APPENDIX A

# LIST OF STRATEGIES, ACTIONS, AND LEAD AGENCIES

## Land Use and Transportation

Goal: Madison will be comprised of compact, interconnected neighborhoods anchored by a network of mixed-use activity centers.

Goal: Madison will have a safe, efficient, and affordable regional transportation system that offers a variety of choices among transportation modes.

| Strategies | Actions | Lead Agencies |
|---|---|---|
| **Strategy 1** Improve **transit service**, especially to peripheral employment and residential locations, with a focus on **reducing the travel time** for transit dependent populations. | a. Pursue improvements to transit service in peripheral areas and adjacent municipalities. | Metro |
| | b. Consider implementing additional Madison Metro routes that more directly connect peripheral areas without traveling through Downtown. | Metro |
| | c. Prioritize improved service for transit-dependent populations when integrating Madison Metro routes and schedules with BRT. | Metro |
| **Strategy 2** Implement **bus rapid transit (BRT)** to improve travel times, enhance reliability, and increase ridership. | a. Build a new bus storage and maintenance facility to support an expanded bus fleet. | Metro |
| | b. Prepare detailed plans for BRT corridors to guide redevelopment and improve pedestrian and bicycle linkages. | Planning |
| | c. Integrate BRT-supportive features into street reconstruction and development projects along BRT corridors wherever feasible. | Engineering |
| | d. Explore opportunities to use alternative methods to fund BRT infrastructure | Economic Development |
| **Strategy 3** Ensure **all populations benefit** from the City's **transportation investments**. | a. Use the City's Racial Equity and Social Justice Initiative (RESJI) tools to inform major transportation projects. | Engineering |
| | b. Partner with businesses and governmental entities to expand access to various money-saving transit pass programs. | Metro |
| | c. Pursue equitable distribution of amenities and traffic calming measures in street reconstruction projects throughout the city. | Engineering, Traffic Engineering, Planning |
| **Strategy 4** Improve access to **transit service to nearby cities**, such as Milwaukee, Chicago, and Minneapolis. | a. Support construction of an intercity bus terminal that is well-integrated with Madison Metro and future BRT. | Director of Transportation |
| | b. Work with WisDOT and local railroad operators to maintain the viability of existing rail corridors for future passenger rail operations both within the city and to adjoining metro areas. | Director of Transportation |
| | c. Continue to advocate for high speed rail connections to nearby metro areas with state officials. | Mayor's Office |
| **Strategy 5** Concentrate the highest intensity **development along transit corridors**, downtown, and at Activity Centers. | a. Implement Transit Oriented Development (TOD) overlay zoning along BRT and other existing and planned high-frequency transit service corridors to create development intensity minimums, reduce parking requirements, and support transit use. | Planning |
| | b. Ensure that redevelopment is well-integrated into adjacent low density residential areas. | Planning |
| | c. Facilitate the creation of Transportation Management Associations (TMAs) and implementation of Transportation Demand Management (TDM) strategies to serve high-intensity development at Activity Centers and along major transit corridors. | Planning |
| | d. Prepare plans to transition auto-oriented commercial areas into mixed-use Activity Centers. | Planning |
| **Strategy 6** Facilitate compact growth to reduce the development of **farmland**. | a. Continue to update peripheral neighborhood development plans to increase allowable development intensity and create density minimums. | Planning |
| | b. Steer peripheral growth towards priority areas, with a focus on land already served by utilities. | Planning |
| | c. Accommodate a majority of growth through infill and redevelopment. | Planning |
| **Strategy 7** Maintain **downtown Madison** as a major Activity Center for the region while improving access and inclusivity. | a. Continue to use the City's Affordable Housing Fund to support construction of affordable housing in and near downtown. | Community Development |
| | b. Facilitate partnerships with community organizations to host more downtown events that attract a wider variety of demographic groups. | Planning, Economic Development, Parks |
| | c. Improve transit service to and from downtown outside of standard commuting hours. | Metro |
| | d. Develop and implement a park-and-ride plan to increase accessibility to downtown and the UW-Madison campus. | Planning, Metro |

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| **Strategy 8**<br>Expand and improve the city's **pedestrian and bicycle networks** to enable safe and convenient active transportation. | a. Proactively fill gaps in the pedestrian and bicycle network. | Engineering |
| | b. Continue to integrate pedestrian and bicycle safety improvements and amenities into new and reconstructed streets. | Engineering |
| | c. Update the subdivision ordinance to ensure that new developments incorporate the City's planned shared-use path network. | Planning |
| | d. Develop and adopt a citywide pedestrian and bicycle plan that advocates for implementation of modern design principles while also moving towards a financially sustainable maintenance program. | Planning |
| **Strategy 9**<br>Implement **new technologies** to more efficiently use existing transportation infrastructure. | a. Work with the Madison Area Transportation Planning Board (MATPB) and other entities to implement the Regional Intelligent Transportation Systems (ITS) Plan for the Madison Metropolitan Area. | Traffic Engineering |
| | b. Partner with UW-Madison and other entities to safely test and build transportation infrastructure that supports connected and autonomous vehicles. | Traffic Engineering |
| | c. Use technology to enhance parking management systems. | Traffic Engineering |
| | d. Evaluate emerging technologies for use in bridging "first mile/last mile" gaps in the transit system. | Metro, Traffic Engineering, Planning |

## Neighborhoods and Housing

Goal: Madison will be a safe and welcoming city of strong and complete neighborhoods that meet the needs of all residents.

Goal: Madison will have a full range of quality and affordable housing opportunities throughout the City.

| Strategies | Actions | Lead Agencies |
|---|---|---|
| **Strategy 1**<br>Create **complete neighborhoods** across the city where residents have access to transportation options and resources needed for daily living. | a. Plan for and facilitate mixed-use neighborhood centers featuring shops, services, employment, and a mix of housing types within and near single-use neighborhoods as identified in the Growth Priority Areas map. | Planning |
| | b. Plan for complete neighborhoods in developing areas on the city's periphery to avoid the need to retrofit them in the future. | Planning |
| | c. Support the integration of a mix of housing types and neighborhood amenities near existing transit corridors and shared use paths. | Planning |
| | d. Ensure that existing and future neighborhoods are well served by transit, shared use paths, and sidewalks. | Planning, Metro, Traffic Engineering |
| **Strategy 2**<br>Support development of a **wider mix of housing** types, sizes, and costs throughout the city. | a. Include "Missing Middle" housing types within detailed sub-area plans. | Planning |
| | b. Encourage provision of life cycle housing choices by supporting lower priced or lower maintenance accessible housing options integrated into places with convenient transportation options. | Community Development |
| | c. Continue to enable and encourage a variety of ownership and occupancy structures including co-housing, condominiums, and owner-occupied rentals. | Planning, Zoning |
| **Strategy 3**<br>Increase the **amount of available housing**. | a. Support substantial new housing opportunities by prioritizing planning efforts to transition underutilized, automobile-dominated commercial areas into complete neighborhoods and mixed-use Activity Centers. | Planning |
| | b. Explore adjustments to the number of dwelling units, building size, and height thresholds between permitted and conditional uses to increase the allowable density for residential buildings in mixed-use zoning districts and select residential zoning districts. | Planning, Zoning |
| | c. Take a proactive approach to finding and marketing housing development opportunities to development partners. | Community Development |
| | d. Explore the widespread replacement of residential density maximums with building height maximums outside of the downtown area. | Planning, Zoning |

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| **Strategy 4**<br>Integrate **lower priced housing**, including subsidized housing, into complete neighborhoods. | a. Support the distribution of affordable housing throughout the city. | Community Development, Planning |
| | b. Explore how TIF could be better utilized to fund affordable housing. | Community Development, Economic Development |
| | c. Continue allocating money to the City's Affordable Housing Fund. | Community Development |
| | d. Continue to pursue a variety of county, state, and federal funding and public-private partnerships to support the development of affordable housing. | Community Development |
| | e. Support and partner with non-profit organizations to preserve affordable housing for the long term. | Community Development, Planning, Economic Development |
| **Strategy 5**<br>Provide **housing options with health and social services** for residents who need it most, including residents experiencing homelessness. | a. Through partnerships, support organizations that provide temporary shelter and access to a full range of supportive services in or near affordable housing. | Community Development |
| | b. Continue to support the provision of tenant resources and information about housing rights and options, especially for low-income households. | Community Development |
| | c. Continue the permanent supportive housing program and monitor the success of the program in meeting the challenges of homelessness. | Community Development |
| **Strategy 6**<br>Support the **rehabilitation of existing housing stock**, particularly for first-time homebuyers and people living with lower incomes. | a. Increase programmed building inspections and enforcement activities for rental housing maintenance, prioritizing areas with vulnerable residents. | Building Inspection, Fire |
| | b. Partner with MGE, the Madison Metropolitan Sewerage District, the Madison Water Utility, and others to provide incentives for rehabilitation, maintenance, and enhanced accessibility and sustainability of housing. | MGE, MMSD, Water Utility, Engineering, Fire |
| | c. Review the use of first time homeowner assistance programs, small cap tax incremental financing, and other similar rehabilitation and ownership programs. | Community Development, Economic Development, Building Inspection |
| **Strategy 7**<br>Support **neighborhood-scaled schools** that offer amenities and services to the surrounding area. | a. Support development of neighborhood-scaled schools that serve the community while fitting within the context of the neighborhood. | MMSD, Planning, Library |
| | b. Ensure that Madison's existing schools can remain strong and viable by supporting housing for families with children near existing and planned schools. | Planning, Community Development |
| | c. Work with Madison Metropolitan School District (MMSD) and surrounding school districts to ensure school attendance areas reflect development patterns and account for planned growth areas. | MMSD, Planning |
| | d. Support expansion of the MMSD "Community School" program. | MMSD, Library |
| **Strategy 8**<br>Ensure **access to food** that is affordable, nutritious, and culturally specific. | a. Continue initiatives to support the introduction of neighborhood-serving grocery stores into under-served established neighborhoods. | Economic Development, Public Health |
| | b. Identify public and private spaces suitable for community gardens and explore expansion of existing gardens to meet demand. | Planning, Parks, Public Health |
| | c. Improve access to fresh foods by encouraging and facilitating the equitable distribution of farmers markets and farm stands. | Economic Development, Public Health |
| | d. Encourage initiatives that support the emergency food system and facilitate donation of near-expired, but high-quality, foods. | Public Health |

## Economy and Opportunity

Goal: Madison will have a growing, diversified economy that offers opportunity for businesses and residents to prosper.

Goal: Madison will have equitable education and advancement opportunities that meet the needs of each resident.

| Strategies | Actions | Lead Agencies |
|---|---|---|
| **Strategy 1** Retain existing **employers** and attract new employers to ensure residents have access to jobs. | a. Target Business Retention and Expansion (BRE) efforts toward our competitive advantage. | Economic Development |
| | b. Continue the Business Walk program. | Economic Development |
| | c. Support the siting of state government facilities within the City. | Economic Development |
| | d. Expand the City's TIF program to keep Madison regionally competitive and support small businesses. | Economic Development |
| **Strategy 2** Ensure an **adequate supply of sites** for a wide variety of employers to operate and grow. | a. Reserve sites for employment uses in City land use plans. | Planning |
| | b. Layer tools and incentives in specific geographic areas. | Community Development, Economic Development, Planning |
| | c. Facilitate the reuse of Brownfield sites. | Engineering, Economic Development |
| | d. Participate in site selection and site certification programs. | Economic Development |
| **Strategy 3** Support more jobs that pay a **family-supporting living wage**. | a. Continue the living wage for City employees and contractors. | Human Resources, Civil Rights |
| | b. Leverage the Jobs TIF program to support living wage jobs. | Economic Development |
| | c. Pursue increases to Wisconsin's minimum wage. | Mayor's Office |
| **Strategy 4** Close the **educational opportunity gap**. | a. Continue to improve access to quality child care with an emphasis on underrepresented groups. | Community Development |
| | b. Continue support for out of school time programming. | Community Development, Library |
| | c. Align City internships and initiatives with work-based learning opportunities for youth and young adults. | Civil Rights, Human Resources |
| | d. Expand access to low-cost, high-speed internet service. | Information Technology, Library |
| **Strategy 5** Remove barriers to achieving **economic stability**. | a. Continue support for neighborhood centers. | Community Development |
| | b. Work with partners to better align efforts in job training and placement programs. | Community Development, Economic Development |
| | c. Increase awareness of programs that build residents' financial capability. | Community Development |
| **Strategy 6** Support **small businesses** and cultivate **entrepreneurship,** especially businesses owned by underrepresented groups. | a. Continue the Business Assistance Team. | Economic Development |
| | b. Continue development of underrepresented contractors. | Community Development, Economic Development |
| | c. Continue support for business incubators. | Community Development, Economic Development |
| | d. Establish a Kiva City crowdfunding program. | Economic Development |
| **Strategy 7** Support efforts for businesses and consumers to **produce and buy local** food, products, and services. | a. Foster a Northside Food Innovation District. | Economic Development |
| | b. Continue implementation of the Madison Public Market and MarketReady program. | Economic Development |
| | c. Expand the Street Vending program. | Economic Development, Public Health |
| **Strategy 8** City government should lead and encourage other employers to develop a **diverse workforce** best able to serve an increasingly diverse population. | a. Continue the City's Equitable Workforce program. | Civil Rights, Human Resources |
| | b. Support community efforts to diversify Madison's workforce. | Civil Rights, Human Resources |

## Culture and Character

Goal: Madison will be a vibrant and creative city that values and builds upon its cultural and historic assets.

Goal: Madison will have a unique character and strong sense of place in its neighborhoods and the city as a whole.

| Strategies | Actions | Lead Agencies |
|---|---|---|
| **Strategy 1**<br>Create **vibrant and inviting places** through creative architecture and urban design. | a. Prioritize placemaking as a way to focus on who and how public spaces will be used and designed throughout the city. | Planning, Parks |
| | b. Emphasize high quality human-scaled design in new buildings and public spaces. | Planning |
| | c. Use the City's development review standards and processes to ensure that redevelopment and infill projects result in interesting, high-quality buildings and spaces and harmonious design relationships with older buildings. | Planning |
| | d. Update Urban Design Districts 1-6 and consider expanding urban design districts to redeveloping corridors. | Planning |
| **Strategy 2**<br>Preserve **historic and special places** that tell the story of Madison and reflect racially and ethnically diverse cultures and histories. | a. Complete, adopt, and implement a Historic Preservation Plan as a framework for the future of Madison's historic preservation program. | Planning |
| | b. Finish updating the Historic Preservation Ordinance by revising the standards for each of the local historic districts. | Planning |
| | c. Identify ways to retain older buildings that contribute to the special character of an area, or are associated with diverse cultures, through the adoption of sub-area plans prior to redevelopment pressures. | Planning |
| | d. Update the zoning code and height maps to better link the code with the City's historic preservation plan and ordinance. | Planning |
| **Strategy 3**<br>Create **safe and affirming community spaces** that bring people together and provide social outlets for underrepresented groups. | a. Identify existing underutilized spaces, both public and private, and help facilitate their increased usage and activation. | Planning, Library |
| | b. Design a wide variety of new parks and public spaces in developing parts of the city for enjoyment by a broad range of users. | Parks, Planning |
| | c. Engage artists and talent to find positive ways for the City to improve its support of concerts, events, and gatherings, including encouraging music venues for a wider range of audiences. | Planning |
| **Strategy 4**<br>Balance the concentration of **cultural and entertainment venues** between the downtown and other areas of the city. | a. Continue to implement Madison's Cultural Plan and regularly update it to ensure it reflects Madison's changing population. | Planning |
| | b. Promote cultural and music events in diverse neighborhoods where the whole community is welcome. | Planning, Library |
| | c. Develop a streamlined protocol to set up temporary spaces for smaller events. | Planning, Parks, Traffic Engineering |
| **Strategy 5**<br>Preserve **defining views** of the lakes, downtown skyline, and Capitol from publicly accessible locations. | a. Adhere to the Maximum Building Heights Map and Views and Vistas Maps in the Downtown Plan. | Planning |
| | b. Conduct a viewshed study of the lakes, downtown skyline, and Capitol from vantage points within the city and beyond its borders and implement zoning restrictions to preserve these views. | Planning |
| **Strategy 6**<br>Integrate **public art** throughout the city. | a. Continue to implement recommendations in the Public Art Framework and schedule a comprehensive revision of that plan to ensure it represents all segments of the community. | Planning |
| | b. Emphasize the equitable geographic distribution of City investment in public art. | Planning |
| | c. Incorporate art and the work of artists that reflects Madison's cultural diversity and heritage at City facilities. | Planning |
| | d. Work with community partners to integrate art into their buildings and spaces. | Planning, Library |
| **Strategy 7**<br>Provide opportunities to **learn about, create, collaborate, and enjoy the arts.** | a. Promote and support a diverse array of local artists to increase their ability to flourish as creative professionals. | Planning, Economic Development |
| | b. Support the efforts of community partners to identify and implement art and creative activities that are open and accessible to the public. | Planning, Library |
| | c. Work with educational institutions and community organizations to provide culturally relevant arts education for all groups and age ranges. | Planning, Library |
| | d. Utilize artists in planning and other City processes to highlight the value of art as a cross-cultural communication tool. | Planning |

## Green and Resilient

Goal: Madison will be a leader in stewardship of our land, air, and water resources.

Goal: Madison will have a model park and open space system that preserves our significant natural features and offers spaces for recreation and bringing residents together.

| Strategies | Actions | Lead Agencies |
|---|---|---|
| **Strategy 1** Protect Madison's water supply and infrastructure to provide **safe, clean drinking water**. | a. Continue the accelerated water main replacement program and infrastructure renewal program. | Water Utility |
| | b. Expand education programs related to appropriate salt application. | Water Utility, Engineering |
| | c. Pursue updates to the building code to expand use of rainwater harvesting and use of graywater for water conservation. | Planning, Building Inspection |
| | d. Continue to partner with Project Home to help homeowners make water conservation upgrades. | Water Utility |
| **Strategy 2** Improve **lake and stream water quality.** | a. Partner with other entities to keep phosphorus and other pollutants out of the lakes. | Engineering |
| | b. Increase frequency and efficiency of leaf collection and street sweeping to reduce phosphorus runoff. | Streets |
| | c. Further incentivize rain gardens and other types of green infrastructure. | Engineering |
| | d. Continue adaptive stormwater management and erosion control to prepare for more intense rain events. | Engineering |
| **Strategy 3** Increase the use and accessibility of **energy efficiency** upgrades and **renewable energy**. | a. Implement the Energy Plan to reach the goal of 100% renewable and zero-net carbon emissions. | Engineering |
| | b. Promote various financing tools to fund energy efficiency upgrades and renewable energy. | Engineering |
| | c. Partner with electrical utilities to increase renewable energy and provide education on the cost savings. | Engineering, Planning |
| | d. Support infrastructure to expand the use of electric vehicles and other eco-friendly fuel sources. | Fleet, Engineering, Traffic Engineering |
| **Strategy 4** Acquire **parkland** and upgrade **park facilities** to accommodate more diverse activities and gatherings. | a. Incorporate preferences specific to different cultures, age groups, and abilities in parks and open spaces. | Parks |
| | b. Pursue acquisition of parkland in areas planned for or which have had significant redevelopment. | Parks |
| | c. Increase connectivity between parks and open spaces through greenways and trails. | Parks |
| **Strategy 5** Improve and preserve **urban biodiversity** through an interconnected greenway and habitat system. | a. Enhance the capability of greenways and open spaces to support natural habitats. | Parks, Engineering |
| | b. Integrate vegetation into the built environment, such as terrace plantings, living walls, and green roofs. | Planning, Engineering |
| **Strategy 6** Develop a healthy and diverse **urban tree canopy**. | a. Continue to prioritize tree species diversity to create a resilient tree canopy. | Parks/Forestry |
| | b. Work across agencies to increase the tree canopy. | Parks/Forestry, Planning, Traffic Engineering, Fire |
| | c. Review and update City policies, practices, and programs, and operations that impact the urban tree canopy. | Parks/Forestry, Planning, Engineering |
| **Strategy 7** Improve public **access to the lakes**. | a. Expand protected shoreline through the purchase of property or easements. | Parks, Engineering |
| | b. Provide additional connections to and along the lakes. | Parks, Engineering, Planning |
| | c. Prioritize water quality improvements at public beaches. | Parks, Public Health |
| **Strategy 8** Reduce **landfilled waste**. | a. Establish a new westside full-service drop-off site for recyclables, hazardous materials, and yard waste. | Streets |
| | b. Establish a citywide food scrap recycling program. | Streets |
| | c. Create multi-lingual educational information about recycling and composting. | Streets |
| **Strategy 9** Support sustainable **farming and gardening** practices that protect the ecosystem and public health. | a. Work with partners to continue to support community gardens and associated infrastructure. | Mayor's Office, Community Partners, Parks |
| | b. Identify opportunities to support local food production within the City. | Mayor's Office, Planning |
| | c. Establish guidelines for sustainable agricultural best practices. | Mayor's Office, Parks |

# Effective Government

Goal: Madison will have efficient and reliable public utilities, facilities, and services that support all residents.

Goal: Madison will collaborate with other governmental and non-governmental entities to improve efficiency and achieve shared goals.

| Strategies | Actions | Lead Agencies |
|---|---|---|
| **Strategy 1** Pursue **regional solutions** to regional issues. | a. Strengthen the capacity of regional agencies to foster collaboration and consensus. | Planning, Engineering, Public Health |
| | b. Work with Dane County and adjacent communities to improve the quality of area lakes and preserve other natural resources and facilities. | Engineering, Planning, Parks |
| | c. Work with Dane County and other municipalities to develop a regional food systems plan. | Planning, Public Health |
| **Strategy 2** Collaborate with State and local officials to create a **regional transit authority** to enhance public transit in the Madison area. | a. Collaborate with area municipalities and businesses to make the case for the creation of a regional transit authority. | Director of Transportation, Metro, Economic Development, Planning, MPO |
| **Strategy 3** Locate **community facilities** to provide a **high level of service** to all neighborhoods. | a. Create a long-range facilities plan to guide the siting of City facilities. | Finance, Engineering, Planning, Others |
| | b. Co-locate community facilities to improve service provision and reduce capital and operating costs. | Finance, Engineering, Planning, MMSD, Others |
| | c. Establish partnerships with other entities to improve service delivery and reduce duplicative services. | Finance, Others |
| **Strategy 4** Work with area municipalities and regional entities to preserve long-term options for **efficient City expansion**. | a. Meet with area municipalities to share and discuss community goals and growth plans. | Planning, School Districts |
| | b. Work closely with Capital Area Regional Planning Commission and Dane County on regional planning. | Planning |
| | c. Continue to enter into intergovernmental plans and agreements with neighboring municipalities when it is beneficial to do so. | Planning, Mayor's Office |
| | d. Continue to use the City's extraterritorial review authority to limit unsewered, low density development on the City's periphery. | Planning |
| **Strategy 5** Ensure that **new development** occurs in locations that can be **efficiently served** to minimize costs on the community as a whole. | a. Use the Comprehensive Plan and sub-area plans to guide development towards areas that can be efficiently served. | Planning |
| | b. Use the urban service area process to guide development to areas that can be served best. | Planning, Water Utility, Engineering |
| | c. Be judicious with outward expansion of utilities and community facilities. | Planning, Water Utility, Engineering |
| **Strategy 6** Improve **accessibility to government** agencies and services. | a. Provide language translation and interpretation to meet the needs of residents. | Civil Rights |
| | b. Consider new technology and systems, such as a 311 system for people to efficiently communicate with the City. | Finance, Information Technology |
| | c. Explore expanded office hours and satellite facilities to accommodate customers with varying work schedules or those who rely on transit. | Planning, Library, Police, Fire, Public Health |
| **Strategy 7** Ensure that the City of Madison government is **transparent and accountable**. | a. Provide information on City operations and initiatives through Results Madison and other mechanisms. | Finance, Information Technology |
| | b. Use customer satisfaction surveys to gain feedback on City services. | Information Technology, Civil Rights |
| | c. Engage city residents by providing meaningful opportunities for participation in decisions that affect their neighborhoods and the city as a whole. | Planning |
| | d. Provide a wide range of opportunities for involvement in planning and decision making, with targeted access and inclusion of underrepresented populations. | Finance, Clerk |
| **Strategy 8** Continue to **build better relationships** between police officers and the diverse communities they serve. | a. Continue outreach programs that develop connections with individual residents and the community. | Police, Public Health |
| | b. Increase avenues for community feedback and influence in police practices. | Police, Public Health |
| | c. Continue Madison Police Department training in cultural competency. | Police, Public Health |
| **Strategy 9** Ensure all **neighborhoods are clean and safe** through the provision of quality non-emergency services. | a. Raise awareness of the City's Report-a-Problem service to increase use and quickly address resident concerns. | Engineering, Others |
| | b. Continue to pursue innovation and efficiency in the provision of core city services. | Engineering, Streets, Others |

APPENDIX B

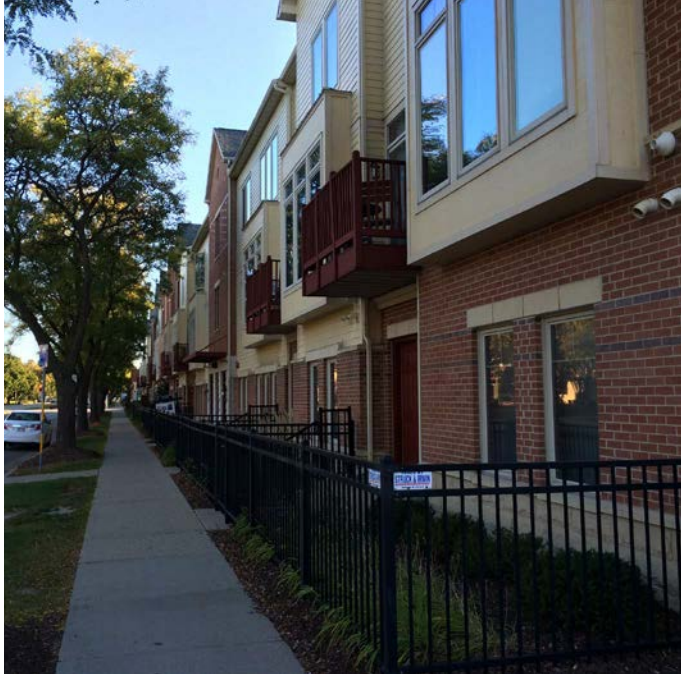
# LAND USE AND TRANSPORTATION SUPPLEMENT

DESIGN PRINCIPLES
SUB-AREA PLANS AND THE COMPREHENSIVE PLAN
LAND DEMAND ANALYSIS
TRANSPORTATION

## Transit-Oriented Development Principles

This Plan encourages Transit-Oriented Development (TOD) along all existing and planned transit routes. Transit-Oriented Development is characterized by a compact, walkable, mixed-use development pattern that focuses higher development intensity in close proximity to high-capacity transit stops. Development, architectural, and site design standards are needed to create a TOD development pattern at and near transit stops. TOD standards may vary from location to location based on site-specific conditions, but the following design elements should be adhered to for TODs within the city:

- Place buildings so they create a sense of spatial enclosure of streets and public spaces.
- Orient buildings to the street and close to the sidewalk.
- Provide building entrances that open onto public streets and sidewalks (not private streets, sidewalks, or parking lots) to provide convenient access to transit.
- Provide windows at the ground level of buildings to create a feeling of interaction between the public right-of-way and private buildings.
- Provide urban open spaces such as plazas or squares.
- Connect TODs to multiple travel modes, important neighborhood destinations, and activity centers throughout the community and region.
- Include uses that generate pedestrian activity, such as retail shops, services, and offices, particularly at ground level.
- Create both vertical and horizontal mixed-use development patterns.
- Provide a mixture of housing types, sizes, tenures, and costs (for sale, for rent, market rate, affordable, senior housing, etc.).
- Manage parking to balance automobile accessibility with provisions to ensure attractive and convenient transit, walking, and bicycle accessibility.
- Provide shared parking facilities, parking structures, and underground parking. Surface parking should be limited, and, when present, should be behind the building and screened from public streets.
- Create a highly interconnected system of streets, sidewalks, and paths that serve the area.
- The street network should create a series of small, walkable blocks.
- Concentrate the most intense development close to high-capacity transit stops (such as BRT stations).



## Traditional Neighborhood Development Principles

Traditional Neighborhood Developments (TNDs) are compact neighborhoods with mixed-use centers served by a highly interconnected system of pedestrian and bicycle-scaled streets, sidewalks, paths, and trails. Schools, parks, and other neighborhood-scale civic and institutional uses are interspersed throughout a TND.

TNDs are designed around the concept of the pedestrian shed, which is typically a five- to ten-minute walk from the center of the neighborhood to its edge. Local examples of TNDs include Grandview Commons (Madison), Middleton Hills (Middleton), Smith's Crossing (Sun Prairie) and Providence (Sun Prairie). Redevelopment and infill projects, such as Royster Corners, can also be developed as TNDs.

