomington Transit is the main local transit service in the City and operates 14 routes with a fleet of 49 buses. It generally operates from around 6:00 a.m. to around midnight during the weekday. Weekend services are limited and infrequent. In 2016, there were approximately, 3.48 million passenger boardings, compared to 3.53 million boardings in 2015.

Decreases in ridership may be attributed, in part, to the increasing popularity of ride-hailing services, provided by transportation network companies (TNCs) such as Uber and Lyft. Based on survey results in large cities across the country, one study suggests that 24 percent of respondents would have opted to ride transit if ride-hailing services weren't available.[12] In addition to increasing the frequency, reliability, and connectivity of transit service, the City of Bloomington can enact ordinances to more efficiently manage curb space allocation and prioritize transit vehicles. Keeping access to bus stops clear of other vehicles through policy, infrastructure, and enforcement can help bus operators maintain their schedules and increase efficiency.

Several streets in Bloomington serve high-demand and high-use bus routes including 3rd Street, 7th Street, and 10th Street. Transit should be given priority along these corridors, including above TNCs and private buses. Along these corridors and others, TNCs can diminish the efficiency of transit and the safety of bicycle facilities for the convenience of a few. For some areas, such as 10th Street, a corridor study that considers, among other options, restricting private vehicle access at all times or during certain hours would greatly improve the efficiency, convenience, and reliability of transit.

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[9] Pierce, J.R., Denison, A.V., Arif, A.A. et al. J Community Health (2006) 31: 289. https://doi.org/10.1007/s10900-006-9014-8.

[10] City of Bloomington. 2018 Comprehensive Plan. Pg.71.

[11] M. Bopp, V. Gayah, M. Campbell. *Examining the Link. 2015. Between Public Transit Use and Active Commuting*. Int. J. Environ. Res. Public Health. 12 (4256-4274).

[12] Schaller Consulting. The New Automobility: Lyft, Uber and the Future of American Cities. July 25, 2018.

Dedicating specific locations for TNC pick-ups and drop-offs, especially near major destinations, may reduce the likelihood of ride-hailing drivers blocking bus stops; enforcement would also play a role in reducing and preventing instances of TNCs blocking bus stops and bicycle lanes. An increasing number of communities are finding ways to successfully integrate transit service with ride-hailing service, taking advantage of ride-hailing to complement or replace underperforming transit routes.[13]

Indiana University also operates a free fixed-route bus service called Campus Bus in Bloomington. It operates five routes from 7:30 a.m. to midnight on weekdays and limited service on weekends. The ridership for the Campus Bus has also decreased in recent years.

Continued improvement and growth in the local public transit network is vital to supporting a multimodal transportation approach to transportation planning. Cross-jurisdictional coordination can improve local and regional transit, enhancing the experience for riders crossing city boundaries. For community members who are unable to drive or choose not to, public transit serves an important role in providing access to destinations across the city.

2.3 Review of Previous Plans

The City of Bloomington, Monroe County, and Indiana University have adopted guiding comprehensive and transportation plans that outline policies, strategies, and projects that impact the city's transportation network. This section describes these plans and their relationship to the Bloomington Transportation Plan.

2018 Bloomington Comprehensive Plan

The Bloomington 2018 Comprehensive Plan situates Bloomington to achieve excellence through collaboration, creativity, cultural vitality, inclusion, and sustainability. The Comprehensive Plan sets forth an aggressive agenda and includes considerations for mass transit, bicycle and pedestrian transportation, motor vehicles, and parking. The 2018 Comprehensive Plan proposes three outcomes with identified metrics. These three outcomes are:

- The transportation network supports all travel modes for people of all ages and abilities;
- Public streets and rights-of-way have positive health impacts; and
- Public parking demands are managed efficiently and effectively, to an optimum level of 85% of supply.

These three outcomes and their related metrics provide a measuring tool for the City in developing and implementing this Plan. Additional information on the 2018 Comprehensive Plan's principles and recommended policies for the Master Thoroughfare Plan is provided in Appendix A, along with relevant details from all the plans summarized in this section.

The 2018 Comprehensive Plan identifies the need to take a multimodal transportation approach to planning in Bloomington. The 2018 Plan calls for a "Mobility Management" focused approach that highlights the affordability and inclusionary benefits of multimodal planning. As identified in the 2018 Plan, these benefits can make a significant impact in Bloomington as households nationwide spend, on average, 19 percent of household income on transportation;[14] and, approximately 7

[13] Joseph P. Schwieterman, Mallory Livingston, and Stijn Van Der Slot. Partners in Transit. August 1, 2018.
[14] Federal Highway Administration. "Transportation and Housing Costs."
https://www.fhwa.dot.gov/livability/fact_sheets/transandhousing.cfm

percent of Bloomington's population under 65 years old has a disability.[15] Multimodal transportation planning benefits not only low- and moderate-income households, and people with disabilities, but also the broader community. As mobility options and connections improve in Bloomington, more destinations become accessible to more community members.

2017 Bloomington/Monroe County MPO Metropolitan Transportation Plan: Transform2040

The Bloomington/Monroe County Metropolitan Planning Organization (BMCMPO) Metropolitan Transportation Plan: Transform2040 provides performance measures and future scenarios for the region. Transform2040 recommends a growth scenario which uses projects from the BMCMPO's FY 2016-2019 Transportation Improvement Program (TIP), and projections for urban infill. This scenario provided the "best multi-modal system performance in the Year 2040."[16] The projects recommended in the Transform2040 plan which are within a one-mile buffer of Bloomington's city limit were considered when identifying projects for this Plan.

2012 Monroe County Comprehensive Plan

The 2012 Monroe County Comprehensive Plan provides land use guidance for areas surrounding Bloomington. The County Comprehensive Plan describes rapidly developing areas in the County and defines Bloomington Urbanizing Areas. The Bloomington Urbanizing Areas immediately adjoin the city and are expected to contain employment, estate residential,[17] and urban residential land uses in addition to residential uses. The expected level of development from many of the areas identified by the County Comprehensive Plan will significantly impact transportation needs in Bloomington, such as the platted county lands just west of Bloomington (across I-69). While these areas are not currently developed to the extent predicted by the County, ensuring they are considered in this Plan will help alleviate additional vehicular congestion when they are developed.

2010 Indiana University Bloomington Master Plan

Indiana University Bloomington developed its 2010 Master Plan to guide their campus' development. The Master Plan identified the campus' significant opportunity to decrease its motor vehicle footprint as most campus users live within three miles of campus: 90% of undergraduate students; 75% of graduate students; and 57% of faculty.[18] The Master Plan also provides a list of recommended multimodal transportation projects to increase the safety and comfort of travel to and around campus. From the Master Plan's project list, the following two recommended projects provide opportunities to leverage the City's and the University's partnership and coordination efforts:

- The University's development of a bus transit route on East 7th Street from downtown Bloomington to the Indiana Memorial Union.
- The development of a multiuse recreational path along the SR 45/46 Bypass with crossing improvements at East 10th Street.

[15] United States Census Bureau. QuickFacts: Bloomington city, Indiana. https://www.census.gov/quickfacts/fact/table/bloomingtoncityindiana/PST045217

[16] Bloomington/Monroe County Metropolitan Planning Organization. Transform2040. Pg. 9.

[17] Estate residential land uses are defined by Monroe County as residential property within designated communities that do not have the full range of typical urban infrastructure services and are not located within conservation residential areas.

[18] Indiana University Bloomington, 2010 Master Plan.

2008 Bloomington Bicycle and Pedestrian Transportation and Greenways System Plan

The 2008 Plan is based off a conceptual plan that identified three distinct character areas (Central City, Urbanizing Ring, and Fringe), and seven primary bicycle and pedestrian facility types (signed bike route, bike lanes, sidewalks, etc.). Since the Plan's adoption in 2008, the City has taken great strides in active transportation planning and implementation. From 2010 to 2017, Bloomington saw a 94 percent increase in the mileage of bicycle facilities, trails, and paths around the city.[19] The popular B-Line Trail was completed during this period in 2011.

> *Bloomington's progress was recognized by the League of American Bicyclists as the City's Bicycle Friendly Community designation improved from a bronze designation in 2004, to a silver designation in 2010, to a gold designation in 2014.*[20]

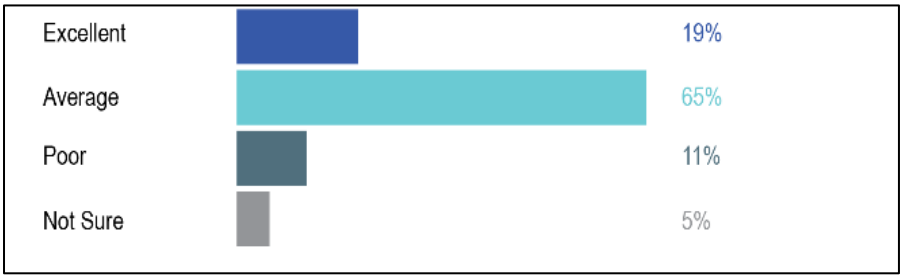
2002 Growth Policies Plan – Part 5, Master Thoroughfare Plan

The 2002 Master Thoroughfare Plan, as part of the Growth Policies Plan, focuses on integrating "all modes" to create a transportation network that links together all parts of the community, including activity centers and recreation opportunities. In response to the growing rate of congestion, the 2002 Plan encouraged actions to reduce single-occupancy vehicle dependency, and use of "alternative transportation modes." This Plan is an update to the 2002 Master Thoroughfare Plan.

2.4 Existing Transportation Conditions

While travel modes other than private automobile continue to grow in the City of Bloomington, significant network gaps and safety concerns remain in the transportation system.

Figure 3. Responses to survey question: How would you rate Bloomington's performance in providing appropriate bicycle and pedestrian facilities?



2.4. A Voices of the Public: WikiMap Survey Summary

As part of this project, an online interactive map-based survey (called a WikiMap) was used to better understand existing walking and bicycling issues and routes. Based on feedback from over 250 WikiMap responses, 65 percent of respondents feel that the City provides bicycling and pedestrian facilities on an "average" level of service. Nineteen percent of respondents feel that the City provides facilities on an "excellent" level of service, and only 11 percent said that the City provides facilities on a "poor" level of service. In the face of upcoming pressure on the City's

[19] City of Bloomington. 2018 Bloomington Comprehensive Plan. Pg. 70.
[20] City of Bloomington. 2018 Bloomington Comprehensive Plan. Pg. 70.

transportation network due to behavior changes and growth, the City has an opportunity to take bold steps now to assure continued improvement on its delivery of pedestrian and bicycle facilities.

Community members also provided feedback on popular walking and biking routes and destinations, difficult and high traffic routes, and desired improvement locations. Key findings from the over 250 WikiMap responses are outlined in Appendix B.

2.4.B Signal and Communications Equipment

The City of Bloomington's signal and communications system uses relatively old and inconsistent equipment that hinders effective communication. This inconsistency limits the maximum potential use of the signal system. For example, traffic signals along a particular corridor can be retimed based on the mode priority of the corridor. Thus, it can be upgraded and improved to match national industry standards. Recent and forthcoming improvements in technology will improve traffic signal system operations, safety, and maintenance.

2.4.C Existing Street Network and Traffic Volumes

The Bloomington/Monroe County Metropolitan Planning Organization categorizes roadways according to Federal Highway Administration (FHWA) definitions, which determine federal funding eligibility.[21] Bloomington's roadway functional classifications are illustrated in Figure 6.

FHWA guidelines indicate that a two-lane roadway with a center-turn lane can carry approximately 20,000 vehicles per day.[22] These guidelines, as well as field observation of traffic flow in Bloomington, show that generally the existing traffic volumes are adequately accommodated by the available travel lanes on the roadways. Table 2 presents roadways with high average daily traffic volumes (ADT) in Bloomington.

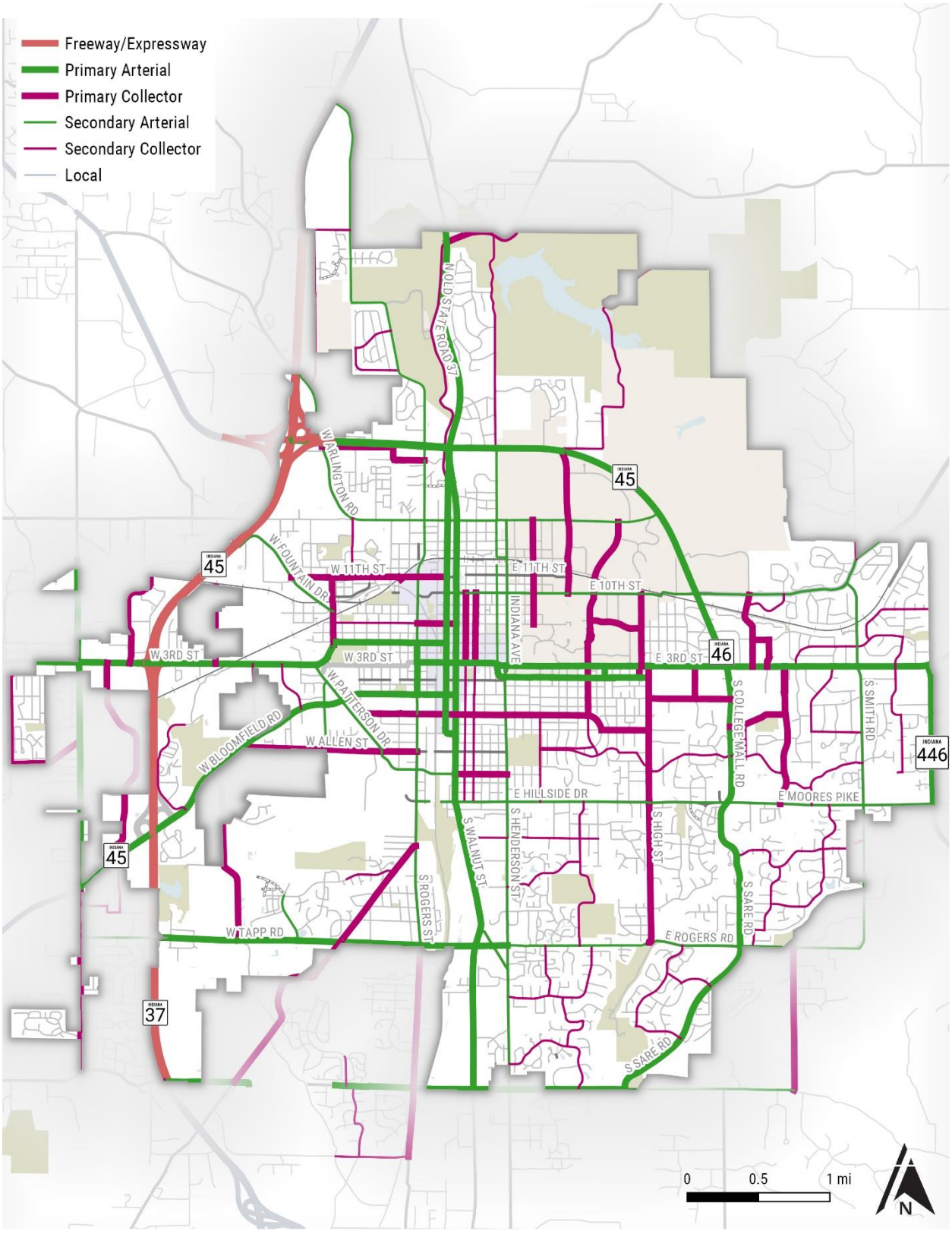
[21] Federal Highway Administration. Highway Functional Classification Concepts, Criteria and Procedures. https://www.fhwa.dot.gov/planning/processes/statewide/related/highway_functional_classifications/section03.cfm

[22] Federal Highway Administration. Road Diet Informational Guide – 3.3.5 Average Daily Traffic. https://safety.fhwa.dot.gov/road_diets/guidance/info_guide/ch3.cfm#s335

Table 2. Traffic Volumes

Street	Location	Year	Average Daily Traffic Volume (vehicles per day)
W 3rd St	East of S Gates Dr	2017	34,786
SR 45/46 Bypass	N. Kinser Pike to N. Walnut St	2017	30,226
SR 46 Bypass	E Eastgate Ln to SR 45	2017	27,900
S Walnut St	E Wilson St to S Monon Dr	2008	27,052
W 3rd St	East of I-69	2017	24,964
W Bloomfield Rd	S Rolling Ridge Way to S Lakecrest Dr	2014	22,372
S. College Mall Rd	E 2nd St to E 3rd St	2017	21,265
S. Walnut St	North of E Winslow Rd	2008	20,414
W 3rd St	S Johnson Ave to S Muller Pkwy	2012	20,145
S Walnut St	W Allen St to E Dixie St	2016	17,403
SR 46 Bypass	S Meadowbrook Dr to S. Smith Rd	2017	16,520
S Walnut St	South of E Winslow Rd	2010	16,192
E 3rd St	S Overhill Dr to SR 46 Bypass	2017	16,116
E 3rd St	S Washington St to S Lincoln St	2017	16,077
N Walnut St	W Kirkwood Ave to E 6th St	2008	15,744
S College Ave	W 4th St. to W Kirkwood Ave	2009	15,609
N Walnut St	E Fritz Dr to E Blue Ridge Dr	2017	15,319
W Tapp Rd	S Weimer Rd. to S. Kegg Rd	2017	14,254
S Leonard Springs Rd	South of SR 45	2016	11,163

Figure 4. Roadway Functional Classifications



2.4.D Reported Crash Data

From 2010 to 2015, the City's reported pedestrian-motor vehicle and bicycle-motor vehicle collisions centered around the downtown arterials, primarily north of East Third Street. The concentration of collisions along these streets is due to a variety of factors including the number of nearby destinations, traffic volumes, vehicular speed, and roadway design. In preparing for increasing population growth and mode shift, the City of Bloomington should examine these collision hot spots for vulnerable roadway users and implement targeted safety design improvements with the guidance and recommendations included in this Plan.

During the same period, 8 fatal crashes and 252 incapacitating injury crashes occurred within City limits. Three of the 8 fatal crashes involved a moped or motorcycle. The most common primary factor for crashes resulting in incapacitating injury were:

- Failure to yield right of way (70 crashes)
- Following too closely (33 crashes)
- Pedestrian action (23 crashes)
- Ran off road to the right (22 crashes)
- Disregarded signal or regulatory sign (20 crashes)

For incapacitating injury crashes, 46 of the crashes involved pedestrians and 19 crashes involved bicyclists.

Street design should be the primary strategy to reduce or eliminate fatal and incapacitating injury crashes, paired with enforcement and educational efforts. Improving sight lines, managing motor vehicle speeds, enhancing pedestrian crossings, and providing separated infrastructure are valuable strategies for improving transportation safety.