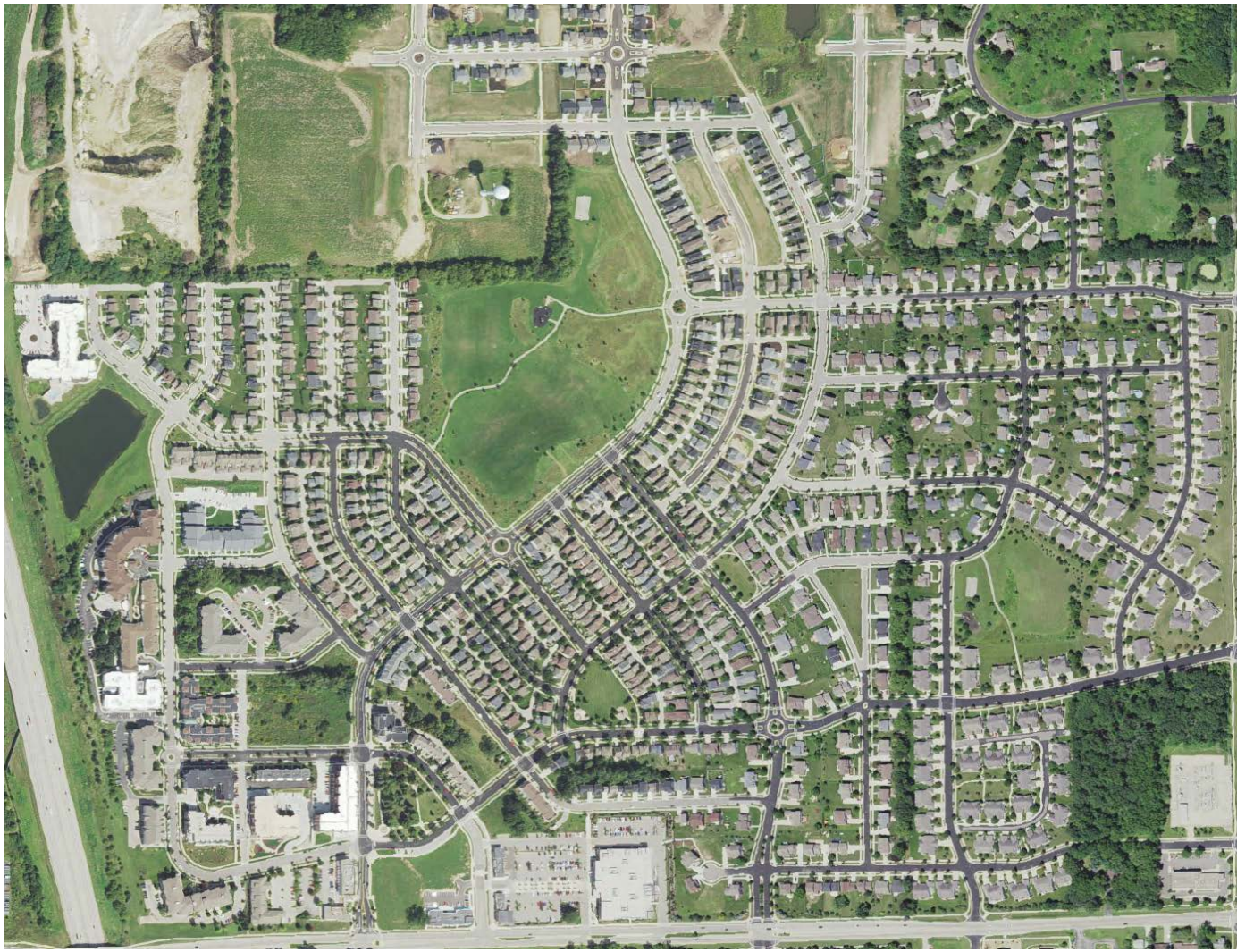
TNDs should be the primary style of development within neighborhood development plan areas and areas designated on the Generalized Future Land Use Map as Neighborhood Planning Areas. While TNDs are ideally created by a single developer under approved architectural and design standards, it will sometimes take more than one developer to create a complete TND. The City's TND zoning district is the "Traditional Residential – Planned" (TR-P) district, which enables the mix of uses needed to establish a TND without some of the more complicated requirements of Planned Development zoning. However, it is still possible to create a TND without using TR-P zoning by using a combination of other zoning districts. Many TNDs establish architectural design requirements for buildings, but the most important elements of a TND are a mix of housing types, mix of uses, and an interconnected, walkable street network.

Neighborhood development plans provide specific recommendations regarding the location, layout, and design of planned TNDs. Infill TND projects should be designed to be compatible with the established land use pattern in the general area and be well connected with surrounding neighborhoods.

Regardless of the number of property owners, development of TNDs should provide a coordinated plan for the entire site. This plan may be established under a sub-area plan, neighborhood development plan, or by a developer. Neighborhood development plan layouts may be refined by a landowner or developer master plan. These plans should ensure that public improvements such as schools, parks, public facilities, roads, and other infrastructure are built in a coordinated and timely manner, and that the cost of those improvements is equitably distributed among property owners and other beneficiaries. Ideally, coordinated architectural standards should be established if a TND will be developed by multiple developers or owners.

TNDs should adhere to the following general design principles:

- Neighborhoods should generally be no more than 160 acres. Sites larger than 160 acres should usually be developed as multiple TNDs.
- In general, between 50 and 70 percent of the land area of a TND, exclusive of non-developable areas such as parks or environmental corridors, should be residential development. This range may be adjusted based on the recommendations of a detailed City-adopted plan.



- TNDs should exceed eight dwelling units per net acre, with the most intense development close to or within the neighborhood center, along major street corridors, or in close proximity to public facilities (community centers, libraries, schools, etc.).
- Dwelling units should include a mix of single- family detached dwellings on small and medium-sized lots, townhouses, duplexes, two flats, multifamily buildings, and dwellings in mixed-use buildings.
- Multifamily residential should contain a mixture of small units (efficiencies and one bedroom units), medium sized units, and larger units (with three or more bedrooms).
- TNDs should have relatively short block lengths (generally not more than 600 feet), narrow block widths (generally not more than 300 feet), and narrow streets lined with sidewalks and street trees. Mid-block pedestrian paths may be required if larger blocks are necessary due to topography or existing street patterns.
- A pattern of streets, sidewalks, bicycle facilities, and public transit facilities that maximizes the connectivity of land uses within the neighborhood and maximizes connectivity to areas outside the neighborhood.
- Connections to surrounding street networks should be made early in the development process.
- Streets should be relatively narrow and include on-street parking where possible.
- Buildings in TNDs should be designed using timeless principles of quality architectural design rather than mandating a specific architectural style. Critical factors in establishing a "timeless" architectural quality in the neighborhood include: massing and composition of the structure; the proportion and profile of windows, doors, and other elements of the facade; orientation of doors, windows, balconies, porches, and roof decks toward the street; and the choice of facade materials and colors.
- Any conditions, covenants, and restrictions for TND land division should include architectural standards for the property. These standards should be approved by the City and include a process for assuring their long-term application and implementation.
- Parking facilities should be located behind, beneath, or at the side of buildings.
- Garages should not dominate the view from the street to the building and driveways should not dominate the front yard. Garages facing the front of the lot should be set back from the front façade of the principal building.
- The use of alleys for access to parking areas is preferred over front loaded driveways.
- Land use changes should occur at mid-block so that similar uses face each other.
- Multifamily buildings should have street entrances for all ground-floor units.
- Multifamily buildings, townhomes, commercial buildings, mixed-use buildings, and alley-loaded single-family and duplex residences should be set close to the street and have doors and windows facing the street.
- Front-loaded single-family and duplex homes may be set back further from the street, generally by enough distance to allow for a car to be left on the driveway without blocking the sidewalk (approximately 18-20 feet).
- The center of a TND should serve as a focal point for the TND and include as many of the following elements as possible: engaging public space, such as a pedestrian-oriented "main street," square, green, or plaza; public buildings, such as a library, place of worship, or community center; a transit stop; multi-unit residential buildings or mixed-use buildings; and, depending on market conditions, neighborhood-scale retail uses.
- Two- to four-story mixed-use buildings and/or multifamily residential buildings should be included in TND centers.

## SUB-AREA PLANS AND THE COMPREHENSIVE PLAN

### Relationship Between the Comprehensive Plan and Sub-Area Plans

This Plan includes a Generalized Future Land Use (GFLU) Map which makes general land use recommendations. The land use categories mapped in this Plan are broad and applied to relatively large geographic areas. Each land use category encompasses a range of potential land uses, development intensities, and building forms which establish the characteristics recommended within a given area. The land use and design recommendations within neighborhood, neighborhood development, or special area plans assign more specific uses, intensities, or forms to particular locations. Such plans should be consistent with, and fit within, the broad Comprehensive Plan future land use categories. There is considerable variation in the level of detail in different neighborhood or special area plans. Despite this, it is intended that all neighborhood and special area plans include land use and design recommendations that are specific enough to provide meaningful guidance to developers, neighborhoods, City agencies, policy makers, and others involved in the initiation or review of development projects.

In a community the size of Madison, the Comprehensive Plan can sometimes be too general to provide fine-grained levels of guidance on design considerations that tend to be site-specific. At the same time, the State-mandated comprehensive planning process is too cumbersome to allow for continuous updates to this Plan. Sub-area plans should be adopted as "a supplement to the Comprehensive Plan" to reflect their function and status in providing more detailed planning recommendations than are often needed to effectively implement the Plan. This Plan provides a long-term, broad, generalized policy framework for land use, growth, and large scale investment priorities for the City. Sub-area plans provide more detailed recommendations for a specific geographic area. This Plan should be modified if a sub-area plan makes recommendations for a given area that is inconsistent with this Plan.

## Consistency Between Sub-Area Plans and the Comprehensive Plan

The Generalized Future Land Use (GFLU) Map in this Plan is generally consistent with land use recommendations in City-adopted sub-area plans, considering the differences in scale and specificity between the types of plans. Considerable flexibility is provided within the land use categories mapped in this Plan. Future sub-area plans, unless they specifically recommend edits to this Plan, should work within Comprehensive Plan land use categories to establish more detailed and precise land use and design recommendations.

The generalized nature of the GFLU Map means that boundaries between land uses are not meant to be exact. Similarly, because future land use is not mapped on a parcel-by-parcel basis, some small inconsistencies between existing development and planned future land uses may be present, such as a small apartment building in the midst of a Low Residential area. It is not the intent of this Plan that such areas must always be brought into compliance with the GFLU Map. Please see additional discussion about the GFLU Map and land use categories starting on page 17 of the Growth Framework chapter.

This Plan and sub-area plans may have small differences in the mapped boundaries between areas recommended for different land uses without necessarily making the plans inconsistent or requiring an amendment to either plan. These differences are inherent in plans that differ significantly in scale, particularly when this Plan's GFLU categories have considerable scope.

If an inconsistency is identified between this Plan and a reasonably contemporary sub-area plan, substantial weight should be given to the sub-area plan. Additionally, either the sub-area plan or this Plan should be amended to eliminate the inconsistency. In cases where a sub-area plan is determined by the Plan Commission or Common Council to be inconsistent with this Plan, either the sub-area plan should be revised to be consistent, or an amendment to this Plan should be adopted to remedy the conflict. Because amending this Plan is a substantial undertaking, the City may not immediately amend this Plan to reflect sub-area plans that have been newly adopted (or amended) as a supplement to this Plan. Instead, it may aggregate GFLU amendments and other edits recommended by sub-area plans into a single, larger update. The City will still review proposals with respect to their compliance with sub-area plans that have been adopted as a supplement to this Plan even if such an update to this Plan has not yet been adopted.

## Adopted Sub-Area Plans

Over the years, the City of Madison has adopted numerous sub-area plans. These include neighborhood development plans for peripheral areas, neighborhood plans for already-developed areas, and other special area plans for corridors or small areas. Adopted plans are listed below by category, with dates reflecting the original adoption of the plans and subsequent amendments.

### Neighborhood Development Plans

The City has 19 adopted neighborhood development plans (NDPs) as of Spring 2018. These plans cover lands on the City's edge. Some of these NDPs, like Blackhawk, have experienced significant development over time, while others, such as Pumpkin Hollow, have seen little or no development. The intent of NDPs is to provide a detailed plan that addresses land use, transportation, utilities, and services. These plans often include large areas of undeveloped rural land. It is expected that over time new development will be constructed within approved NDP boundaries. However, some areas will potentially remain in rural/agricultural use for the foreseeable future. An alphabetical list of NDPs is shown below (see the Peripheral Planning Areas map on page 28 for NDP boundaries):

- Blackhawk (1994, 2006)
- Cottage Grove (1992, 2006)
- Cross Country (1993, 1998)
- East Towne Burke Heights (1987)
- Elderberry (2002, 2018)
- Felland (2002)
- Hanson Road (2000)
- High Point-Raymond (1997 2001, 2005, 2006, 2017)
- Junction (1990, 1992, 2015, 2018)
- Marsh Road (1999)
- Midtown (1999, 2001, 2004)
- Nelson (1992, 1993, 1999, 2001, 2005, 2009, 2017)
- Northeast Neighborhoods (2009)
- Pioneer (2004, 2013, 2018)
- Pumpkin Hollow (2008)
- Rattman (1992, 1995, 1997, 2000)
- Shady Wood (2009)
- Sprecher (1998, 1999, 2001, 2005)
- Yahara Hills (2017)

### Neighborhood Plans

Neighborhood Plans are adopted for areas that have already been built out. They are frequently undertaken for areas that are either experiencing substantial redevelopment interest and/or have various challenges to neighborhood stability. Neighborhood Plans generally address such things as land use, urban design, economic development, transportation, parks, and community health and wellness. An alphabetical list of Neighborhood Plans is shown below:

- Allied-Dunn's Marsh (1990)
- Allied-Dunn's Marsh-Belmar (2005)
- Arbor Hills-Leopold (2013)
- Bassett Neighborhood Master Plan (1997)
- Bay Creek (1991)
- Brittingham-Vilas (1989)
- Brentwood Village-Packers-Sherman Village (1996)
- Broadway-Simpson-Waunona (1986)
- Carpenter-Hawthorne-Ridgeway-Sycamore-Truax (2001)
- Darbo-Worthington-Starkweather (2017)
- Emerson East-Eken Park (1998)
- Emerson-East-Eken Park-Yahara (2016)
- First Settlement Neighborhood Master Plan (1995)
- Greenbush (2008)
- Greenbush-Vilas Neighborhood Housing Revitalization (2010)
- Hiestad (2006)
- Hoyt Park Area (2014)
- Marquette Neighborhood Center Master Plan (2000)
- Marquette-Schenk-Atwood (1994)
- Midvale Heights-Westmorland Joint Neighborhood (2009)
- Northport-Warner Park-Sherman (2009)
- Royster Clark Redevelopment - BUILD (2009)
- Regent Street South Campus (2008)
- Ridgewood East Central Development (2002)
- Schenk-Atwood-Starkweather-Worthington Park (2000)

- South Madison (2005)
- Southwest (2008)
- Spring Harbor (2006)
- Tenney-Lapham (2008, 2014)
- Triangle Monona Bay (in progress 2018)
- University Hill Farms (2016)

**Other Plans**
- Central Park (2011)
- Cherokee Special Area (2007)
- Cottage Grove Road Activity Centers (2017)
- Downtown Plan (2012)
- East Rail Corridor (2004)
- East Washington Gateway Revitalization - BUILD (2004)
- East Washington Avenue Capitol Gateway Corridor (2008, 2016)
- East Washington Old East Side Master Plan - BUILD (2000)
- Lamp House Block (2014)
- Milwaukee Street Special Area (in progress 2018)
- Monroe Street Commercial District (2007)
- Park Street Urban Design Guidelines (2004)
- Schenk–Atwood Neighborhood Business District Master Plan (2001)
- South Capitol Transit Oriented Development District (2014)
- Stoughton Road Revitalization (2008)
- University Avenue Corridor (2014)
- Williamson Street - BUILD (2005)
- Wingra Creek Market Study and Redevelopment - BUILD (2006)

Additionally, the City has adopted campus master plans prepared by Edgewood College and the University of Wisconsin-Madison prepared under the City's Campus-Institutional zoning district.

## Sub-Area Plan Retirement

There is currently no process for retiring adopted city plans. This leads to some instances where staff must compare proposed projects to plans that have recommendations that have already been implemented or are out of step with more recently adopted policies and plans. The lack of a plan retirement process also leads to circumstances where there can be two, three, or four overlapping plans for the same area, leading to confusion by staff, policymakers, developers, and residents as to what plan recommendations govern. As the city continues to grow and change, plans that have largely been implemented, have been superseded by a more recently adopted plan for the same area, or no longer reflect current priorities, as determined by this Plan, the Plan Commission, and City Council, should be retired. While the age of a plan does tend to play a role, how much of the plan has been implemented and whether the plan reflects current city priorities are also factors, meaning that a broad-brush approach that retires plans due to some arbitrary age limit is inadequate. Some older plans still reflect the general priorities contained in this Plan and play an important role in establishing detailed recommendations for specific areas that may still be developed or redeveloped.

This Plan recommends that the Planning Division and Plan Commission establish a procedure to periodically review plans to determine whether they should be retired. Stakeholders of areas covered by the plan will be engaged in the review and determination of whether the plan should be retired. General considerations for review may include, but are not limited to:

1. Whether a plan has been implemented.
2. Whether a more recent plan has been adopted for the same area or a similar area.
3. The age of the plan.

## Overlapping Sub-Area Plans

There are some instances where sub-area plans overlap. Where this occurs, the more recently adopted plan should govern unless otherwise specified within the plan or within a plan amendment. To avoid confusion and streamline review of proposed projects, plans developed after adoption of this Comprehensive Plan should include an analysis of previously adopted sub-area plans that are still in effect for any part of the planning area. This should be followed by a statement about how the new plan does, or does not, impact the previously adopted plans. If the new sub-area plan largely replaces previous planning efforts for a given area, retirement of the previous plans for the area should be considered at the time the new plan is adopted.

## LAND DEMAND ANALYSIS

Wisconsin's Comprehensive Planning Legislation requires municipalities to provide 20-year projections for land uses in five-year increments. These projections, shown in Table 1, are based on a variety of spatial assumptions. The projections shown here are general estimates. Changes in demand, financial changes, and other factors may considerably alter these projections. Nevertheless, despite the shortcomings of the assumptions and difficulty in making projections in general, the land demand analysis provides a framework for estimating the amount of land the City will need to accommodate growth through 2040.

Trends in the price of land and the amount, intensity, and density of existing land uses are some of the attributes that dictate how land is used in Madison. The following tables and discussions provide an explanation of land price, development, intensity, and density trends. Table 2 shows that between 2000 and 2016, the city of Madison has annexed approximately 13 square miles. During the same time, the city's population increase by nearly 50,000 residents, resulting in an increase in residential density within city limits from 3,106 to 3,156 persons per square mile. During the same time, equalized land value within the city has increased from $67,350 to $117,485 per acre, a rate of increase nearly double the inflation rate over the same period.

Table 3 shows the change in the acres of land dedicated to current land uses. Despite an increase of over 2,400 acres between 2005 and 2017, the number of acres used for agriculture or sitting vacant has declined by nearly 1,700 acres, meaning a large amount of land already within Madison city limits is being converted to other uses, primarily residential, commercial, and parks and open space. In 2017, non-vacant commercially-, industrially-, and employment-zoned parcels had an average floor area ratio of 0.25, which represent significant intensity increases over the 0.15 FAR projection for commercial uses and 0.20 FAR projection for industrial uses in the 2006 Comprehensive Plan.

**Table 1: Land Demand Projections for the City of Madison (acres), 2015-2040**

| Land Use | 2015-2020 | 2021-2025 | 2026-2030 | 2031-2035 | 2036-2040 | Land Demand 2015-2040 |
|---|---|---|---|---|---|---|
| Residential Single-Family | 230 | 284 | 269 | 284 | 310 | 1,377 |
| Residential Multi-Family | 63 | 78 | 74 | 78 | 85 | 378 |
| Commercial Office/Services | 148 | 153 | 158 | 162 | 168 | 789 |
| Commercial Retail | 37 | 34 | 31 | 28 | 25 | 155 |
| Industrial | 0 | 0 | 0 | 0 | 0 | 0 |
| Parks & Open Space | 117 | 132 | 135 | 134 | 159 | 677 |
| Institutional | 24 | 27 | 27 | 28 | 30 | 136 |
| Street ROW | 155 | 177 | 173 | 179 | 194 | 878 |
| Subtotal | 773 | 884 | 866 | 894 | 970 | 4,387 |
| +50% Flexibility Margin | 387 | 442 | 433 | 447 | 485 | 2,194 |
| Total Land Demand | 1,160 | 1,326 | 1,299 | 1,341 | 1,455 | 6,581 |

**Table 2: City Area, Valuation, and Density**

| Year | Land Area (sq. mi.) | Equalized Value (Land only) | Value/Acre | Population | Population Density (per sq. mi.) |
|---|---|---|---|---|---|
| **2016** | 80.0 | $6,017,511,950 | $117,485 | 252,557 | 3,156 |
| **2014** | 78.5 | $5,699,050,800 | $113,504 | 245,674 | 3,131 |
| **2012** | 75.2 | $5,544,386,800 | $115,271 | 240,315 | 3,198 |
| **2010** | 75.0 | $4,978,806,200 | $103,779 | 233,777 | 3,119 |
| **2008** | 74.7 | $5,410,955,000 | $113,160 | 226,650 | 3,034 |
| **2006** | 74.2 | $5,179,451,200 | $109,116 | 223,280 | 3,010 |
| **2004** | 72.4 | $4,478,252,400 | $ 96,642 | 217,935 | 3,010 |
| **2002** | 71.6 | $3,635,501,300 | $ 79,325 | 213,679 | 2,984 |
| **2000** | 67.0 | $2,887,522,900 | $ 67,350 | 208,054 | 3,106 |

Source: Land Value: DOR Statement of Changes in Equalized Value; Area: Planning Division; Population: US Census Bureau, Wisconsin Dept. of Administration

Table 4 shows parcel creation in Madison via plats and certified survey maps. While parcel creation fluctuates from year to year, recent totals are higher than the years of 2007-2009, when fewer than 200 new parcels were created each year. Parcel creation is still below the decade of 1997-2006, when 900 parcels were created annually on average.

Table 5 shows the assumptions used to determine the land demand for residential development between 2015 and 2040. The 22% single-family – 78% multifamily split is based on the number of new dwelling units built in the city from 2013 to 2016. 59% of projected multifamily units are attributed to infill, keeping with the 59% of new multifamily units built between 2007 and 2016 being built in infill locations or as redevelopment. Single-family and multifamily densities are assumed to be 5.17 dwelling units per acre (based on 2013-2016 new units) and 28.68 dwelling units per acre (based on 2007-2016 new units), respectively.

Table 6 shows employment projections and Table 7 shows employment and other commercial land demand. Projections were made for total employment in Madison (employees, not employed residents) using historical information from the Census, Info USA, and the Census Center for Economic Studies' On the Map application, combined with estimates from Madison in Motion and the Madison Area Transportation Planning Board 2035 and 2050 Regional Transportation Plans. The 2012 Economic Census Bureau of Labor Statistics Employment Projections program and historical Dane County employment growth were used to project the proportion of employment in the industrial, commercial retail, and commercial office/services sectors. The three sectors were allocated according to standard NAICS classifications. These sector-specific employment numbers were then multiplied by space needs per employee and floor area ratio to determine total land demand. Employment density is the number of square feet per employee, derived from the National Association for Industrial and Office Parks, Certified Commercial Investment Member Institute, and a University of San Diego study. Floor area ratio (FAR) is based on a review of 1,628 non-vacant industrial, commercial, and employment zoning district parcels. Note that due to national trends in the decline of manufacturing jobs (including a 0.4% projected annual employment decline in Madison), no additional industrial land demand is projected in this analysis.

**Table 3: Existing Land Use (Acres)**

| Land Use | 2005 | 2017 | Increase |
|---|---|---|---|
| Residential | 13,140 | 15,008 | 14% |
| Commercial | 4,133 | 4,942 | 20% |
| Industrial | 4,079 | 4,161 | 2% |
| Institutional | 2,334 | 2,282 | -2% |
| Parks & Open Space | 8,719 | 9,645 | 11% |
| Agriculture & Vacant | 7,568 | 5,887 | -22% |

Source: Planning Division

**Table 4: Parcel Creation**

| Year | Parcels Created |
|---|---|
| 2013 | 184 |
| 2014 | 958 |
| 2015 | 316 |
| 2016 | 468 |
| 2017 | 649 |

Source: CARPC Regional Trends, Planning Division

**Table 5: Residential Land Demand, 2015-2040**

| | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|
| Projected Households | 112,204 | 118,838 | 125,118 | 131,764 | 139,007 |
| Numeric Change from 2015 | 5,377 | 12,011 | 18,291 | 24,937 | 32,180 |
| 22% Single-Family Households | 1,172 | 2,618 | 3,987 | 5,436 | 7,015 |
| Total Single-Family units w/ 1.5 % vacancy rate | 1,190 | 2,658 | 4,047 | 5,518 | 7,120 |
| Single-Family Land Demand (acres) | 230 | 514 | 783 | 1,067 | 1,377 |
| Single-Family Land Per 5-year increment (acres) | 230 | 284 | 269 | 284 | 310 |
| 78% Multifamily Households | 4,205 | 9,393 | 14,304 | 19,501 | 25,165 |
| Multifamily Units w/ 5 % vacancy rate | 4,415 | 9,862 | 15,019 | 20,476 | 26,423 |
| Multifamily units minus infill units | 1,810 | 4,044 | 6,158 | 8,395 | 10,833 |
| Multifamily Land Demand (acres) | 63 | 141 | 215 | 293 | 378 |
| Multifamily Land Per 5-year increment (acres) | 63 | 78 | 74 | 78 | 85 |

***** There were an estimated 106,827 households in 2015 in the City. That number represents an average between Wisconsin Department of Administration numbers and the US Census Bureau's American Community Survey 1-year estimate for 2015.

**Table 6: Employment Assumptions**

| Employment Sector | % of Projected New Employment | 2015-2020 New Employment | 2020-2025 New Employment | 2025-2030 New Employment | 2030-2035 New Employment | 2035-2040 New Employment |
|---|---|---|---|---|---|---|
| Commercial Office/Services | 89% | 6,438 | 6,646 | 6,859 | 7,075 | 7,295 |
| Commercial Retail | 11% | 1,003 | 927 | 850 | 768 | 686 |
| Industrial | 0% | -496 | -514 | -530 | -543 | -556 |
| Total | 100% | 6,945 | 7,059 | 7,178 | 7,300 | 7,426 |

Table 8 shows the assumptions and calculations used to determine the demand for recreational land. The 10 acres per 1000 population standard is based on the City's 2012 Parks and Open Space Plan, existing conditions, and National Recreation and Park Association goals. See page 92 or the City's latest Parks and Open Space Master Plan for a more detailed discussion on parks and open space needs.

Institutional and street right-of-way land demand has been determined based on existing allocations of these land uses. Approximately 4% of Madison's land area is allocated to institutional uses, and approximately 25% to right-of-way.

**Table 7: Commercial Land Demand**

| Employment Sector | Employment Density (SF/Employee) | Floor Area Ratio | 2015-2020 Land Demand | 2020-2025 Land Demand | 2025-2030 Land Demand | 2030-2035 Land Demand | 2035-2040 Land Demand |
|---|---|---|---|---|---|---|---|
| Commercial Office/Services | 250 | 0.25 | 148 | 153 | 158 | 162 | 168 |
| Commercial Retail | 400 | 0.25 | 37 | 34 | 31 | 28 | 25 |
| Industrial | 450 | 0.25 | -21 | -21 | -22 | -22 | -23 |
| Total | | | 164 | 166 | 167 | 168 | 170 |

**Table 8: Recreation Land Demand**

| | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|
| 10 acres/ 1000 pop ratio | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| 2015 Population | 245,788 | 245,788 | 245,788 | 245,788 | 245,788 |
| Projected Population | 257,461 | 270,631 | 284,147 | 297,582 | 313,444 |
| Population Change | 11,673 | 24,843 | 38,359 | 51,794 | 67,656 |
| Parks & Open Space Demand (acres) | 117 | 248 | 384 | 518 | 677 |
| Demand Per 5-yr increment (acres) | 117 | 132 | 135 | 134 | 159 |

## Transportation Systems for Persons with Disabilities

All of the City's Metro buses are equipped with accessibility features, including bus stop annunciators, wheelchair securement locations, ADA-accessible ramps, and a kneeling feature, enabling all individuals, with operator assistance, to board, ride, and disembark from all standard Metro buses. The City will continue to purchase such buses, including for any future implementation of bus rapid transit (BRT). Improvement of transit service through implementation of BRT (see page 32) will benefit persons with disabilities, as will extension of standard Metro service (see page 31).

Implementation of the State of Wisconsin's Family Care program in Dane County in 2018 may result in the shifting of an estimated $3.9 million of funding away from Metro's paratransit program to contractors. The anticipated loss of funding will result in changes to Metro's paratransit service. The detailed work of determining the precise magnitude of the changes, when they will be implemented, and how they will be implemented will be undertaken by the City's Transportation Policy and Planning Board and Transportation Commission.

## Air Transportation

The region's major air transportation facility is Dane County Regional Airport, which is administered by the County. The City will continue to work with Dane County to maintain and improve air passenger services and air freight services to attract, maintain, and enhance business development in the City.

## Trucking

The City will continue to provide truck routes for the safe and efficient movement of truck traffic within the city to provide access to and serve the needs of city residents and businesses. The negative impact of trucks on existing and future residential neighborhoods should be minimized.

## Water Transportation

City, resident, and business use of the area's lakes and rivers is generally limited to recreational purposes. The City has no plans to pursue water transportation.

## Regional and State Transportation Plans

Some transportation-related planning and project development that affect the city are managed by other local, regional, or state agencies or entities. The City has an excellent relationship with the Madison Area Transportation Planning Board (MATPB), which is the federally-designated Metropolitan Planning Organization (MPO) for the Madison urban area. The MATPB is the policy body responsible for cooperative, comprehensive regional transportation planning and decision making. The City has worked closely with the MATPB to ensure that regional plans integrate the City's transportation interests and concerns. The 2050 Regional Transportation Plan goals, objectives, and policies line up well with the transportation-related Strategies and Actions of this Plan. Similarly, the MATPB's 2015 Bicycle Transportation Plan for the Madison Metropolitan Area and Dane County continues the City's and region's strong commitment to bicycling for transportation and recreation, ensuring that City efforts to improve the bicycle system are well-integrated with adjoining municipalities. Finally, the MATPB's 2013 Bus Rapid Transit Study set the stage for the system included in this Plan. The City anticipates working closely with the Board to implement BRT, per the previously undertaken planning efforts.

While the State of Wisconsin maintains a statewide plan for transportation (Connections 2030), with statewide plans for specific detailed topics like bicycling, pedestrians, freight, and rail, the plans that tend to be most applicable to the city are for specific highways and corridors. However, with recent state transportation funding challenges, many studies and planned projects, such as the Beltline and Stoughton Road/US Highway 51, have been delayed, and it is uncertain when the projects will be restarted, making it difficult to integrate such projects and plans within this Plan. The City shares some common goals with the State, such as improving connectivity across existing limited-access highways like the Beltline. At other times, goals can be at odds, but the City will look to continue engaging with the State to ensure that local and regional interests are well-represented in State projects that impact Madison. Madison in Motion, the city's Transportation Master Plan, contains more information on how the City can connect with regional planning efforts and work with WisDOT to improve connectivity and transportation in the Madison region.

APPENDIX C

# URBANFOOTPRINT ANALYSIS

# URBANFOOTPRINT ANALYSIS FOR THE COMPREHENSIVE PLAN

As part of the Comprehensive Plan process, the City used a growth scenario modeling tool called UrbanFootprint to help estimate the future impacts of land use and transportation decisions across seven major modules: energy use, water use, fiscal impacts (for both the City and for households), transportation, emissions, health, and land consumption. Growth scenario modeling works by creating a map of existing transportation, land use, employment, development density, and other aspects of urban development. Changes to land use and transportation are then made to existing conditions to create a future scenario. The impacts of future scenarios across the seven metrics are then compared to existing conditions or to other alternate scenarios. UrbanFootprint was customized for use in Madison and Dane County with local data and information from dozens of sources, including the Census, InfoUSA (employment data), Madison Water Utility, Madison Gas and Electric, Wisconsin DNR, the National Household Travel Survey, City Assessor, Capital Area Regional Planning Commission, Dane County, the Madison Area Metropolitan Planning Organization, and many others.

Three citywide scenarios were created for the Imagine Madison process, all of which assumed the addition of approximately 70,000 new residents and 37,000 new employees by 2040. Those scenarios are mapped and summarized on the following pages.

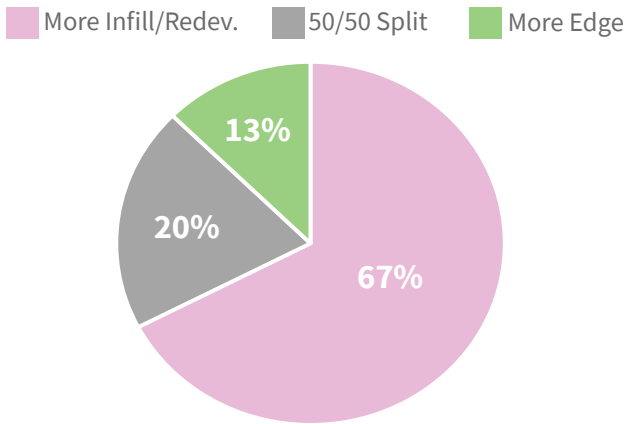
To maintain an "apples to apples" comparison, all three scenarios also assume development occurs according to the Comprehensive Plan's Generalized Future Land Use (GFLU) Map (see page 18 of the Growth Framework chapter). The difference between the scenarios was where growth would occur, not whether the Comprehensive Plan was followed.

More roadbuilding and less transit were associated with Scenario #1 because edge development tends to be less intense, have a less walkable street network, have less mixing of uses, and be more difficult to serve with transit due to low development intensity and a larger service area. More transit service was associated with Scenarios #2 and #3 because redevelopment tends to occur in areas that are already walkable and served by transit. Public feedback on Plan Goals and Strategies in the initial stages of the Imagine Madison process helped inform scenario development.

## Public Input Results – Website

UrbanFootprint analysis was used as part of an Imagine Madison website module where visitors had an opportunity to explore outcomes and view maps based on the three citywide scenarios summarized above. Website visitors could explore the anticipated land consumption, household water use, household vehicle miles traveled (VMT), and time spent walking associated with each scenario, alongside maps that depicted geographic variations in these metrics. It is important to note that in an effort to keep participation accessible and concise, dozens of other possible UrbanFootprint metrics were not presented. Further, other potential considerations that could factor in to a discussion of where to accommodate growth such as impacts on parking, property values, and rental rates were not covered. Upon reviewing the information that was available, participants could then choose the scenario that most closely matched their vision for the future of the city.

See the maps on the following pages for a comparison of where development of new dwelling units was generally shown for each scenario (green represents edge development and pink represents redevelopment; the darker the color, the more intense the development). Two-thirds of respondents selected Scenario #3 (which showed the most infill and redevelopment), as the generally preferred path for future development in the city. Twenty percent chose Scenario #2, and 13% felt Scenario #1 was most appropriate for accommodating future growth.




In addition to reviewing and selecting their preferred UrbanFootprint growth scenario, respondents could also answer three multiple choice questions covering what type of neighborhood housing they preferred, how important they felt it was to have neighborhoods close to destinations such as schools and shops, and how important they felt it was to have neighborhoods with access to public transit. Additionally, participants were asked open-ended questions about good locations for lower cost housing, what area/neighborhood should be prioritized for development and why, and for examples of valued development (i.e., favorite neighborhoods or projects that could be considered a good example for future development).

## Public Input Results – Community Meetings and Resident Panels

Imagine Madison community meetings used UrbanFootprint in a different manner. Background information was provided to participants in an introductory presentation and via a series of displays that showed existing conditions for the percent of trips taken by non-car modes of transportation, walking minutes per day for adults, and miles driven per household per year (VMT). These maps conveyed the geographic differences between how people travel based on location.

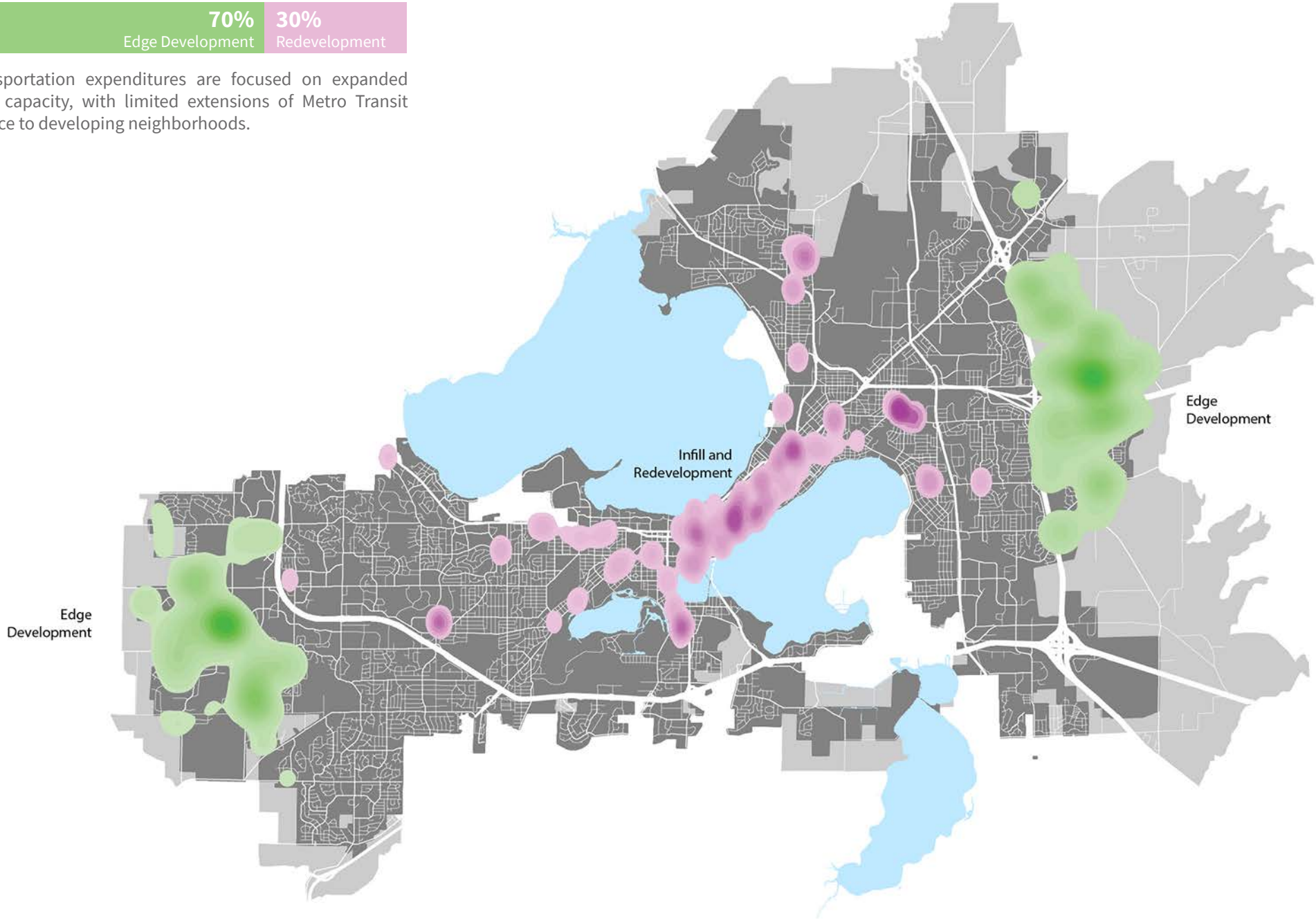
Community meeting participants could explore select information from the same three scenarios that were provided on the Imagine Madison website. They were then asked to place dots on a map of the city and surrounding area to show where they thought the city should accommodate the 40,000 housing units anticipated in the next twenty years. As with the website, this was not a statistically valid survey, but of those electing to participate during community meetings, ninety-one percent of dots were placed in infill and redevelopment areas. A similar growth prioritization exercise was provided to Resident Panels, though none of the UrbanFootprint background information was included. Eighty-one percent of resident panel dots were placed in infill and redevelopment areas. The multiple

*Continued on page 136*

## Scenario #1

**70%** Edge Development | **30%** Redevelopment

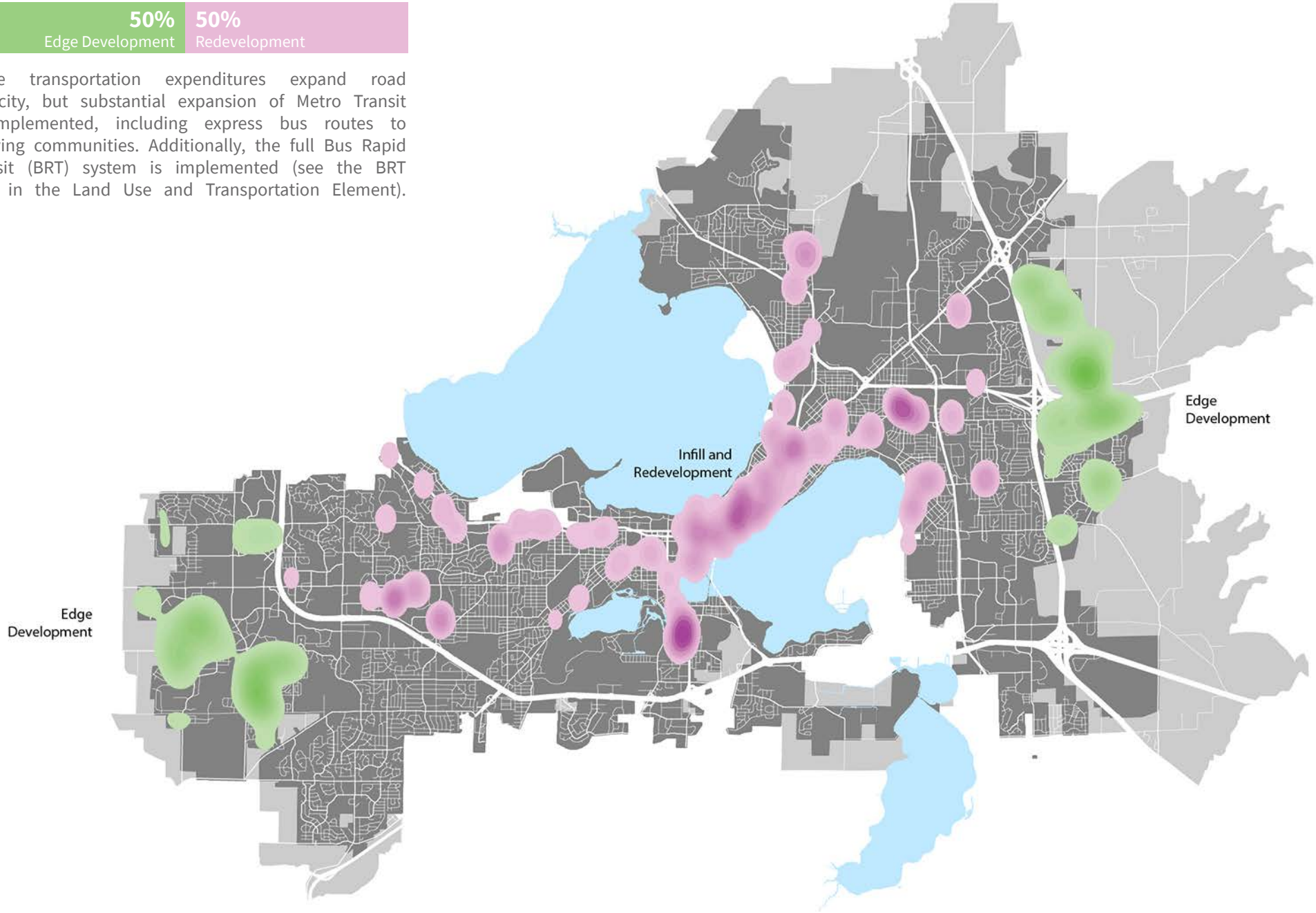
Transportation expenditures are focused on expanded road capacity, with limited extensions of Metro Transit service to developing neighborhoods.



## Scenario #2

**50%** Edge Development | **50%** Redevelopment

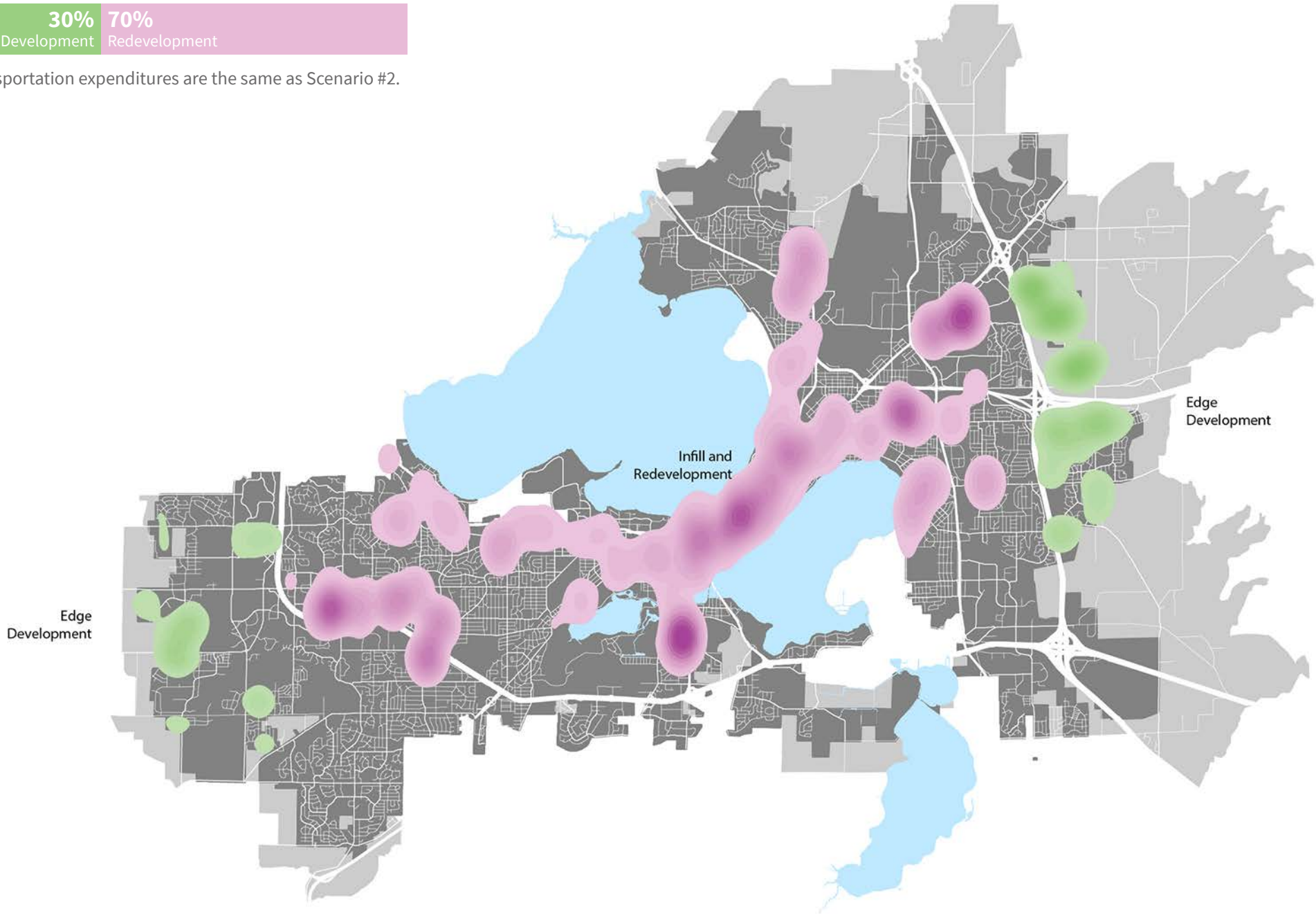
Some transportation expenditures expand road capacity, but substantial expansion of Metro Transit is implemented, including express bus routes to outlying communities. Additionally, the full Bus Rapid Transit (BRT) system is implemented (see the BRT map in the Land Use and Transportation Element).



## Scenario #3

**30%** Edge Development | **70%** Redevelopment

Transportation expenditures are the same as Scenario #2.



choice and open-ended questions that were on the website were also provided to community meeting and Resident Panel participants.

## Implications of Growth Prioritization Results

Implementation of the community's preference for growth to be largely accommodated through infill and redevelopment will be challenging. Redevelopment, when compared to edge development, will always have more residents nearby, some of whom may not agree with a given project. When contrasted with edge development, which tends to have very few (if any) neighbors, attempting to address stakeholder concerns with a proposed redevelopment project creates uncertainty in the development process. When combined with other redevelopment challenges that generally are not present in edge development, such as building demolition, a constrained site, potential environmental contamination, and maintaining transportation circulation, the market demand and the potential financial reward of redevelopment has to be substantial before a redevelopment project can proceed.

With all of the challenges associated with redevelopment, the benefits can sometimes be overlooked. Redevelopment projects frequently have access to existing transit service, the road and utility networks have already been constructed, no additional roads need to be maintained to serve redevelopment, the area is already covered by emergency services, and property values (and therefore property tax collections) are substantially higher for most redevelopment projects, among other factors. All this adds up to redevelopment generating more tax revenue for the City while creating fewer costs to be borne by property taxpayers. Not only is that better in the short term, but redevelopment also helps sustain the fiscal health of the City over the long term – fewer maintenance liabilities are generated, and the City doesn't have to depend as much upon revenues from new growth to pay for maintaining existing services and infrastructure.

There are also a number of environmental benefits to redevelopment. Because redevelopment tends to be more intensive, with smaller lots or larger buildings, there tends to be less energy use per resident or per employee. Water use per household tends to be lower as well. For example, multifamily buildings do not have as much lawn to irrigate, and single family homes, when built as part of a redevelopment or infill project, tend to be on smaller lots with smaller lawns. Redevelopment also reduces the amount of rural farmland and forested lands needed for edge development. Finally, infill and redevelopment are effective at reducing VMT[25] and the accompanying fossil fuel usage and air pollution if projects are planned and implemented with a connected and walkable street network, destinations that are accessible by walking and transit, and a diversity of land uses.

Of course, infill and redevelopment can have negative impacts. While overall VMT is reduced, local traffic may increase. Additionally, demand for low-cost or free on-street parking can increase. While harder to quantify, infill and redevelopment can change the general feel of an area, especially an area with a prevalence of historic buildings. While infill and redevelopment can add exciting new destinations, larger buildings are sometimes out of scale with their surroundings and are not always embraced by some residents who value the current look and feel of a corridor or neighborhood. Redevelopment can also lead to increased housing costs and commercial rents, as newer units typically rent for higher prices than development that may have previously been present on a redevelopment site. Loss of existing low-cost residential units and commercial spaces can lead to displacement of current residents and businesses.

Adoption of neighborhood and other sub-area plans which address land use, built form, public infrastructure investments, and other physical, and sometimes social, aspects of a neighborhood can help address concerns in advance of an actual proposal and reduce controversy and conflict for redevelopment, thus lessening one of the barriers to redevelopment.

## UrbanFootprint and Madison's Future

While UrbanFootprint helps quantify the impacts of different styles of development, simply using the tool does not guarantee a desirable outcome. Detailed plans that address factors that are unique to a given area or corridor are still needed to ensure that complete neighborhoods – both those on the edge and those experiencing redevelopment – are created. However, UrbanFootprint does help to put numbers to many of the considerations (VMT/traffic, transit use, water use, energy use, emissions, health impacts, land consumption, and fiscal impacts) that are often overlooked when development or redevelopment is proposed.
UrbanFootprint was used to analyze the future of the city in two different ways:

1. Three citywide scenarios were created to analyze the impacts of focusing on redevelopment versus edge development.

2. Scenarios were created for three specific areas of the city that have a high capacity for redevelopment and are planned for future Bus Rapid Transit (BRT) service to analyze the short-term and potential long-term impacts of substantial transit-oriented development around planned BRT routes.

The sections below describe the approach and outcomes of each analysis. It should be noted that none of the scenarios are plans – they simply represent different potential futures for the City, all of which comply with the Comprehensive Plan's Generalized Future Land Use Map.

## Citywide UrbanFootprint Scenarios

The table on the next page summarizes citywide UrbanFootprint growth scenarios. All three scenarios assumed 70,000 new residents and 37,000 new employees are added to the city through 2040. The difference between the scenarios is where the new growth is accommodated.

The table on the next page summarizes the results of UrbanFootprint scenarios for selected metrics, with further analysis following the table. Note that UrbanFootprint analyzes conditions for all of Dane County, including both existing development and planned development in future scenarios. This means that new development can only have an incremental change on future outcomes for the entire area because there are already a substantial number of people living in Dane County. The county's 2015 population was 523,643, and the UrbanFootprint scenarios anticipate adding 70,000 residents to the city. With 70,000 new residents representing 13% growth for the county as a whole, the impacts of predicted city growth become diluted. As such, some metrics, such as water consumption, are not shown in the summary table because there is not a substantial difference between scenarios. However, there are still some

patterns that emerge that, in aggregate, represent meaningful differences in the outcomes attributable to the city's style of growth through 2040.

**Citywide UrbanFootprint Scenarios Summary**

| | Scenario #1: Edge Growth Focus | Scenario #2: Edge/Redevelopment Balance | Scenario #3: Redevelopment Focus |
|---|---|---|---|
| **Population Growth: Edge vs. Redevelopment** | 49,000 edge; 21,000 redev. | 35,000 edge; 35,000 redev. | 21,000 edge; 49,000 redev. |
| **Jobs Growth: Edge vs. Redevelopment** | 25,900 edge; 11,100 redev. | 18,500 edge; 18,500 redev. | 11,100 edge; 25,900 redev. |
| **Roads, Highways, and Auto Infrastructure** | Programmed and planned new arterials and collectors; programmed and planned major highway expansions (Interstate 39/90 south of Beltline, US 51- Stoughton Road, US 14 south of STH 138, US 12 West freeway past CTH K, US 12/18 East freeway past CTH N; US 151 - Verona Road); Beltline capacity expansion; additional cross-Beltline connections; North Mendota Parkway. | Programmed and planned new arterials and collectors; some programmed and planned major highway expansions (Interstate 39/90 south of Beltline, US 51 - Stoughton Road, US 151 - Verona Road); limited further Beltline expansion; additional cross-Beltline connections; North Mendota Parkway. | Programmed and planned new arterials and collectors; some programmed and planned major highway expansions (Interstate 39/90 south of Beltline, US 51 - Stoughton Road, US 151 - Verona Road); limited further Beltline expansion; additional cross-Beltline connections; North Mendota Parkway. |
| **Transit** | Incremental service improvements to existing system; enhanced service to peripheral Madison neighborhoods; enhanced service to existing Metro communities. | Improvements to existing system (including service to Monona and Sun Prairie); express bus lines to outlying areas (per Figure 15 of Madison Transit Corridor Study); currently planned BRT system (per Madison Transit Corridor Study). | Improvements to existing system (including service to Monona and Sun Prairie); express bus lines to outlying areas (per Figure 15 of Madison Transit Corridor Study); currently planned BRT system (per Madison Transit Corridor Study). |

### Land Consumption

The focus on accommodating growth through redevelopment in Scenario #3 results in an estimated 932 fewer acres of land that would transition from farmland to city development through 2040. As a comparison, the UW-Madison campus is just over 1,000 acres, the UW-Madison Arboretum is about 1,200 acres, and the entire isthmus (Park Street east to the Yahara River) is approximately 1,300 acres.

### Energy Use

Scenario #3 results in 128.6 billion fewer British Thermal Units (BTUs) of energy consumed per year, based solely on the style of growth. Scenario #3 assumes more redevelopment, which tends to occur in multifamily buildings. Multifamily buildings are more energy efficient than single-family homes because there is less exterior wall and ceiling space per unit. With the average home in Wisconsin consuming 103 million BTUs of energy per year,[26] Scenario #3 results in about 1,250 homes worth of residential energy consumption that is eliminated when compared to Scenario #1. Considering that Scenario #1 only adds 36,400 dwelling units, this is a significant reduction in residential energy use.

### Transportation-Related Greenhouse Gas Emissions

Transportation-related Greenhouse Gas (GHG) emissions appear to show a nominal decrease from Scenario #1 to Scenario #3. However, the EPA estimates that the typical passenger vehicle emits 4.6 metric tons of carbon dioxide per year.[27] Scenario #3 is equivalent to removing approximately 11,100 cars from the road, which represents a significant decrease in carbon emissions attributable to the land use pattern alone.

### Fuel Costs

Scenario #3, which contains more redevelopment and transit investments than Scenario #1, results in the average Dane County household spending $106 less on gas per year than Scenario #1. With 252,653 households in the scenario, that represents a $26.6 million reduction in spending per year on gasoline. Assuming access to enhanced transit and a steady growth rate, households would save a total of about $577 million on gas between 2018 and 2040.[28] Overall, Scenario #3 anticipates approximately $100 million less in annual passenger vehicle transportation costs per year (about $400 per household) – a total of about $2.15 billion from 2018 through 2040.

### Vehicle Miles Traveled

Scenario #3 has about 170 million fewer vehicle miles traveled (VMT) per year than Scenario #1, which is equivalent to removing the vehicles of about 9,100 households from roadways in Scenario #3 when compared to Scenario #1. Note that VMT numbers are analyzed for the entire county, so existing development tends to dilute the gains from new transit service and new transit-oriented development. Each scenarios add, on average, about 35,400 new households. If all the new miles traveled are assigned to new households, each new household drives about 16,600 miles/year in Scenario #1, 14,000 miles/year in Scenario #2, and 11,100 miles/year in Scenario #3. Reducing the average VMT per household is a critical part of mitigating increasing traffic as the region continues to add population and jobs.

In the case of these three scenarios, the reduction in VMT between Scenario #1 and #3 was achieved by adding BRT, adding express bus service, adding local bus service, and locating housing, jobs, and destinations in close proximity to each other and to transit.

The "UrbanFootprint and Bus Rapid Transit" section at the end of this Appendix has an additional comparison of what it means to locate housing and jobs next to transit.

### Transit Trips Per Day

Scenario #1 projects that Metro Transit ridership will increase by about 50% by 2040. While the future population stays constant through all three scenarios, the extension of additional transit service in Scenario #2 increases transit ridership by 38% over Scenario #1 and 108% over current conditions. Scenario #3, which has more growth occurring as redevelopment, increases transit ridership about 3% over Scenario #2 and 114% over current conditions. Expansion of the City's, and region's, transit system helps reduce the growing population's impact on traffic and provides an alternative to driving.

## Citywide UrbanFootprint Maps

UrbanFootprint's strength is in its ability to not only provide numeric comparisons of future scenarios, but also to provide maps of existing and future conditions for the variety of modules that are available. The six maps on the following pages show existing and future conditions across a variety of metrics:

1. Percent of Trips by Non-Car Modes of Transportation, 2015
2. Walking Minutes Per Day for Adults, 2015
3. Vehicle Miles Traveled Per Household, 2015
4. Vehicle Miles Traveled Per Household, Scenario #1
5. Passenger Vehicle Greenhouse Gas Emissions Per Household, Scenario #2
6. Percent Change in Transit Use, Scenario #3

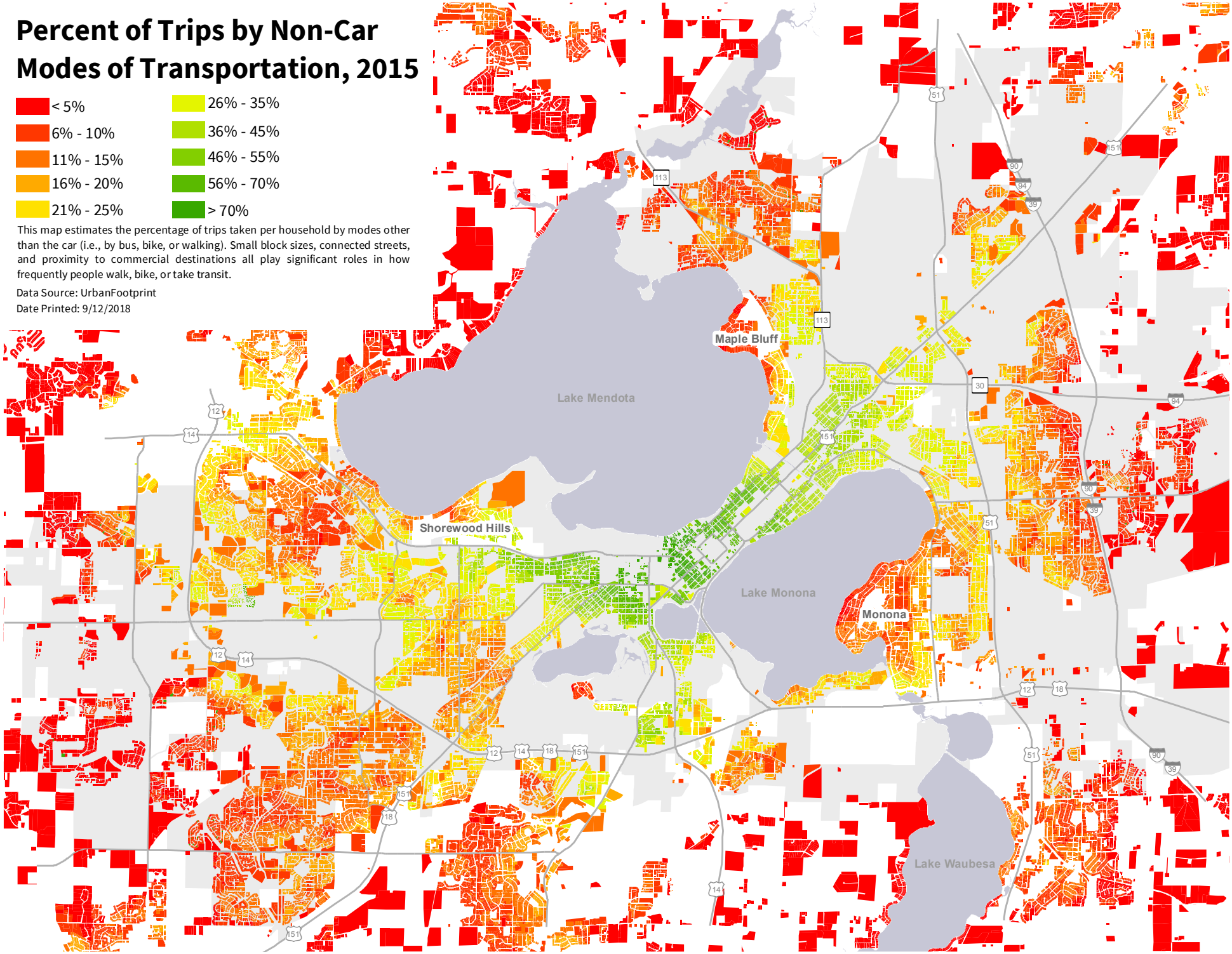
# Percent of Trips by Non-Car Modes of Transportation, 2015

- < 5%
- 6% - 10%
- 11% - 15%
- 16% - 20%
- 21% - 25%
- 26% - 35%
- 36% - 45%
- 46% - 55%
- 56% - 70%
- > 70%

This map estimates the percentage of trips taken per household by modes other than the car (i.e., by bus, bike, or walking). Small block sizes, connected streets, and proximity to commercial destinations all play significant roles in how frequently people walk, bike, or take transit.