Figure 5. Motor Vehicle-Pedestrian Crash Density (2010-2015)

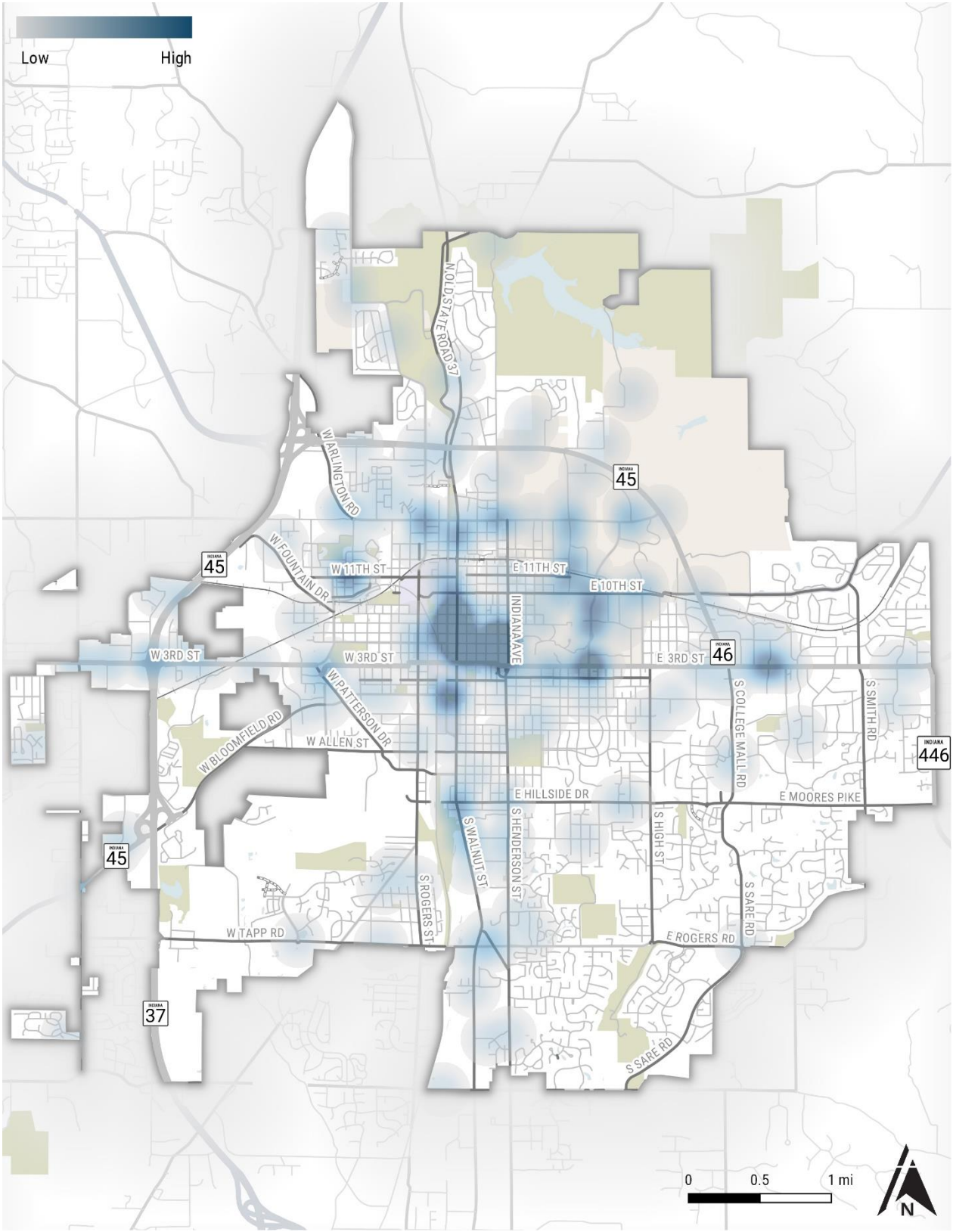


Figure 6. Motor Vehicle-Bicycle Crash Density (2010-2015)

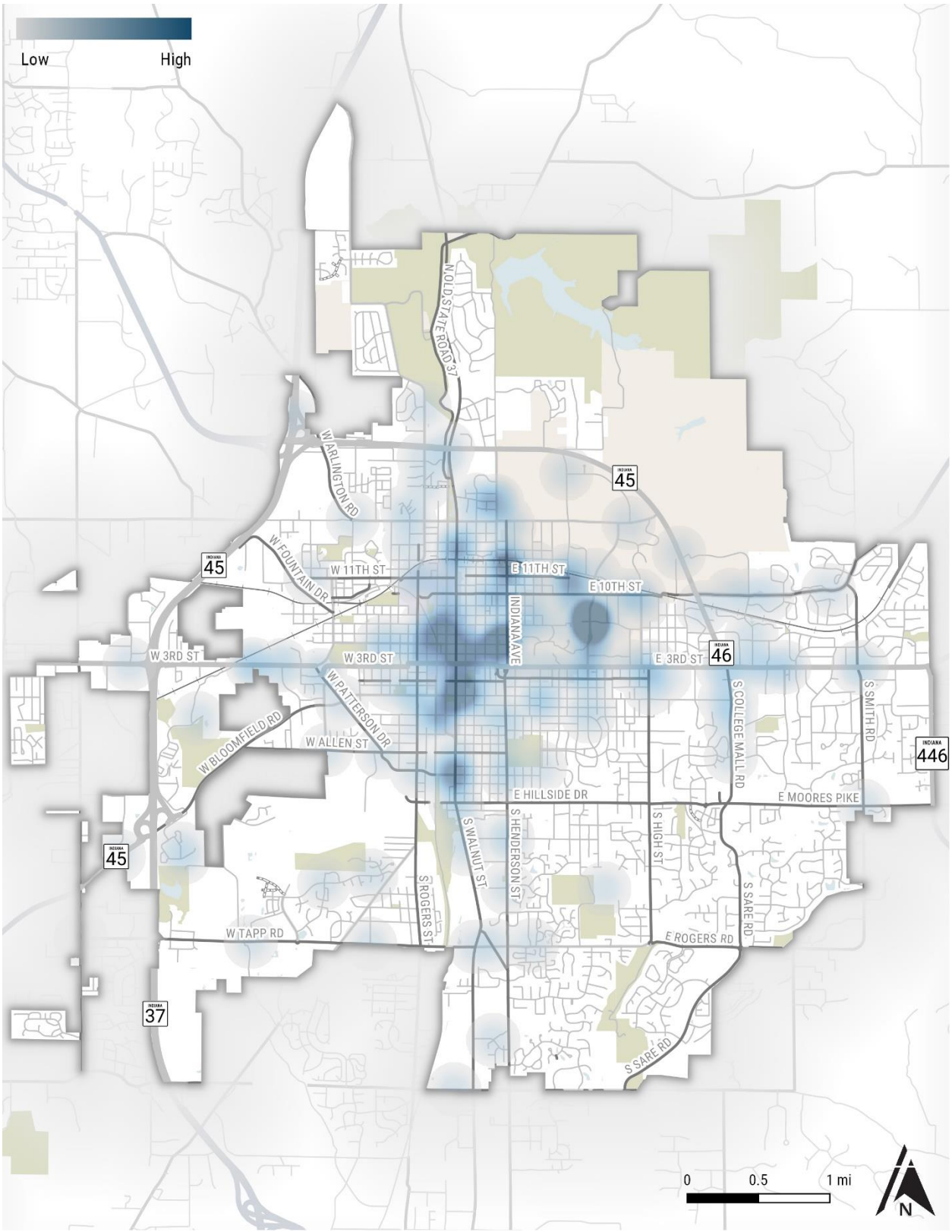
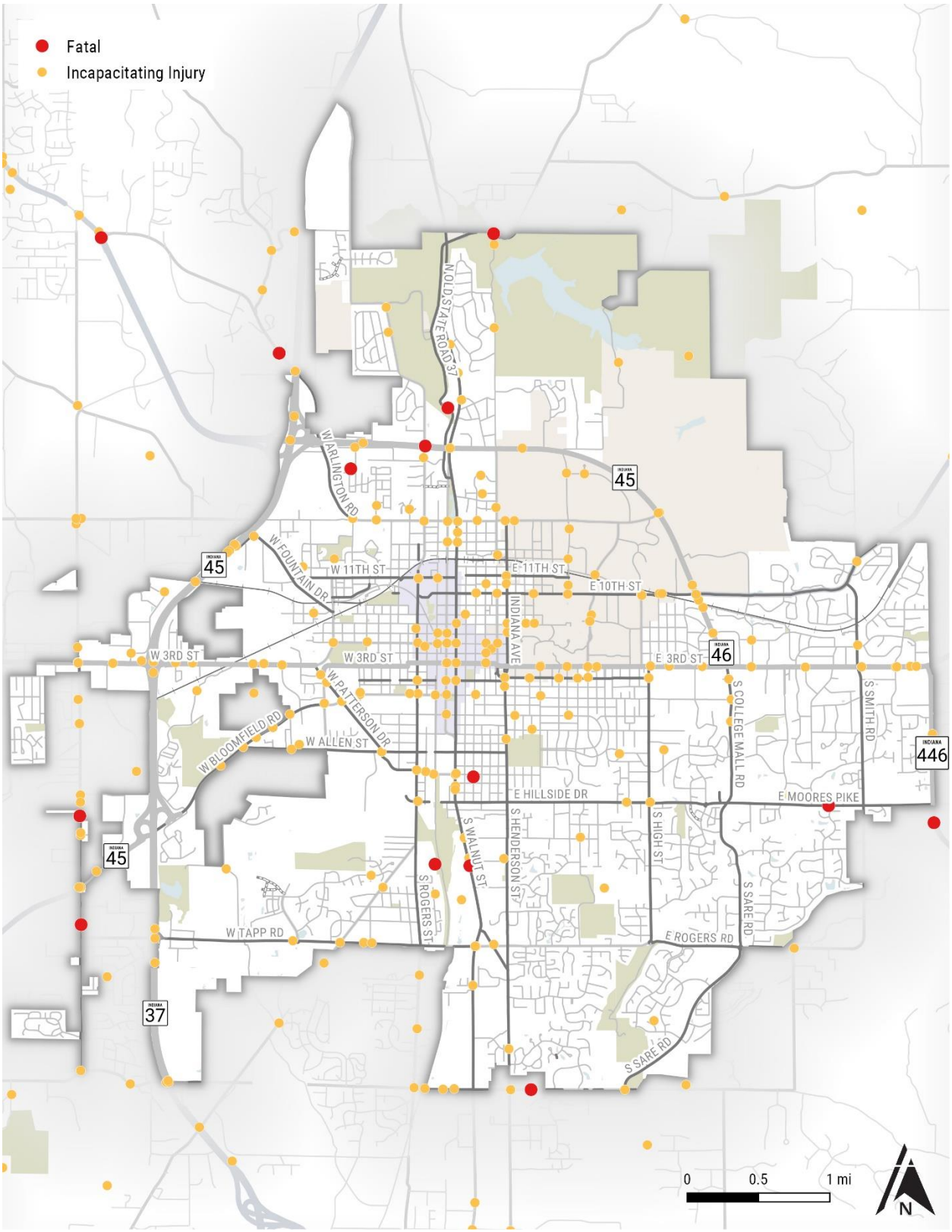


Figure 7. Fatal and Incapacitating Injury Crashes (2010-2015)



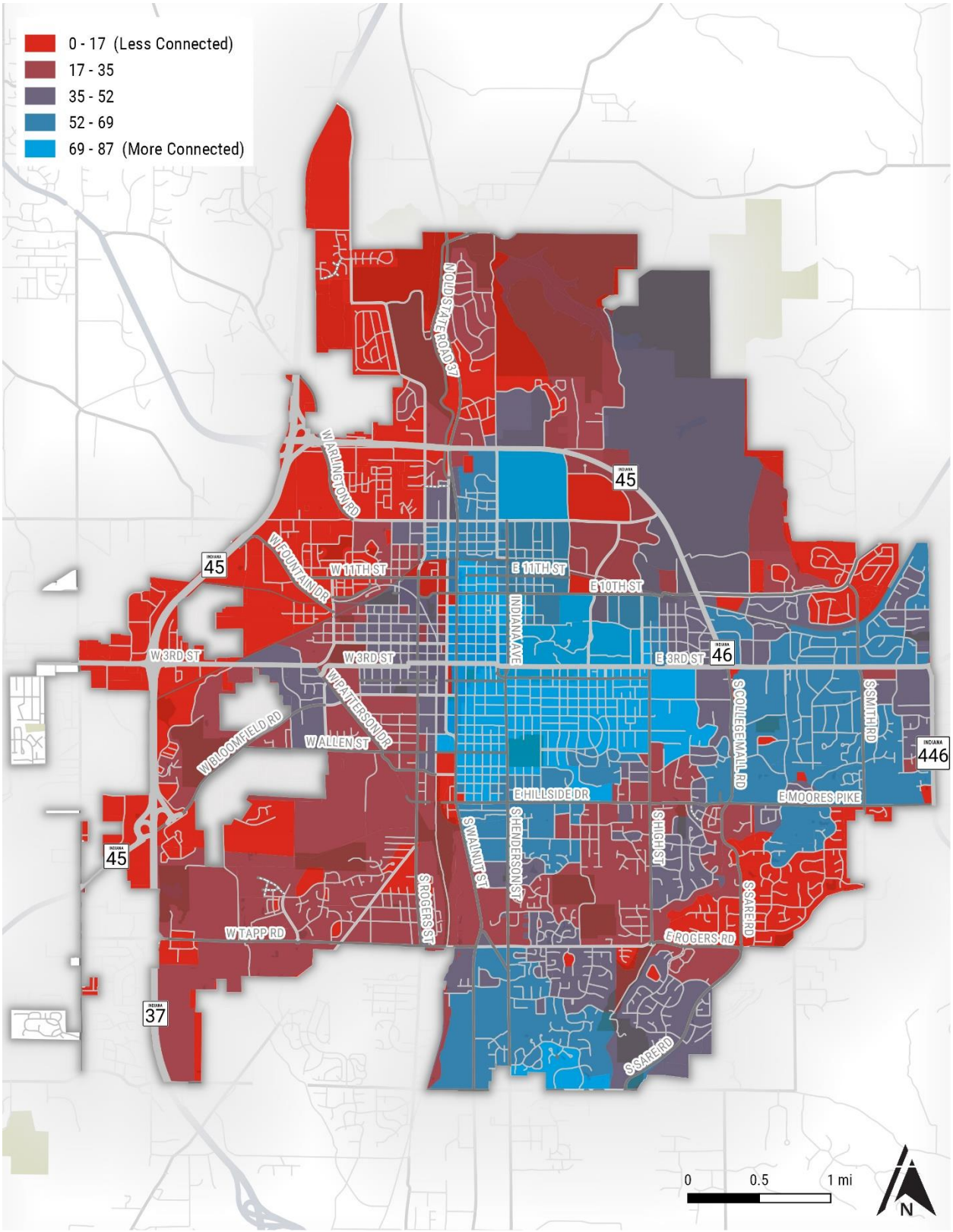
2.4.E Existing Bicycle Network Analysis

In addition to evaluating existing motor vehicle traffic volumes and reviewing historical crash data, the development of this Plan's recommendations included analyzing the existing bicycle network. This was accomplished using the Bicycle Network Analysis (BNA) tool. The tool specifically measures connectivity of the low-stress bicycle network, as a connected and comfortable network is vital for encouraging and supporting bicycling for people of all ages and abilities. The BNA tool uses local roadway data to identify areas of low connectivity, find gaps in the existing network, and estimate connectivity improvements from specific projects. The BNA tool's connectivity score represents the number of destinations, per census block, that are accessible through a low-stress (or high-comfort) bicycle network. The types of destinations that are part of the BNA tool include parks, medical services, transit, retail, and employment.

The BNA showed that there is substantial lack of bicycle connectivity west of College Avenue and Walnut Street as well as within the southeastern side of the City. The BNA's findings align with the observed pattern of higher levels of physical inactivity as discussed in Section 2.2.

The BNA tool results were considered in combination with the reported adult physical inactivity rates, WikiMap results, existing motor vehicle traffic volumes, and crash data. Together the data and representative maps indicate travel patterns, barriers to active transportation, and opportunity sites for improving safety and mobility for all street users in Bloomington.

Figure 8. Bicycle Network Analysis Results



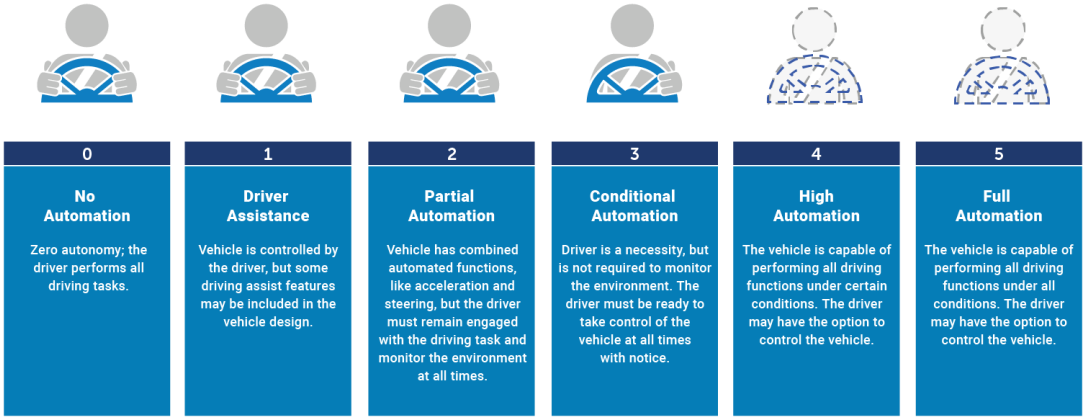
2.5 Planning for New and Future Transportation Options

Status of Autonomous Vehicles

Numerous organizations and companies are actively researching and developing autonomous vehicle technologies. The United States Department of Transportation published their Comprehensive Management Plan for Automated Vehicle Initiatives in July 2018 which describes the federal approach to developing policies and plans, funding and implementation, and administrative management for vehicle automation. Also, the Federal Highway Administration has endorsed the Society of Automotive Engineer's automation levels, shown in Figure 11.[23]

While proponents suggest that autonomous vehicles could improve traffic safety, minimize the need for private ownership, and reduce traffic congestion, concerns about safety and liability persist. There also exists great opportunity to improve public transit using autonomous vehicle technology. Bloomington hosted Indiana's first test of an autonomous bus in 2017, though the State of Indiana was unable to pass legislation regulating autonomous vehicles (HB 1341).

Figure 9. Society of Automotive Engineer's Automation Levels



Ride-Sharing

Ride-sharing options include Transportation Network Companies such as Uber and Lyft as well as non-profit or community-based endeavors to share cars. Uber and Lyft drivers have proliferated in Bloomington largely due to the presence of Indiana University, and they already present some problems in taking up curb space otherwise used by transit buses. Ride-sharing can be a good way for individuals to give up their personal cars or for families to make do with a single vehicle. The development of this mode of transport should be monitored to ensure public ROW is not abused by these users.

Dockless Scooters and Bicycles

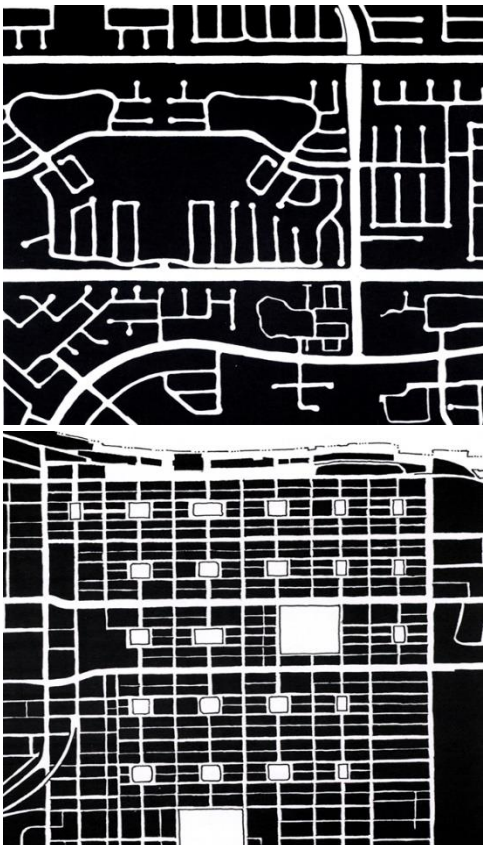
In 2018, Bloomington saw the arrival of both a dockless bike-share program through Pace (in collaboration with the City and IU), and two dockless scooter programs through Lime and Bird (without prior notification to the City). Although both provide alternatives to individual automobile

[23] Society of Automotive Engineers. "Full Automation."

use, there have been complaints about the scooters blocking sidewalks and littering the streetscape. The City is currently exploring legislation to regulate scooter use and parking.