Data Source: UrbanFootprint

Date Printed: 9/12/2018

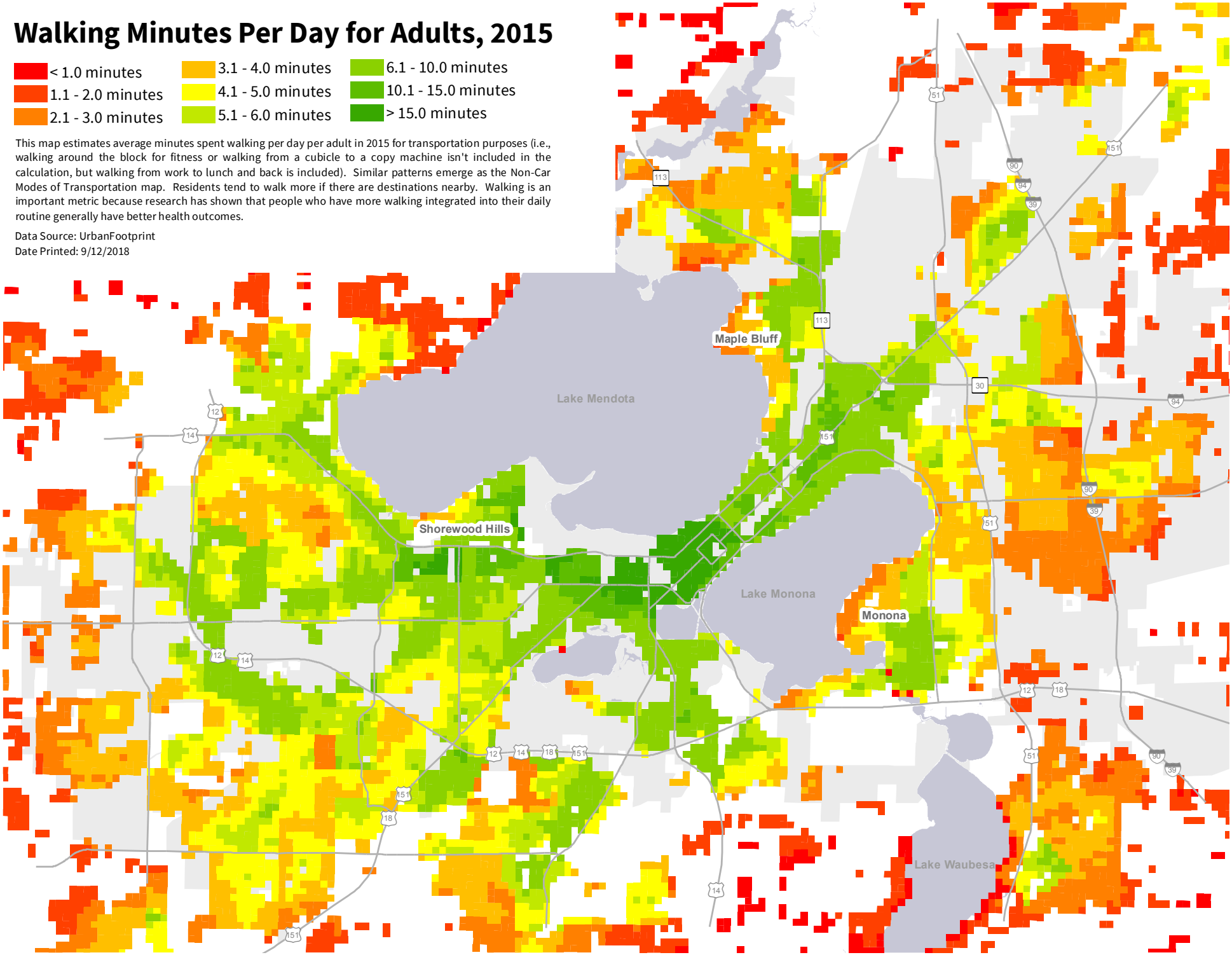


# Walking Minutes Per Day for Adults, 2015

- < 1.0 minutes
- 1.1 - 2.0 minutes
- 2.1 - 3.0 minutes
- 3.1 - 4.0 minutes
- 4.1 - 5.0 minutes
- 5.1 - 6.0 minutes
- 6.1 - 10.0 minutes
- 10.1 - 15.0 minutes
- > 15.0 minutes

This map estimates average minutes spent walking per day per adult in 2015 for transportation purposes (i.e., walking around the block for fitness or walking from a cubicle to a copy machine isn't included in the calculation, but walking from work to lunch and back is included). Similar patterns emerge as the Non-Car Modes of Transportation map. Residents tend to walk more if there are destinations nearby. Walking is an important metric because research has shown that people who have more walking integrated into their daily routine generally have better health outcomes.

Data Source: UrbanFootprint
Date Printed: 9/12/2018

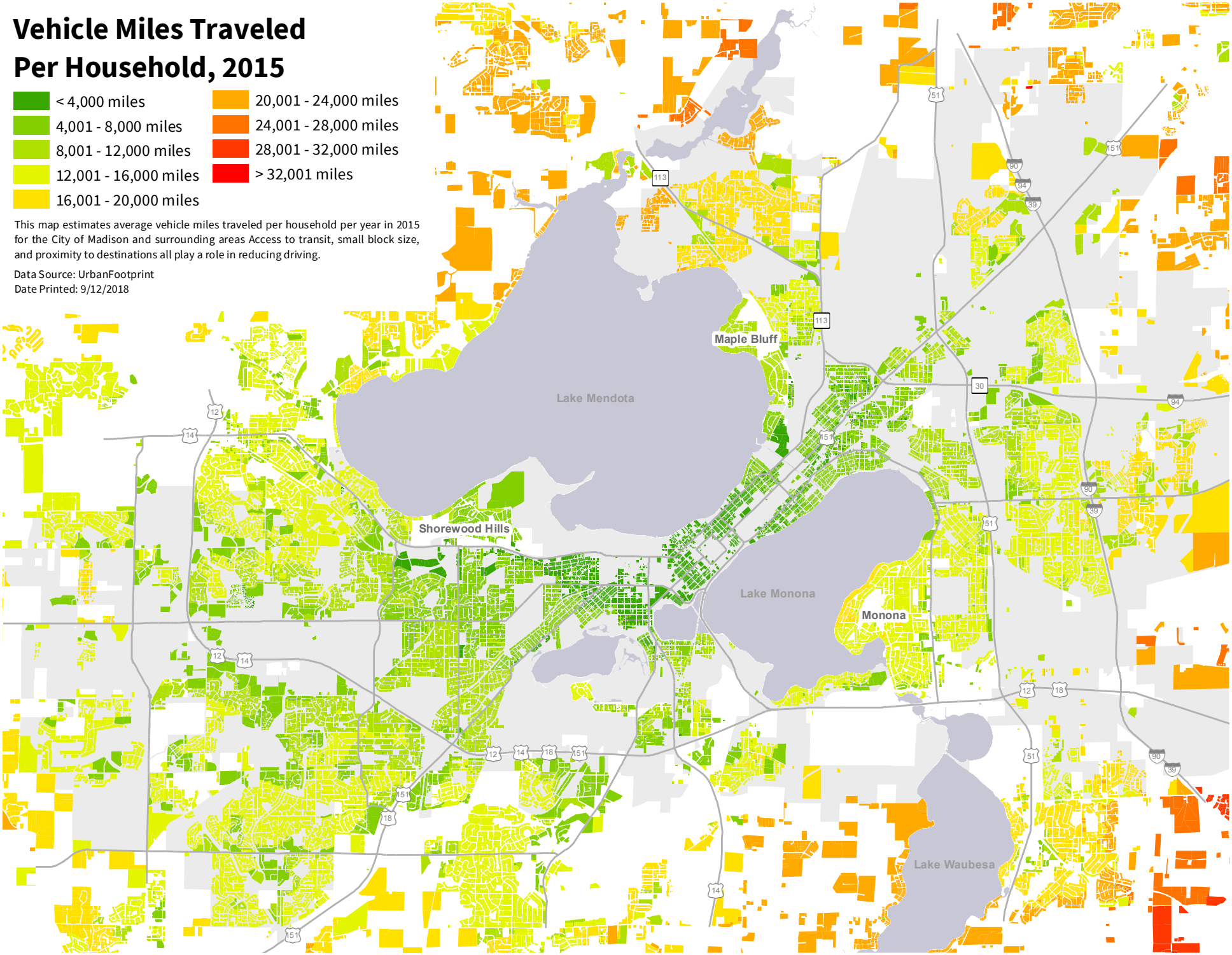


# Vehicle Miles Traveled Per Household, 2015

- < 4,000 miles
- 4,001 - 8,000 miles
- 8,001 - 12,000 miles
- 12,001 - 16,000 miles
- 16,001 - 20,000 miles
- 20,001 - 24,000 miles
- 24,001 - 28,000 miles
- 28,001 - 32,000 miles
- > 32,001 miles

This map estimates average vehicle miles traveled per household per year in 2015 for the City of Madison and surrounding areas Access to transit, small block size, and proximity to destinations all play a role in reducing driving.

Data Source: UrbanFootprint
Date Printed: 9/12/2018

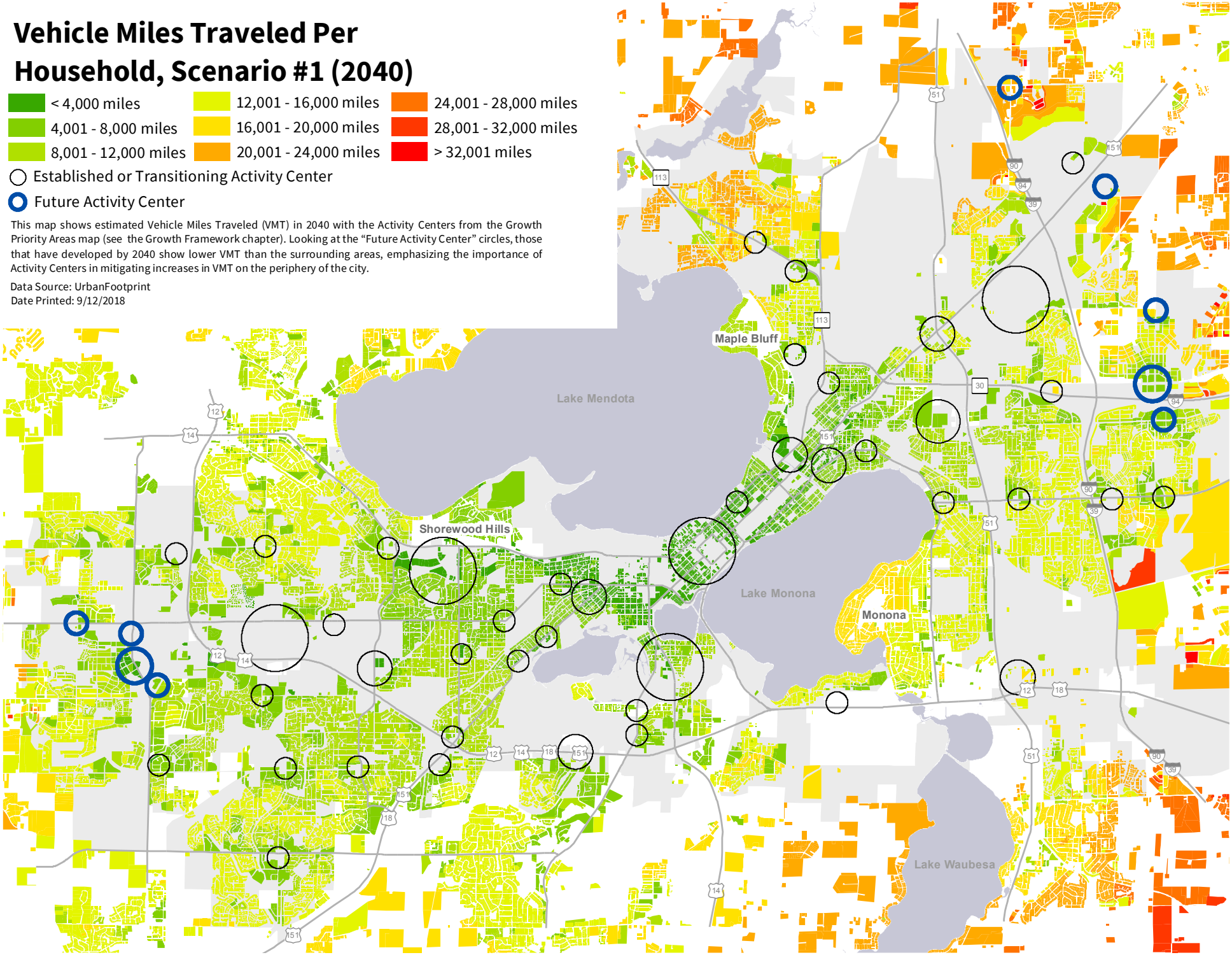


# Vehicle Miles Traveled Per Household, Scenario #1 (2040)

- < 4,000 miles
- 4,001 - 8,000 miles
- 8,001 - 12,000 miles
- 12,001 - 16,000 miles
- 16,001 - 20,000 miles
- 20,001 - 24,000 miles
- 24,001 - 28,000 miles
- 28,001 - 32,000 miles
- > 32,001 miles
- Established or Transitioning Activity Center
- Future Activity Center

This map shows estimated Vehicle Miles Traveled (VMT) in 2040 with the Activity Centers from the Growth Priority Areas map (see the Growth Framework chapter). Looking at the "Future Activity Center" circles, those that have developed by 2040 show lower VMT than the surrounding areas, emphasizing the importance of Activity Centers in mitigating increases in VMT on the periphery of the city.

Data Source: UrbanFootprint
Date Printed: 9/12/2018

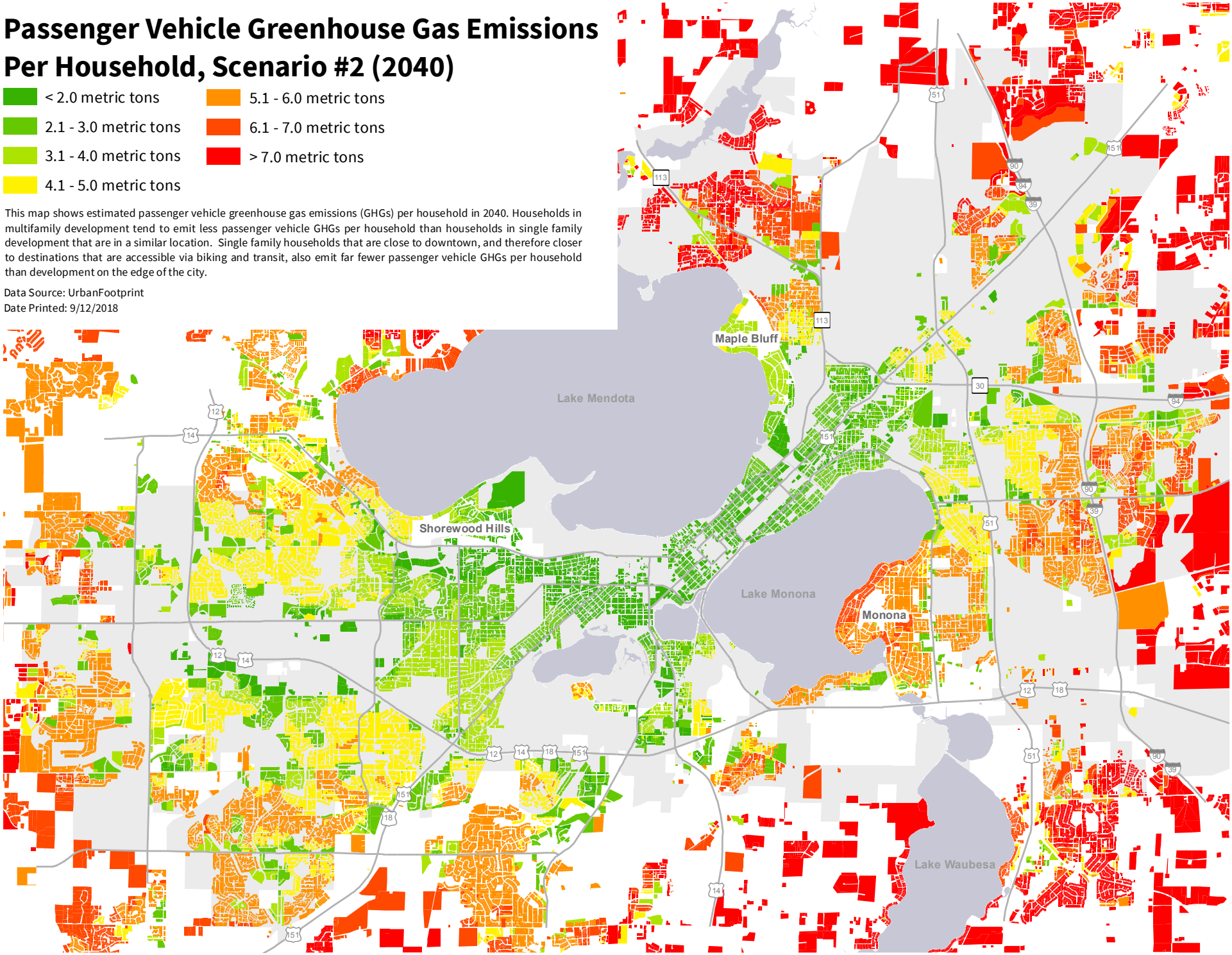


# Passenger Vehicle Greenhouse Gas Emissions Per Household, Scenario #2 (2040)

- < 2.0 metric tons
- 2.1 - 3.0 metric tons
- 3.1 - 4.0 metric tons
- 4.1 - 5.0 metric tons
- 5.1 - 6.0 metric tons
- 6.1 - 7.0 metric tons
- > 7.0 metric tons

This map shows estimated passenger vehicle greenhouse gas emissions (GHGs) per household in 2040. Households in multifamily development tend to emit less passenger vehicle GHGs per household than households in single family development that are in a similar location. Single family households that are close to downtown, and therefore closer to destinations that are accessible via biking and transit, also emit far fewer passenger vehicle GHGs per household than development on the edge of the city.

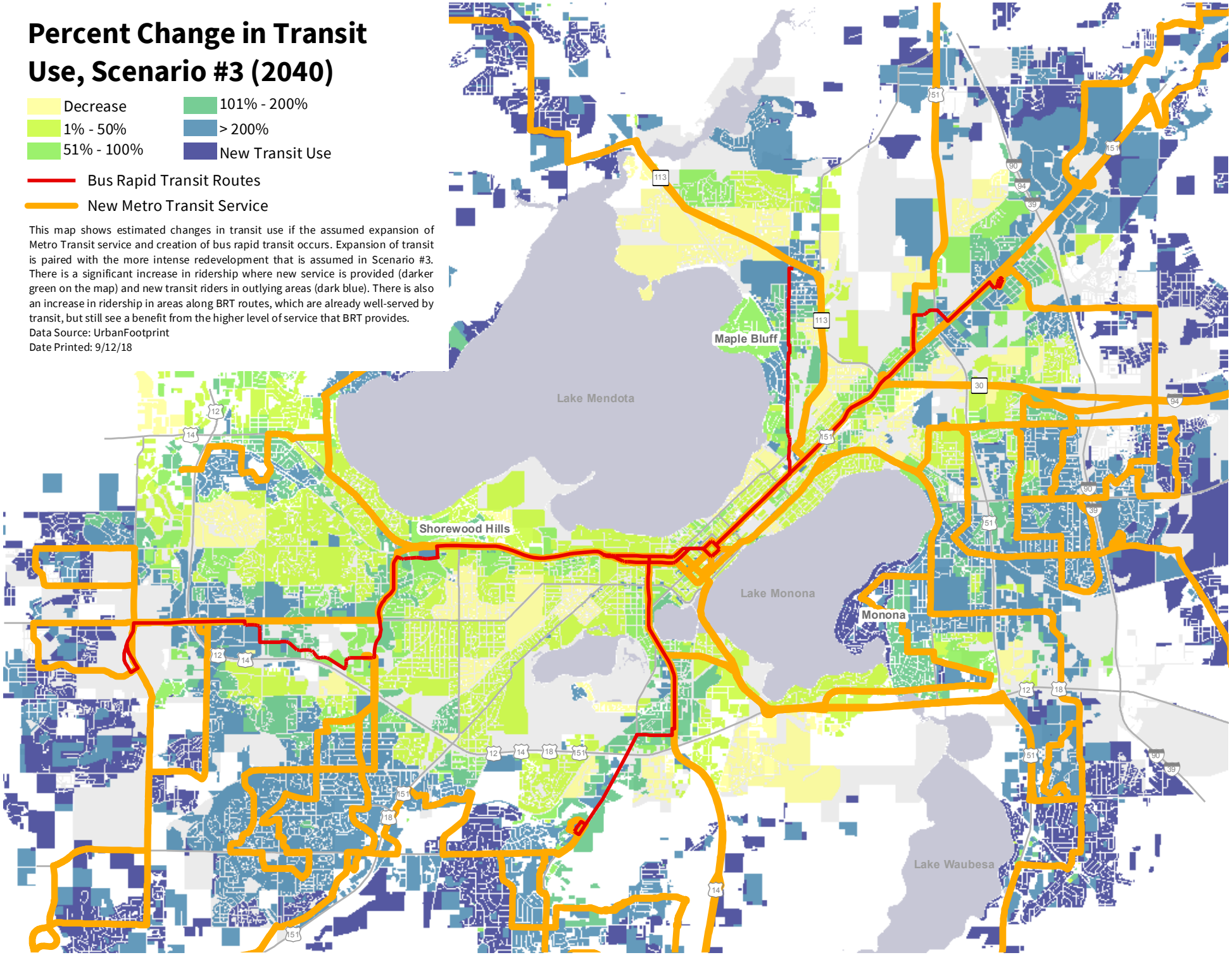
Data Source: UrbanFootprint
Date Printed: 9/12/2018



# Percent Change in Transit Use, Scenario #3 (2040)

- Decrease
- 1% - 50%
- 51% - 100%
- 101% - 200%
- > 200%
- New Transit Use
- Bus Rapid Transit Routes
- New Metro Transit Service

This map shows estimated changes in transit use if the assumed expansion of Metro Transit service and creation of bus rapid transit occurs. Expansion of transit is paired with the more intense redevelopment that is assumed in Scenario #3. There is a significant increase in ridership where new service is provided (darker green on the map) and new transit riders in outlying areas (dark blue). There is also an increase in ridership in areas along BRT routes, which are already well-served by transit, but still see a benefit from the higher level of service that BRT provides.
Data Source: UrbanFootprint
Date Printed: 9/12/18

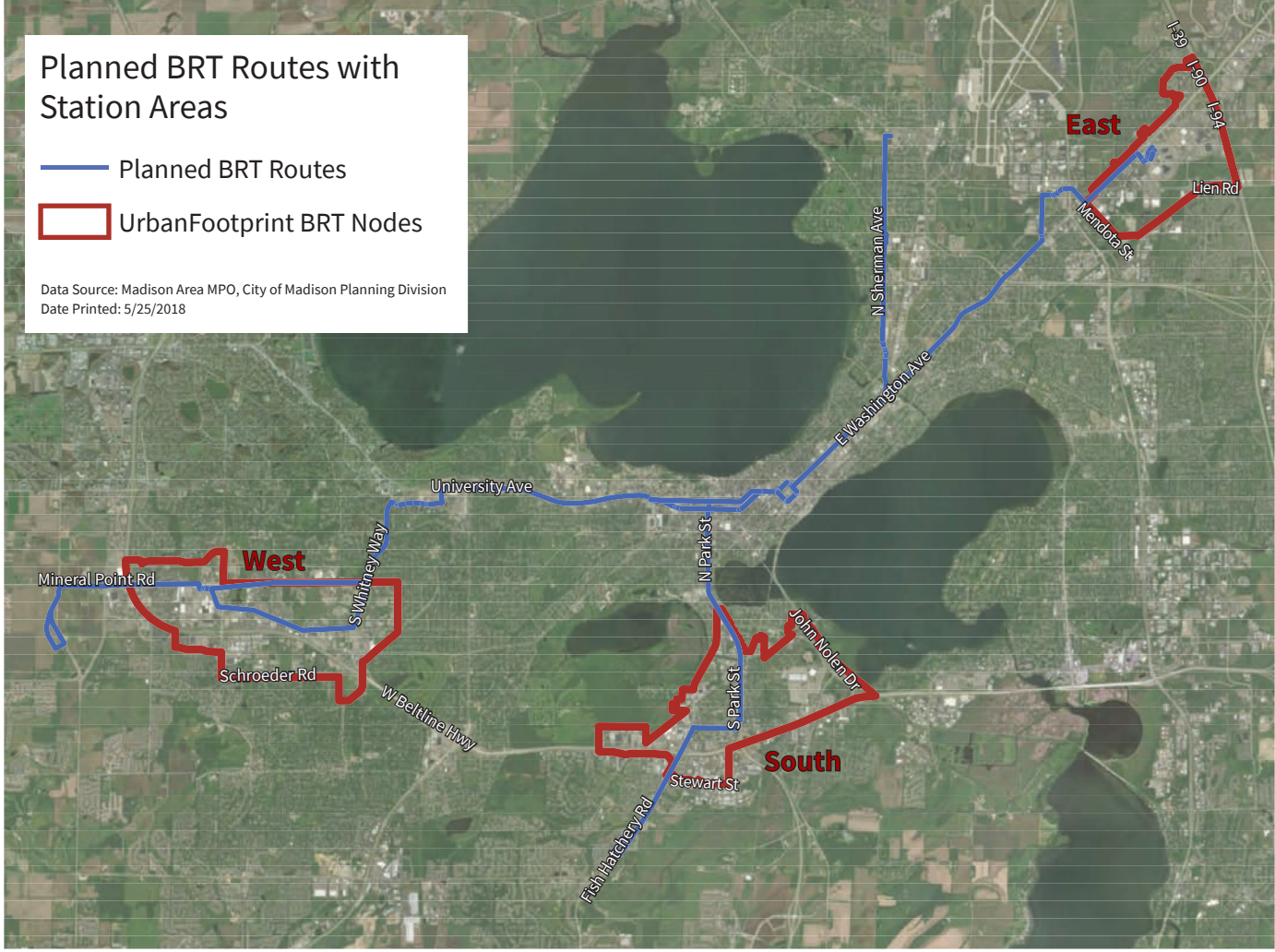


## UrbanFootprint Bus Rapid Transit Nodes Analysis

In addition to the three citywide scenarios, UrbanFootprint scenarios were developed to compare development within three areas that have significant capacity for infill and redevelopment and are planned for Bus Rapid Transit service. These three areas are shown on the map on the next page.

There are opportunities for both near-term infill and redevelopment in all three areas, as well as long-term infill at a scale that could lead to redevelopment similar to what the Hilldale area has begun to experience. While there are no detailed plans in place to guide such a substantial change to these areas, an UrbanFootprint analysis was run as an exercise to see what the potential impacts of such development would be when compared with accommodating the same number of people and employees within edge development areas (see the peripheral growth areas on the Growth Priority Areas map on page 16).