3. Street Network and Classifications

A street network is the backbone of any city's transportation system. Hence, proper planning, design, operation, and maintenance of Bloomington's street network is critical to sustain the city's economic vitality as well as establish a sense of place. The Plan's recommendations are intended to preserve the public right-of-way and classify streets so that they are aligned with the vision and goals in the 2018 Comprehensive Plan.



A disconnected street network (top) and a connected street grid network (bottom)

3.1 Transportation Planning Approach

The following section describes key elements of this Plan's approach. These elements form the basis for identifying new street networks, recommending improvements and categorizing Bloomington's streets based on context. The fundamental elements of this Plan are based on national best practices for multimodal transportation planning and design including connected street grids, leveraging and managing the relationship between transportation and land use, and prioritizing the safety and mobility of all street users. The Federal Highway Administration, National Association of City Transportation Officials, and other organizations have made available numerous guidance documents for planning and designing transportation infrastructure.

Urban Grid Network

Having an urban, orthogonal grid provides a structure for creating blocks and land parcels in a regular, organized pattern. An urban street and land grid:

- Provides the most efficient distribution of motorized and non-motorized traffic volume and reduces the pressure from any single roadway;
- Improves emergency response times and access;
- Increases predictability for all roadway users;[24]
- Can encourage people to walk to their destinations;[25] and
- Provides economic benefits via easy building siting and localized travel.[26]

Coordinated Land Use and Transportation

Creating a healthy and vibrant community requires strong correlation between the transportation facility and the surrounding land uses. The design of transportation facilities must match the

[24] Ellickson, R. The Law and Economics of Street Layouts: how a grid pattern benefits a downtown. Alabama Law Review. 2013.

[25] Congress for New Urbanism. Street Networks 101. Accessed 05/04/18. https://www.cnu.org/our-projects/street-networks/street-networks-101.

[26] Ellickson, R. The Law and Economics of Street Layouts: how a grid pattern benefits a downtown. Alabama Law Review. 2013.

surrounding land use context and vision. Conversely, land uses can align with transportation through strategic zoning and site design requirements, realizing efficiencies like mixed use and transit-oriented development. This Plan recommends new street typologies that are aligned with the surrounding land use and character.

The Comprehensive Plan provides Development Themes for Land Use Classifications: Maintain, Enhance, or Transform. For street redesign projects, the street typologies provide guidance, but deviations from the conceptual typology cross-sections will be necessary, and sometimes desired. The Development Themes provide additional guidance to determine if the street re-design should enhance the existing character and context or if the re-design should contribute to the transformation of an area. While maintain is a development theme, it should not be considered an option for street projects, as all projects can serve to enhance the public realm, contribute to the context, and improve safety. Finally, street redesign projects should focus on prioritizing pedestrians, enhancing the public realm, improving livability, and providing safe access to bicyclists.

Complete Streets

The Complete Streets approach encourages communities to plan and design streets not only for multiple modes of travel, but also for people of different ages and abilities. Complete Streets considers how people connect between modes, and the importance of designing roadways with respect for their local context. The Bloomington/Monroe County Metropolitan Planning Organization (MPO) 2018 Complete Streets policy calls on the incorporation of "community values and qualities including environment, scenic, aesthetic historic and natural resources, as well as safety and mobility" into transportation planning and design.[27] Some of the most common benefits of Complete Streets projects include:

- Improved safety and comfort for all roadway users;
- Easier crossings for pedestrians and bicyclists;
- Improved access to transit;
- Increased transportation choices;
- Improved access to schools, community centers, businesses, trails, and parks; and
- More opportunities for community members to be physically active in their everyday lives.

[27] Bloomington/Monroe County Metropolitan Planning Organization. Resolution Adopting a Complete Streets Policy. November 9, 2018.

3.2 Street Typologies

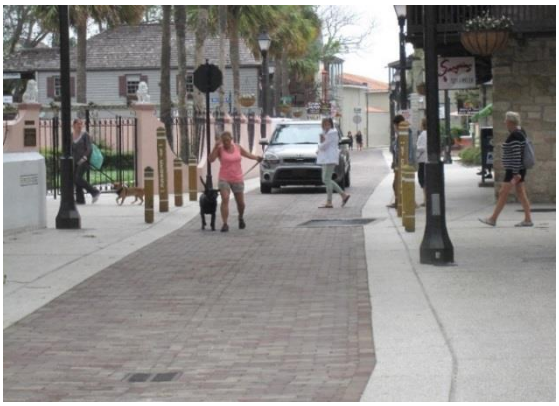
This section describes new street typologies developed for the Plan. These typologies align with the multimodal transportation policies outlined in the Comprehensive Plan and are intended to complement the traditional functional classifications. Traditionally, surface streets are generally classified as an arterial, collector, or local street based on the anticipated function of the street. These functional classifications are primarily based on vehicular capacity, level of vehicular access, and posted speed of the roadway.

The typologies presented in this section consider local context, follow a Complete Streets approach, and recognize the City's constrained ability to expand most roadways. Protected bike lanes can be configured with separation elements appropriate for the context, as detailed in section 3.3. The inclusion and configuration (parallel, angle pull-in, angle back-in) of on-street parking should be based on surrounding land uses, traffic operations, and right-of-way constraints.

If the elements of the typical cross-section cannot be accommodated within the right-of-way, developments must dedicate easements or right-of-way and provide the improvements for pedestrian and bicycle facilities, as required with redevelopment or new development. Even when the immediate user of the property is not intending to use the pedestrian space, it ensures connectivity and provides space for the pedestrian realm in the long term. The UDO should be updated to require easements or dedicated right-of-way, where legally feasible.

Shared Streets

Designed for pedestrians, bicyclists, transit riders, and motorists to operate in a "shared" space, shared streets utilize design elements such as pavement treatments, planters, roadway widths, parking spaces, and other elements to direct traffic flow and to encourage cooperation among travel modes in typically flush or curbless environments.[28] They are ideal for locations with high pedestrian activity and dense commercial or mixed-use land uses.

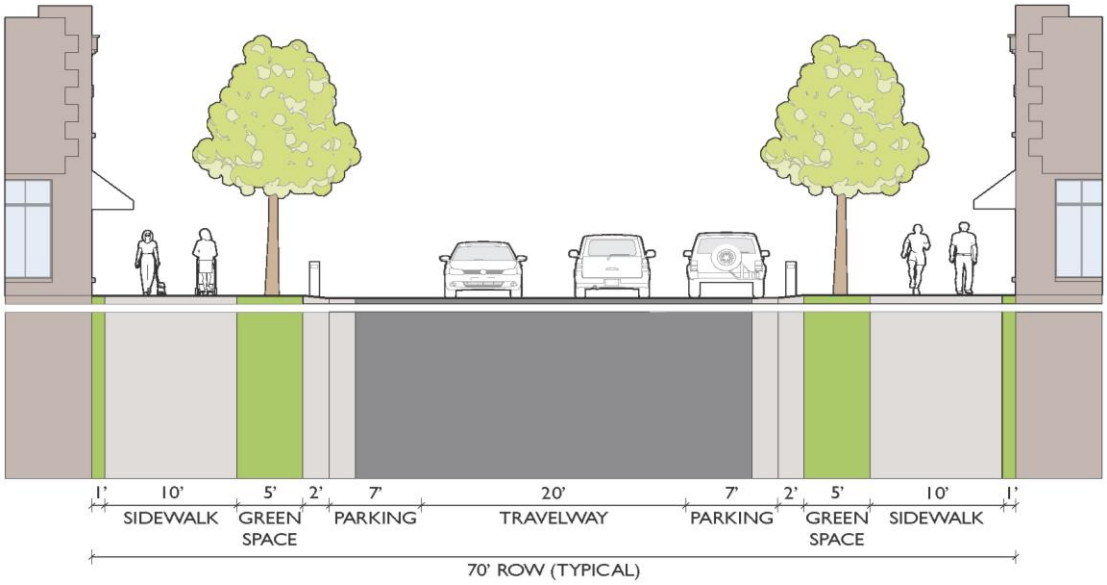


Shared street example

Indiana law currently limits minimum posted speed limits to 20 mph.[29] However, street design treatments can encourage slower speeds (10 to 15 mph) to make shared streets comfortable for people walking, bicycling, and driving. Slower speeds encourage a wide variety of uses along the street including commercial, recreational, and park spaces while continuing to allow motor vehicle access.[30]

The Federal Highway Administration's (FHWA) Accessible Shared Streets guidebook encourages transportation professionals to work closely with representatives from local disability communities when designing shared streets.[31] The typical cross-section of a shared street is shown in Figure 10. Shared street typical cross-section It should be noted that the design elements shown in the cross-section, and in all subsequent cross-sections, may vary based on public input and City of Bloomington priorities.

Figure 10. Shared street typical cross-section



[28] PedBikeSafe. Pedestrian Safety Guide and Countermeasure Selection System. Shared Streets. Accessed 05/03/2018. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=67.

[29] Indiana Code 9-21-5-6.

[30] PedBikeSafe. Pedestrian Safety Guide and Countermeasure Selection System. Shared Streets. Accessed 05/03/2018.

[31] FHWA. Accessible Shared Streets. 2017. Accessed 05/03/2018. https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/accessible_shared_streets/fhwahep17096.pdf.

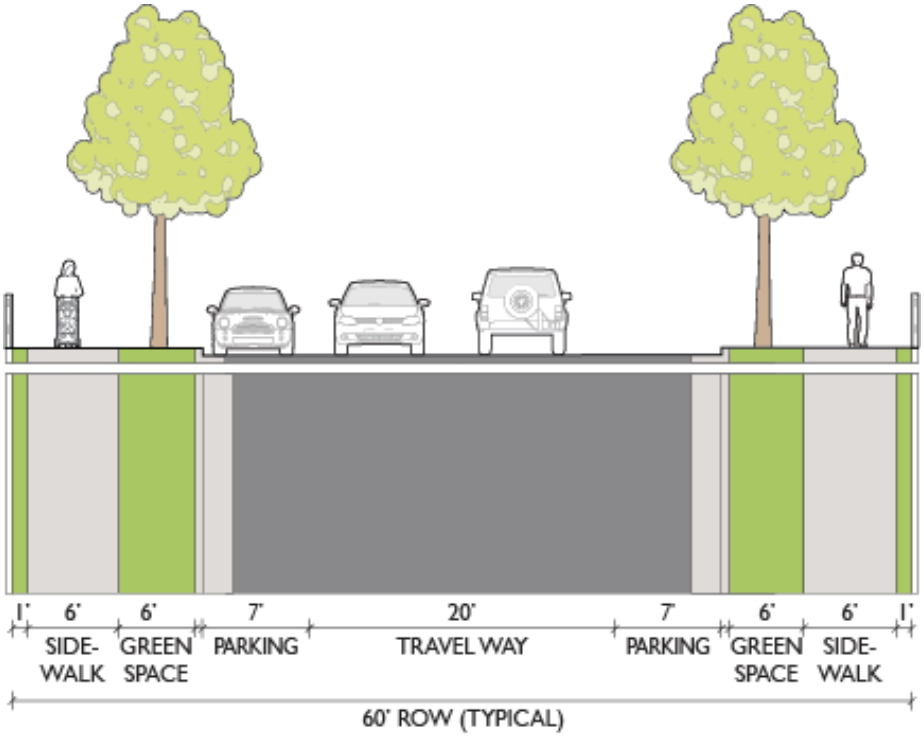
Neighborhood Residential Streets

Bloomington has several local residential streets that provide access to single and multifamily homes and are not intended to be used for regional or cross-town commuting. Neighborhood residential streets have slow speeds and low vehicular volumes with general priority given to pedestrians. Other characteristics of the street are provided in Table 3. Figure 11 shows the typical cross-section of neighborhood residential street with on-street parking on both sides of the street. Because of the low-speed and low-volume nature of neighborhood residential streets, the City may decide to reduce the width of parking lanes or travel lanes. On-street parking could be consolidated to one side or removed altogether.

Neighborhood residential street example

Many existing Neighborhood Residential Streets are quite narrow in width. In order to preserve neighborhood fabric, existing streets shall not be required to conform to these cross-section standards. Priority for Neighborhood Residential Streets is on maintaining calm streets that create a safe and comfortable environment for walking, even if there are no sidewalks.

Figure 11. Neighborhood residential street typical cross-section



Main Street

A Main Street is the economic and communal heart of a city. It exemplifies the character of the community while also being the center of commerce and cultural activity. It is usually surrounded by businesses, restaurants, and government services. Pedestrian activity is generally high on main streets. Figure 12 shows one option for a cross-section of a Main Street with a center turn-lane and on-street parking and protected bike lanes on both sides of the street. At this time, College Avenue and Walnut Street are the only streets within the Main Street typology. In order to determine future cross sections for each of these streets, a corridor study would need to be conducted. The corridor study would further develop the cross-sections for each of the streets, and most likely each street would focus on different elements. The cross-sections in Figure 12 and Figure 13 are conceptual. They provide two examples of possible options for Main Streets.

Main Street Example: This is an example of a Main Street configuration, which includes a center turn lane at the cost of a wider sidewalk. The preferred option would include wider sidewalks and more space for outdoor dining adjacent to businesses along the sidewalk.

Figure 12. Main Street conceptual cross-section

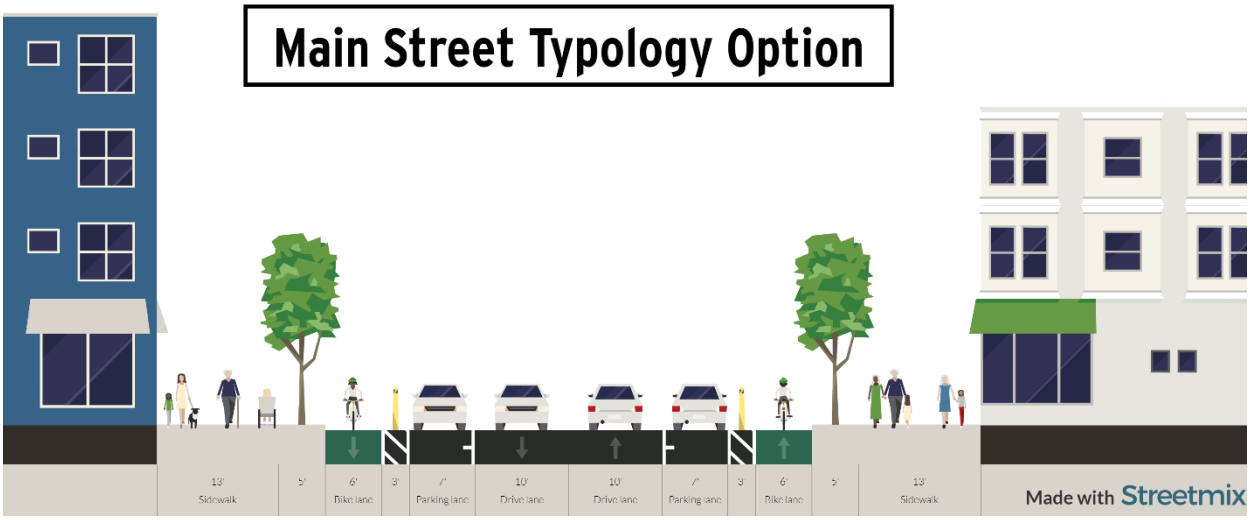
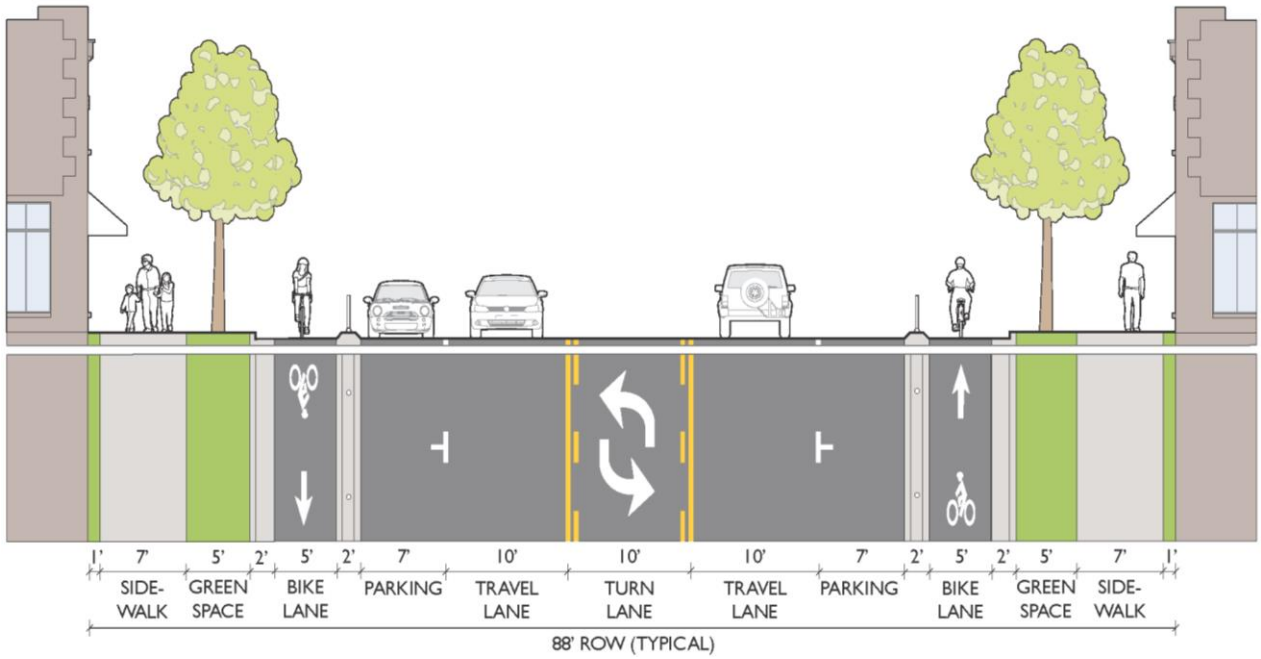


Figure 13. Main Street conceptual cross-section



General Urban Street

General Urban Streets provide vital connections between the suburban street network and the downtown core. They carry higher traffic volumes and operate at higher speeds than Main Street, while providing access to surrounding commercial and medium/high-density mixed-use facilities. General urban streets can coincide with truck routes for freight delivery to downtown Bloomington. Due to high traffic volumes, bicycle facilities on general urban streets include physical separation to improve safety and comfort for bicyclists of all ages and abilities. The cross-sections in Figure 14 and Figure 15 provide two examples of options for General Urban Streets.

General Urban Street Example: This is an example of the elements of a General Urban Street. In this example street image, the widths of each element in the example image do not necessarily match the conceptual cross-section. This example image includes sidewalks, street trees, a protected bike lane, parallel on-street parking, and travel lanes. While the example image is a one-way street, the General Urban Street Typology does not recommend one-way streets. The sidewalk area includes space for outdoor seating.