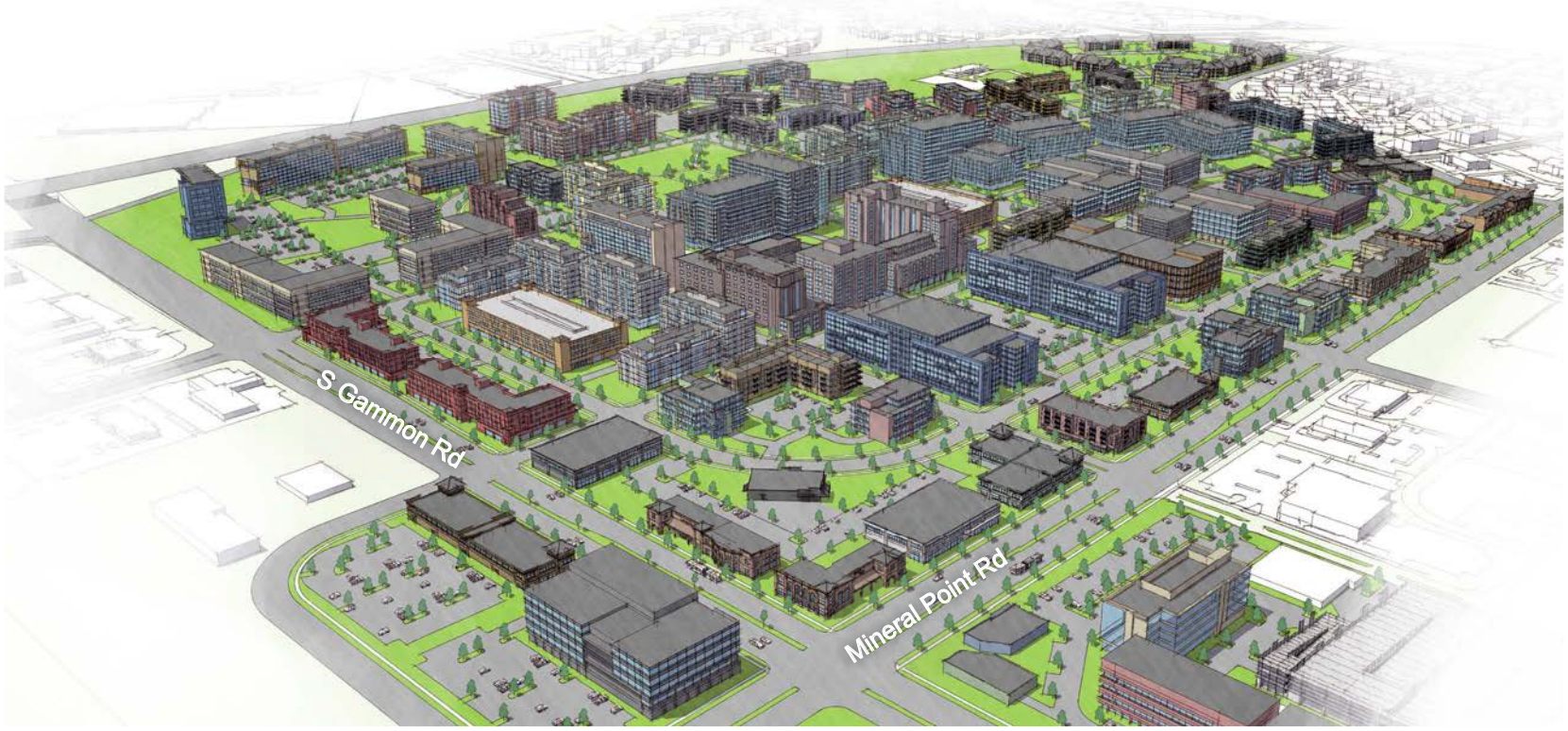
The following table summarizes the current population and jobs within the BRT nodes (according to the US Census Bureau and InfoUSA), along with potential near-term (over the next 10-20 years) additions in population and jobs through redevelopment and long-term (20+ years) infill and redevelopment. As a comparison, the isthmus (Park Street to the Yahara River) contained about 40,000 residents and 39,000 jobs on 1,336 acres in 2015. The combined BRT nodes are about three times larger than the isthmus, encompassing 3,914 acres. It should be noted that, even in the Long Term scenario, not all land in the BRT areas is assumed to be redeveloped/infilled – about 850 acres is assumed for redevelopment/infill. Overall, the 850 acres of infill can accommodate about the same amount of development as approximately 2,900 acres (4.5 square miles) of edge development, if areas on the periphery of the city developed consistent with the Generalized Future Land Use Map and Neighborhood Development Plans. With additional rights-of-way, the peripheral acreage would be even larger. The conceptual renderings on the following pages illustrate what the near-term and potential long-term development could be within certain parts of the three BRT areas.




### UrbanFootprint BRT Areas Summary

| | Population | Jobs |
|---|---|---|
| BRT Areas – Current | 13,000 | 35,600 |
| BRT Areas – Near Term (redevelopment in scattered areas; includes current population and jobs) | 20,600 | 43,400 |
| BRT Areas – Long Term (substantial build out of potential infill/ redevelopment areas; includes current and Near Term population and jobs) | 68,000 | 93,300 |


**West Towne Mall Area – Near-Term Concept**




**West Towne Mall Area – Long-Term Concept**


**South Area –
Near-Term Concept**


**South Area –
Long-Term Concept**


**East Towne Area – Near-Term Concept**


**East Towne Area – Long-Term Concept**

The table to the right summarizes metrics that compare redevelopment within the BRT areas (the large purple dots on the Growth Priority Areas map on page 16 of this Plan) to accommodate the same number of residents and employees in edge development (the yellow areas on the Growth Priority Areas map). Some additional metrics are also provided to show the estimated impact of transit-oriented development on things like walk minutes per day.

As would be expected, accommodating growth via redevelopment virtually eliminates the consumption of agricultural and wooded lands. Residential energy use is also reduced, as most redevelopment tends to occur as multifamily development, which is more energy efficient because there is less exterior wall and roof area per unit. Greenhouse gas emissions attributable to passenger vehicles remains virtually the same because of the larger amount of commercial space within the BRT areas, which attracts more passenger vehicles from outside of the area than the Edge Development scenario.

Vehicle miles traveled per household is cut by more than half – a substantial change that can be attributed to placing more intense development in close proximity to high-capacity, frequent transit service. This reduction also obviously means a reduction in the GHG emissions attributable to driving. Residents take about 65% more trips via transit when development is focused around newly provided BRT service. Walk minutes per day increase by 83% - with more intense, mixed-use development, there are more destinations within easy walking distance and also more frequent transit service to walk to. Finally, outdoor residential water use is decreased by two-thirds in the BRT scenario, as there is less lawn to water for residential infill/redevelopment.

## Summary

The above scenarios are meant to provide a numerical comparison, based on the UrbanFootprint modeling software, of how the city is impacted by different approaches to growth. While the city will not grow precisely as envisioned in any given scenario, knowing the potential outcomes of different styles of growth across a variety of metrics can help inform decisions on transportation expenditures and land use planning.

**UrbanFootprint BRT Area Infill/Redevelopment Comparison With Edge Development**

| | Scenario A: Edge Development | Scenario B: BRT Areas | Percent Change |
|---|---|---|---|
| Agriculture/Woodland/Rural Land Consumed (acres) | 2,900 | 16* | -99.4% |
| Annual Energy Use – Residential (BTUs/year, in trillions) | 2.04 | 1.81 | -11.3% |
| Transportation-Related Greenhouse Gas Emissions for Passenger Vehicles (metric tons/year) | 289,000** | 290,000** | +0.3%** |
| Vehicle Miles Traveled (household/year)~ | 8,100 | 3,890 | -51.0% |
| Transit Trips/day | 16,789 | 27,754 | +65.3% |
| Adult Walk Minutes/day | 3.32 | 6.09 | +83.4% |
| Residential Outdoor Water Use (millions of gallons/year) | 207 | 69 | -66.7% |

Note: All numbers assume that the only changes from 2015 are to land use and transportation to isolate the impacts of different styles of development. Annual gasoline costs per household are not available for smaller project areas.

* Some portions of University Research Park, which is included in the west BRT area, are currently undeveloped.

** There is no substantial difference because the BRT areas contain a much larger amount of total commercial space and employment, which attracts more passenger vehicles. With the BRT Areas scenario having 22% more total jobs and the same population as the Edge Development scenario, having GHG emissions be virtually the same is an indication of the impact of providing a high level of transit service – the BRT Areas scenario supports 16,800 more jobs than the Edge Development scenario without generating more passenger vehicle emissions.

~ Because so much of the total VMT is attributable to people driving to the scenario areas from outside the boundaries, VMT/HH/year is used instead of total VMT to illustrate the impact of households being located in close proximity to high-frequency transit.

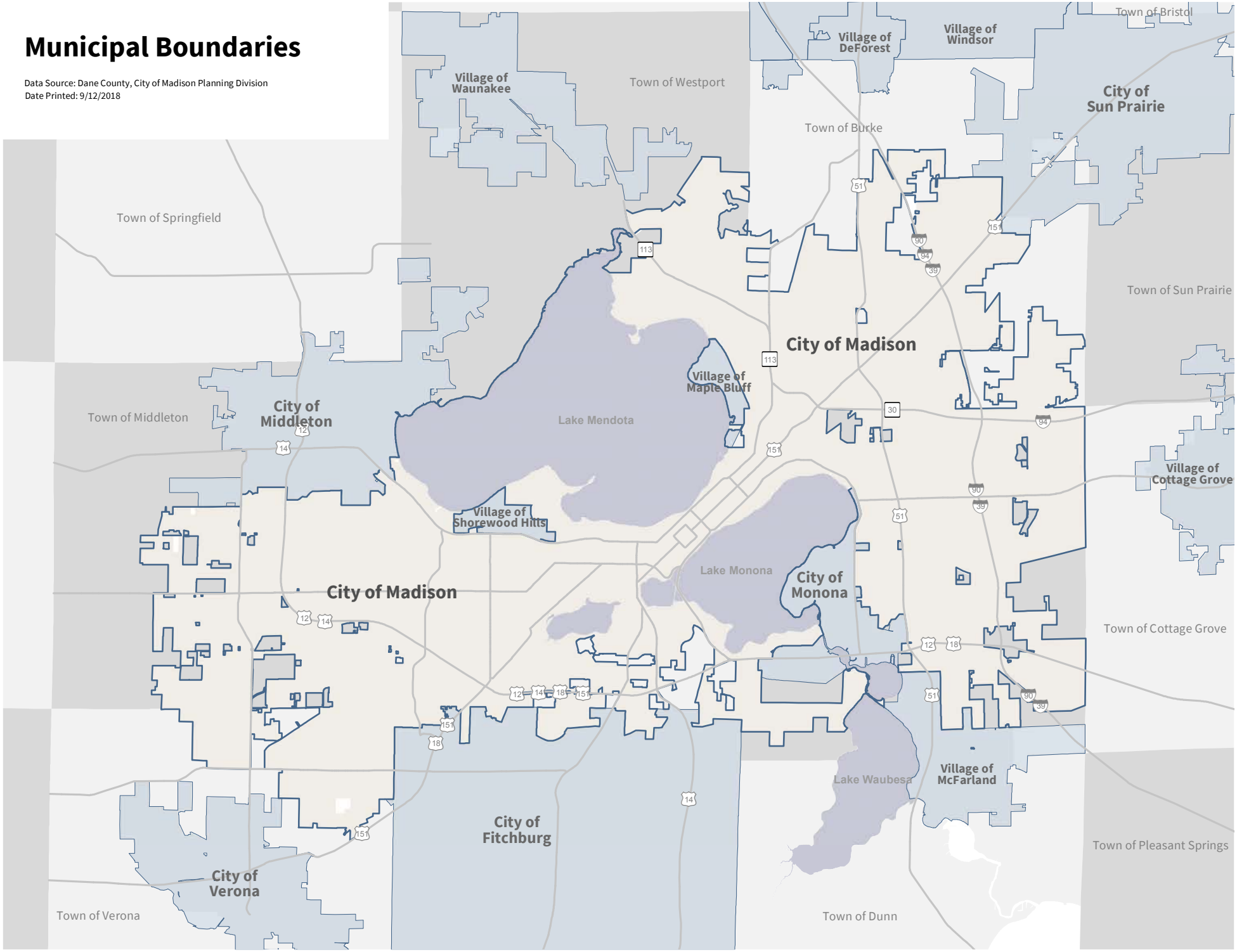
APPENDIX D

# REFERENCE MAPS

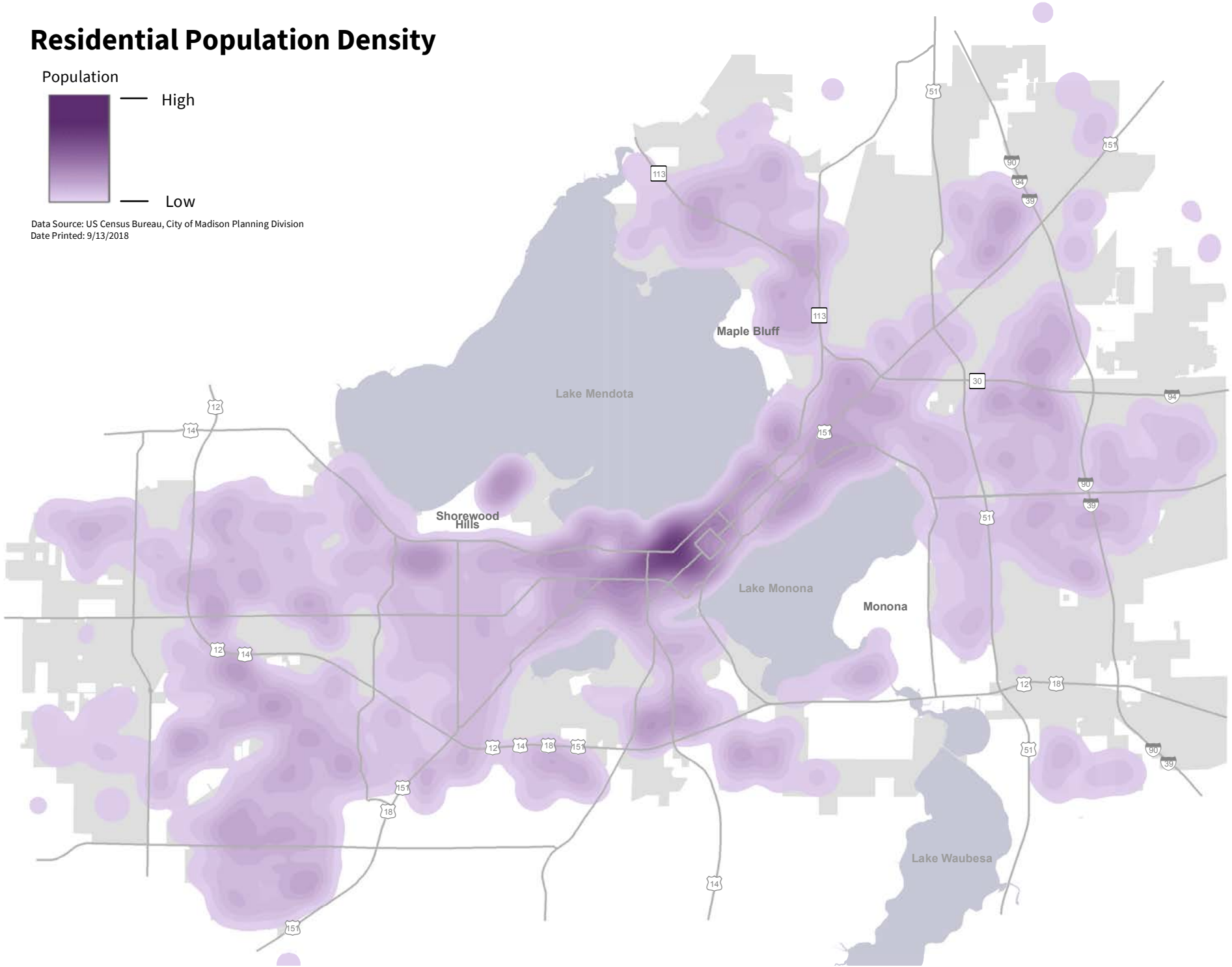
The following reference maps are provided to offer additional context for the contents of this Plan. Additionally, several of these maps have been included to meet the requirements for comprehensive plans found in §66.1001, Wisconsin State Statutes. Maps are ordered generally to correspond with the outline of the six Elements within the Plan, though individual maps are not individually tied to specific Elements, Goals, Strategies, or Actions.

# Municipal Boundaries

Data Source: Dane County, City of Madison Planning Division
Date Printed: 9/12/2018



# Residential Population Density




Data Source: US Census Bureau, City of Madison Planning Division
Date Printed: 9/13/2018

# Population Increase by Race or Ethnicity*

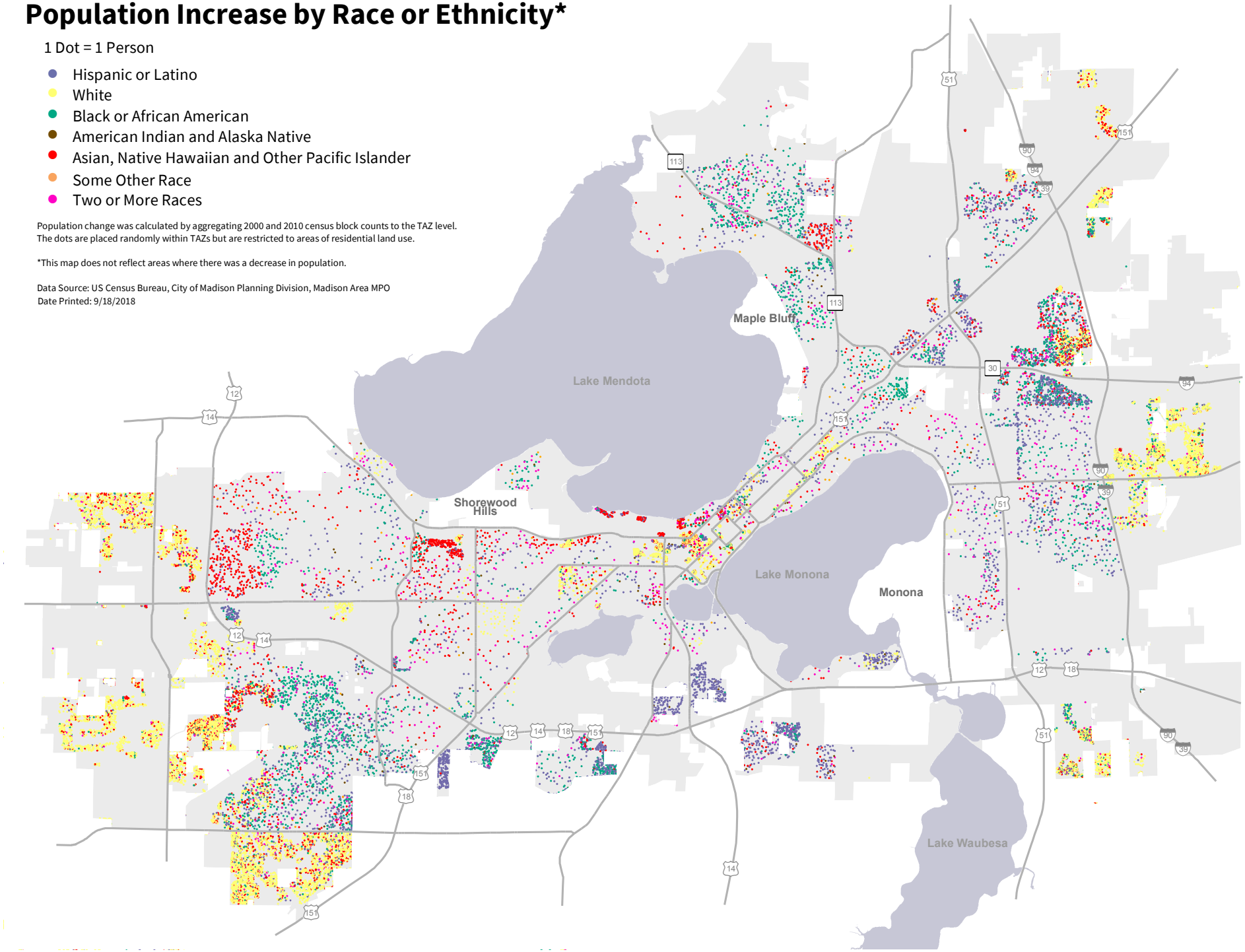
1 Dot = 1 Person

- Hispanic or Latino
- White
- Black or African American
- American Indian and Alaska Native
- Asian, Native Hawaiian and Other Pacific Islander
- Some Other Race
- Two or More Races

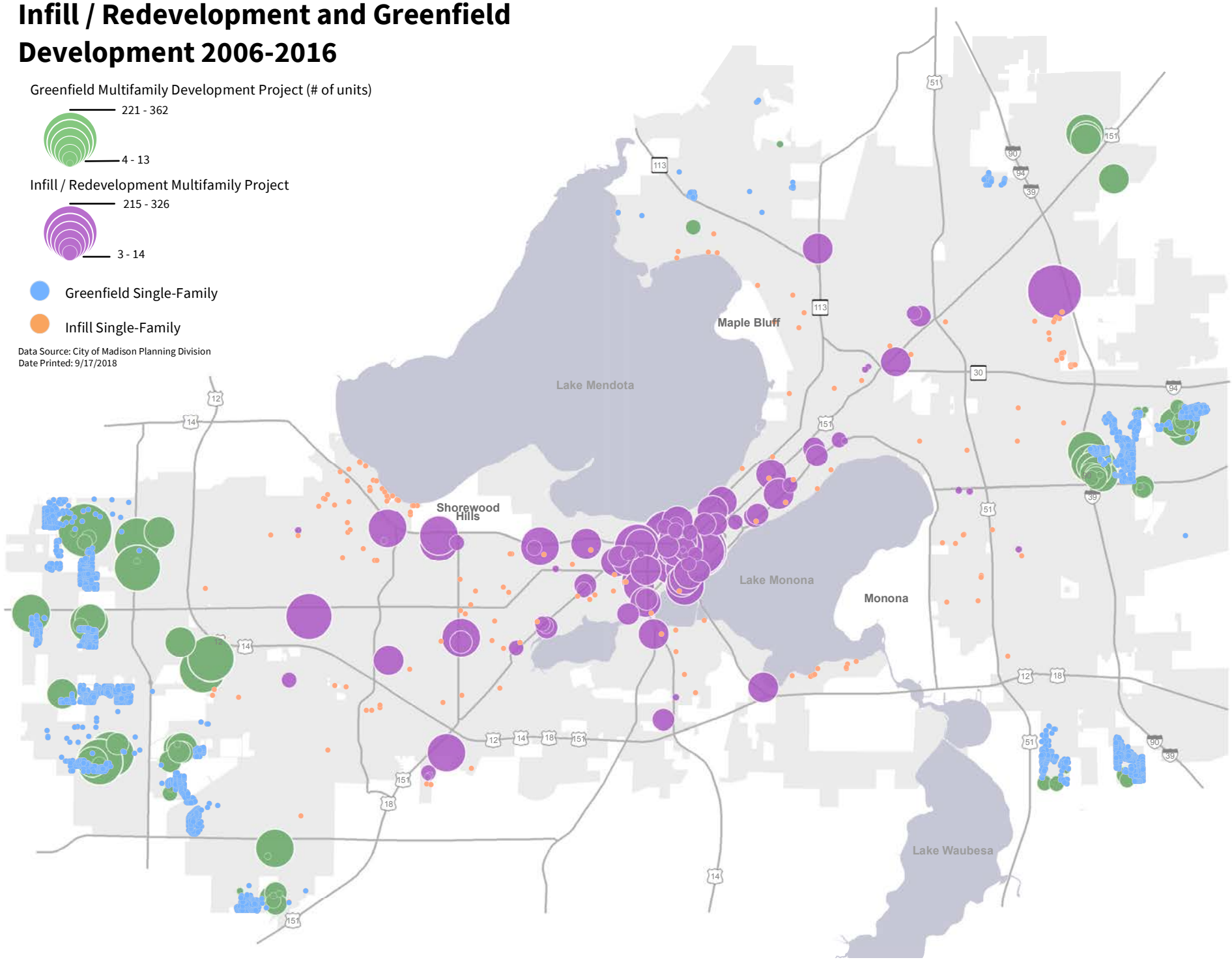
Population change was calculated by aggregating 2000 and 2010 census block counts to the TAZ level. The dots are placed randomly within TAZs but are restricted to areas of residential land use.

*This map does not reflect areas where there was a decrease in population.

Data Source: US Census Bureau, City of Madison Planning Division, Madison Area MPO
Date Printed: 9/18/2018



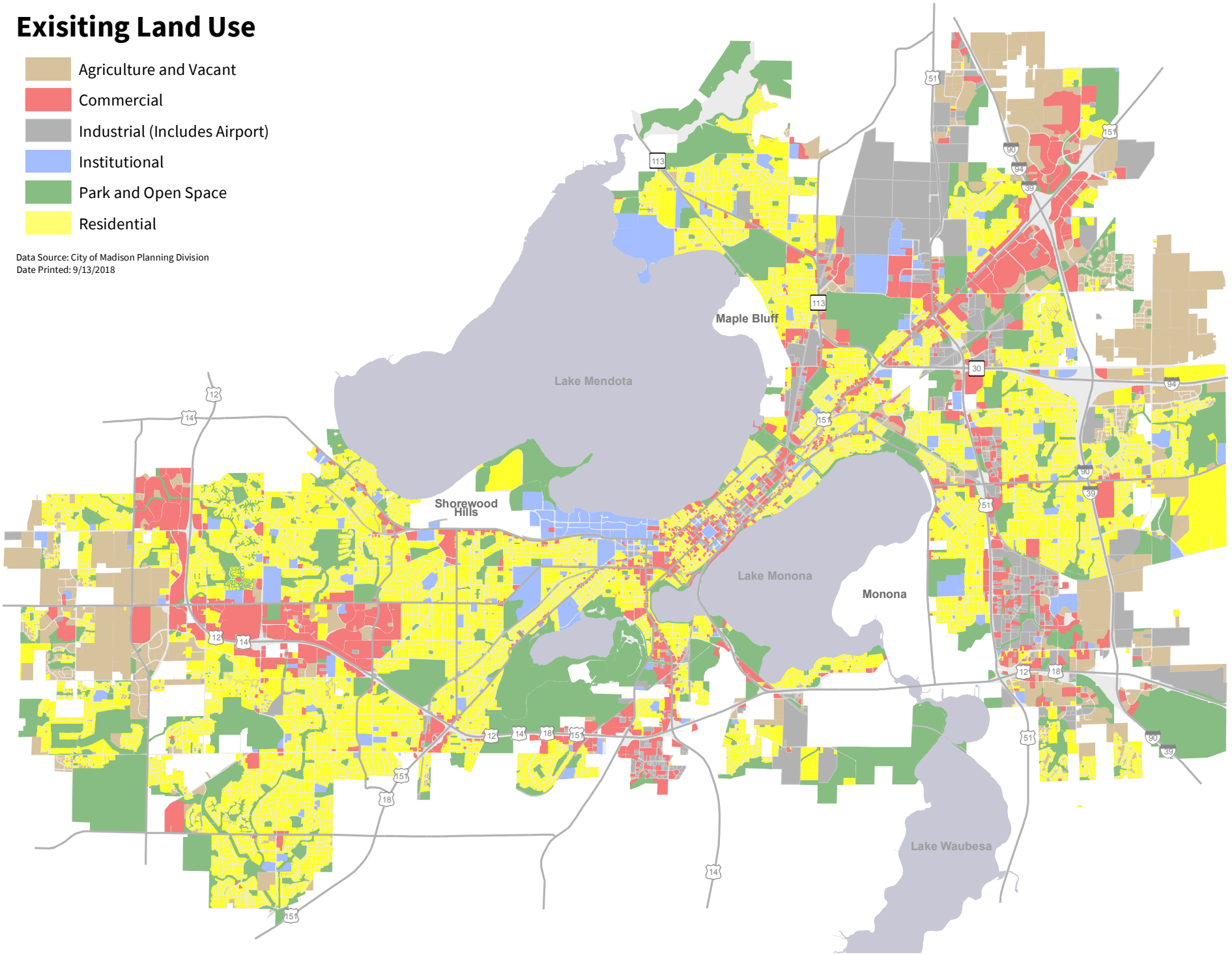
# Infill / Redevelopment and Greenfield Development 2006-2016



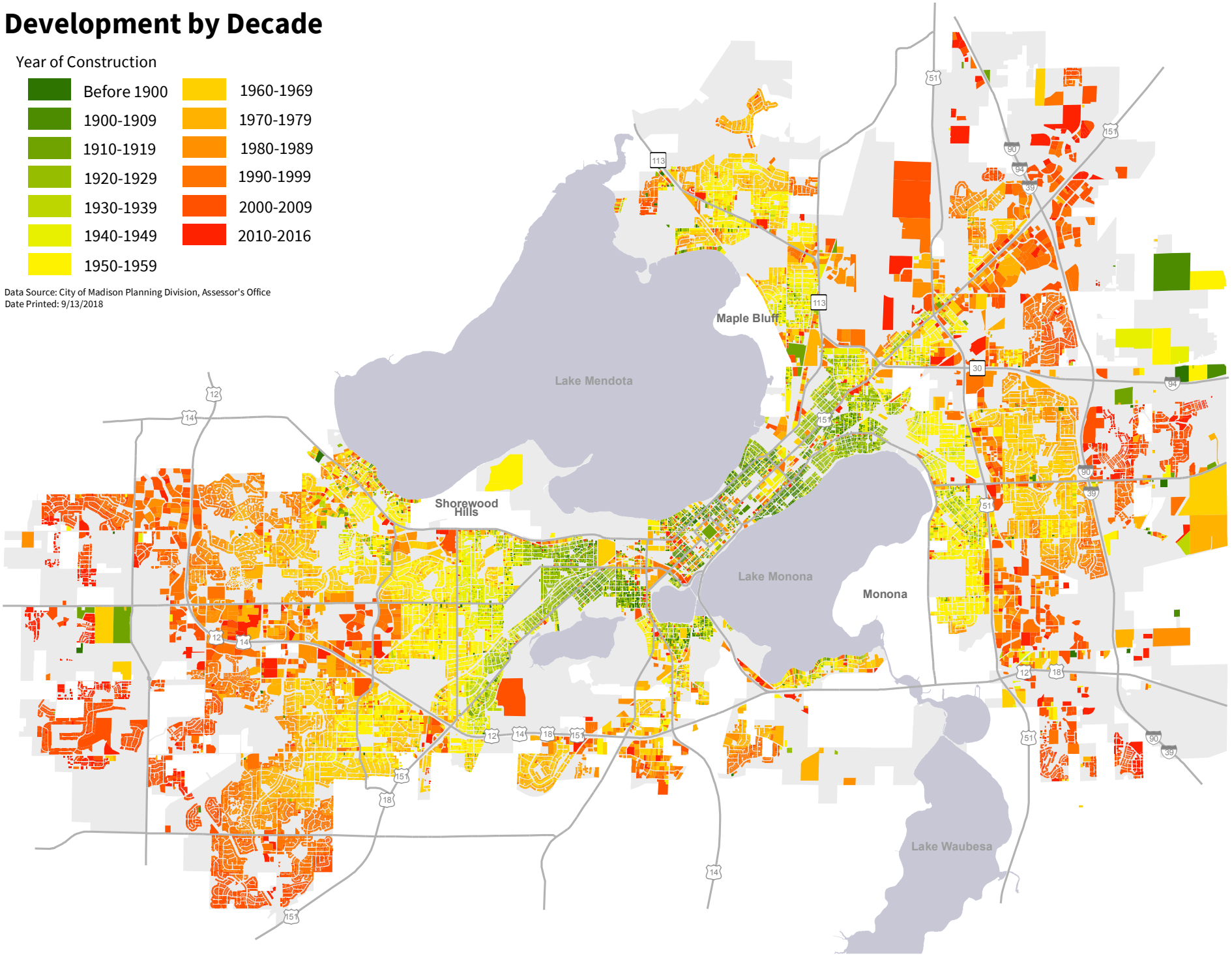
# Exisiting Land Use

- Agriculture and Vacant
- Commercial
- Industrial (Includes Airport)
- Institutional
- Park and Open Space
- Residential

Data Source: City of Madison Planning Division
Date Printed: 9/13/2018



# Development by Decade




Data Source: City of Madison Planning Division, Assessor's Office
Date Printed: 9/13/2018

# Active Living Index

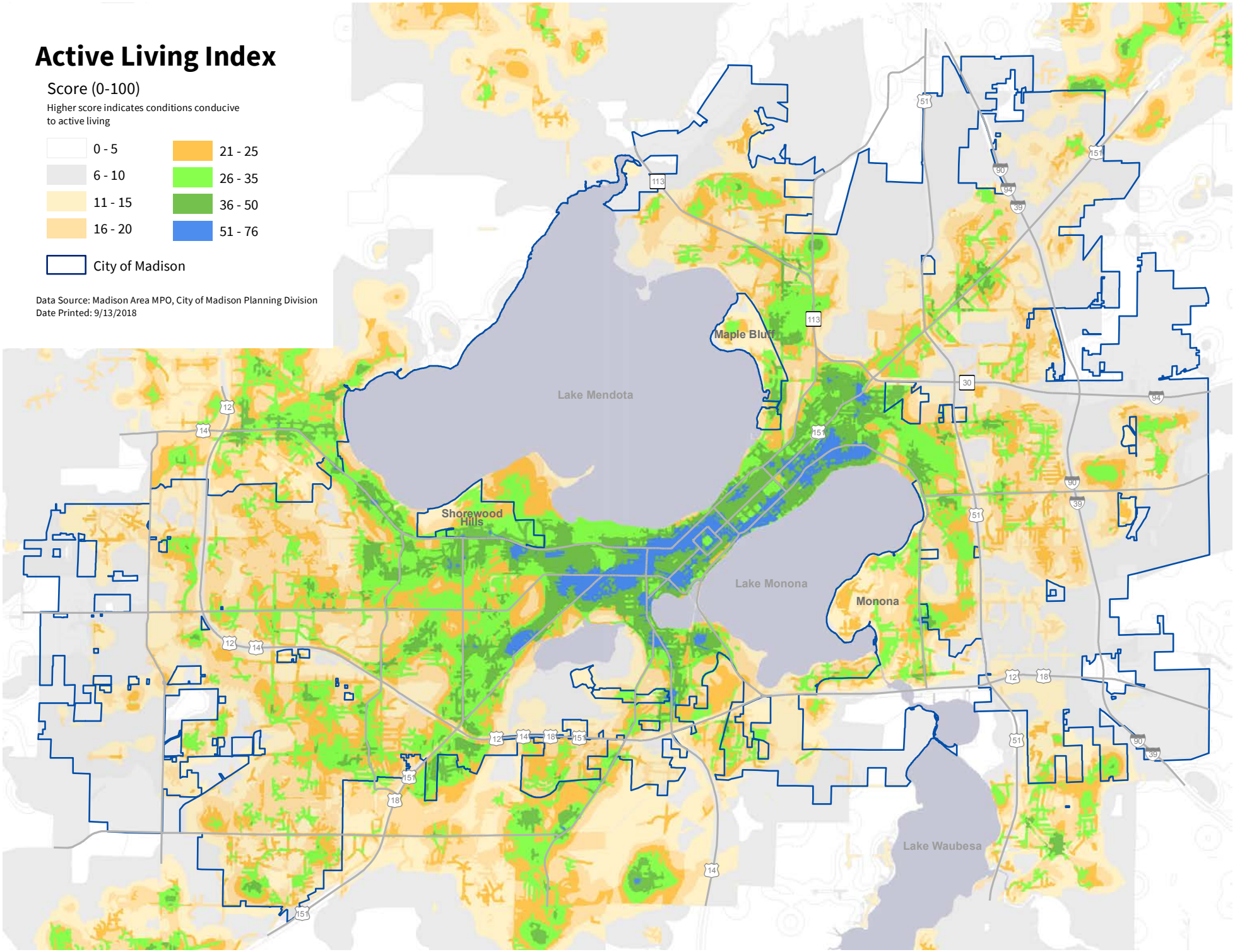
Score (0-100)

Higher score indicates conditions conducive to active living

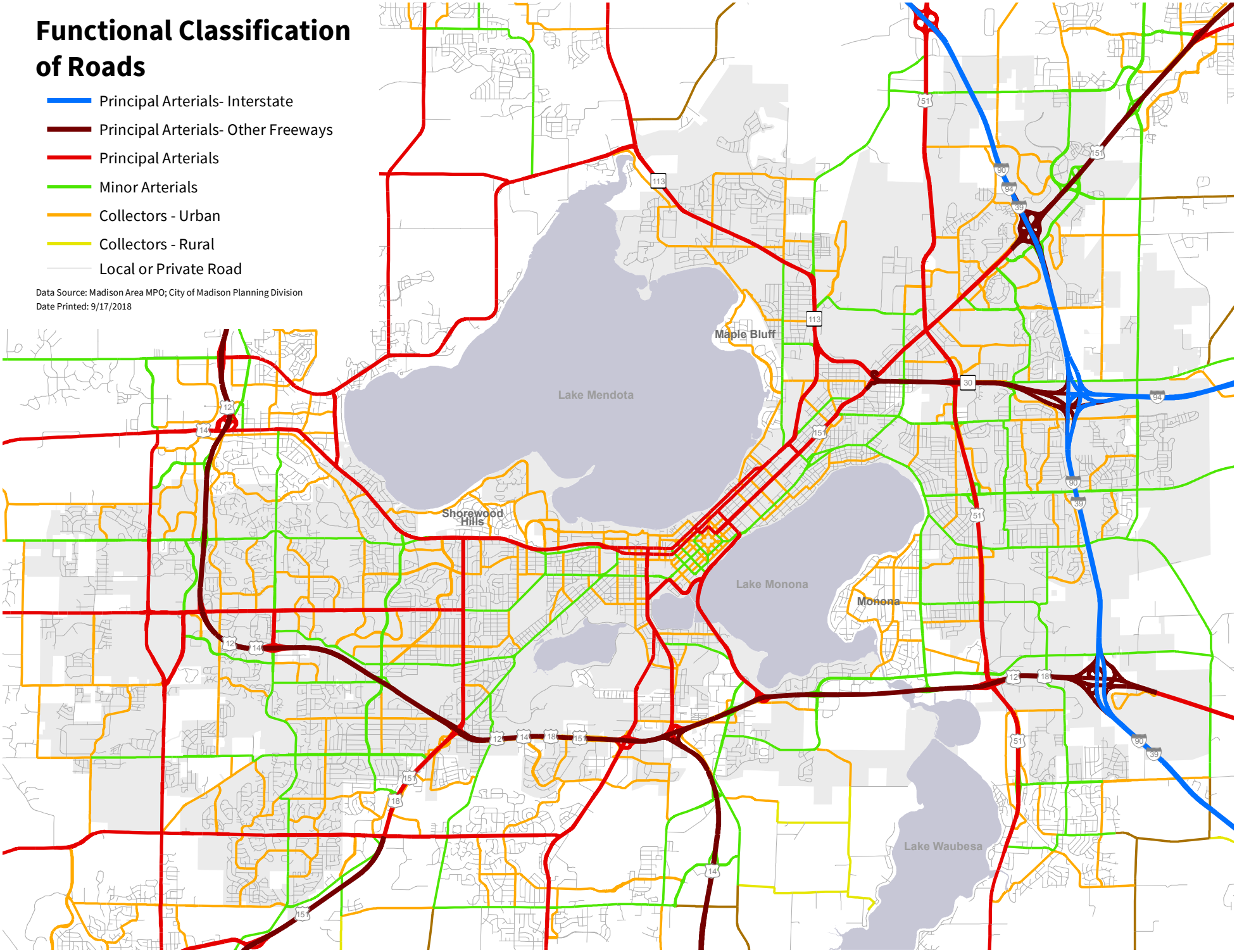
| | |
|---|---|
| 0 - 5 | 21 - 25 |
| 6 - 10 | 26 - 35 |
| 11 - 15 | 36 - 50 |
| 16 - 20 | 51 - 76 |

City of Madison

Data Source: Madison Area MPO, City of Madison Planning Division
Date Printed: 9/13/2018



# Functional Classification of Roads



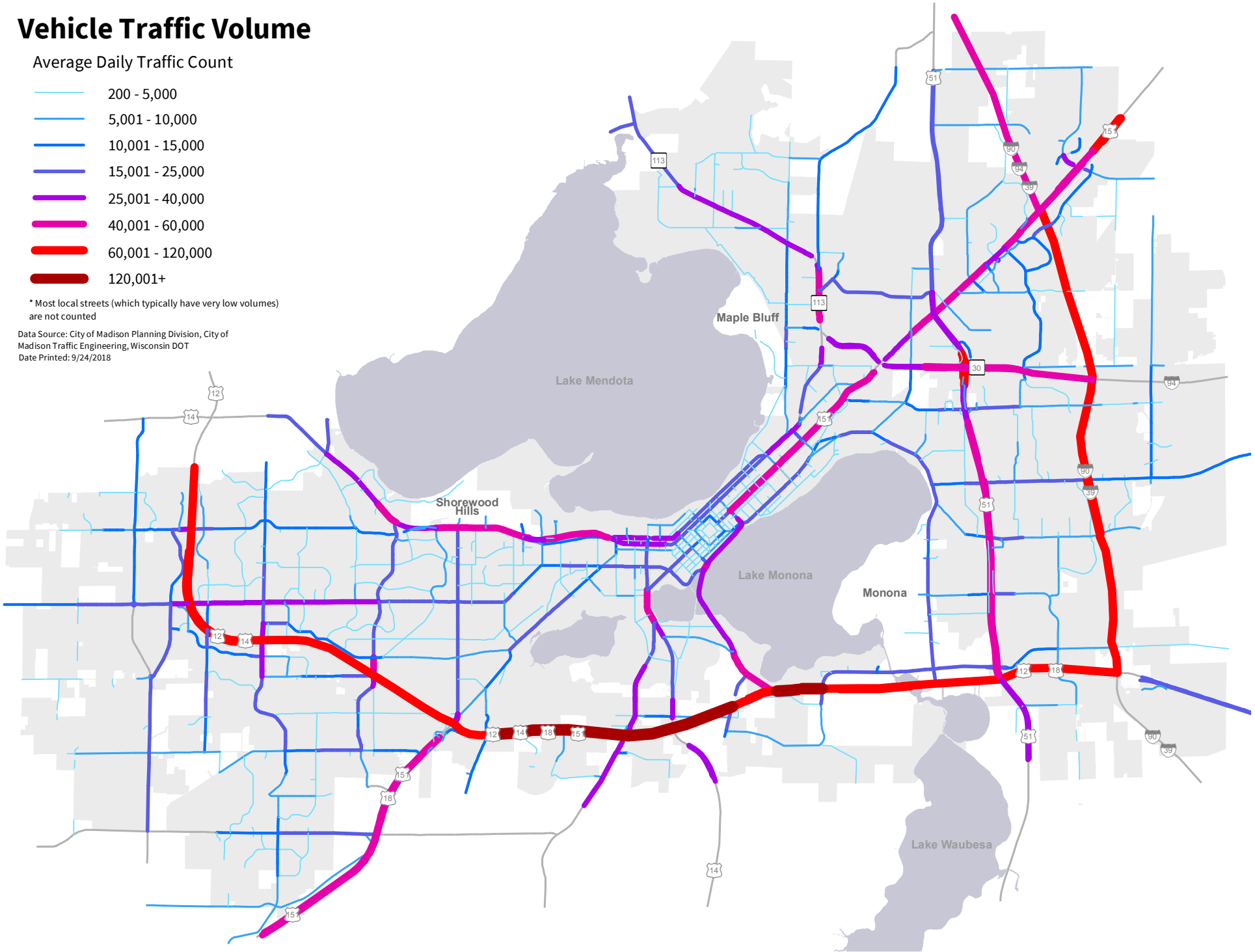
# Vehicle Traffic Volume

Average Daily Traffic Count

- 200 - 5,000
- 5,001 - 10,000
- 10,001 - 15,000
- 15,001 - 25,000
- 25,001 - 40,000
- 40,001 - 60,000
- 60,001 - 120,000
- 120,001+

* Most local streets (which typically have very low volumes) are not counted

Data Source: City of Madison Planning Division, City of Madison Traffic Engineering, Wisconsin DOT
Date Printed: 9/24/2018

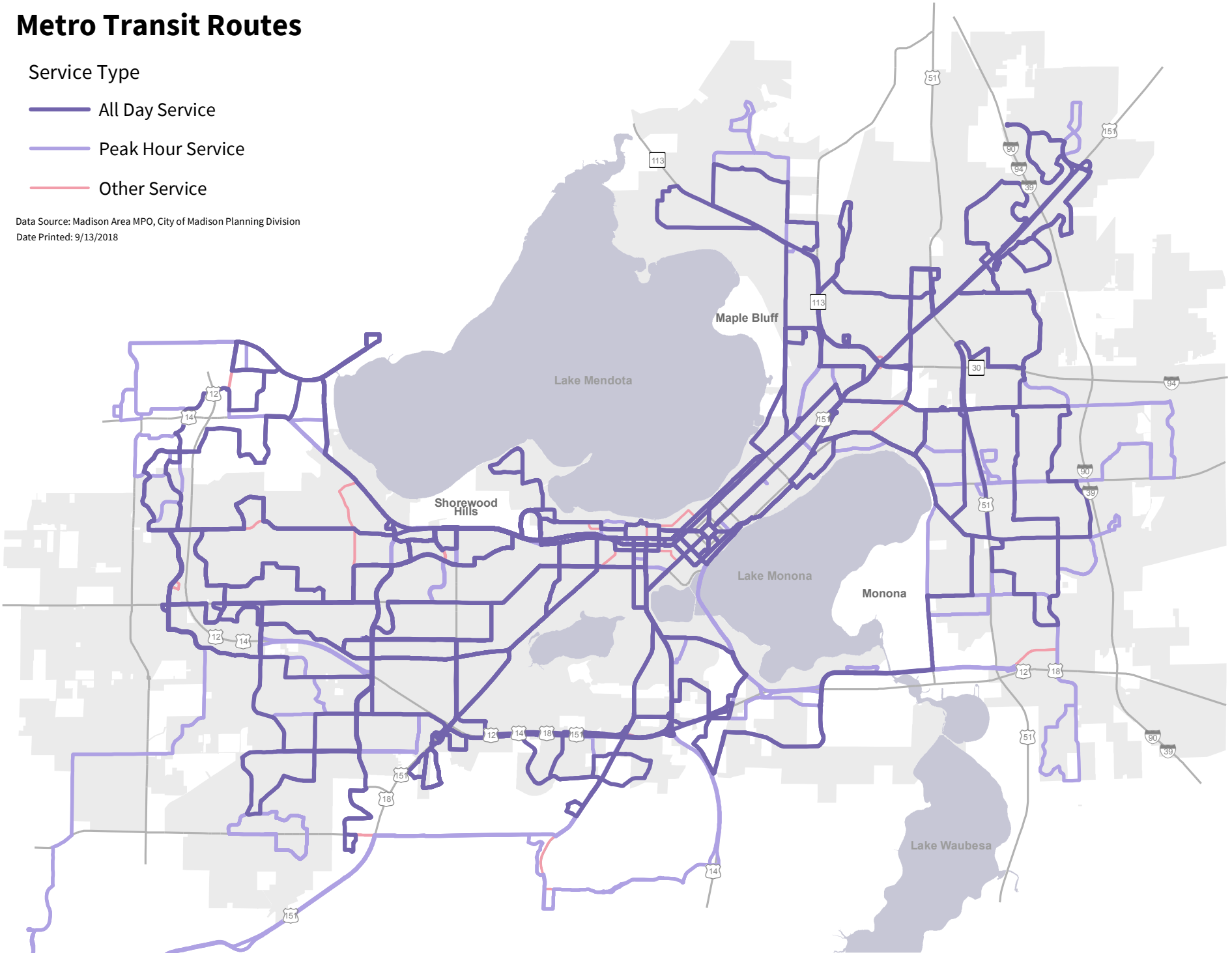


# Metro Transit Routes

Service Type

- All Day Service
- Peak Hour Service
- Other Service

Data Source: Madison Area MPO, City of Madison Planning Division
Date Printed: 9/13/2018



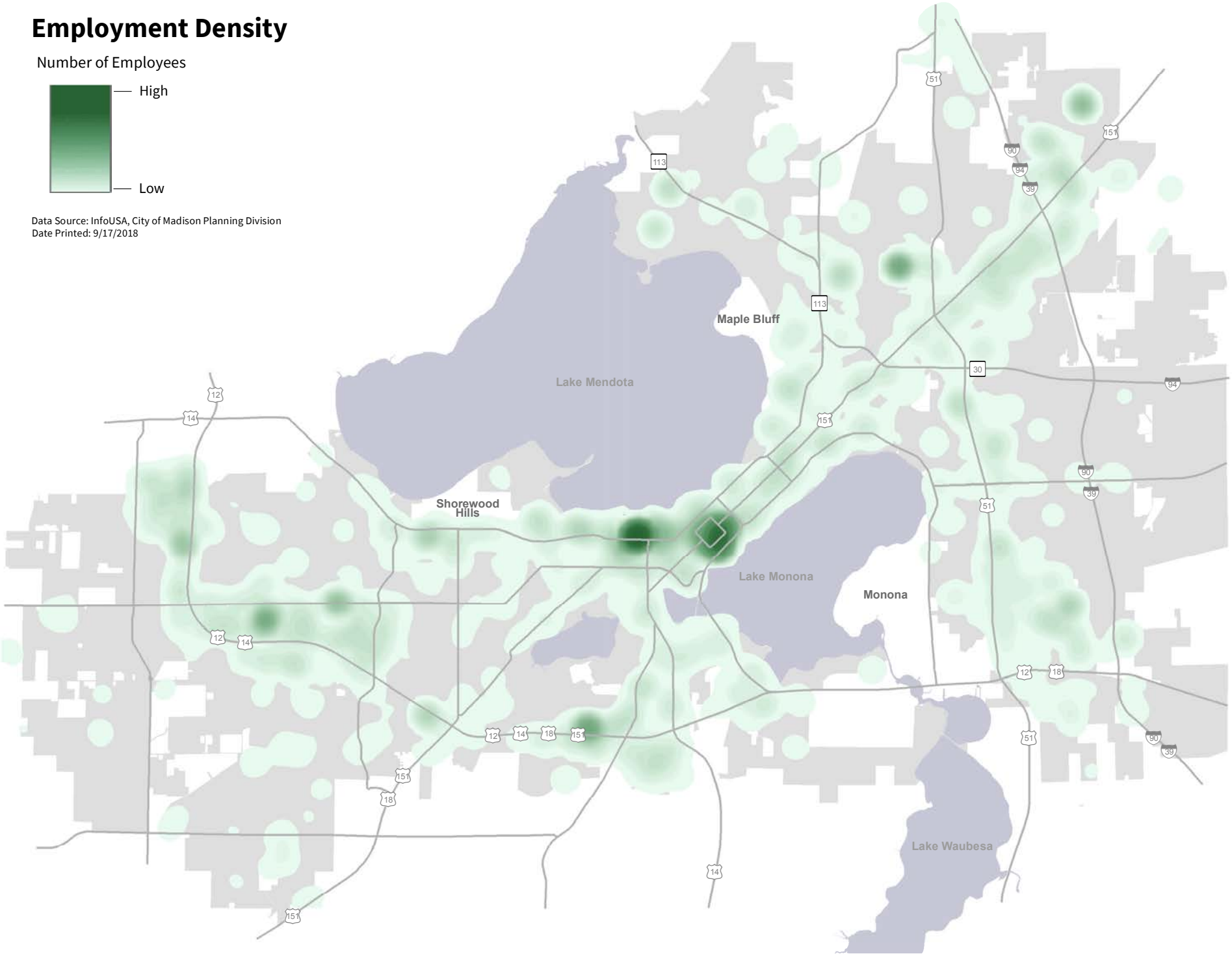
# Employment Density

Number of Employees

High

Low

Data Source: InfoUSA, City of Madison Planning Division
Date Printed: 9/17/2018



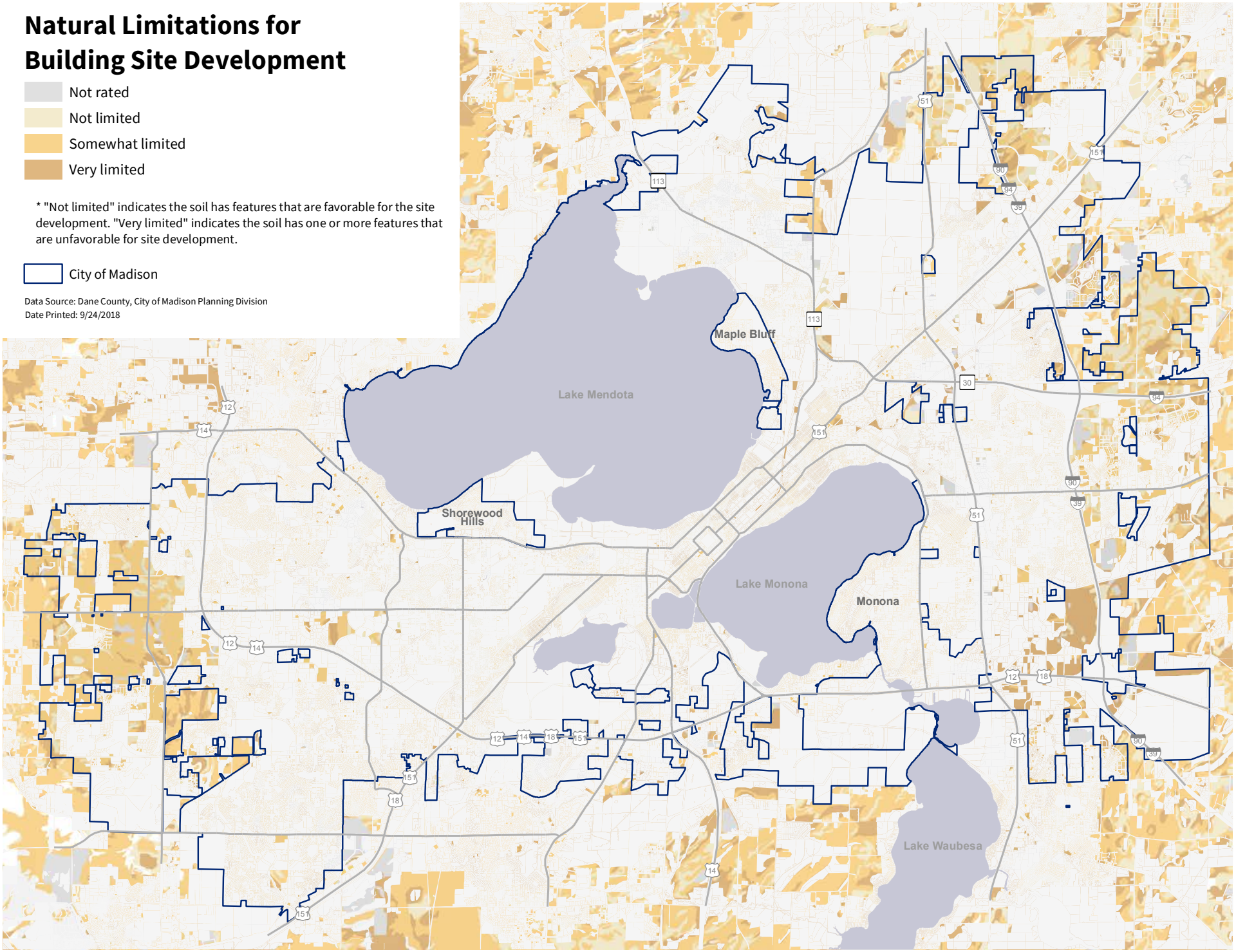
# Natural Limitations for Building Site Development

- Not rated
- Not limited
- Somewhat limited
- Very limited

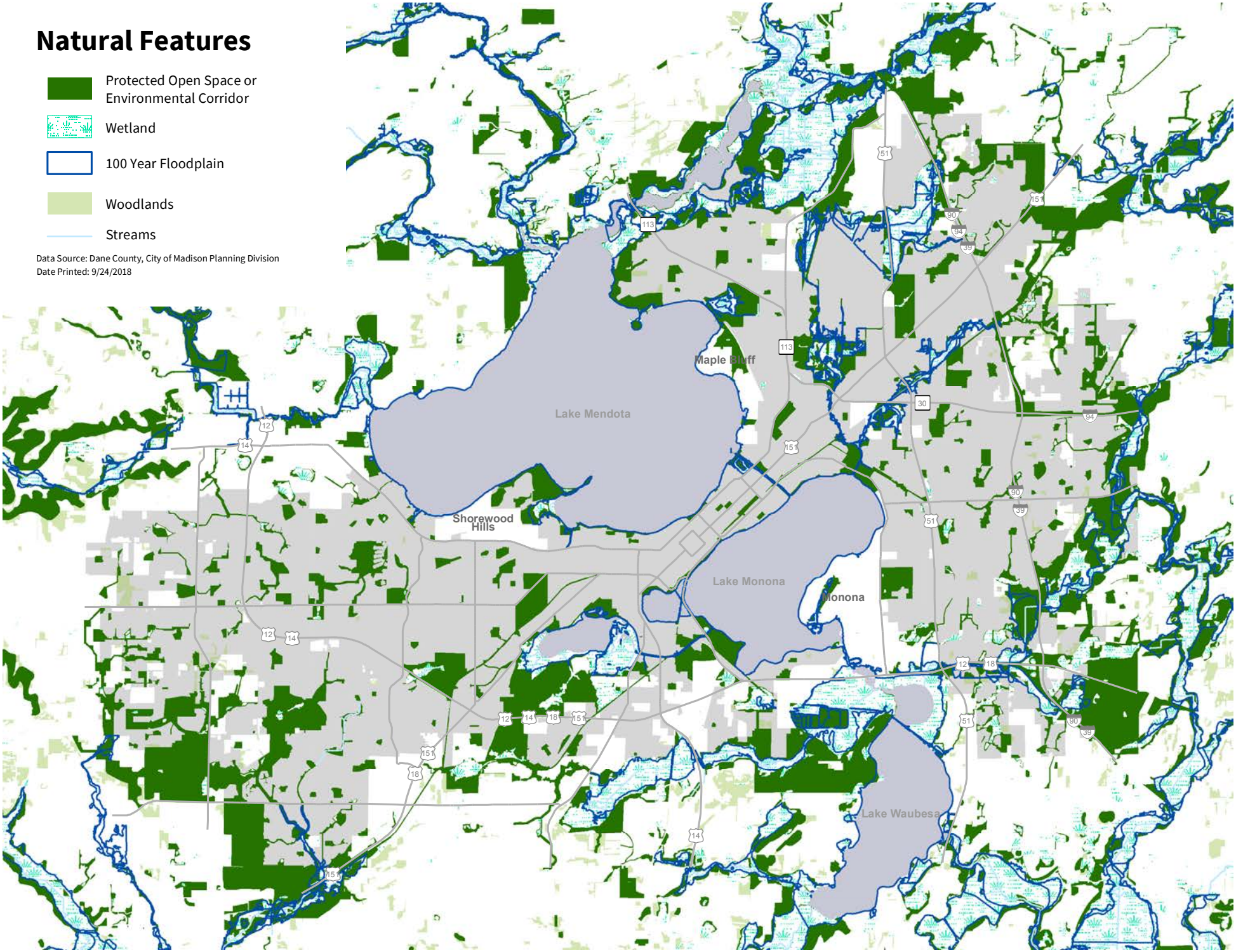
* "Not limited" indicates the soil has features that are favorable for the site development. "Very limited" indicates the soil has one or more features that are unfavorable for site development.