Figure 14. General Urban Street typical cross-section

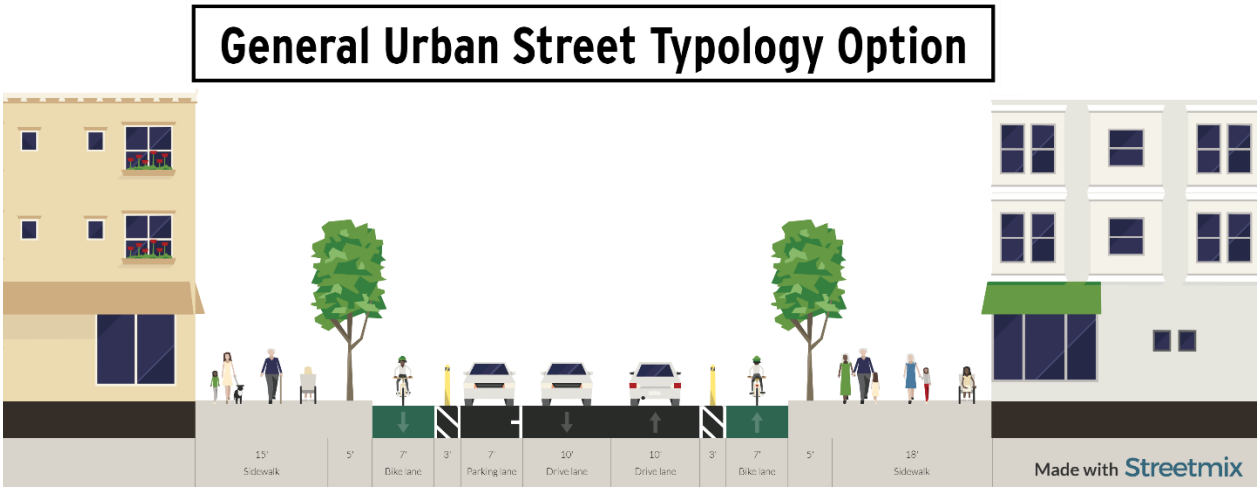
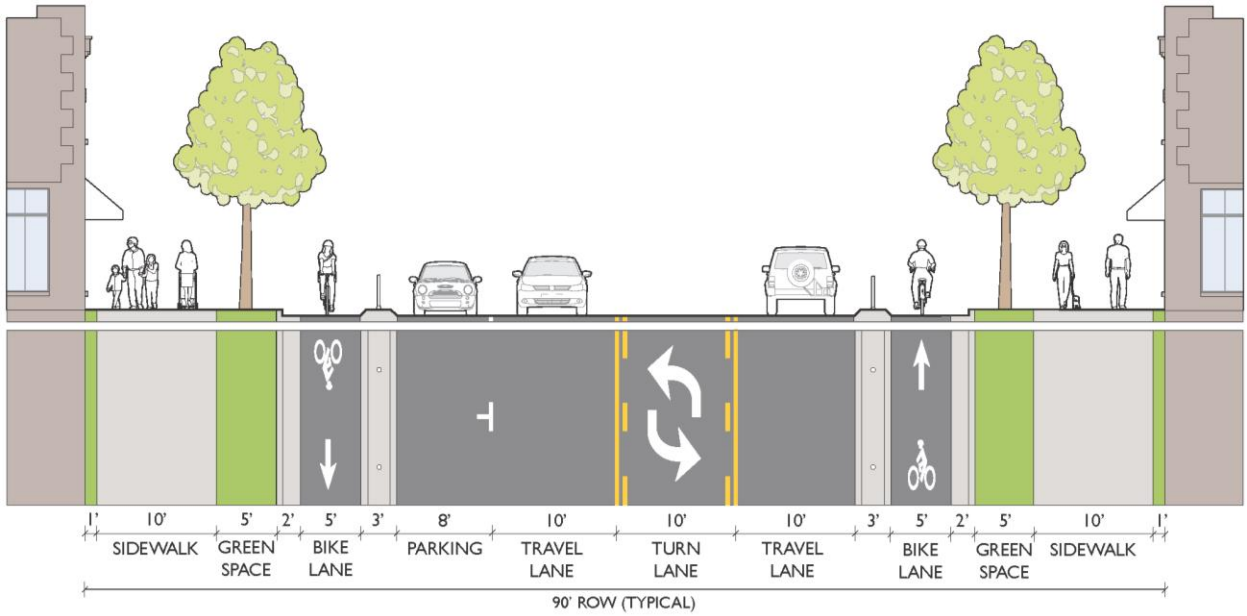


Figure 15. General Urban Street typical cross-section

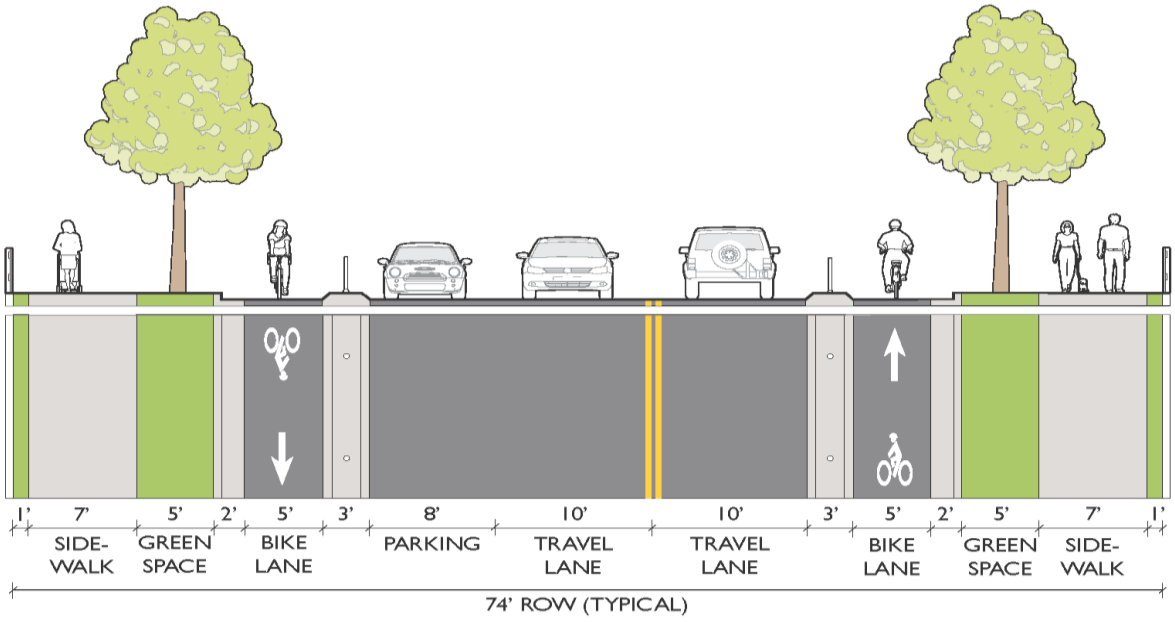


Neighborhood Connector Street

Neighborhood connector streets provide connections between the neighborhood residential and general urban or suburban connector streets. They collect traffic from residential neighborhoods and distribute it to the broader street network. Most of the land uses surrounding neighborhood connectors are generally low/medium-density residential with commercial nodes as it connects to the larger street network. Figure 16 shows the typical cross-section of the street type.

Neighborhood connector street example

Figure 16. Neighborhood Connector Street typical cross-section

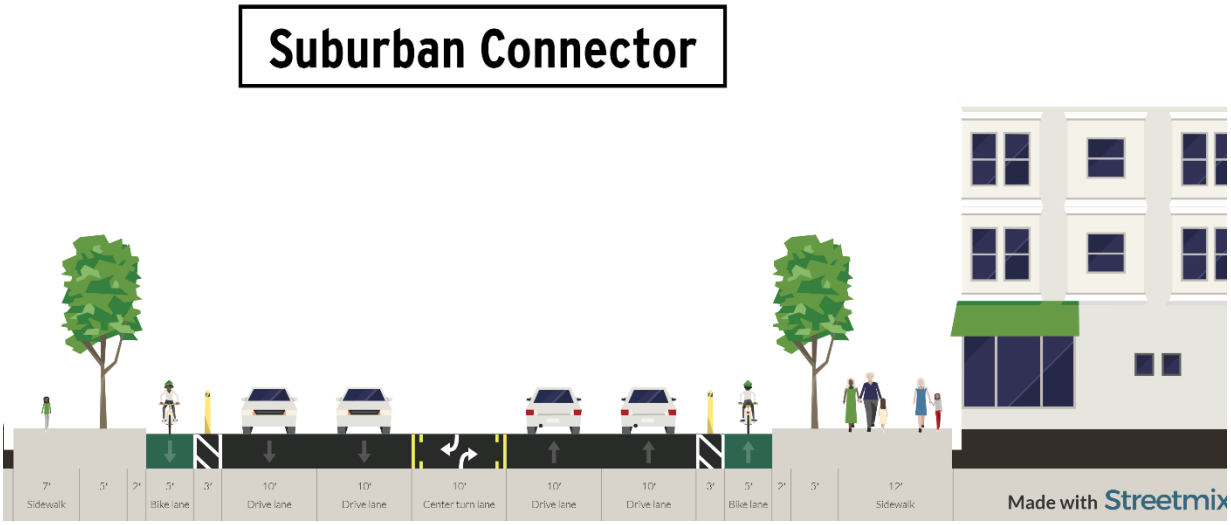


Suburban Connector Street

Suburban connector street example

Suburban connector streets carry the highest volume of motor vehicle traffic and are intended to provide higher vehicular mobility between different areas in Bloomington. Access to the roadway is limited on these streets. They carry traffic for longer trip lengths and provide lower comfort for people who walk and bike. Suburban connector streets can be utilized as traffic routes to provide access to downtown Bloomington for heavy vehicles. Figure 17 shows the typical cross-section of the street type. Suburban connectors vary in terms of the number of lanes and the context throughout the community. Some streets within this typology are one lane each direction and will remain in their current configuration. The typical cross-section is conceptual.

Figure 17. Suburban Connector Street typical cross-section



Street Typology Summary

Table 3 provides a summary of the key features of each street type. When faced with constraints and considering ways to preserve private property, mitigate environmental impacts, or reduce inordinate construction costs, the City of Bloomington will have to consider which modes to prioritize and their associated tradeoffs. As illustrated in Figure 18, pedestrians should receive the greatest priority, because they are the most vulnerable and the most space-efficient road user. Conversely, single-occupancy vehicle drivers should be the least prioritized, though safe motor vehicle access should still be provided.

Figure 19 shows the map of new street types for Bloomington based on the above typologies. Table provides additional guidance for each street typology. Appendix E provides a detailed design framework as well as step-by-step guidance on the typologies that were selected for specific streets.

Figure 18. Modal Priorities

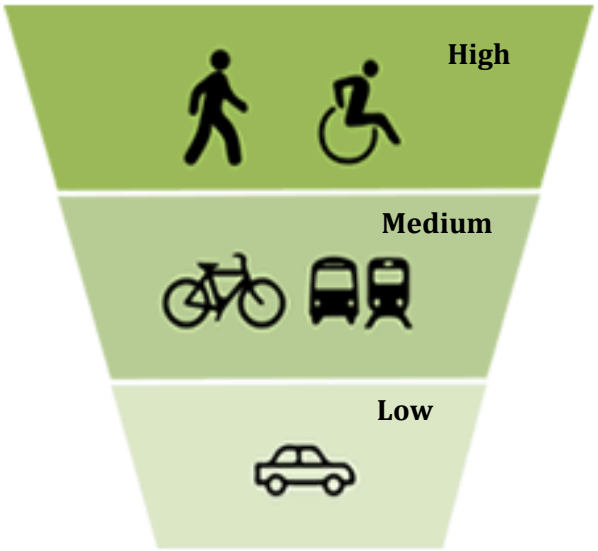
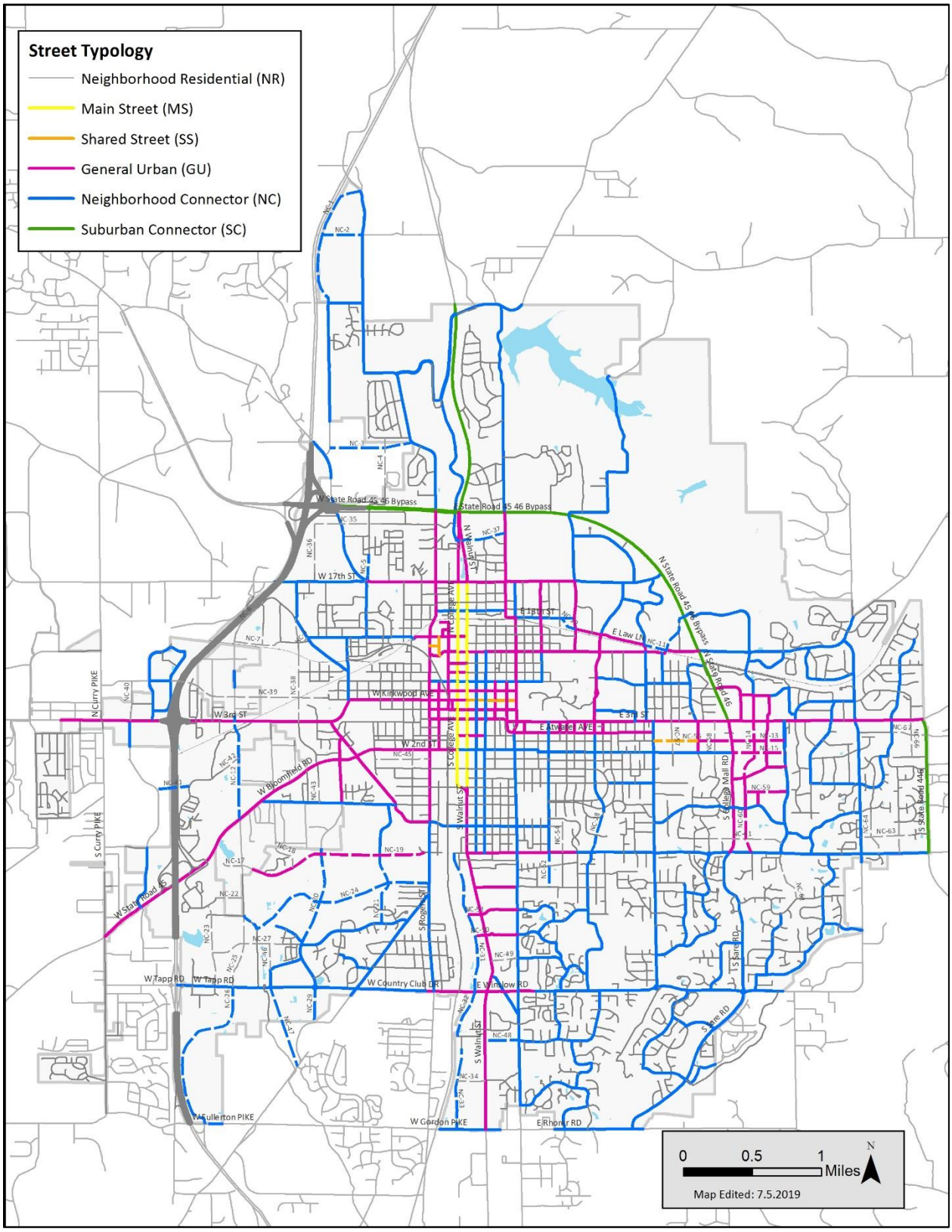


Table 3. Street Typology Summary

Street Typology	Land Use Context and Function	Transportation Context and Function	Typical Features
Shared Street Candidate Streets: Selective local streets in the downtown and other denser urban commercial areas; Kirkwood Ave. Default Width: 70 feet	• Medium to high density • Mixed-use, retail, downtown office, dense residential • Buildings close to street	• High volumes of pedestrian activity and bike traffic • Low volumes of autos • Little to no transit • Extremely low speeds • ADA-compliant slopes • Blends transportation and public space	• Narrow, undelineated space shared by all modes in addition to pedestrian-only space. • Designated parking stalls, street furniture, sidewalk cafes, small-scale lighting • Street trees and landscaping • Unique pavement
Neighborhood Residential Street Candidate Streets: Any local street in residential neighborhoods Default Width: 60 feet	• Low to medium density • Single-family and multi-family residential • Buildings with moderate setbacks from the street	• Slow speeds • Focus on pedestrian safety • Traffic calming • Typically allows on-street parking	• No centerline • Sidewalks • Neighborhood greenways • Unmarked on-street parking • Street trees and landscaping
Main Street Candidate Streets: College, Walnut, (from 17th St to Dodds St) Default Width: 88 feet	• Medium to high density • Primarily commercial with small to medium businesses and mixed use • Buildings close to street • Outdoor events & dining • Often has historic character	• High volumes of pedestrian activity and bike traffic • Medium volumes of autos and transit • Low speeds • Facilitates access • Often includes metered on-street parking	• 2 travel lanes and optional center turn lane • Wide sidewalks • Bike lanes or other bicycle facility • On-street parking • Street furniture, sidewalk cafes, small-scale lighting • Street trees and landscaping
General Urban Street Candidate Streets: Rogers St 10th St Default Width: 90 feet	• Medium to high density • Mixed-use, downtown office, dense residential • Buildings close to street	• Medium to high pedestrian activity and bike traffic • Medium to high volumes of autos and transit • Low speeds • Facilitates access • Often includes on-street parking	• 2 or 3 travel lanes • Wide sidewalks • Bike lanes • Marked on-street parking • Street trees and landscaping
Neighborhood Connector Street Candidate Streets: Henderson St 2nd St Default Width: 74 feet	• Low to medium density • Residential with occasional businesses • Buildings with moderate setbacks from the street • Connect multiple neighborhoods	• Medium to high pedestrian activity and bike traffic • Medium volumes of autos and transit • Low to moderate speeds • Facilitates access while providing continuous walking and bicycling routes	• 2 travel lanes • Sidewalks • Bike lanes • Some on-street parking • Street trees and landscaping

Street Typology	Land Use Context and Function	Transportation Context and Function	Typical Features
Suburban Connector Street Candidate Streets: SR 45/46 Bypass SR 446 N. Walnut Street Default Width: 101 feet	• Low to medium density • Suburban commercial, residential, and institutional areas • Buildings with moderate to deep setbacks	• High volumes of autos and transit • Low to mid pedestrian activity (higher on transit routes) • Low bike traffic Moderate to high speeds	• 2 or 4 travel lanes • Median or center turn lane • Sidewalks or multiuse path • Protected bike lanes and multiuse path • Street trees and landscaping

Figure 19. New Connections and Street Typologies



Design Parameters

The tables below identify typical parameters for street design and show preferred dimensions for different street typologies in Bloomington. New streets should be constructed with design speeds equal to or less than the target speeds, which may require proactive traffic calming on neighborhood residential streets. Based on specific site conditions, City staff may approve different dimensions with approval from the Director of Planning and Transportation. For example, two-lane streets with frequent transit service may warrant slightly wider travel lanes to accommodate buses. Deviation from these parameters should be carefully considered and documented appropriately. Appendix E also provides detailed guidance on allowable deviation from these parameters.

Table 4. Roadway Zone Design Parameters

Typology	Travel Lanes	Travel Lane Width	Center Turn Lane / Median	On-Street Parking	Target Speed (mph)	Typical Auto Traffic Volume (ADT)	Preferred Bicycle Facility[1]
Shared Street	No centerline	20'-22' total	None	Optional	10	Less than 1,000	None
Neighborhood Residential Street	No centerline	20' total	None	Optional	15-20	Less than 3,000	Neighborhood greenway
Main Street	2	10'	Optional	Recommended; Delineated	20-25	5,000-20,000	Bike lanes[2]
General Urban Street	2	10'	Optional	Recommended; Delineated	25	10,000-20,000	Bike lanes[2]
Neighborhood Connector Street	2	10'	None	Optional	25	5,000-15,000	Bike lanes[2]
Suburban Connector Street	2-4	10'	10'	None	25-35	15,000-30,000	Protected bike lanes and multiuse path

[1] Refer to Bicycle Facility Plan for recommended facilities. This category is a general recommendation by Street Typology.
[2] Refers to conventional, buffered, or protected bike lanes

Table 5. Pedestrian Zone Design Parameters

Typology	Frontage Zone[1] Door swings, awnings, café seating, retail signage displays, building projections, landscape areas	Pedestrian Zone Clear space for pedestrian travel, should be clear of any and all fixed obstacles	Greenscape / Furnishing Zone Street lights, utility poles, street trees, landscaping, bike racks, parking meters, transit stops, street furniture, signage	Total Width *(Lower value excludes Frontage Zone)*[2]
Shared Street	8'	10'	5'	15'-23'
Neighborhood Residential Street	N/A	6'	5'	11'
Main Street	8'	7'	5'	12'-19'
General Urban Street	8'	10'	8'	18'-26'
Neighborhood Connector Street	8'	7'	8'	15'-23'
Suburban Connector Street	N/A	12' (Multiuse path)	8'	20'

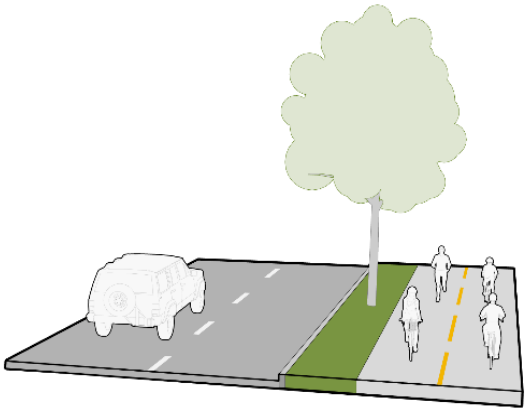
[1] Frontage zone may be accommodated within building setback requirement
[2] The Total Width is the Total Pedestrian Zone width for one side of the street.