City of Madison

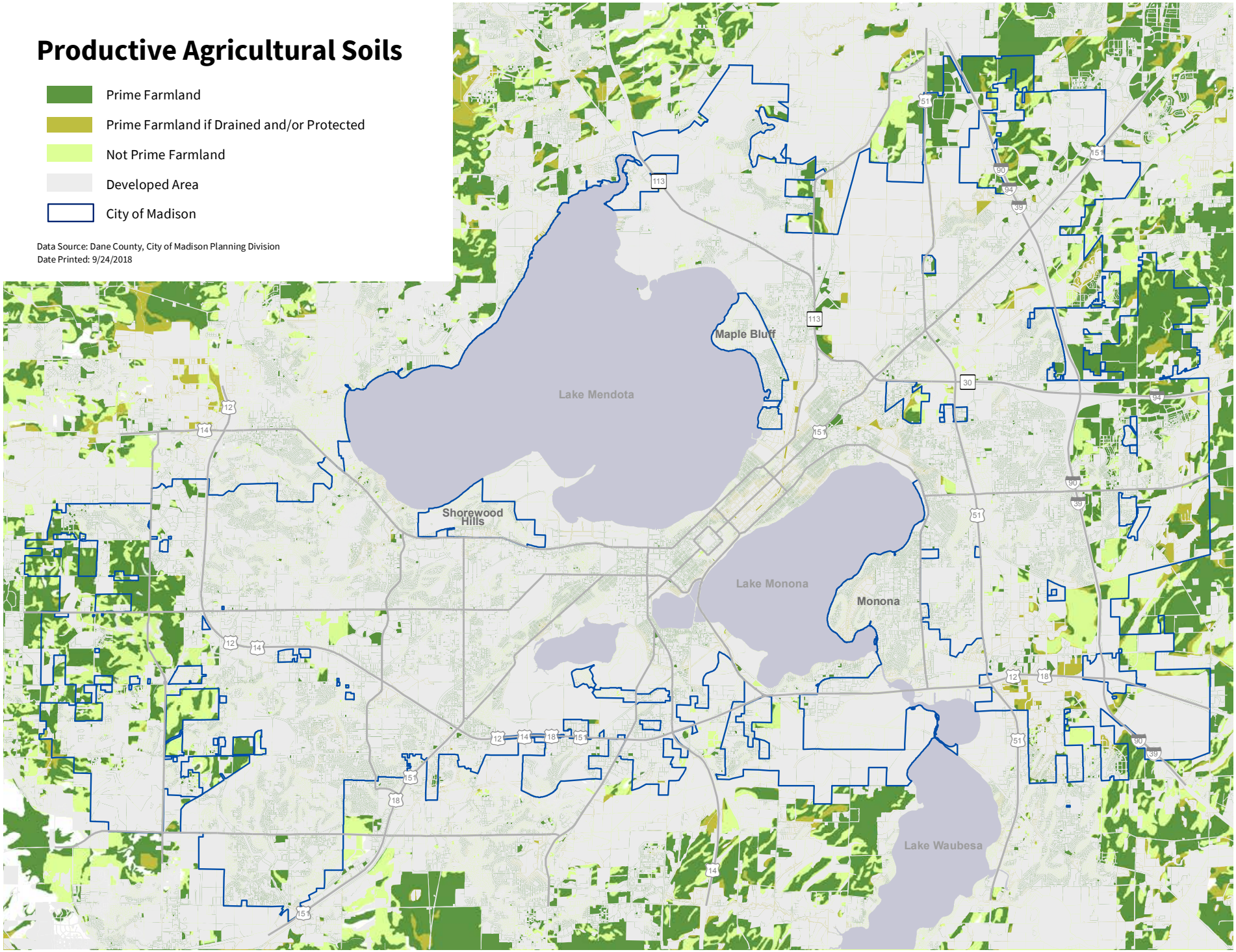
Data Source: Dane County, City of Madison Planning Division
Date Printed: 9/24/2018

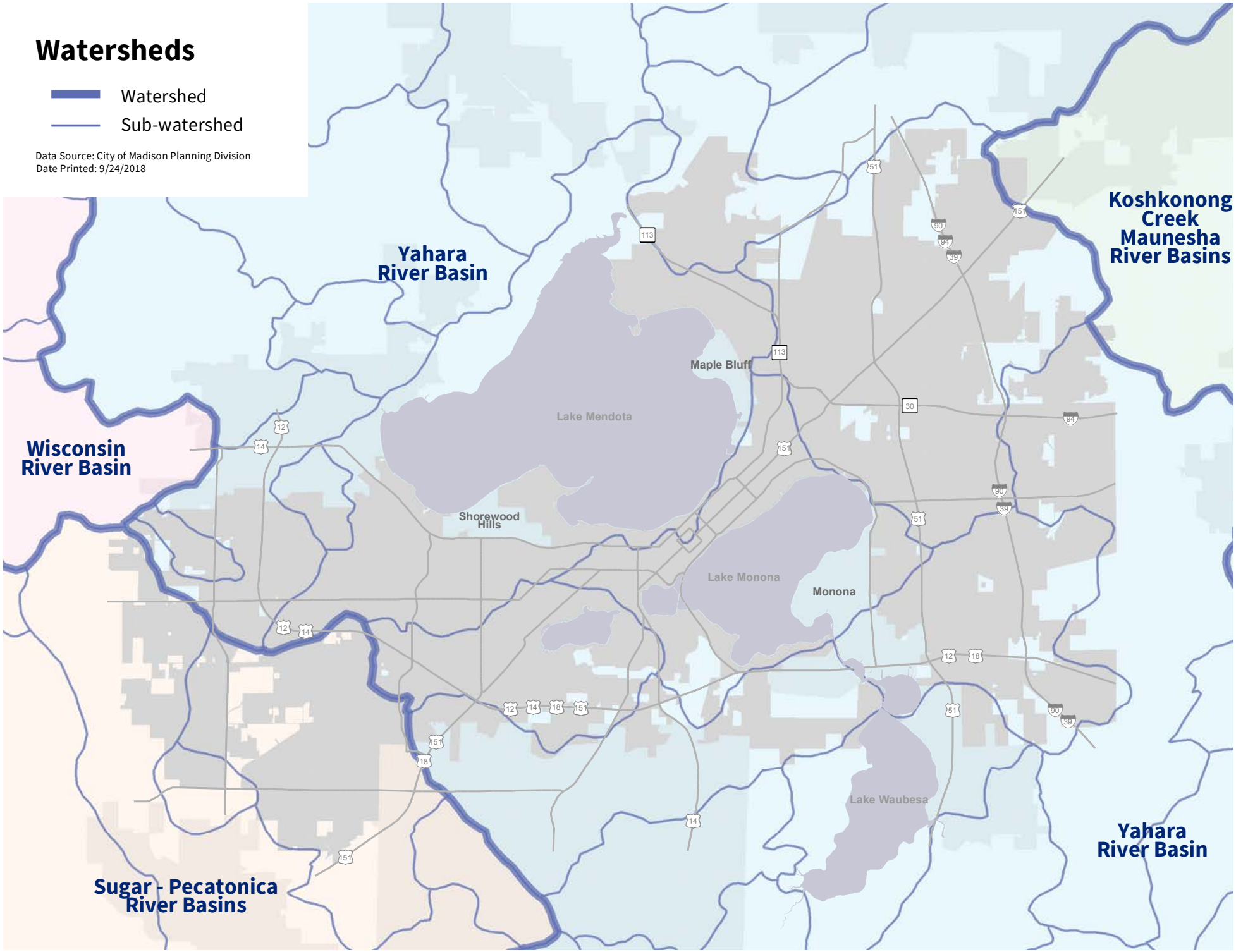


# Natural Features



# Productive Agricultural Soils




Watersheds
Watershed
Sub-watershed
Data Source: City of Madison Planning Division
Date Printed: 9/24/2018
Yahara River Basin
Koshkonong Creek Maunesha River Basins
Wisconsin River Basin
Maple Bluff
Lake Mendota
Shorewood Hills
Lake Monona
Monona
Lake Waubesa
Yahara River Basin
Sugar - Pecatonica River Basins

# Mineral Resources

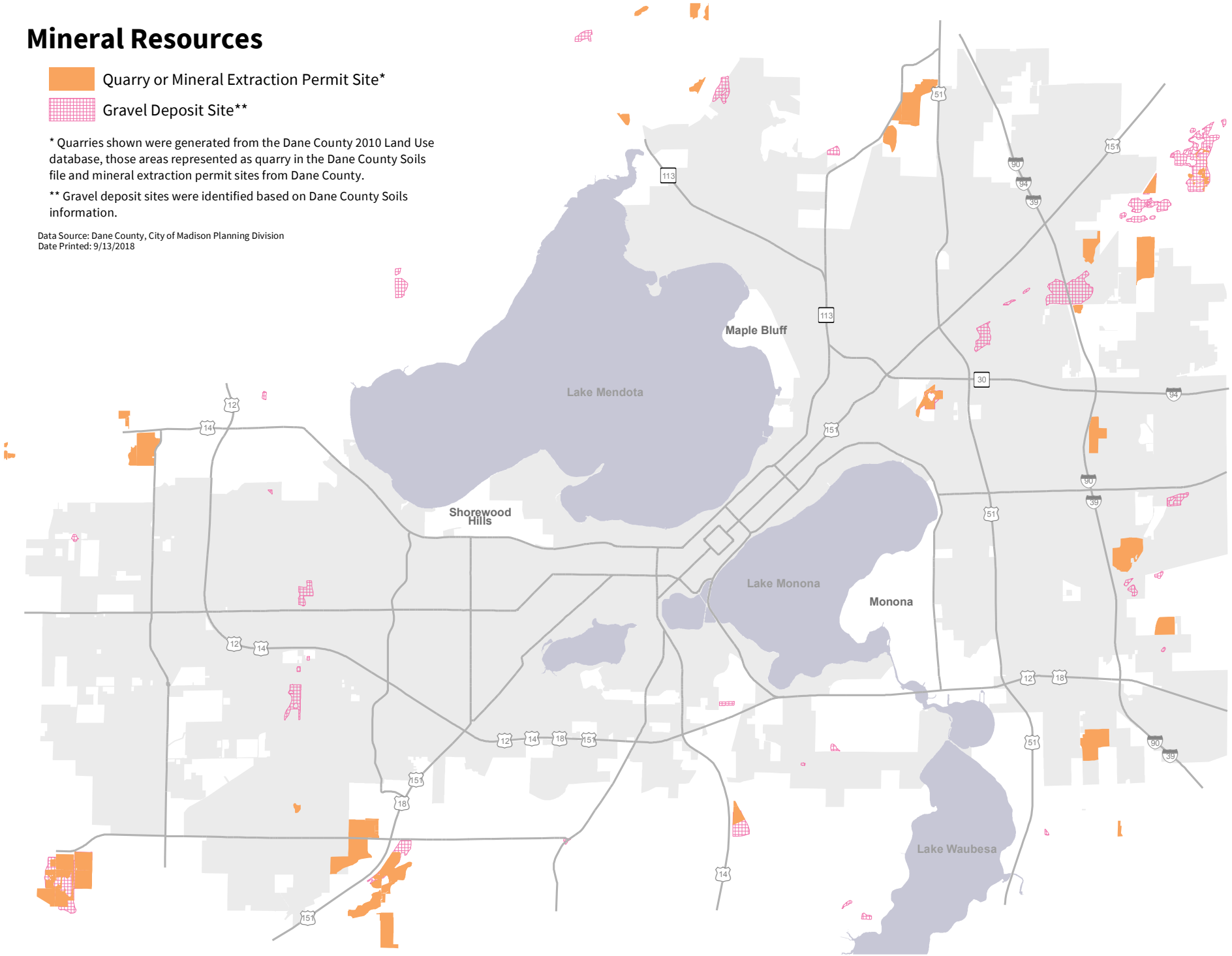
Quarry or Mineral Extraction Permit Site*

Gravel Deposit Site**

* Quarries shown were generated from the Dane County 2010 Land Use database, those areas represented as quarry in the Dane County Soils file and mineral extraction permit sites from Dane County.

** Gravel deposit sites were identified based on Dane County Soils information.

Data Source: Dane County, City of Madison Planning Division
Date Printed: 9/13/2018

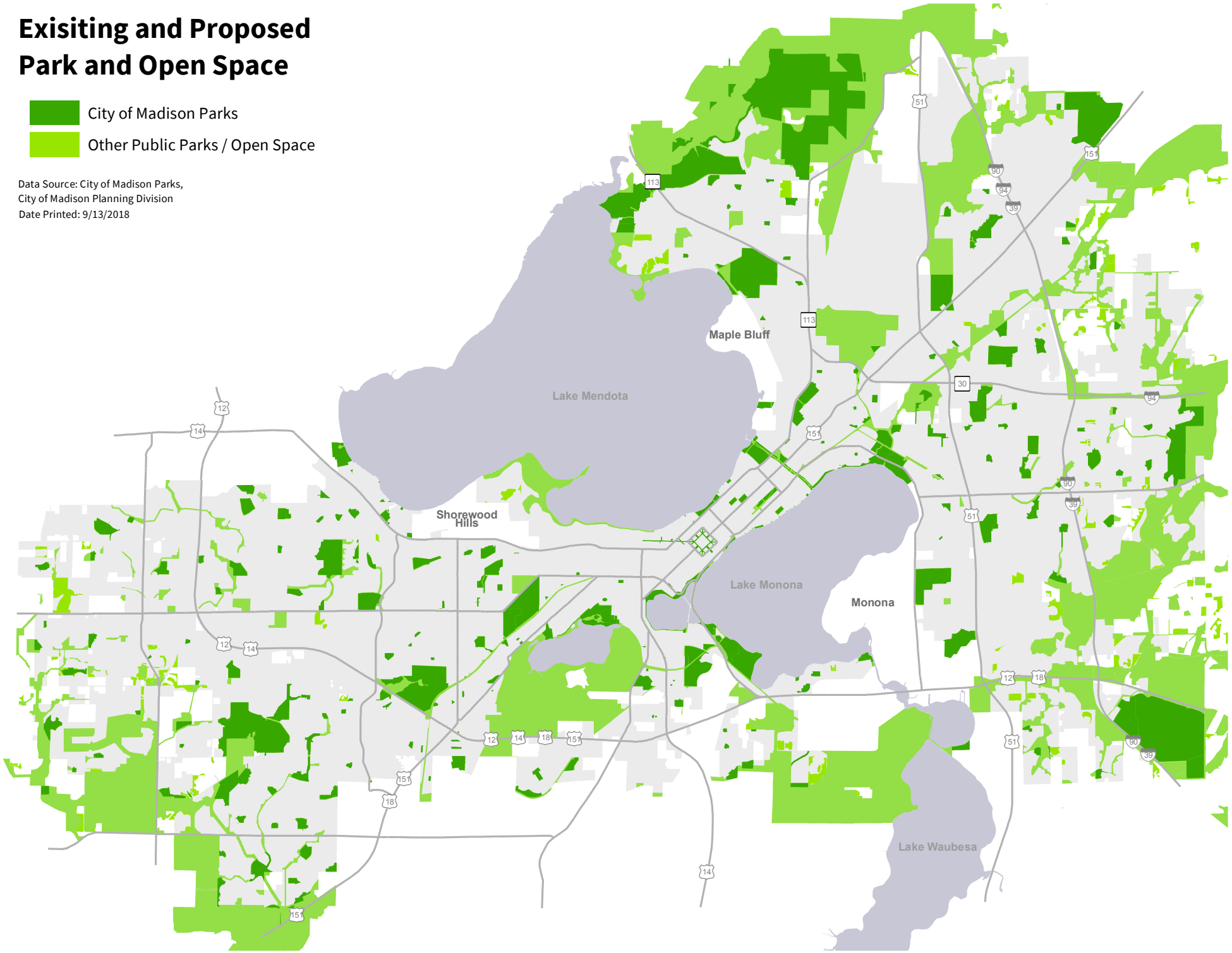


# Exisiting and Proposed Park and Open Space

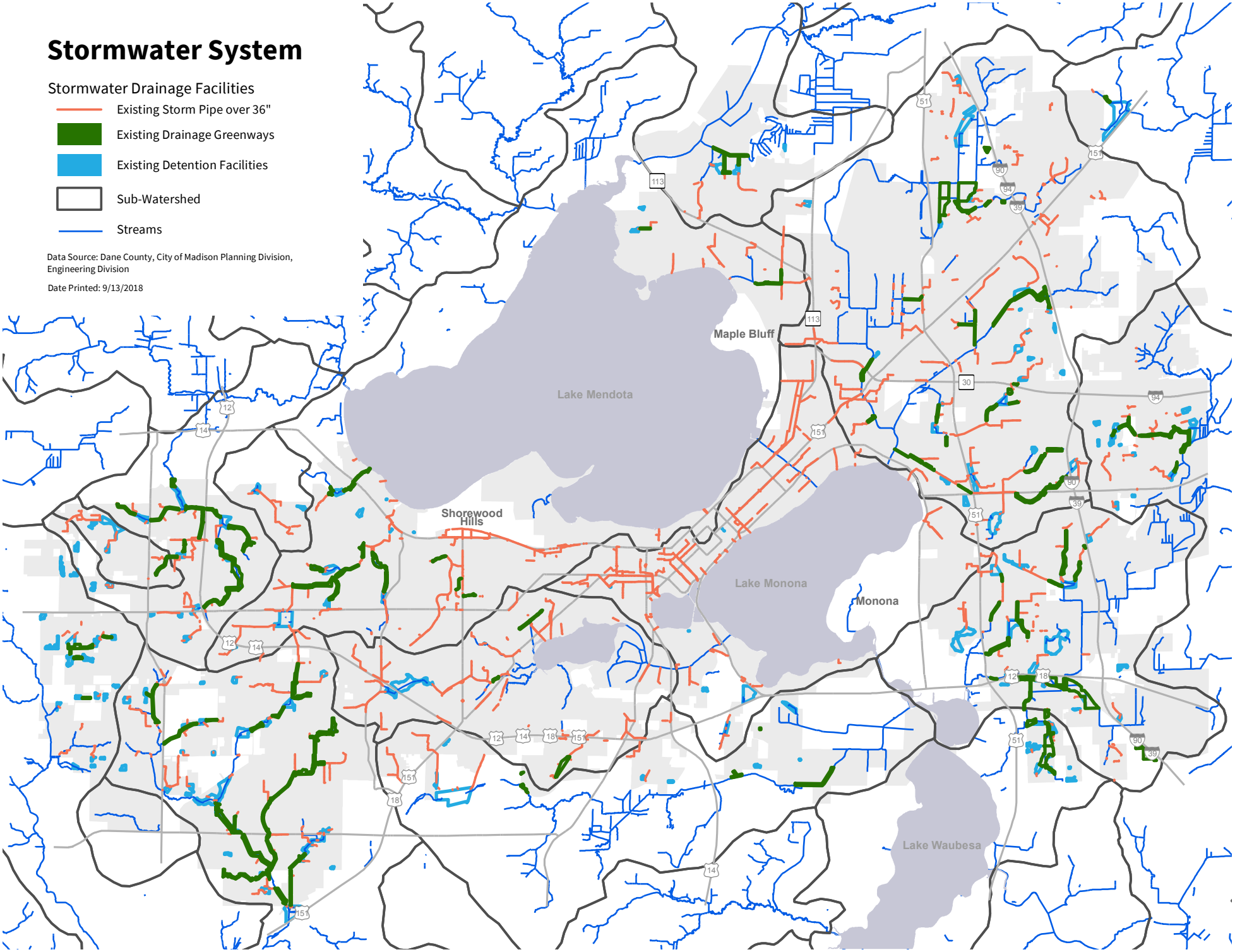
City of Madison Parks

Other Public Parks / Open Space

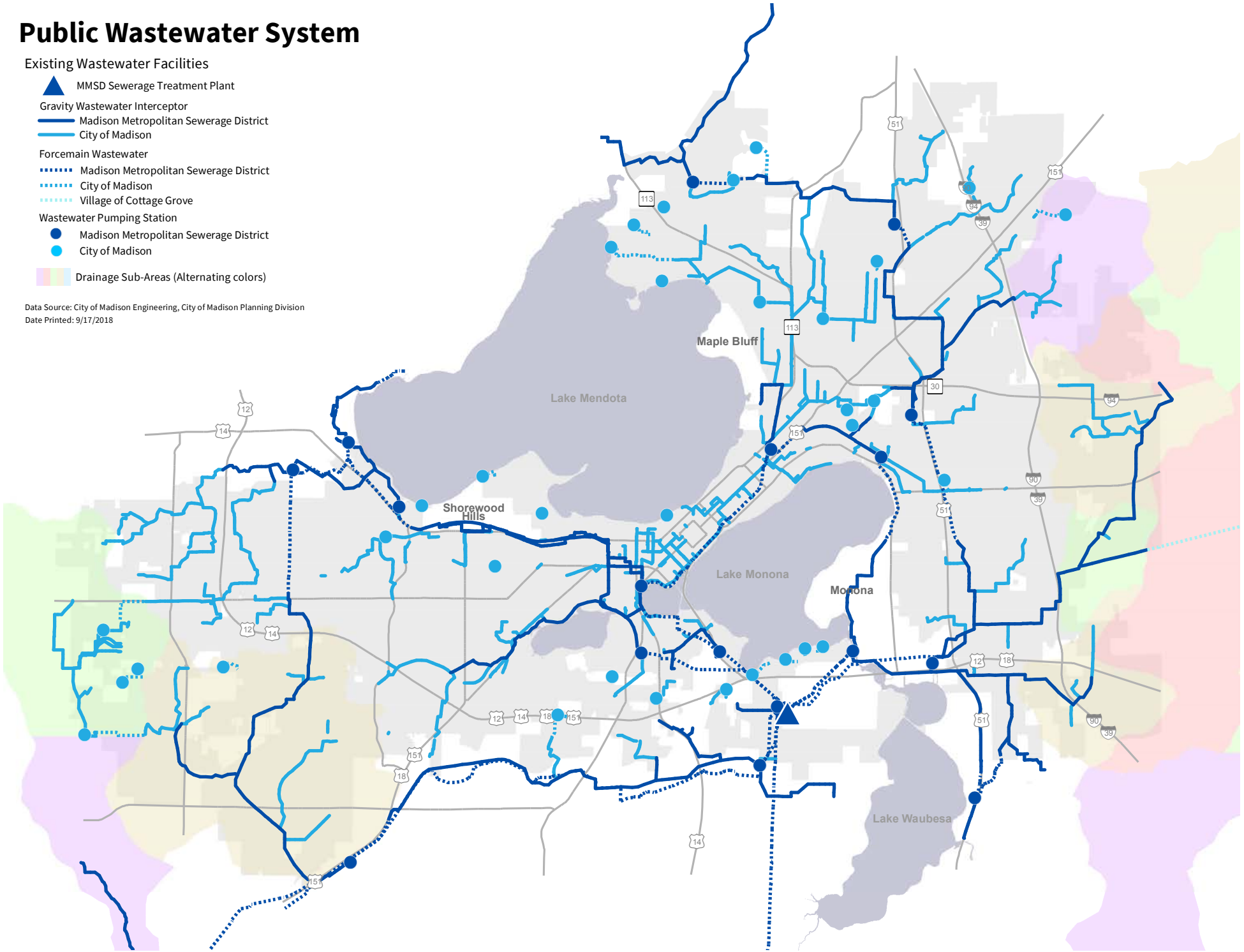
Data Source: City of Madison Parks,
City of Madison Planning Division
Date Printed: 9/13/2018



# Stormwater System



# Public Wastewater System



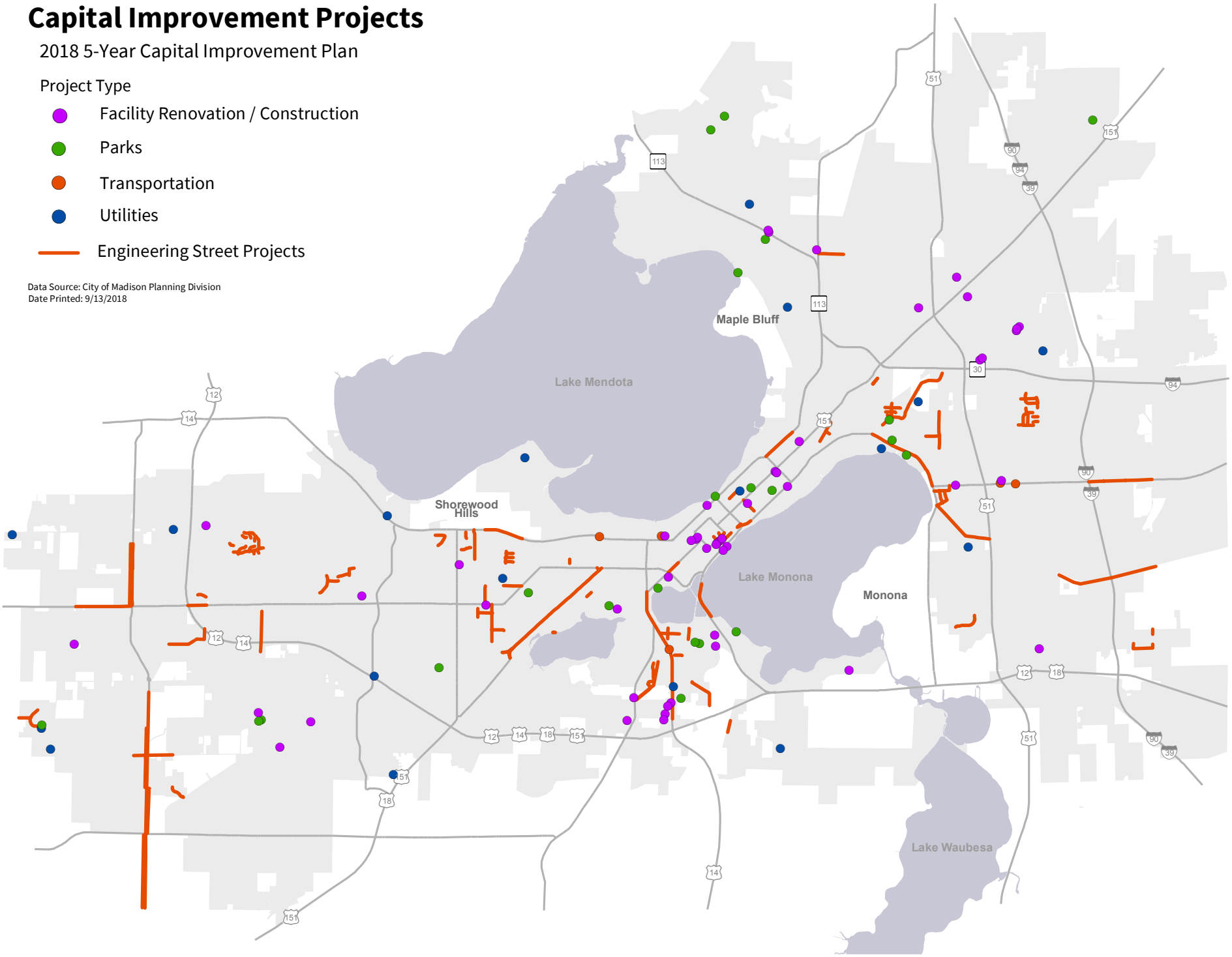
# Capital Improvement Projects

2018 5-Year Capital Improvement Plan

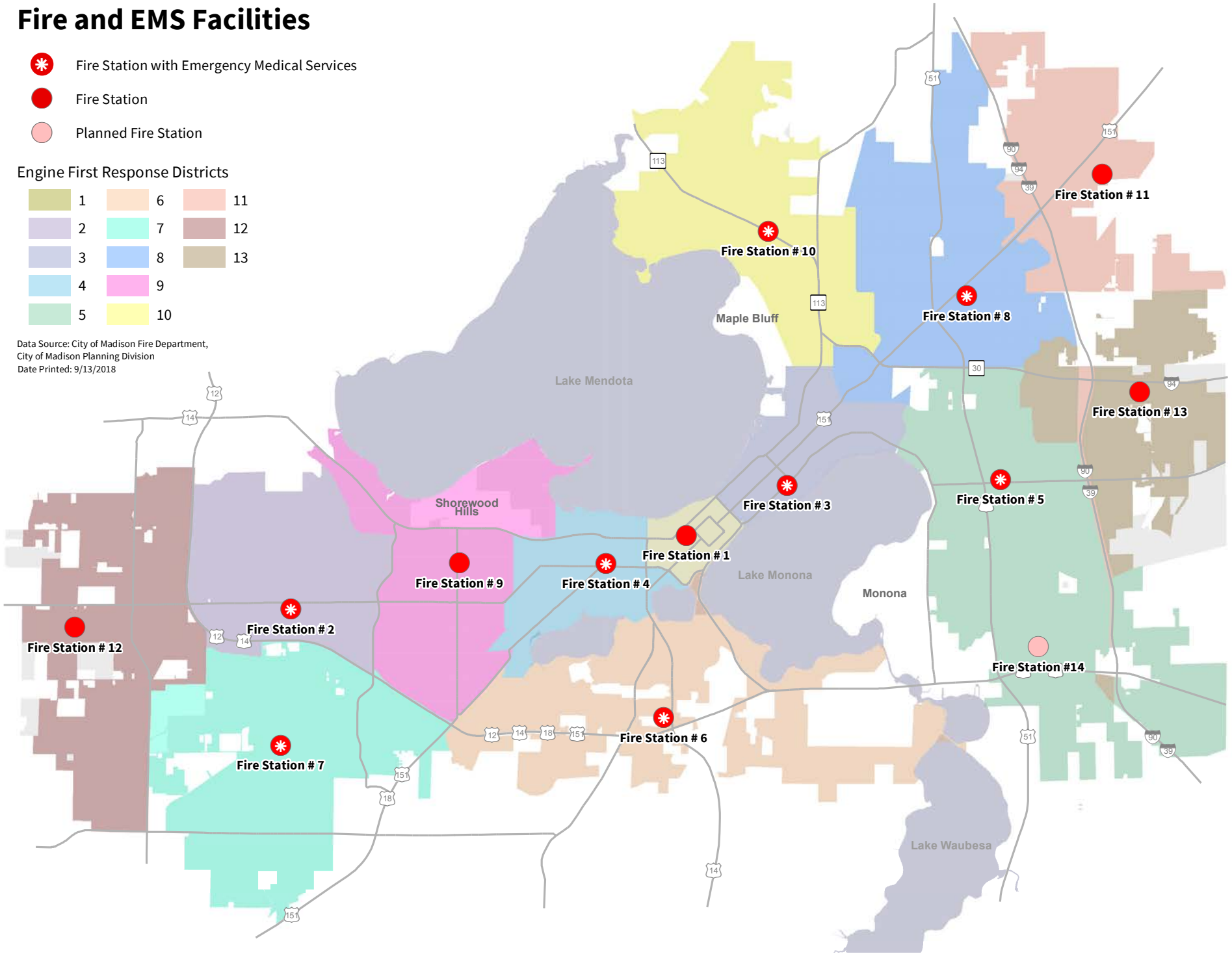
Project Type

- Facility Renovation / Construction
- Parks
- Transportation
- Utilities
- Engineering Street Projects