3.3 Bicycle Facility Types

The following sections provide high-level guidance for the selection, design, and implementation of bicycle facilities included in the street typologies in section 3.2, the bicycle network in section 3.4, and the project recommendations in section 4. Bicycle facilities should be designed using national design guidance including the American Association of State Highway and Transportation Officials' Guide for the Development of Bicycle Facilities, Manual on Uniform Traffic Control Devices, the Federal Highway Administration's Separated Bike Lane Planning and Design Guide, and the National Association of City Transportation Officials' Urban Bikeway Design Guide.

Multiuse Paths and Trails

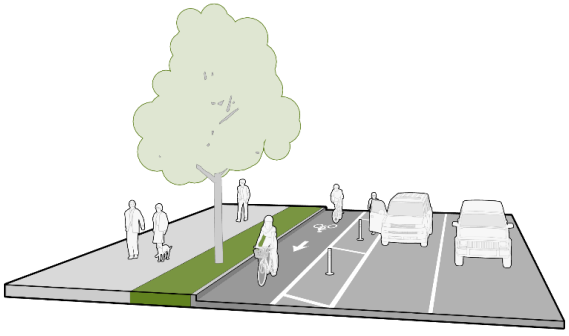
Multiuse paths are dedicated facilities for bicyclists and pedestrians that are typically located within the ROW of higher-speed roads with very few roadway or driveway crossings. Multiuse Paths and Trails are facilities that can accommodate all ages and abilities because of their separation from traffic. Snow removal and sweeping of these paths may require specialized equipment. Additionally, tree roots growing under the pavement may require periodic maintenance to preserve a comfortably smooth pathway surface. Alternatively, multiuse trails are shared-use facilities that are separate from roadways and in their own right-of-way.



Multiuse Path

Protected Bike Lanes

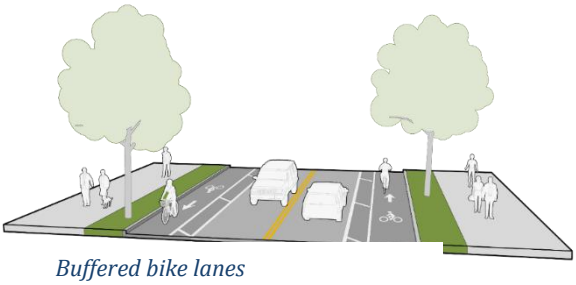
Protected bicycle lanes (PBLs) are street-adjacent bicycle lanes that are physically separated by barriers from motor vehicles and pedestrians. PBLs can be designed for one-way or two-way bicycle traffic. This bicycle facility type combines the user experience of a multiuse path with the on-street connectivity of bike lanes. Separation from traffic can be achieved with physical elements including parallel parking, planters, curbing, or posts. Where there are high levels of curbside activity, PBLs may be the most appropriate facility to properly restrict motorists from traveling, stopping, or parking in them. PBLs require added design considerations at driveways, transit stops, and intersections (especially for two-way PBLs) to manage conflicts with turning vehicles and crossing pedestrians. Stormwater maintenance issues may be mitigated by installing pre-cast concrete blocks with drainage sleeves to allow stormwater drainage. Specialized street sweepers may be required to maintain narrow facilities.



Protected bicycle lane

Buffered Bike Lanes

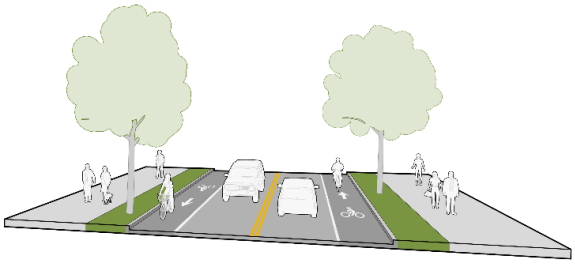
Buffered bike lanes provide a greater level of comfort for bicyclists than conventional bike lanes by providing a painted buffer between the bike lane and the travel lane, parking lane, or both. Maintenance considerations are similar to bike lanes except that buffered lanes have more striping that needs to be refreshed.



Buffered bike lanes

Conventional Bike Lanes

This bicycle facility type uses signage and striping to allocate dedicated roadway space to bicyclists. It encourages predictable movements by bicyclists and motorists. Care must be taken to properly design bike lanes to meet or exceed minimum standards. It is also important that bike lane treatments be carried through intersections to provide continuity and guidance for bicyclists where the potential for conflicts is highest. Bike lanes generally need to be swept periodically to keep debris from accumulating, especially when located adjacent to a curb. Where there are high levels of curbside activity, Conventional Bike Lanes will not be sufficient to prevent motorists from traveling, stopping, or parking in them.



Conventional bike lanes

Neighborhood Greenways

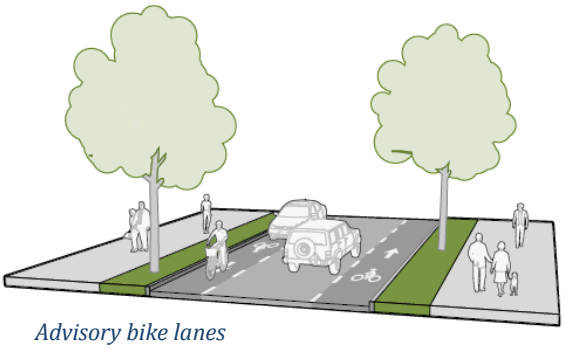
Neighborhood greenways (also referred to as bicycle boulevards or neighborhood bikeways) are low-speed, low-volume shared roadways that create a high-comfort walking and bicycling environment. In addition to shared lane markings and wayfinding signs, traffic calming or diversion treatments are often used to promote speed and volume reduction (less than 25 mph and 3,000 vehicles per day). Another option would be to restrict automobile traffic on certain roads to residents and visitors only. Maintenance should be commensurate with the level of traffic, debris accumulation, and wear and tear on traffic-calming features.

Neighborhood Greenway

Neighborhood greenways also improve overall transportation safety and can improve conditions for pedestrians by enhancing crosswalks, reducing conflicts, and managing speeds. This Plan recommends several new and enhanced neighborhood greenways on existing high-comfort routes, such as East Allen Street, as well as new routes through areas of town that currently lack significant

bicycle infrastructure. The Plan also acknowledges that preferences of residents and owners of properties along neighborhood greenways must be ascertained and given due regard in the design and installation of these facilities.

Advisory Bike Lane / Shoulder



Advisory bike lanes

On narrow streets where the pavement width is not adequate for two vehicular travel lanes and bike lanes of standard width, advisory bike lanes / shoulder may be considered, if the traffic volume is relatively low (generally less than 3,000 vehicles per day) and posted speeds are less than 25 mph. On these streets, a preferred 6 feet wide (4 foot minimum) bike lanes may be marked with a dashed white line. The middle, two-way travel lane width varies from a maximum of 18 feet to minimum of 10 feet. This configuration requires passing vehicles to give way to one another, resulting in low operating speeds. Since advisory lanes are a new treatment, jurisdictions looking to install advisory lanes must submit a Request to Experiment to the FHWA, further detailed in Section 1A.10 of the Manual on Uniform Traffic Control Devices.

3.4 Bicycle Network

Figure 20 shows the Full-Build Bicycle Network for Bloomington. The network was developed based on the bicycle facility selection guide provided in Appendix E, local land-use context, and the future multimodal needs of Bloomington. When implementing the Full-Build network, availability of funds, right-of-way availability, or other factors will dictate the type of facilities that can be installed. This may necessitate installing different facilities than shown in Figure 20. For example, as part of a City repaving project or maintenance project where the curbs remain in place, a conventional bike lane may be added on a street which shows a higher level facility. In the future, the facility shown in the figure could be added. Conversely, if the City is acquiring right-of-way with a project or redesigning a street, intersection, or facility, the planned facilities from Figure 20 should be included. Similarly, development and redevelopment projects must construct the facilities as outlined in Figure 20, when applicable per UDO standards and when possible per ROW constraints. Appendix E provides the bicycle facility selection guidance used to identify the Full-Build Bike Network.

Figure 21 shows the High-Priority Bike Network for Bloomington. Given the limited resources, the projects highlighted in the map and listed in Table 7, are anticipated to achieve the biggest impact within a short timeframe to advance multimodal transportation in the City. These projects form the basic east-west and north-south bicycle network that will be the backbone of the multimodal transportation system in the City. The projects are categorized in two phases. Phase 1 projects are anticipated to be implemented in the near-term, i.e. years 1 to 3 after the adoption of this Plan. Phase 2 projects are mid-term projects which are anticipated to be implemented in years 3-6.

During detailed study and design of the high-priority bicycle facilities, routing alignments should be updated as necessary to improve the feasibility of construction and usefulness of each facility. Also,

the focus on the high-priority bicycle network should not prevent pursuing other bike facility projects, especially when coordination opportunities exist. Finally, trail connections should be added into existing neighborhoods whenever feasible, and trail connections should always be included in new developments and redevelopments. Small connections could be pursued on existing utility easements, and these small connections should be designed as multiuse trails. These small connections are not all shown in the facilities map.

In addition to on-street bicycle facilities for travel, bicycle parking is vital to a complete system. The community must increase attractive and convenient public bicycle parking facilities, including covered bicycle parking, to support an increase in bicycle mode share.

Rails with Trails

The Full-Build Bicycle Network includes multiuse trail projects along existing, active rail corridors. These trail projects may be built within the existing railroad right-of-way, where feasible as a Rail with Trail facility; the facilities can also be built if the railroad is abandoned as Rail Trails. Additionally, the City could pursue the development of trails along the rail corridors which might require additional property, beyond the rail right-of-way. Rail Trails, Rails with Trails, and trails adjacent to railroad property can provide high-quality and low-stress bicycle and pedestrian facilities similar to the B-Line Trail. The projects will require consultation with railroad owners and further study to ensure that adequate right-of-way is available to accommodate required setbacks and other design parameters.

Figure 20. Bicycle Facilities Network

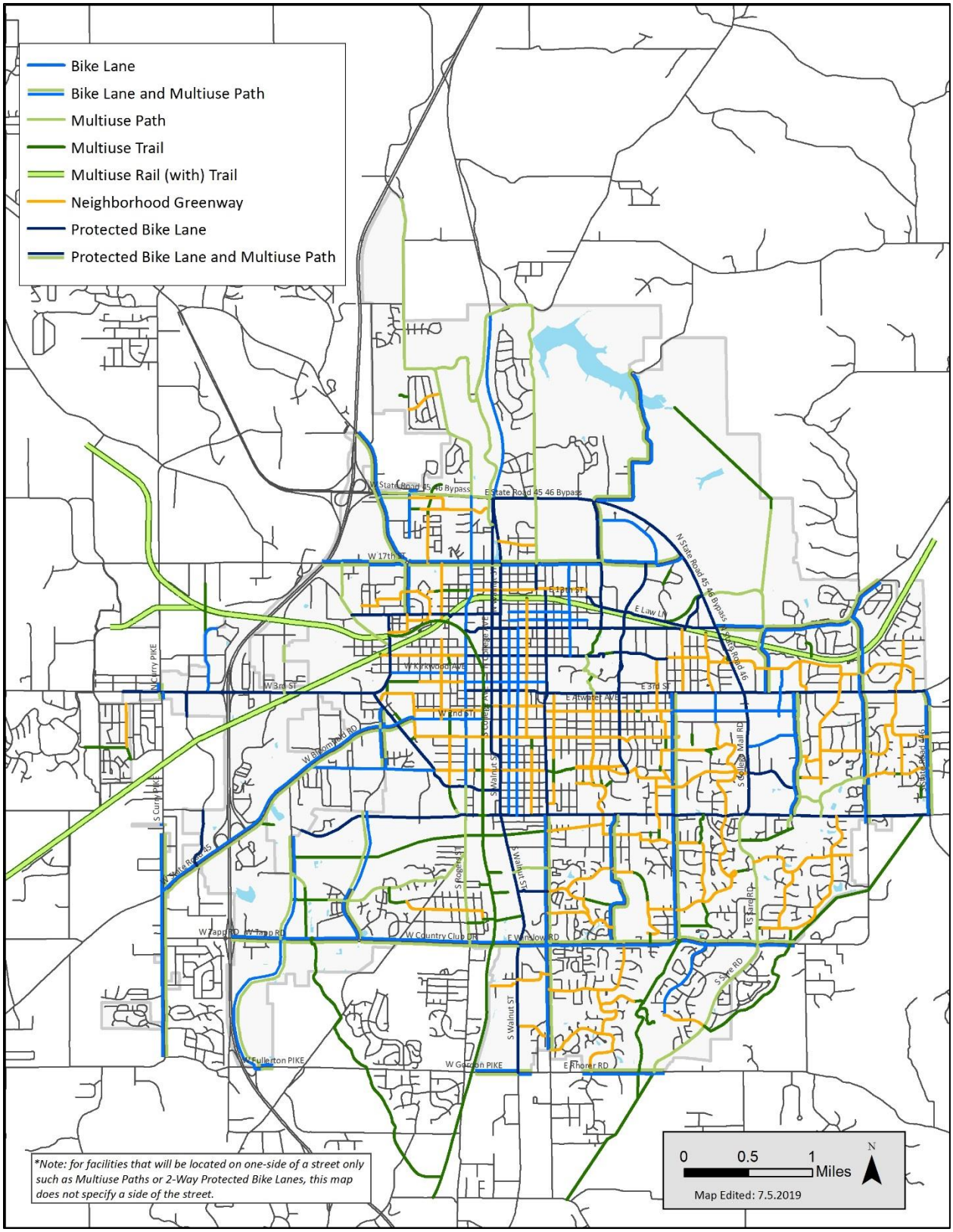
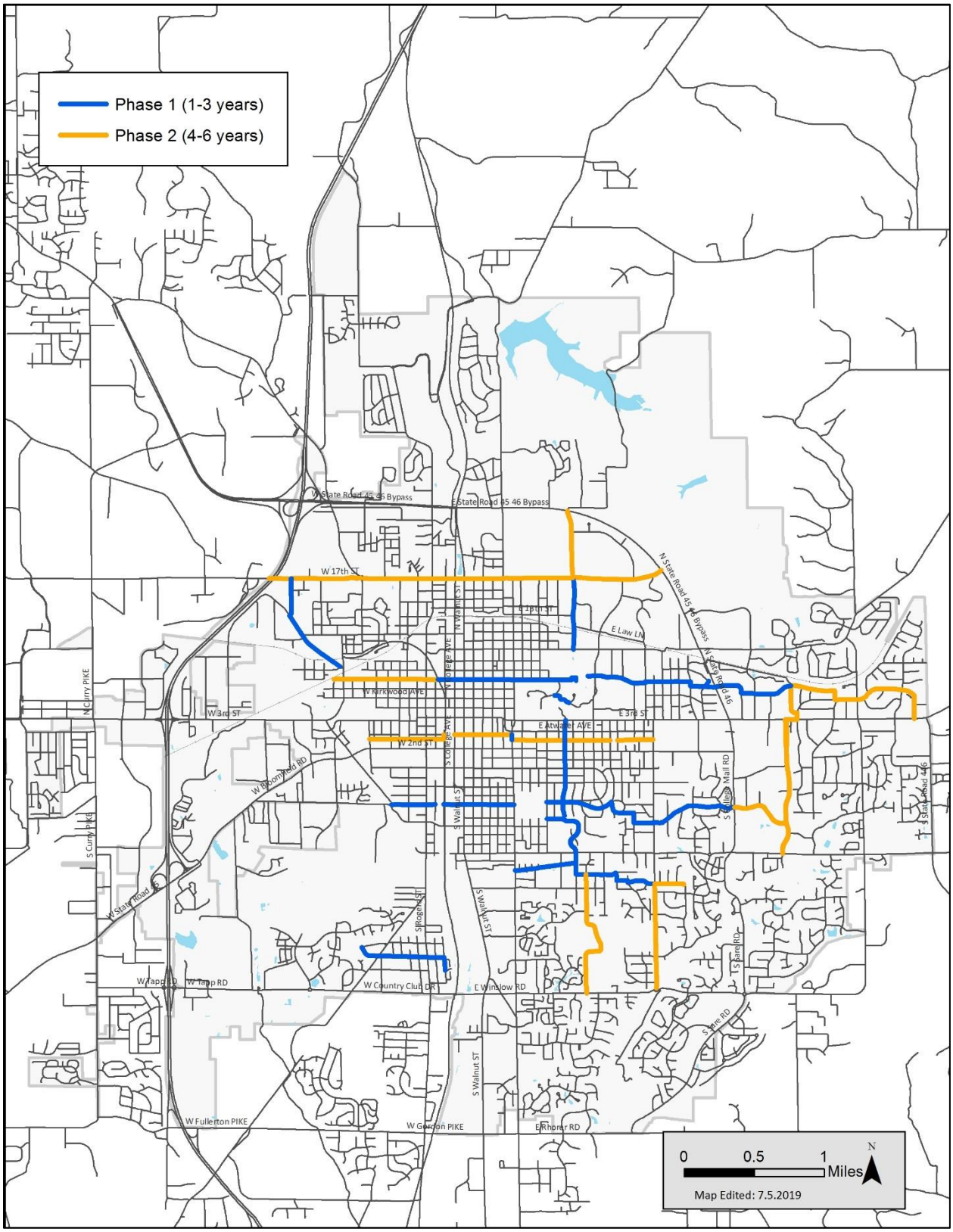


Figure 21. Priority Bicycle Facilities Network



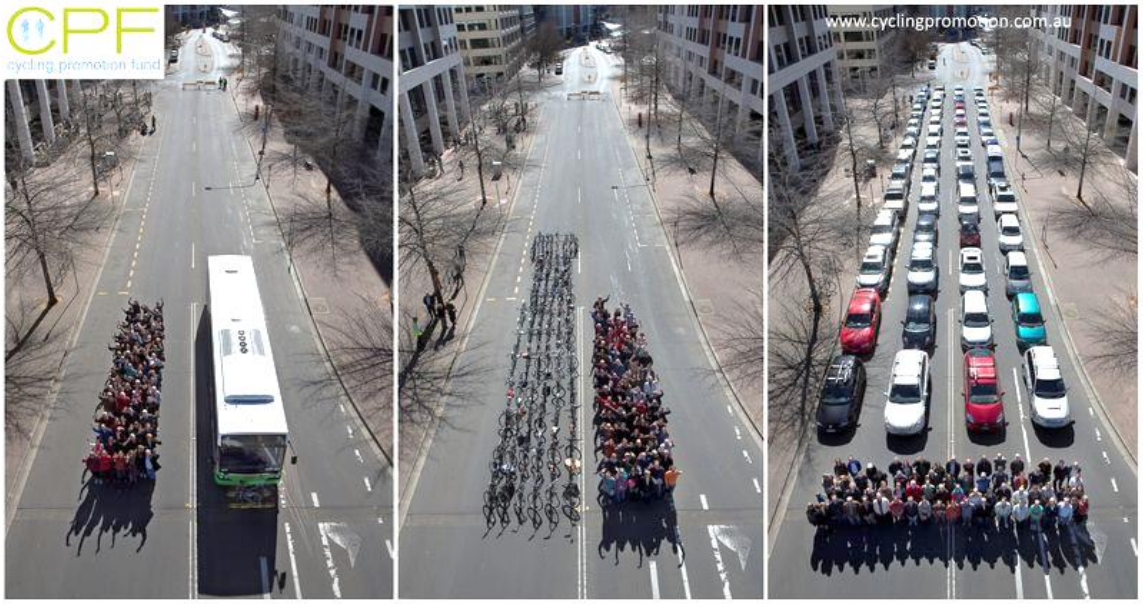
3.5 Transit Network

Transit is an integral part of Bloomington's transportation network. Bloomington Transit and IU Campus Bus are each responsible for the operations of their transit agency. While the City of Bloomington cannot impact the operations of transit, the City does control the public right-of-way, where transit operates. The City can pursue several options within the right-of-way in order to prioritize and improve transit. Prioritizing transit with changes to the right-of-way, access to transit, and funding to improve transit are ways that Bloomington can work to meet the goals of the Comprehensive Plan, such as:

- Goal 6.1 Increase Sustainability;
- Goal 6.2 Improve Public Transit: Maintain, improve, and expand an accessible, safe, and efficient public transportation system; and
- Goal 6.4 Prioritize Non-Automotive Modes: Continue to integrate all modes into the transportation network and to prioritize bicycle, pedestrian, public transit, and other non-automotive modes to make our network equally accessible, safe, and efficient for all users.

Prioritize space for transit to increase efficiency

Buses are a space-efficient form of transportation. One Bloomington Transit bus fits approximately 75 people. One bus occupies the same street space as approximately two cars, but the bus can carry 7.5 times as many people as the two cars. In order to prioritize transit and transportation efficiency, Bloomington can consider ways to improve transit by dedicating space to buses only. Dedicating street space to buses allows the transit to maintain a more predictable schedule, to save time by not waiting in traffic, and to reduce the total route time, thereby potentially increasing bus frequency. Bloomington can consider dedicating space by creating transit-only streets, transit-only lanes, and transit-only curb space.



In order to improve transit efficiency, Bloomington should conduct a pilot project to examine 10th Street as a transit-only corridor from Woodlawn Avenue to Union Street, while still allowing walking and bicycling. This segment of the corridor is greatly congested and it serves as one of the primary transit corridors. The congestion makes it very difficult for transit to provide service in a

reliable and competitive manner. Making this segment bus only would reduce travel time on transit, thus making it more competitive with the automobile and other modes. The pilot project is recommended for one year in order to examine how exclusive transit access on 10th Street can improve transit reliability and ridership. The pilot project should examine the benefits of a transit-only street for certain times of the day, such as 8:00 a.m. to 5:00 p.m., in order to allow motor vehicle access at other times of the day.

Bloomington can also consider introducing bus-only lanes in other areas of the community. Dedicated bus lanes provide more reliability and predictability in the provision of transit service in heavily congested corridors. Adding reliability and faster speeds to transit service in congested corridors will make transit more attractive to greater numbers of residents. Additionally, increasing the number of transit users within a corridor increases the number of people that can move along a street. Streets with multiple lanes and high-transit activity are candidates, especially when it can be coordinated with transit-oriented development. Bus-only lanes should be considered during corridor studies and as a tool for improving transit.

In recent years, Bloomington Transit and IU Campus Bus are facing more and more competition for curb space at transit stops, especially on campus and in the downtown area. Currently, there are no rules—whoever arrives first at a bus stop gets the space. Bloomington should regulate and enforce bus stops and curb space access at key transit stops in the public right-of-ways on campus and downtown. This would help ensure public transit operators have clear access to bus stops without competition from privately operated shuttles, ride-hailing services, private automobiles, and commercial vehicles.

Improve Pedestrian Access to Transit

Transit and the pedestrian network are linked because most people access transit by walking. The pedestrian environment can present significant barriers to people using transit. The City should focus investments and resources toward improving pedestrian access, especially near transit stops, to make our community more walkable and, in turn, more transit friendly. When improving pedestrian infrastructure, especially along transit corridors, the following factors should be considered:

- Prioritize sidewalk connections to bus stops and provide safe mid-block crossings where needed. In situations where mid-block crosswalks aren't warranted, nearby intersections should be upgraded to include high-visibility crosswalks and ADA compliant pedestrian signals.
- Permissive turn phases at signalized intersections with high pedestrian volumes create conflict points that increase crash risk at the intersection. While pedestrians in the crosswalk legally have the right of way, motorists often aren't looking for pedestrians and sometimes complete the turns at high speeds to avoid collisions with oncoming vehicles. Higher numbers of motorists and pedestrians can be expected along transit corridors. Reducing curb radii to manage turning speeds, installing signage to restrict right turns on red or require yielding to pedestrians, and adjusting traffic signal timings can improve safety for motorists, transit users, and pedestrians at intersections.
- Increase the addition of shelters, seating, lighting, and signage at transit stops to increase rider comfort, safety, convenience, and accessibility for users of all ages and abilities.

- Large, expansive parking lots and frequent driveways reduce comfort and safety for pedestrians walking along the street. Efforts should be made to consolidate driveways and/or provide public access through parking lots to improve the pedestrian environment in the City.

Increase funding to improve transit service

In the last fifteen years, there's been a proliferation of off-campus apartment complexes that offer private shuttle services to and from campus. These privately operated shuttle services are exclusively provided for the residents of the complexes and often compete with public transit for limited curb space at transit stops. Moreover, these services are likely impacting public transit ridership. As large new apartment developments are considered for approval by the City, developers should be encouraged or required where possible to contract with Bloomington Transit to provide general public shuttle service to all residents in lieu of a privately operated shuttle that exclusively benefits the residents of the development. In cases where the City is able to do so, the City should strengthen the public transportation route network instead of contributing to private shuttle transportation. This will help transit provide broader access to more residents.

The most important consideration for improving transit services in the community is the provision of adequate local resources. Transit systems across the country are struggling for resources. Federal and State funding make up about 60 percent of the Bloomington Transit budget. Locally derived taxes currently only generate about 18 percent of Bloomington Transit's budget. It is unlikely that funding from the federal or state level will increase in the near future. If transit services are to grow significantly in Bloomington, as promoted in the Comprehensive Plan, then it will be up to the local community to invest additional resources in transit. The City can consider new and innovative methods to provide more local resources to grow and expand transit in Bloomington.

3.6 Pedestrian Network Assessment

Sidewalks and the pedestrian network are the foundation of a transportation network. Pedestrian facilities provide direct access to homes, businesses and institutions. The availability and quality of safe and comfortable facilities for walking is important to maintain and improve the quality of life for all residents. In order to improve walking conditions throughout the City, street design should prioritize the safety and comfort of pedestrians, our most vulnerable roadway users.

In the interest of assuring a strong pedestrian network, the City should adopt a comprehensive system for evaluating pedestrian facilities. Such comprehensive system for evaluation should be adopted after the City's Planning and Transportation Department and the Bicycle and Pedestrian Safety Commission have examined evaluative approaches based on both planning literature and best practices from other communities.

Pedestrian Facility Types

The Pedestrian Network includes sidewalks, shared streets, multiuse paths, multiuse trails, rails with trails, and neighborhood greenways. All facilities for pedestrians must be designed for safety, accessibility, and comfort. For sidewalks and multiuse paths, this includes designing facilities to have added separation from moving motor vehicle traffic using street trees and treeplots. When street trees cannot be planted due to utility conflicts, separation must still be provided and should

include landscaping when possible. Neighborhood Greenways and Shared Streets are designed for pedestrians, bicyclists, vehicles, and other users to share space.

Improving the Pedestrian Network

Not all streets in Bloomington have sidewalks on both sides, and some streets have no sidewalks. In Bloomington, many neighborhoods and developments were constructed when sidewalks were not required. Filling in the gaps needs to be prioritized in order to improve the pedestrian network. Funding is limited, which makes constructing sidewalks on every existing street fiscally challenging and unlikely. To make the most of infrastructure investments, the community should prioritize locations that can serve the most people or the greatest need.

New Streets

All new streets must include sidewalks on both sides of the street and be designed according to the Street Typology, as outlined in Section 3.2.

Retrofitting and Filling in the Network Gaps on Existing Streets

Installing sidewalks on all existing public streets would be a huge burden on public finances and is largely cost prohibitive. However, to fill in existing sidewalk gaps, Bloomington should follow these decision-making guidelines for City initiated projects and for infill houses on existing lots of record:

- Suburban Connector, Neighborhood Connector, General Urban, Main Streets and Shared Streets: Sidewalks on both sides of the street.
- Neighborhood Residential Streets: Depending on the following criteria, these streets could have sidewalk on both sides, one side, or neither side.
    - **Sidewalks on both sides:** All Neighborhood Residential Streets unless the streets meets the criteria described in one of the categories below.
    - **Sidewalk on one side:** Any Neighborhood Residential Street with an existing or expected average daily traffic volume (ADT) of less than 1,500 vehicles per day and an expected operating speed of 25 mph or less, unless described in more detail below. Streets with community amenities such as schools, libraries, grocery stores, health facilities, parks, etc. should have a sidewalk on at least one side of the street, regardless of ADT or speed.
    - **No sidewalk:** Any Neighborhood Residential Street with an existing or expected ADT of less than 500 vehicles per day and an expected operating speed of 20 mph or less, except when community amenities like schools, libraries, grocery stores, health facilities, parks, etc., are present.
    - **Determinations:** These criteria are meant to be used as guidelines. The Transportation and Traffic Engineer will use professional judgement to determine if a sidewalk is the appropriate facility when in conflict with the ADT and speed criteria.

Uncontrolled Crossings

National resources on best practices can guide the City of Bloomington in selecting appropriate pedestrian crossings. The FHWA published its *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* in 2017 which includes guidance for pedestrian crash countermeasures based on roadway configurations, speed limits, and average daily traffic volumes. The City of Bloomington should utilize the guide to determine appropriate treatments at uncontrolled crossings.

Tree Coverage and Vegetation

Tree coverage and vegetation are important functional and aesthetic characteristics for pedestrian-friendly streets. They provide a variety of environmental, health benefits, and safety benefits. When placed strategically, street trees can help encourage walking by providing comfort and shade.

The environmental benefits of integrating trees and vegetation in the City's streetscape include better management of stormwater runoff, an increase in air quality, and a reduction of the urban heat island effect. Tree canopies also have the potential to capture up to 30 percent of stormwater before it reaches the ground, which can reduce the need for and demand on stormwater infrastructure. Stormwater runoff collects pollutants from hard surfaces which can be directed to bioswales created in the landscape buffer between the roadway and sidewalk. These bioswales act as natural filters before the stormwater is directed to downstream watersheds.

Tree coverage and vegetation also provide health and comfort benefits by reducing air pollution which can lead to negative health impacts, such as worsening asthma symptoms.[32] Adding trees along pedestrian routes can help decrease the exposure to the sun, which prevents skin cancer and increases comfort. In addition to protecting pedestrians directly, added shade from trees can help reduce the urban heat island effect.

Street trees and vegetation benefit all roadway users. The presence of street trees along the edge of a street can reduce motor vehicle speeds and has been shown to reduce the frequency of crashes. Trees and vegetation should be placed such that they maintain a 5-foot minimum clear path on the sidewalk. Some considerations for tree placement include:

- Avoiding trees and vegetation from acting as obstructions. When trees are placed between on-street parking stalls and sidewalk, adequate distance should be provided from the curb to ensure that the trees and vegetation are not damaged by car doors while opening. When trees and vegetation are located at intersections, they should be outside the intersection sight triangle to maintain the visibility of vehicular, pedestrian, and bicycle traffic.

- Increasing shade coverage: To invest strategically in trees and vegetation, the City can place plants in areas with high pedestrian foot traffic and locations where pedestrians tend to wait to either cross the street or to board a bus. These locations include major pedestrian intersections and bus stops that do not currently have a bus shelter. Walking routes that connect pedestrians to bus stops, or community amenities such as schools, parks, libraries and grocery stores, are also important areas for trees and vegetation.

- Planning for utilities and vegetation: Many of our utilities are located within the ROW. Plan the location of utilities, whenever possible, such that street trees and vegetation may be planted between the street and sidewalk or between the street and multiuse path.

[32] Centers for Disease Control and Prevention. *Particle Pollution.* Available at: https://www.cdc.gov/air/particulate_matter.html

3.7 Key Treatments and Supporting Guidance

In addition to the new street typologies and bicycle facilities, there are several key treatments and supporting operational and/or policy guidance that support the goals of the Plan and enhance the experience of the public. These treatments and guidance are discussed below.

Circulation

Streets were originally designed for two-way circulation. However, with increases in automobile traffic and under the misconception that reducing travel time and delay equates to increased economic activity, many streets in downtown settings were converted to one-way couplets in the mid-20th century. This led to higher speed roadways in high density commercial and surrounding residential areas, which do not typically support community goals and aspirations.

Converting one-way streets to two-way operation would support Bloomington's Comprehensive Plan goals, such as "establishing downtown as the center of the community," because two-way streets improve storefront access and shorten trip lengths. Two-way travel can also encourage speed limit compliance, provide more direct routes for drivers, reduce sidewalk bicycling or bicycling against traffic flow, and simplify routing for transit services. Simplifying routes and providing more direct routes for transit supports the Comprehensive Plan Goal of "Improve Public Transit." Additionally, by creating more direct routes to destinations, overall driving distances are reduced, which supports the Comprehensive Plan Goal and Policy, respectively of, "Reducing Greenhouse Gas Emissions," and "Reduce vehicle miles travelled per capita." Finally, two-way streets are considered more intuitive and easier to navigate, which can help Bloomington's 2 million annual visitors.

When developing a design for a one-way to two-way conversion, additional care should be given to intersection treatments and traffic signal coordination.[33] Two-way street restoration projects should include robust engagement with residents, business owners, and other stakeholders. Impacts to traffic circulation and overall connectivity should be evaluated to determine the benefits and tradeoffs of converting existing one-way streets to two-way streets.

One-Way to Two-Way Restoration of Dr. Martin Luther King Boulevard (South Bend, Indiana)

[33] PedBikeSafe. Pedestrian Safety Guide and Countermeasure Selection System. One-way/Two-way Street Conversions. Accessed 05/03/2018. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=23.

Modern Roundabouts

Designed to improve safety, encourage slow speeds, and to facilitate motor vehicles yielding to pedestrians and bicyclists, the modern roundabout reduces crash severity, improves traffic flow, and provides gateway treatment opportunities.[34]

Modern roundabouts present both significant safety improvements and design challenges. When considering the installation of a modern roundabout, pedestrian and bicycling volumes, traffic volume and speed, and available ROW should be carefully reviewed. Engineers and planners should consider how all users will interact with and use a modern roundabout. This Plan recognizes the benefits of the roundabout and recommends it at a few specific intersections. In general, new intersections and intersections planned for reconstruction should be evaluated for roundabouts. Roundabouts are an intersection design treatment available for implementation given appropriate traffic volumes and available space.

Protected Intersections

Protected intersections are most beneficial at locations with existing bicycle infrastructure, high bicycle and pedestrian volumes, and a history of right-turning motorists not yielding to or striking bicyclists or pedestrians. The protected intersection design increases motorist yielding by managing right-turn speeds, increasing bicyclist and pedestrian conspicuity, and improving motorist sight lines. While a full protected intersection will be most beneficial with two intersecting protected bike lanes, key features of the protected intersection (advanced stop bars, corner deflection islands, etc.) can also be incorporated at other intersections with available space to improve intersection safety.

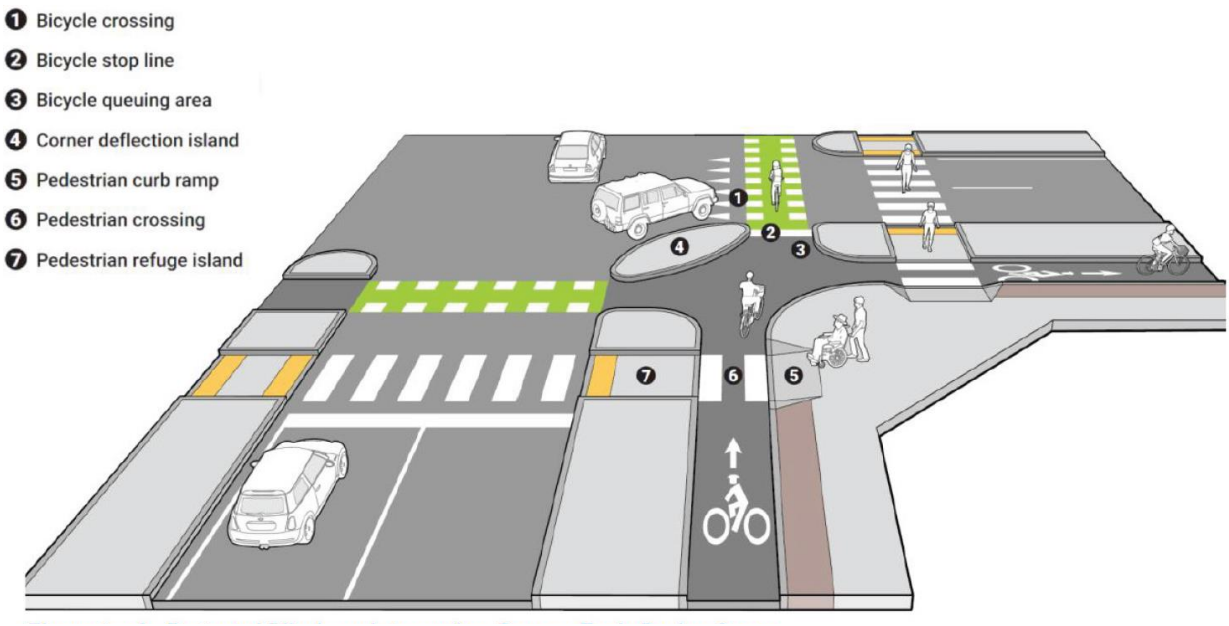


Illustration of a Protected Intersection; protected intersections can also be applied on streets with fewer lanes.

[34] PedBikeSafe. Pedestrian Safety Guide and Countermeasure Selection System. Roundabouts. Accessed 05/03/2018. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=25.

Grade Separated Intersections

Overpasses and underpasses completely separate people walking and bicycling from motor vehicle traffic. Cost and space considerations make these treatments most appropriate at intersections with particularly high motor vehicle volumes and speeds, railroad crossings, or natural barriers such as creeks. Grade separated intersections should be evaluated for all new and modified high volume intersections including interstates and major state highways.

Loading Zones

Loading zones, particularly in the downtown area, are necessary to support freight for local businesses and a thriving economy. While loading zones can potentially pose obstacles for motorists and bicyclists when they are not designed properly, simple guidance can help roadway users navigate these areas.

When possible, loading zones should be relocated to alleyways to avoid conflicts between delivery trucks, motorists, bicyclists, and pedestrians. If that is not feasible, the City should consider restricting the loading times to off-peak hours in order to reduce conflicts during the peak hours of the day. Loading zones can also be established within center left-turn lanes to reduce occurrences of delivery vehicles blocking motor vehicle travel, bike lanes, access to businesses, or access to on-street parking. Furthermore, the City should assess the opportunity to consolidate the number of loading zones to help reduce points of conflict between the different roadway users. If on-street parking is present, on-street parking could be used during certain hours as a loading zone.

If on-street parking is not available and more space is required for the loading zone, then additional space can be acquired through reducing the number of travel lanes or permitting roadway users to travel in a center turn lane when deliveries are being unloaded.[35] There are several options to address the need for loading in the downtown, and the City should work with downtown businesses to create a new loading zone policy.

Alleyways

Alleyways are an asset that can be used to support connectivity, retail, urban design, and sustainability. Alleyways create a clear front and back to a building and provide access for services such as deliveries, trash, recycling, and more. As noted, alleys are important for removing loading zones and deliveries from streets, but they can also serve more functions with proper management.

Alleyways can reduce out-of-direction travel and provide a low-traffic route for pedestrians and bicyclists. Alleys also accommodate vehicular traffic and reduce curb cuts resulting in greater comfort and safety for pedestrians and bicyclists along streets. Bloomington should require developments in the downtown, in neighborhoods, and in Urban Villages especially and throughout the community to use alleys for vehicular access in order to reduce curb cuts and improve pedestrian safety.

Alleyway preservation and improvement can also benefit local retail by providing affordable commercial space for local businesses. They can be improved to create a sense of place by activating the area with the help of public art such as murals, pedestrian-scale lighting, increased

[35] Federal Highway Administration. 2015. Separated Bike Lane Planning and Design Guide. Available at: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/

economic activity geared toward the alleyways, and wayfinding signage. Additionally, implementing green alley design elements can help manage stormwater runoff and reduce heat. Green alley design elements include elements such as permeable pavers and pavement, pavement with high albedo (ability to reflect sunlight), and dark-sky compliant light fixtures. The City of Bloomington can preserve and invest in alleyways to support bicycle and pedestrian connectivity and increase retail access where loading zones are not feasible.

Bloomington has many unimproved alleyways throughout the city. Bloomington should consider investing in improving targeted alleyways as a tool for redevelopment and improved urban design; additionally, Bloomington should require that alleyways are improved by developers where feasible. Based on the many benefits of alleyways, Bloomington should work to preserve and not vacate its alleyways.

Traffic Calming

Traffic calming aims to manage vehicular speeds and volumes. The greatest benefit of traffic calming is increased safety and comfort for all users. Compared with conventionally designed streets, traffic calmed streets typically have fewer collisions and fewer traffic-related injuries and fatalities.[36] These safety benefits are the result of slower speeds for motorists that result in greater driver awareness, shorter stopping distances, and less kinetic energy during a collision.

In addition to "promoting safe, reasonably convenient, accessible and pleasant conditions" for the many users of neighborhood streets, the City's current traffic calming program as codified in Title 15 (Vehicles and Traffic) also strives to "[i]mprove neighborhood livability by mitigating the negative impact of vehicular traffic on residential neighborhoods" and "encourage citizen involvement in all phases [of the program]." These objectives should be carried forward into the future.

Traffic calming for speed reduction can be achieved by installing horizontal or vertical elements. The section below discusses a few of the elements that are effective at reducing vehicular speed. The list is not exhaustive and is intended for information only.

Horizontal Elements

Horizontal traffic calming elements reduce vehicular speeds by narrowing lanes or adding horizontal curves on the street. Some treatments may slow traffic by creating a yield situation where one driver must wait to pass, also known as yield streets or queuing streets. Example of horizontal elements include chicanes and traffic circles.

Traffic circle on West 7th Street (Bloomington, Indiana)

Chicanes are curb bulbouts that are placed mid-block to narrow the roadway and add horizontal curves on the vehicular travel path, forcing motorists to reduce speed. These can also be placed mid-block directly opposite each other to physically and visually reduce the width of the roadway. Chicanes may require the removal of on-

[36] Federal Highway Administration. Speed Management Toolkit.

street parking in spot locations. Chicanes can be designed to minimize impacts to stormwater drainage. The size of chicanes will vary based on the targeted design speed and roadway width.

Traffic circles are used at uncontrolled or yield-control intersections to reduce speeds of motorists, which reduces collisions and improves bicycle and pedestrian safety. They can also encourage regional traffic to stay on larger streets, reducing the traffic volumes in neighborhoods. Traffic circles are appropriate for consideration on local streets not designated as emergency response routes. Neighborhood traffic circles should be considered at local street intersections to prioritize the through movement of bicyclists without enabling an increase in motorist speeds.

Vertical Elements

Vertical traffic calming treatments compel motorists to slow their speed to traverse the treatment and are found to be the most effective speed reduction treatments. They are typically used where other types of traffic controls are less frequent, such as along neighborhood greenways where stop signs may have been removed to ease bicyclist travel. Examples of vertical traffic calming elements include speed humps and raised marked crosswalks.

Raised crosswalk example

A speed hump is a roadway design feature that consists of raised pavement extending across the full width of the street. They are engineered for speeds less than 30 mph and are not typically used on the general urban or higher street typology. Designs can be compatible with snow plowing equipment and speed humps are typically designed with a rise of 3 to 6 inches above the roadway. Speed cushions are either speed humps or speed tables that include wheel cutouts to allow large vehicles to pass unaffected, while reducing passenger car speeds. Speed cushions are generally more compatible with Neighborhood Greenways because they allow space for bicyclists and pedestrians to go between the cushions instead of over them.

Raised marked crosswalks (also known as speed tables) employ vertical deflection that reduces motorist speeds when approaching the crosswalk. Similarly, raised intersections are created by raising the roadway to the same level as the sidewalk, essentially creating a speed table across an entire intersection. This treatment enhances the pedestrian experience, reduces speeds of motorists, and increases visibility between motorists and pedestrians. Raised intersections are most appropriate in areas of high pedestrian demand. The impact on stormwater design should be carefully considered when designing raised crosswalks or intersections.

4. Recommended Projects

Working towards the vision set forward by the 2018 Comprehensive Plan will require safety and accessibility focused projects that build upon and improve the existing multimodal transportation network. This Plan includes a number of recommended projects to do just that. This chapter details recommended projects, which are divided into new roadway connections and multimodal projects.

The projects were developed based on input received from the public, elected officials, and City staff during the planning process; responses from the WikiMap survey; analysis of the existing network including average daily traffic volumes and crashes; and relevant recommendations from past studies. New roadway connection projects are based on increasing street connectivity and planning for streets to be constructed by future developments. Multimodal project recommendations are intended to enhance all modes of transportation; reduce crash frequency and severity, especially for vulnerable road users; and improve multimodal transportation infrastructure.

4.1 New Roadway Connections

Table 6 lists 67 new roadway connections, ordered by geography, based on the planning approach and design elements highlighted in Chapter 3. Figure 22 shows the location of proposed new connections, along with multimodal projects. The City of Bloomington should require developments to construct new connections where feasible, seek opportunities to partner with private development to construct new connections, and pursue new connections that would significantly improve transportation connectivity.

Note that the connections represent a long-term vision for the City to maintain access to new undeveloped areas, as well as provide guidance to establish a street grid when large areas redevelop. The connections are conceptual alignments only and require detailed discussion with stakeholders to determine final alignment that meets the intent of the connection. The new connections also support multimodal transportation by reducing out-of-direction travel and helping to distribute vehicular traffic so that it is not concentrated on few existing roadways. While many of the identified new street connections may take years to build, they are critical to consider as Bloomington reinvents, redevelops, and reinvests in the community.

Table 6. New Roadway Connections

Project ID	Project Name	Description
NC-1	N Prow Road extension	Extend N Prow Rd from W Acuff Road to Old Kinser Pike to improve access in the area
NC-2	W Bayles Road extension	Extend W Bayles Rd from N Kinser Pike to new N Prow Rd extension to improve access in the area
NC-3	Briarcliff Dr neighborhood connector extension	Provide new connection from N Prow Rd to N Kinser Drive, south of W Briarcliff Dr, to improve connectivity
NC-4	Stonelake Dr neighborhood residential extension	Provide connection from N Stonelake Dr to W Briarcliff Dr
NC-5	Arlington Valley neighborhood connector	Extend N Monroe Street from W 17th Street to Arlington Valley Dr to improve future connectivity
NC-6	Fountain Dr neighborhood residential extension	Extend W Fountain Dr (Vernal Pike) to connect neighborhood to N Johnson Ave; Requires new railroad crossing
NC-7	Gray St neighborhood residential extension	Extend W Gray St to intersect with the extended W Fountain Dr and N Johnson Ave
NC-8	Nuckles Rd neighborhood residential extension	N Nuckles Rd to W Gray St extension to improve local connection
NC-9	11th St neighborhood residential extension	Improve W 11th St connection to W Gray St
NC-10	Law Ln urban connector extension	Connect E Law Ln to N Walnut Grove Ave to improve EW connection north of the railroad
NC-11	Range Rd, 10th St and Law Ln connector	Provide new connection from E Law Ln to E 10th St and SR 46 at N Range Rd.
NC-12	Weimer Road North Extension	Extend S Weimer Road from W Bloomfield Rd to W 3rd St; Requires new railroad crossing.
NC-13	Northern College Mall east-west connector	Provide new street grid as part of any future redevelopment of the area. The grid should be established with block length of 350- 550 ft.
NC-14	Pete Ellis Dr Extension thru College Mall	Provide new street grid as part of any future redevelopment of the area. The grid should be established with block length of 350- 550 ft.
NC-15	2nd Street Extension thru College Mall	Provide new street grid as part of any future redevelopment of the area. The grid should be established with block length of 350- 550 ft.
NC-16	Kingston Dr S Extension thru College Mall	Provide new street grid as part of any future redevelopment of the area. The grid should be established with block length of 350- 550 ft.
NC-17	Sudbury Dr extension to Bloomfield Rd	Extend W Sudbury Dr from S Weimer Road to W Bloomfield Road
NC-18	Beech Tree Lane extension	Extend S. Beech Tree Lane to Sudbury Farm to improve N-S connection
NC-19	Hillside Drive Extension	Extend Hillside Drive from S Rogers St to W Sudbury Dr as a new major E-W connection
NC-20	Adams St Extension	Provide new road from S Adams St to W Countryside Ln to improve N-S connectivity
NC-21	Strong Dr neighborhood connector extension	Provide new road from S Strong Road to W Countryside Lane to improve local connectivity

Project ID	Project Name	Description
NC-22	Oakdale Dr E-W local extension	Provide connection from S Oakdale Dr to S Weimer Rd to improve local circulation
NC-23	Oakdale Dr N-S extension	Provide connection from S Oakdale Dr to Tapp Road
NC-24	New Road north of RCA Community Park	Provide new connection from Rogers St to Weimer Road to improve E-W local connectivity
NC-25	Realign S Weimer Road	Realign Weimer Road from Wapehani Road to Tapp Road
NC-26	New Frontage Road Connection	Provide connection from W Fullerton Pike to Tapp Road
NC-27	Countryside Lane Extension	Extend Countryside Lane from S Adams St to Oakdale Dr N-S extension
NC-28	Highland Ave Multiuse Path Connection	Provide bike/ped connection from S Tarzian Ln to S Highland Ave
NC-29	Adams St South Extension	Extend S Adams Street from W Tapp Rd to S Rockport Rd
NC-30	Wickens St neighborhood residential extension	Provide new connection from S Rockport Rd to S Wickens St
NC-31	Clear Creek northern neighborhood connector	Activate Switchyard Park and create additional public access by providing connection from E Hillside Dr to W Country Club Dr
NC-32	Clear Creek southern neighborhood connector	Preserve the public use of Clear Creek by providing connection from W Country Club Dr to S Pinewood Ln
NC-33	Pinewood Ln extension	Preserve the public use of Clear Creek by providing connection from W Gordon Pike to S Pinewood Ln
NC-34	Burks Dr neighborhood residential extension	Improve access to Clear Creek by connecting to E Burks Dr
NC-35	W Cascade Ave extension	Extend W Cascade Ave from current terminus to W Arlington Rd and new extension of N Arlington Park Dr
NC-36	N Arlington Park Dr	Extend N Arlington Park Dr from current terminus to W Cascade Rd extension to improve access in the area
NC-37	EW Connector Miller Showers	Provide new connection from N College Ave and N Old State Road 37 to N Dunn Street to improve access and connectivity in the area
NC-38	S Landmark Ave extension	Extend S Landmark Ave from W 3rd St to N Crescent Rd to improve NS connection and alternate to N Adams St railroad crossing
NC-39	W Kirkwood Ave extension	Extend W Kirkwood Ave over railroad and I-69 to Alexander Dr to provide alternate multimodal crossing of I-69
NC-40	Liberty Dr extension	Extend Liberty Drive from W 3rd St to Jonathan Dr to improve access in the area
NC-41	S Basswood Dr crossing	Provide new I-69 crossing from S Basswood Dr to Liberty Dr
NC-42	S Basswood Dr extension	Extend from current terminus to Weimer Road North extension
NC-43	S Landmark Ave extension	Extend S Landmark Ave from current southern terminus to W Allen St
NC-44	S Fairview St extension	Connect S Fairview St from current terminus at W 1st St to W 2nd St

Project ID	Project Name	Description
NC-45	Bloomington Hospital connector	Create a new east-west connection from S Walker St to S Rogers St between E 1st St and E 2nd St. Additionally, provide new street grid as part of any future redevelopment of the area. The grid should be established with block length of 350- 550 ft.
NC-46	S Kegg Rd extension (north)	Extend S Kegg Rd from W Sunstone Dr to Countryside Lane extension
NC-47	S Kegg Rd extension (south)	Extend S Kegg Rd from current southern terminus to S Rockport Rd
NC-48	E Allendale Dr extension	Extend E Allendale Dr from S Walnut St Pike to S Walnut St
NC-49	E Graham Pl extension	Extend E Graham Pl from S Henderson St to S Walnut St
NC-50	E South Ct extension	Extend E South Ct from S Walnut St to Clear Creek northern neighborhood connector
NC-51	N North St extension	Extend N North St from S Walnut St to Clear Creek northern neighborhood connector
NC-52	S Woodlawn Ave	Extend S Woodlawn Ave from E Hillside Dr to E Miller Dr
NC-53	E Thornton Dr connection	Connect E Thornton Dr between S Troy Ct and S Huntington Dr
NC-54	S Huntington Dr extension	Extend S Huntington Dr from E Hillside Dr to S Weatherstone Ln Additionally, provide new street grid as part of any future redevelopment of the area. The grid should be established with block length of 350- 550 ft. or to match the grid to the west and include alleyways.
NC-55	E Grimes Ln extension	Extend E Grimes Ln from S Woodlawn Ave to S Huntington Dr extension Additionally, provide new street grid as part of any future redevelopment of the area. The grid should be established with block length of 350- 550 ft. or to match the grid to the west and include alleyways.
NC-56	E Hunter Ave extension	Extend E Hunter Ave from S High St to S College Mall Rd This connection would be implemented only if redevelopment of the area occurs.
NC-57	S Roosevelt St connection	Connect S Roosevelt St from E 2nd St to E 3rd St Additionally, provide new street grid as part of any future redevelopment of the area. The grid should be established with block length of 350- 550 ft.
NC-58	S Wynnwood Ln extension	Extend S Wynwood Ln from current northern terminus
NC-59	E Goodnight Way extension	Extend E Goodnight Way from roundabout at E Stratum Way to S Auto Mall Rd
NC-60	S Auto Mall Rd extension	Extend S Auto Mall Rd from E Covenanter Dr to E Moores Pike and S Woodruff Ln
NC-61	S Pickwick Pl extension	Extend S Pickwick Pl from S Winfield Rd to S Clarizz Blvd
NC-62	S Arbors Ln extension	Extend S Arbors Ln from current southern terminus to E Winston St
NC-63	E Bridgestone Dr extension	Extend E Bridgestone Dr from current western terminus to S Smith Rd
NC-64	S Romans Ct extension	Extend S Romans Ct from current southern terminus to E Moores Pike and S Wingfield Dr
NC-65	S Graywell Dr extension	Extend S Graywell Dr from E Cricket Knl to E Moores Pike
NC-66	S Morningside Dr extension	Extend S Morningside Dr from E 3rd St to E Janet Dr

Project ID	Project Name	Description
NC-67	E Hagan St extension	Extend E Hagan St from S Park Ridge Rd to Knightdale Rd

4.2 Multimodal Projects

The Plan recommends several multimodal projects that support the transportation goals of the 2018 Comprehensive Plan. The projects include the facilities identified in the High-Priority Bicycle Network. The projects are categorized as follows:

- Corridor Study
- Multiuse Path
- Maintenance Operations
- Sidewalk
- Neighborhood Greenway
- Protected Bike Lane
- Shared Street
- Roundabout
- Transit Assessment
- Trail

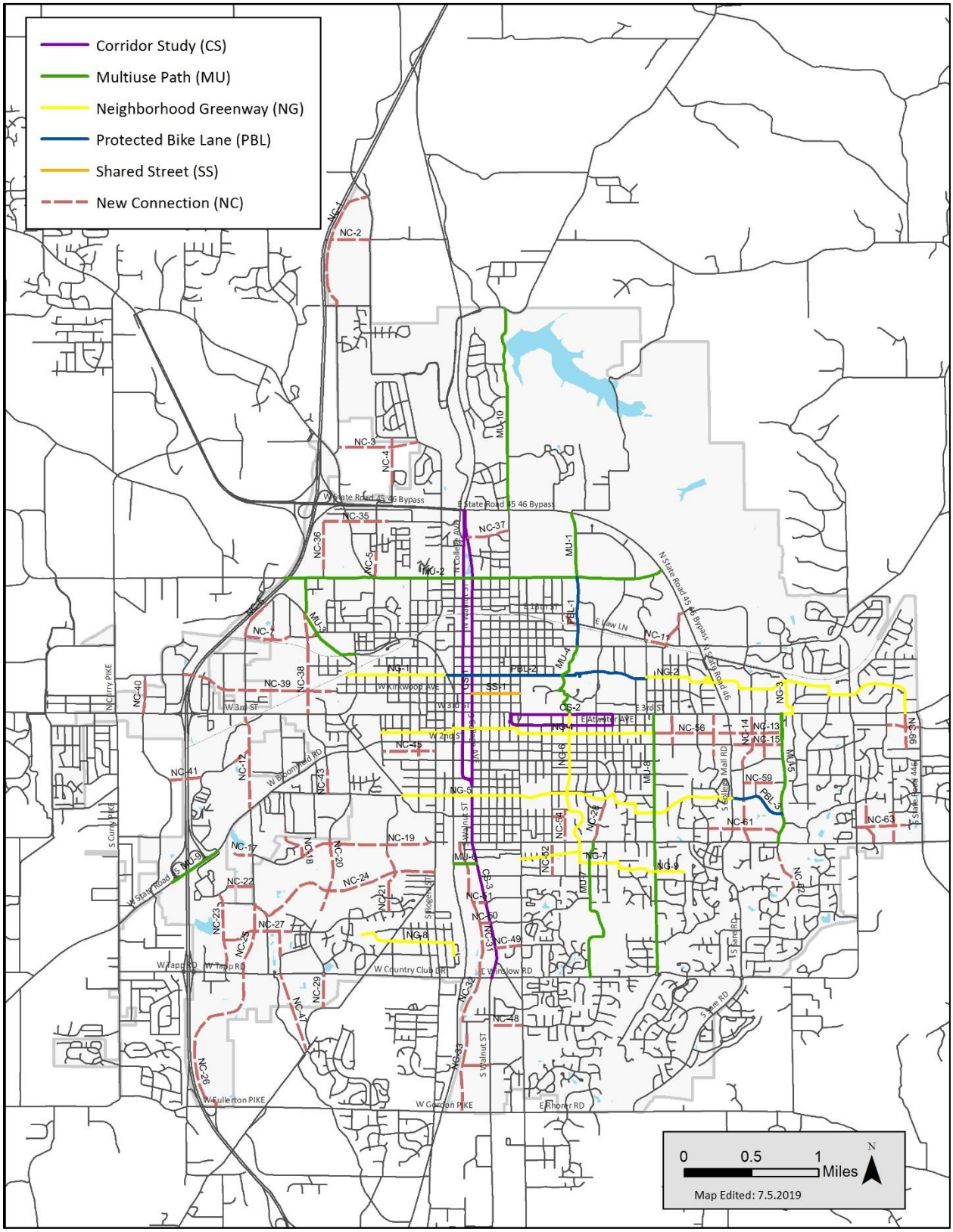
Table 7 shows proposed multimodal projects based on the planning approach and key treatments previously discussed in the Plan. It does not include location specific sidewalk projects due to lack of available data. Projects CC-5, SD-1, TN-1, and TR-1 are recommendations for future study. Figure 22 shows the location of proposed multimodal projects.

Table 7. Multimodal Projects

Project ID	Category	Project Name	Description
CS-1	Corridor Study	College Ave/Walnut St N-S Corridor Study	Conduct a corridor study of College Ave and Walnut St, and nearby N-S roads, from E Allen St to State Rd 45/46 to improve multimodal travel options
CS-2	Corridor Study	E Third St/Atwater Ave E-W Corridor Study	Conduct a corridor study of E Third St and Atwater Ave, and nearby E-W roads, from High St to Dunn St to improve multimodal travel options
CS-3	Corridor Study	S Walnut St Corridor Study	Conduct a corridor study from Allen St to Country Club Dr to improve safety for all users
CS-4	Corridor Study	10th St corridor study	Study 10th St from N College Ave to N Union St to guide future multimodal transportation improvements
CC-1	Circulation Change	Citywide circulation change study	Conduct traffic circulation study to assess other existing one-way street network and identify opportunities to restoring it to two-way circulation
MO-1	Maintenance Operations	Street maintenance evaluation study	Evaluate existing street maintenance operations plan and procedures to improve prioritization and to coordinate with other transportation projects
MU-1	Multiuse Path	N Fee Lane Multiuse Path and Protected Bike Lanes	Provide a multiuse path and protected bike lanes on N Fee Ln from E 17th St to Hwy 45/46
MU-2	Multiuse Path	17th St Multiuse Path and Bike Lanes	Provide a multiuse path and bike lanes on 17th St from I-69/Hwy 45 to Hwy 45/46
MU-3	Multiuse Path	N Crescent Rd/W Fountain Dr Multiuse Path	Provide a multiuse path on N Crescent Rd and W Fountain Dr from W 17th St to the B-Line Trail
MU-4	Multiuse Path	Indiana University Multiuse Path	Provide a multiuse path from E 10th St to E 3rd St between N Woodlawn Ave and N Jordan Ave
MU-5	Multiuse Path	S Clarizz Blvd Multiuse Path and Bike Lanes	Provide a multiuse path and bike lane on S Clarizz Blvd from E Moores Pike to E 3rd St
MU-6	Multiuse Trail	E Thornton Dr Multiuse Trail Extension	Extend the E Thornton Dr multiuse trail from S Walnut St to the B-Line Trail
MU-7	Multiuse Path	S Highland Ave Multiuse Path and Bike Lanes	Provide a multiuse path and bike lanes on S Highland Ave from E Winslow Rd to E Hillside Dr
MU-8	Multiuse Path	S High St Multiuse Path and Bike Lanes	Provide a multiuse path and bike lanes on S High St from E Winslow Rd to E 3rd St
MU-9	Multiuse Path	Ramp Tunnels for Bloomfield Rd Interchange	Tunnel through the two interchange ramps so the multiuse path will avoid the traffic crossings
MU-10	Multiuse Path	N Dunn St Multiuse Path	Provide a multiuse path on N Dunn Street from Hwy 45/46 to N Old State Road 37
NG-1	Neighborhood Greenway	W 7th St Neighborhood Greenway	Provide a neighborhood greenway on W 7th St from N Ritter St to S Rogers St and a protected bike lane on W 7th St from S Rogers St to the B-Line Trail
NG-2	Neighborhood Greenway	E 7th St Neighborhood Greenway	Provide a neighborhood greenway on E 7th St and E Longview Ave from S Union St to N Glenwood Ave
NG-3	Neighborhood Greenway	E Morningside Dr Neighborhood Greenway	Provide a neighborhood greenway on Glenwood Ave, E Longview Ave and E Morningside Dr from S Clarizz Blvd to E 3rd St and S Morningside Dr extension
NG-4	Neighborhood Greenway	E Hunter Ave Neighborhood Greenway	Provide a neighborhood greenway on W Howe St, Smith Ave, and E Hunter Ave from S Walker St to S High St

Project ID	Category	Project Name	Description
NG-5	Neighborhood Greenway	Allen St/E Covenanter Dr Neighborhood Greenway	Provide a neighborhood greenway on Allen St, E Southdowns Dr, E Ruby Ln, E Marilyn Dr, and E Covenanter Dr from W Patterson Dr to S College Mall Rd
NG-6	Neighborhood Greenway	S Hawthorne Dr Neighborhood Greenway	Provide a neighborhood greenway on S Hawthorne Dr and S Weatherstone Ln from E 3rd St to E Thornton Dr
NG-7	Neighborhood Greenway	E Thornton Dr Neighborhood Greenway	Provide a neighborhood greenway on E Thornton Dr and Arden Dr from S Henderson St to S High St
NG-8	Neighborhood Greenway	W Graham Dr Neighborhood Greenway	Provide a neighborhood greenway on W Graham Dr and S Bryan St from W Kissell Dr to the B-Line Trail
NG-9	Neighborhood Greenway	E Arden Dr Neighborhood Greenway	Provide a neighborhood greenway on E Arden Dr from S High St to S Montclair Ave
PBL-1	Protected Bike Lane	N Fee Lane Protected Bike Lanes	Provide protected bike lanes on N Fee Ln from E 10th St to the 45/46 Bypass
PBL-2	Protected Bike Lane	7th St Protected Bike Lanes	Provide protected bike lanes on 7th St from the B-Line Trail to N Union St
PBL-3	Protected Bike Lane	E Covenanter Dr Protected Bike Lanes	Provide protected bike lanes on E Covenanter Dr from S College Mall Rd to S Clarizz Blvd
SD-1	Sidewalk	Pedestrian Priority Area Study	Conduct detailed sidewalk and ADA inventory of key pedestrian priority areas to identify projects and prioritize implementation.
SS-1	Shared Street	Kirkwood Avenue Shared Street	Convert Kirkwood Avenue to shared street from Indiana Ave to Walnut St
TN-1	Transit Assessment	Comprehensive Transit Service Study	Conduct detail assessment of existing transit service and identify additional funding and service improvements.
TR-1	Trail	Rails with Trails Assessment	Coordinate with railroads and conduct survey of proposed rails with trails alignment

Figure 22. Recommended Projects



5. Next Steps for Key Recommendations

The recommended projects identified in Chapter 4 will require additional steps and supporting policies to implement. This chapter includes anticipated next steps for key recommendations, proposed City policy changes, and priority projects for the City to build. Implementation of the Plan's recommendations will require coordination and collaboration among City departments and with external organizations including Indiana University, the Bloomington/Monroe County Metropolitan Planning Organization, Monroe County, and the Indiana Department of Transportation. The City of Bloomington may choose to pursue consultant services for public engagement, planning, and design.

5.1 Overall Approaches

Some of the highlights from this Plan, along with associated next steps that the City and its partners should take, are listed below.

Plan for Future Street Connections

This Plan recommends numerous new street connections that are designed to preserve public right-of-way and establish a transportation network to help meet City goals. Many of the new connections are anticipated to occur as part of future development projects. First, the City should update the Unified Development Ordinance (UDO) to clarify if and when developers are required to build new connections and facilities. As developers submit site development applications to the City, the City should ensure that the new connections, with adequate ROW, are included. Additionally, the City may pursue some of the new connections itself based on priorities for redevelopment, public access, and connectivity.

Improve Multimodal Travel along Major N-S and E-W Corridors

To achieve the goals set forth in the Comprehensive Plan, improvements must be made to facilitate bicycle, pedestrian, bus, and other supported modes of non-automobile travel along the major N-S and E-W corridors through the center of Bloomington. Detailed corridor studies must be conducted to identify the best ways to improve multimodal travel to and through Downtown, while still allowing for safe and efficient automobile travel. These corridor studies should carefully consider the optimal role and function of each relevant street, desired travel patterns, economic development impacts, public health outcomes, and broader community goals. The City should recognize the infrastructure improvements recommended by these studies as optimal approaches to these corridors and should place priority on funding these improvements. In-depth engagement with the community, coordination with agency partners, and a robust education and enforcement program will be critical to the success of whatever changes ultimately are selected and implemented.

The Corridor Studies focus on busy streets where there is a lot of automobile traffic, but where safety and comfort improvements are needed for pedestrians and bicyclists. College Avenue and Walnut Street, as well as 3rd Street and Atwater Avenue, are two one-way couplets that are currently designed to carry high volumes of traffic at higher speed. To support the Comprehensive Plan Objectives to "Nurture Our Vibrant City Center" and "Provide Multimodal Transportation Options," this Plan recommends immediate corridor studies of the major E-W and N-S corridors that pass through the center of Bloomington. The goal should be to determine how best to:

1) Provide pedestrians with safe passage and safe access along and across the length of the corridors;
2) Provide bicyclists with safe, protected bicycle paths throughout the length of the corridors;
3) Provide buses and other forms of mass transit with safe and efficient ways to travel along the corridors;
4) Accommodate potential new and emerging forms of transportation that further the goals of the Comprehensive Plan;
5) Facilitate safe and efficient automobile traffic to the maximum extent possible in light of the aforementioned goals; and
6) Enhance the vitality of Downtown Bloomington's businesses and institutions.

The corridor studies should consider a variety of possible options, including (but not limited to): restoring two-way circulation to currently one-way roads; designating special bicycle roads with limited automobile access; adding or reallocating right-of-way, and/or restricting on-street automobile parking, to enable the creation of new protected bicycle lanes, multi-use paths, sidewalks, and amenities for pedestrians and users of mass transit; and designating certain travel lanes as bus-only.

Redesign Kirkwood Avenue as Shared Street with Focus on Pedestrians

In order to implement the shared street recommendation on Kirkwood Avenue, from Indiana Avenue to Walnut Street, the City should first pursue a design charrette to gather input and ideas of business owners, residents, Indiana University, and other stakeholders. The design charrette would help to establish the vision for the street based on input, identify design elements that are important to stakeholders, and chart a clear path forward.

Extend B-Line and Invest in High-Priority Bicycle Network

In order to extend the B-Line Trail and complete the high-priority bicycle network, the City will need to study, design, and construct numerous projects. The City should allocate funds in the annual budget cycle or create a bond package in order to implement the projects identified in the High-Priority Bicycle Network to build the network within the targeted timeframe.

5.2 Policy Recommendations

The Plan identifies the following policies that should be adopted by the City to advance the transportation goals of the 2018 Comprehensive Plan.

Develop a New Complete Streets Policy

A new Complete Streets policy was adopted by the BMCMPO in 2018, and several key initiatives have been completed by the City and MPO recently, like the 2018 Comprehensive Plan, Transform 2040, and others. Bloomington needs to develop its own Complete Streets policy that will complement the MPO's but specifically address the City's needs and City-funded projects. This Plan lays the groundwork for developing a new City of Bloomington Complete Streets policy. Based on this Plan's recommended street typologies and preferred dimensions of various street design elements, the City should continue to collaborate closely with various departments within the City, Monroe County, and the MPO to leverage existing national guidance for designing and constructing complete streets, such as the Federal Highway Administration's "Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts" and the National Association of City Transportation Officials' Urban Street Design Guide.

As a next step, the City should develop and formally adopt a Complete Streets policy that establishes a transportation hierarchy as follows: pedestrians, bicyclists, public transit, and private automobiles; and provides guidance for reviewing transportation projects. Additionally, the policy should distinguish between developing new streets consistent with the typologies in this Plan and redesigning existing streets where there are space limitations, varying contexts, and, often, competing goals. Overall, for all projects, the policy should focus on prioritizing pedestrians, enhancing the public realm, and improving livability.

Develop a Street Grid Network Policy

As highlighted in this Plan, establishing a street grid network has several benefits. The Plan recommends several new connections that would lay the groundwork for future grid network. However, other opportunities may arise in the future, beyond the new connections shown in this Plan. As such, Bloomington should establish a policy to develop a street grid network of 350'-550' street spacing, where possible. If desired, the policy could be part of the Complete Streets policy and it could be incorporated into the Unified Development Ordinance's Subdivision Regulations and other relevant areas.

Improve Curbside Management

The demand for curbside space will continue to increase with the advent of new and emerging transportation technologies and services. These demands must be managed properly to reduce conflicts and maintain adequate space for transit vehicles over private motor vehicles. Curbside management should be considered part of a Transportation Demand Management strategy that should be addressed through both street design and policy. This Plan recommends improving existing curbside management processes to address loading zones, transportation network companies (TNCs) like Uber and Lyft, bike share and other shared vehicles, on-street parking, protected bike lanes, and other uses. This could take the form of a curbside management policy, which might include:[37]

- Setting priorities for the use of curb space based on street typology, e.g., transit space over metered parking on urban streets;
- Dedicating space to transit vehicles at critical locations and times of day;
- Locating and time-restricting freight loading zones to balance proximity and loading times;
- Redesigning facilities to physically restrict access to the curb using protected bicycle lanes or other design features;
- Redesigning streets to limit access during certain times of day and directing private deliveries or drop-offs to dedicated areas on adjacent streets; and
- Establishing and enforcing time limits and demand-based pricing for on-street parking.

Establish Transit as a Priority

In addition to ensuring that curbside space is allocated to transit vehicles, the City of Bloomington can further establish transit as a citywide priority by considering financial support for Bloomington Transit equipment and/or services, creating slightly wider lane widths along high-frequency routes, implementing intersection improvements such as signal priority and queue jumps,

[37] National Association of City Transportation Officials. Curb Appeal: Curbside Management Strategies for Improving Transit Reliability. November 2017.

requiring motorist yielding through ordinances, and improving transit access with two-way restoration projects.

Update the Existing Traffic Calming Policy

As Bloomington grows, traffic congestion and speeding in residential neighborhoods will likely be a recurring issue for many residents. The City should update its traffic calming policy to ensure it includes an appropriate process to receive traffic calming requests from residents and/or City Council. As not all residents or neighborhoods have the opportunity to voice concerns equally, the policy should include steps for the installation of temporary, proactive traffic calming measures as well as the installation of longer term measures as a result of a reactive process in response to local concerns. This could include determining the procedure to address the request, identifying the technical thresholds when traffic calming treatments may be appropriate, and providing installation guidelines. Having an up-to-date policy will help streamline the requests, set expectations, and provide adequate transparency to all residents. In addition, the updated policies shall carry forward the objectives of the existing policy including, but not limited to, improving neighborhood livability and encouraging citizen involvement in all phases of the program.

Update Unified Development Ordinance

The Plan includes new street typologies and bicycle facility types. As the City updates the Unified Development Ordinance, various elements of the ordinance should be coordinated with the intent and parameters of the new street typologies, bicycle facility types, and other recommendations of this plan.

Adapt to New and Emerging Trends

Transportation options and technologies have evolved rapidly over the past decade and continue to undergo significant change. The emergence of technology-enabled shared mobility services is changing how people live and travel.

Dockless Mobility

Dockless mobility systems include devices, such as bicycles and scooters, which are publicly available for rent and usually don't require stationary locations for pick-up or drop-off. The City of Bloomington should continue to be proactive in preparing for and managing dockless mobility systems by providing parking solutions and taking advantage of the National Association of City Transportation Officials' guidance on regulations for dockless mobility.[38] As a next step, the City should add more bicycle parking and dockless mobility corrals both in the downtown, in neighborhoods, and at other popular destinations. These corrals should often be located within on-street parking areas or on extra sidewalk space, but not at the cost of pedestrian clear space, comfort, or outdoor seating.

Ride-Hailing Services

Other innovations such as ride-hailing services provided by transportation network companies ("TNCs") also promise to change how transportation systems operate. Ride-hailing services may reduce the need for motor vehicle ownership, but they may contribute to increases in vehicle-miles traveled. Based on survey results in large cities across the country, one study suggests that 24

[38] NACTO, "Guidelines for the Regulation and Management of Shared Active Transportation," accessed August 14, 2018. https://nacto.org/home/shared-active-transportation-guidelines/

percent of respondents would have opted to ride transit if ride-hailing services weren't available.[39] This implies that almost one out of every four ride-hailing users are using TNCs because they find it more attractive than public transportation. In addition to increasing vehicle-miles traveled, ride-hailing vehicles often occupy curb space while idling, picking up passengers, or dropping off passengers, which presents an issue when they encroach into bus stop areas or park in bike lanes. Improved curbside management and greater prioritization of transit will be valuable strategies for the City of Bloomington in managing ride-hailing services.

Autonomous Vehicles

Numerous organizations and companies are actively researching and developing autonomous vehicle technologies. While proponents suggest that autonomous vehicles could improve traffic safety and minimize the need for private ownership, concerns about safety, equity, and liability persist. Bloomington hosted Indiana's first test of an autonomous bus in 2017, though the State of Indiana was unable to pass legislation regulating autonomous vehicles (HB 1341). The City of Bloomington should continue to explore autonomous vehicles, especially as they relate to improving public transportation.

[39] Schaller Consulting. The New Automobility: Lyft, Uber and the Future of American Cities. July 25, 2018.

6. Conclusion

The Bloomington Transportation Plan strives to help our city reduce its greenhouse gas emissions as we must do our part to heed the call of the IPCC to reduce emissions by 45% by 2030. Since about 28% of emissions come from the transportation sector, our community's transportation priorities can have a major impact.

The community's transportation priorities were clearly delineated in the 2018 Comprehensive Plan, with the guiding principle on transportation:

> Provide a safe, efficient, accessible and connected system of transportation that emphasizes public transit, walking, and biking to enhance options to reduce our overall dependence on the automobile.

In addition, the Transportation Plan gets us closer to another guiding principle of the Comprehensive Plan:

> Nurture a resilient, environmentally responsible community by judiciously using our scarce resources, enhancing our natural assets, protecting our historic resources, and supporting a vital local food system.

Furthermore, the Plan also supports the following guiding principles from the Comprehensive Plan:

- Nurture our vibrant and historic downtown as the flourishing center of the community;
- Ensure all land development activity makes a positive and lasting community contribution;
- Embrace all of our neighborhoods as active and vital community assets that need essential services, infrastructure, assistance, historic protection and access to small-scaled mixed-use centers;
- Enhance the community's role as a regional economic hub; and
- Encourage healthy lifestyles by providing high quality public places, greenspaces, and parks and an array of recreational activities and events.

The Bloomington Transportation Plan represents the culmination of a year-long process to develop a vision for streets to be more than simply a way to get through the City, but an opportunity to enrich the daily lives of Bloomington's residents, businesses, and visitors. Through extensive public input, research, data collection, and analysis, the Plan identifies transportation challenges facing the City including changes in population and commute mode choices; gaps in the pedestrian and bicycle network; and concerns about traffic safety.

The principles of the 2018 Comprehensive Plan form the basis for a set of policies that will guide the City as it further invests in its transportation system. These policies will help the City determine what projects to fund and construct, which transportation modes to prioritize in each location or setting, and articulate its transportation needs to the State of Indiana, which is responsible for some of the larger roads within City limits. These policies were used to create a list of new connections and multimodal transportation projects that the City can execute in the coming years.

This Plan will serve as a guide to shaping and investing in Bloomington's transportation infrastructure in the coming years. It will help the City build a transportation system that works for everyone, regardless of age, mobility, or transportation mode. It will help the City support anticipated growth and investment; improve and maintain existing transportation infrastructure;

carry out new projects; and establish priorities. Additionally, it will affirm the City's goals to become a more socially, economically, and environmentally sustainable place.

This Plan reflects a broader, nationwide shift in rethinking the way people move which considers all modes of transportation, not just moving automobiles, and establishing our public streets as places where people can play a more active role in their community. With these recommendations in hand, the City can work with Indiana University, Monroe County, the State of Indiana, private developers, and other partners to make the right investments in its transportation system.