Data Source: City of Madison Planning Division
Date Printed: 9/13/2018



# Fire and EMS Facilities



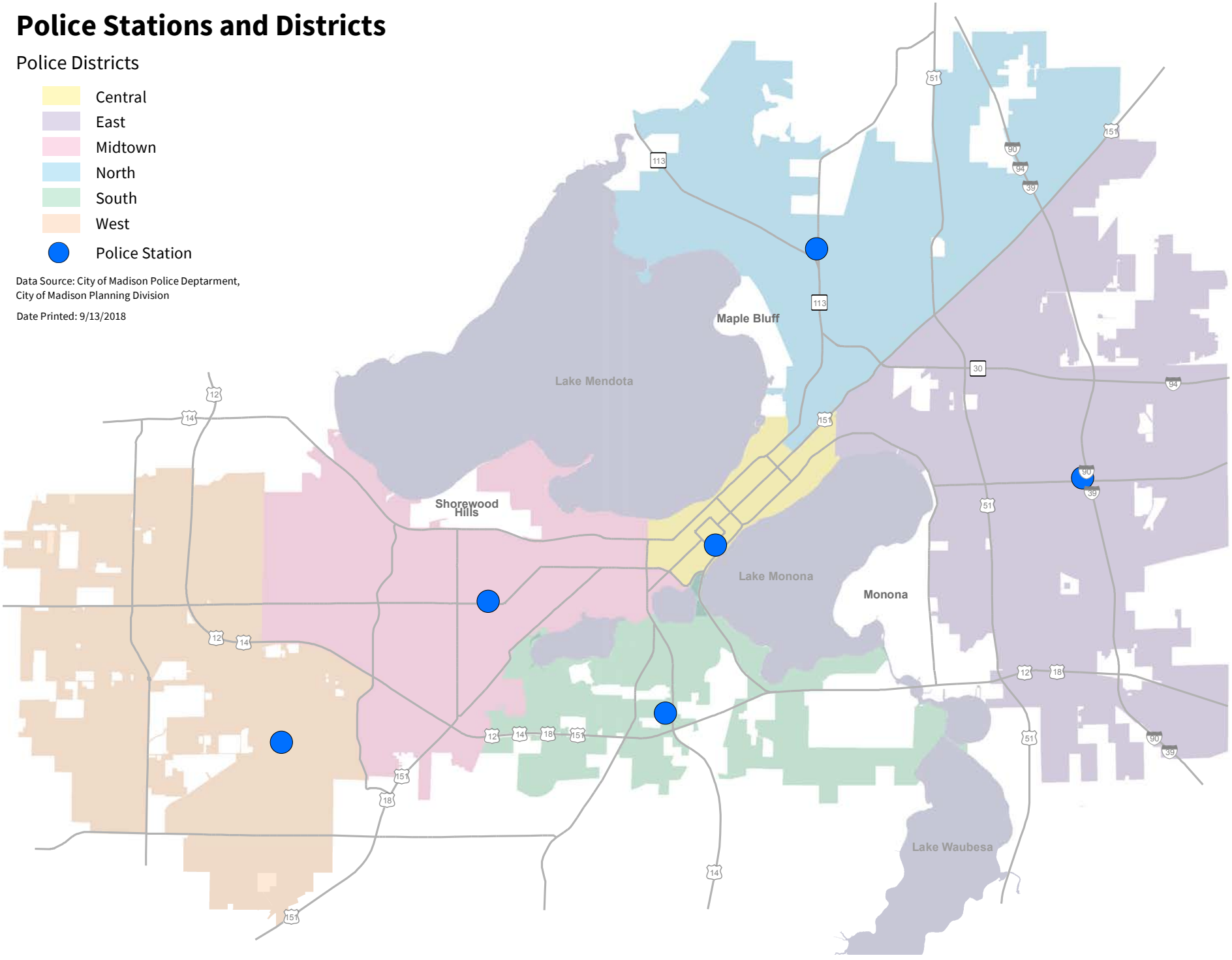
# Police Stations and Districts

Police Districts

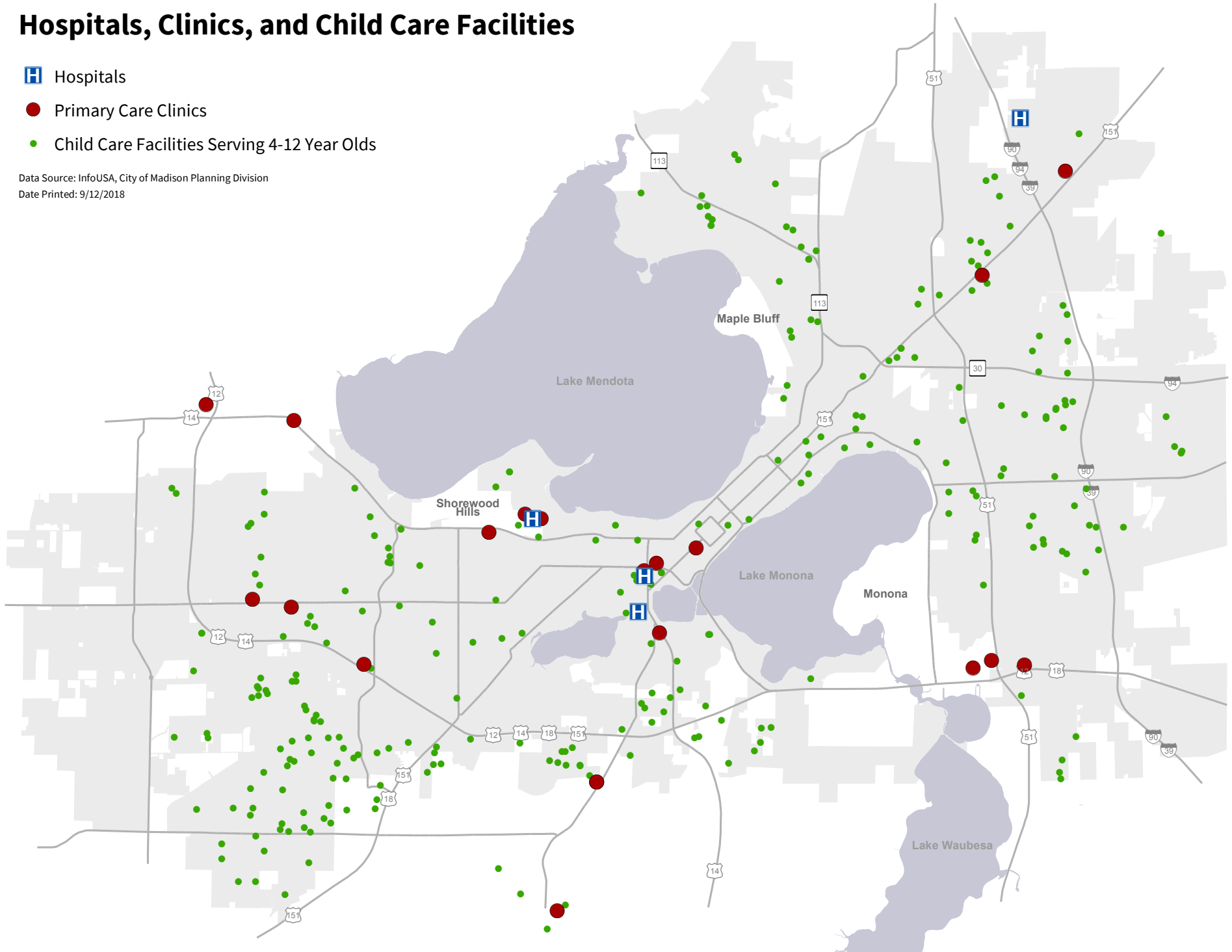
- Central
- East
- Midtown
- North
- South
- West
- Police Station

Data Source: City of Madison Police Deptarment, City of Madison Planning Division

Date Printed: 9/13/2018



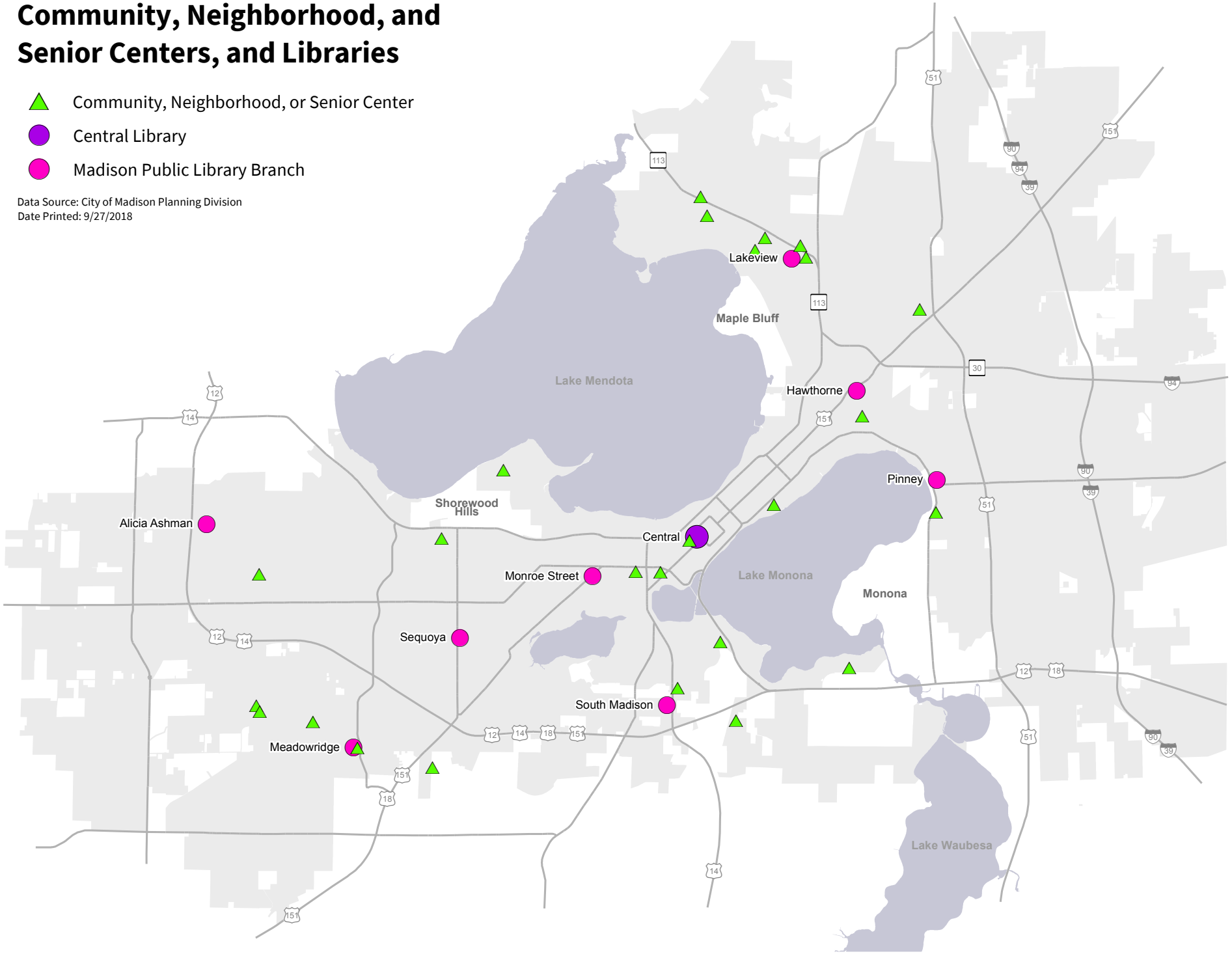
# Hospitals, Clinics, and Child Care Facilities



# Community, Neighborhood, and Senior Centers, and Libraries

- Community, Neighborhood, or Senior Center
- Central Library
- Madison Public Library Branch

Data Source: City of Madison Planning Division
Date Printed: 9/27/2018



APPENDIX E

# GLOSSARY OF TERMS

**Accessory Dwelling Unit** – A second dwelling unit contained within a single-family dwelling or within a detached building located on the same lot as a single-family dwelling. This definition includes accessory buildings constructed in connection with a private garage or a private garage converted into a dwelling unit.

**Activity Center** – An intensively developed area that is the visual and/or functional center of a neighborhood(s) or a district. Activity centers are typically comprised of a mix of land uses developed at a higher intensity than the surrounding area including residential, commercial, employment, civic, institutional, and parks and open space uses.

**Affordable Housing Fund** – A City of Madison program to provide loans and grants to for-profit and non-profit housing developers for the construction of new affordable rental housing.

**Agrihood** – A neighborhood with a working farm integrated into its urban or suburban surroundings that provides or sells its crops and other agricultural products to neighborhood residents and the surrounding community through farm stands, CSA shares, local retailers, and farmers' markets.

**Anaerobic Digester** – The built system where anaerobic digestion takes place. Anaerobic digestion is the natural process in which microorganisms break down natural materials. (Source: U.S. EPA)

**Artificial Intelligence (AI)** – A branch of computer science dealing with the simulation of intelligent behavior in computers or the capability of a machine to imitate intelligent human behavior. (Source: Merriam-Webster Dictionary)

**Autonomous Vehicles** – Vehicles that can drive themselves from a starting point to a predetermined destination in "autopilot" mode using various in-vehicle technologies and sensors, including adaptive cruise control, active steering (steer by wire), anti-lock braking systems (brake by wire), GPS navigation technology, lasers and radar. (Source: Gartner)

**Beach Exclosure** – A treatment system that pumps water from inside a closed off area of a beach through filtration, UV disinfection, then releases treated water back into the swimming area. (Source: INFOS Yahara Lakes)

**Biodiversity** – The variety of life in a particular habitat, including plants, trees, and animals. (Source: Oxford Dictionaries)

**Biogas** – A gaseous fuel, primarily methane, produced by the breakdown of organic matter in the absence of oxygen. (Sources: Dictionary.com, Wikipedia)

**Bus Rapid Transit (BRT)** – A high-capacity bus system with features that are similar to a light rail system, such as frequent service, dedicated bus lanes, off-board fare collection, fewer stops, and traffic signal priority. (Source: Institute for Transportation and Development Policy)

**Capital Area Regional Planning Commission (CARPC)** – One of nine commissions in Wisconsin established to coordinate planning and development among area municipalities. CARPC develops and promotes regional plans, provides objective information and professional planning services, and focuses local attention on issues of regional importance.

CARPC carries out land use planning and areawide water quality management planning for the greater Madison region. State statutes charge it with the duty of preparing and adopting a master plan for the physical development of the region. The Department of Natural Resources contracts with the Commission to maintain a continuing areawide water quality management planning process to manage, protect, and enhance the water resources of the region. (Source: CARPC)

**Capital Costs** – The capital costs are expenses associated with purchasing assets such as land, buildings, and equipment. (Source: Investopedia)

**Capital Budgeting** – A plan for what assets (such as land, buildings, construction, and equipment) will be purchased over a year or more time.

**City Expansion Areas** – Portions of the City that are expected to have future development, including housing, businesses, and more.

**City Fees** – Costs paid by developers or users of City services, such as building permits, development review fees, and parkland dedication fees.

**City Home Rehabilitation Loans** – Financial incentives to invest in housing units in need of rehabilitation, resulting in an improved housing stock.

**Competitive Advantage** – When a city, business, or other entity is able to produce a good or service at a lower price or in a more desirable fashion for customers or customers when compared to competing municipalities or region. (Source: Investopedia)

**Complete Street** – Streets that are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. (Source: Smart Growth America)

**Complete Neighborhood** – A neighborhood where a mix of residential and non-residential buildings are in close proximity to each other with multiple transportation options. This enables community members to reach destinations needed for daily living (like grocery stores, schools, banks, and more) quickly, conveniently, and safely.

**Connected Vehicle** – A car or other vehicle that communicates with the internet, infrastructure, and/or other vehicles. This can allow a car to estimate the cost of a trip, be alerted to traffic, and perform many other activities. (Source: Center for Advanced Automotive Technology)

**Context-Sensitive Design** – Development that is well-integrated into the character of the surrounding neighborhood, and including considerations such as height and bulk, setback from the street, width along the street frontage, and site infrastructure, among others.

**Development District** – Key areas identified to target employment and housing growth within mixed-use, transit-oriented development. These are areas where City eco-

nomic development tools can be aligned, removing barriers to quality development.

**Double Dollars Program** – A program for FoodShare (Wisconsin's version of the federal Supplemental Nutrition Assistance Program) users in Dane County, offering a dollar-for-dollar match for purchases at participating farmers' markets, farm stands, and food retail locations. The program is available year-round at sites throughout the Madison area.

**Easement** – A legal tool that grants one party the right to use property that another party owns and possesses. (Source: Investopedia, Merriam-Webster Dictionary)

**E-Commerce** – Activities that relate to the buying and selling of goods and services over the Internet. (Source: Merriam-Webster Dictionary)

**Edge Development** – Also known as greenfield development: development of vacant, agricultural, or forested land on the periphery of the city that has not been previously developed.

**Equitable Hiring Initiative** – A checklist and guide to ensure each hiring decision for the City of Madison is as equitable as possible.

**Equity Review** – A series of questions to ask to ensure that the impacts on all community members, especially communities of color and low-income populations, are being considered when making decisions.

**Extraterritorial Plat Approval Jurisdiction** – A statutory tool to review land divisions outside city and village boundaries in anticipation of urban development.

**Floor Area Ratio (FAR)** – The measurement of a building's floor area in relation to the size of the building's lot or parcel. FAR is an effective way to calculate the bulk or mass of building volume on a development site, and is often used in conjunction with other development standards such as building heights, lot coverage, and lot area to encourage a community's desired arrangement and form of development. (Source: Metropolitan Council (MN))

**Focus on Energy Program** – Wisconsin's energy efficiency and renewable resource program that partners 108 Wisconsin electric and natural gas utilities with homeowners, business owners, local governments, and others to install energy efficiency and renewable energy projects. (Source: Focus on Energy)

**Geothermal** – Heat derived below the earth's surface that is harnessed to generate clean, renewable energy. (Source: U.S. Department of Energy)

**Graywater** – Wastewater gathered from sinks, bathtubs, and washing machines (but not wastewater from toilets). (Source: APA, A Planners Dictionary)

**Greenfield Development** – Also known as edge development: development of vacant, agricultural, or forested land on the periphery of the city that has not been previously developed.

**Greenhouse Gas** – Gases that trap heat in the atmosphere. Common greenhouse gases include carbon dioxide, methane, nitrous oxide, and fluorinated gases. Livestock, heavy industry, and burning of fossil fuels are top producers of greenhouse gases. (Source: U.S. EPA)

**Green Infrastructure** – A method of treating, infiltrating, and/or reducing stormwater through the use of permeable pavement, bioswales, raingardens, green roofs, and other methods that retain or infiltrate water on-site, rather than send it into the storm sewer and on to streams and lakes.

**Green Roofs** – A roof covered with soil (or other growing media) and vegetation that retains, then evaporates water. (Source: U.S. EPA)

**Greenway** – Linear corridors of land and water and the natural, cultural, and recreational resources they link together. (Source: Massachusetts Office of Energy and Environmental Affairs)

**Gross Domestic Product (GDP)** – A major indicator used to gauge the health of a region or country's economy. It represents the total dollar value of all goods and services produced over a specific time period, often referred to as the size of the economy. (Source: Investopedia)

**Healthy Retail Access Program** – A program created by Madison's Food Policy Council that provides funds for healthy retail projects that aim to improve access to affordable, healthy, and culturally appropriate food and retail within underserved areas.

**Historic District** – A significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. A local, state, or the federal government can officially recognize districts. (Source: U.S. National Park Service)

**Historic Landmark, Local** – Any improvement which has architectural, cultural, or historic character or value reflecting the development, heritage or cultural characteristics of the City, state, or nation; or land of historic significance due to a substantial value in tracing the history of humankind, or upon which an historic event has occurred, and which has been designated as a landmark.

**Historic Preservation Plan** – A plan to provide a framework for future preservation that goes beyond the City's current, primarily regulatory, role. It will recommend strategies to more effectively integrate historic preservation into public policy, explore zoning and land use tools, capitalize on economic development and financial incentives, and encourage heritage tourism.

**Human-Scaled Design** – The perceived size of a building relative to a human being. A building is considered to have good human scale if there is an expression of human activity or use that indicates the building's size. For example, traditionally sized doors, windows, and balconies are elements that respond to the size of the human body, so these elements in a building indicate the building's overall size. (Source: Burien, WA)

**Infill Development** – Development of vacant or underused lots that are surrounded by developed areas.

**Invasive Species** – A living organism that is not native to an ecosystem, spreads/reproduces rapidly, and causes harm to the environment, the economy, or human health.

**Jobs TIF Program** – The use of tax increment financing to provide assistance to employers for the purpose of creating or retaining jobs within the City.

**Leapfrog Development** – New development separated from existing development by substantial vacant or agricultural land.

**LEED** – An acronym for "Leadership in Energy and Environmental Design." LEED is a certification system administered by the United States Green Building Council (USGBC) for buildings that integrate environmentally friendly components and construction techniques to improve things like energy efficiency and air quality. Buildings receive points based on the number and quality of environmentally friendly features. There are four levels of LEED, based on the number of points earned: certified, silver, gold, and platinum. (Source: USGBC)

**Legacy Phosphorus** – Accumulation of phosphorus in soil or sediment, generally due to the over-application of fertilizers on agricultural fields.

**Living Wage** – A wage at which a person who works one full-time job can afford the basics for modern living, including food, shelter, utilities, transportation, and health care.

**Living Wall** – Also known as green walls: self-sufficient vertical gardens that are attached to the exterior or interior of a building. (Source: Green over Grey - Living Walls and Design Inc.)

**MadiSUN** – A City of Madison initiative, administered by local nonprofit RENEW Wisconsin, to expand solar energy installations on homes and commercial properties. MadiSUN offers group buys of rooftop solar for homeowners, a solar loan program for residents, and rebates for businesses. (Source: MadiSUN)

**Master Plan for City Facilities** – A document stating goals and actions to maintain and update City buildings and infrastructure.

**Missing Middle Housing** – A range of smaller multi-unit or clustered housing types compatible in scale with single-family homes. (Source: Opticos Design, Inc.)

**Natural Soil Amendments** – Substances used to improve the physical nature of soil by adding nutrients to the soil and helping retain moisture. (Source: Lowes)

**Neighborhood Development Plan (NDP)** – A plan prepared for largely undeveloped land on the city's edge. NDPs are adopted as supplements of the Comprehensive Plan and include recommendations for land use, transportation, parks and open space, and utilities.

**Neighborhood Plan** – A plan prepared for an already-developed area of the city that includes recommendations for land use, urban design, transportation, parks, placemaking, and other improvements/investments/changes to a given area. Neighborhood plans can encompass more than one neighborhood, and are generally adopted as supplements to the Comprehensive Plan.

**Neighborhood Police Officers** – Police Officers that are assigned to specific areas of the City. The neighborhoods are geographically small, and typically have a high need for police services.

**Neighborhood Resource Teams (NRTs)** – A citywide effort to coordinate and improve the delivery of City services to Madison's neighborhoods. NRTs provide a regular forum for City employees to meet, discuss, and support each other's efforts in delivering excellent City services. NRT membership can include alderpersons, City staff and non-City staff participants.

**Neighborhood-Scaled Schools** – Schools that are designed and built to become a center for interaction and are embedded within a neighborhood, not isolated on large sites surrounded by parking and large swaths of underutilized or unprogrammed greenspace.

**Operating Costs** – Expenses associated with the maintenance and administration of a business or government on a day-to-day basis, such as salaries.(Source: Investopedia)

**Percent for the Arts** – A requirement that 1% of public building project costs, for projects with an adopted budget of $5 million or more, be used for public art.

**Permanent Supportive Housing** – Housing that has social services and counseling programs to assist people with housing, mental health, drug, or other challenges, in the transition to self-sufficiency through gaining a stable income and other skills. (Source: APA, A Planners Dictionary)

**Phytoremediation** – The treatment of pollutants or waste (as in contaminated soil or groundwater) by the use of green plants that remove, degrade, or stabilize the undesirable substances (such as toxic metals). (Source: Merriam-Webster Dictionary)

**Placemaking** – Creation of an environment that fosters community, stimulates interaction, encourages entrepreneurship, generates innovation, and nurtures humanity. (Source: Project for Public Spaces)

**Pollinators** – Animals that assist plants in their reproduction. Species include ants, bats, bees, beetles, birds, butterflies, flies, moths, wasps, and others. (Source: USDA Forest Service)

**Property Assessed Clean Energy (PACE)** – Financing for energy improvements that addresses some of the economic barriers that have prevented the widespread adoption of home energy upgrades, including access to capital and efficient financing mechanisms for upgrades to existing homes. (Source: U.S. Department of Energy)

**Public Housing** – Decent and safe rental housing for low-income families, the elderly, and persons with disabilities that is owned by a government or government agency. Public housing comes in all sizes and types, from scattered single-family houses to high-rise apartments. (Source: HUD)

**Rain Gardens** – Gardens are specially designed to collect and infiltrate stormwater from impervious areas such as roofs, driveways, and heavily compacted lawns.

**Recyclopedia** – An annual City guide that provides information on trash collection, recycling "dos and don'ts," large item collection, and more.

**Redevelopment** – Construction of a new building where a building already exists.

**Regional Agency** – An organization whose interest extends beyond municipal boundaries.

**Regional Transit Authority (RTA)** – An entity created for providing organized, effective public transportation across municipal boundaries.

**Report a Problem** – A City program and website where community members can provide information on non-emergency issues typically related to public safety, including pothole concerns, snow removal, animal control, and stolen bicycles.

**Resident Panels** – A cornerstone of the Imagine Madison public engagement process. Formed through a partnership between the City of Madison and community-based organizations that have connections to Madison's communities of color, lower-income residents, and other residents whose voices are often missing from planning processes, the Resident Panels meant that the voices heard in the Imagine Madison process to be more representative of the city's population.

**Results Madison** – An effort by the City of Madison to coordinate actions as the City works on implementing various services. Results Madison also gathers and analyzes data to help provide information that can be used by City service providers.

**Road Diet** – Reducing the number of lanes dedicated for car travel on an underutilized road in favor of other features, such as bicycle lanes, turn lanes, or wider terraces.

**SEED Program** – A City of Madison program administered by the Madison Food Policy Council that provides grants to improve the local food system and make food more accessible to Madison residents.

**Sense of Place** – The characteristics of a location that make it readily recognizable as being unique and different from its surroundings and that provides a feeling of belonging to or being identified with that particular place. (Source: Scottsdale, AZ)

**Shared Solar** – A business model that allows multiple participants to benefit directly from the energy produced by a solar array. Participants typically own or lease a system or portion of a system or purchase kilowatt-hour blocks of renewable energy generation. (Source: U.S. Department of Energy)

**Social Practice Artists** – Artists who focus on social engagement, inviting collaboration with individuals, communities, and institutions in a dialog about community issues.

**Step Backs** – A building design where there are fewer stories closer to the lot line (for example, near sidewalks and adjacent properties) than the rest of the building.

**Stormwater** – Untreated runoff from rainfall and snowmelt. It flows across impervious surfaces, through fields and over construction sites, crossing municipal boundaries and can carry contaminants to lakes and streams. (Source: Dane County Office of Lakes & Watersheds)

**Sub-Area Plan** – A plan that covers an area smaller than the city as a whole. An umbrella term that encompasses "Neighborhood Development Plans," "Neighborhood Plans," and other types of plans, such as corridor plans (for major streets and the properties surrounding them) and special area plans (generally small areas of a few blocks).

**Subdivision Ordinance** – An ordinance adopted by the City Council that sets standards for the division of land/property.

**Sustainable Agriculture** – An integrated system of plant and animal production practices having a site-specific application that will, over the long term: satisfy human food and fiber needs; enhance environmental quality and the natural resource base upon which the agricultural economy depends; make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls; sustain the economic viability of farm operations; and enhance the quality of life for farmers and society as a whole. (Source: USDA)

**Tax Increment Financing (TIF)** – A governmental finance tool to provide funds to construct public infrastructure, promote development opportunities, and expand the tax base.

**Terrace** – The space between the sidewalk and the curb along a street.

**Traditional Neighborhood Development (TND)** – Development of a complete neighborhood using traditional town planning principles, such as provision of a range of housing types, a network of connected streets, a variety of public spaces, and a variety of destinations (such as schools, shops, offices, and places of worship) within walking distance.

**Transit-Oriented Development (TOD)** – Compact, walkable, pedestrian-oriented, mixed-use development that is centered around a high-quality transit line or system to encourage transit use and reduce car traffic generated by development.

**Transportation Demand Management (TDM)** – A program of information, encouragement, and incentives provided by companies and local or regional governments to help people know about and use transportation options beyond single-occupancy vehicles. It is used to optimize mobility by publicizing non-car options and to counterbalance the built-in government subsidization of parking and roads. (Source: Mobility Lab)

**Transportation Management Association (TMA)** – A nonprofit, member-controlled organization that provides transportation services in a particular area, such as a commercial district, mall, medical center or industrial park. TMAs are generally public-private partnerships, consisting primarily of area businesses with local government support. (Source: TDM Encyclopedia)

**Tree Canopy** – The layer of leaves, branches, and stems of trees that obscure the ground when viewed from above. (Source: Center for Watershed Protection)

**Tier 1 Sidewalks** – Sidewalks that should be added along streets that are close to schools, transit routes, or other features that attract pedestrians.

**Tuj Lub** – A top spinning game that is popular in the Hmong community and is played on a specialized court.

**Underrepresented Groups** – Groups of people with a common race, ethnicity, immigration status, age, income level, gender identity, or sexual orientation who have not typically participated in City decision-making processes commensurate with the proportion of the population they comprise. These groups have often experienced discrimination or marginalization based on their identity.

**Urban Agriculture** – The production of food for personal consumption, market sale, donation, or educational purposes within cities and suburbs.

**Urban Biodiversity** – The variety and variability among living organisms found in a city and the ecological systems in which they occur. (Source: "Urban Biodiversity and Climate Change" by Jose Antonio Puppim de Oliveira, Christopher N. H. Doll, Raquel Moreno-Peñaranda, and Osman Balaban)

**Water Quality** – The condition of water, including its chemical, physical, and biological characteristics with respect to its expected use (i.e., drinking, swimming, fishing, etc.). (Source: Florida Brooks National Marine Sanctuary, Key West, Florida.)

**Watershed** – An area of land that drains all the streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel. (Source: USGS)

**Wisconsin Shares** – A program that supports low-income working families by subsidizing a portion of the cost of quality child care while the parents or caregivers are working or participating in another approved activity. Wisconsin Shares is implemented locally by counties and tribes. (Source: Wisconsin Department of Children and Families)

**YoungStar Rating** – Wisconsin's child care quality rating and improvement system. YoungStar Rating objectively measures child care quality, giving parents an easy way to compare child care options. YoungStar also supports child care providers with tools and training. (Source: Wisconsin Department of Children and Families)

**Zones of Contribution (for Municipal Wells)** – The entire land surface area over which water can infiltrate and move toward a well. (Source: WI DNR)

**Zoning Code** – An ordinance that regulates land use, lot size, building placement, building height, and other aspects of the development of land.

APPENDIX F

# DATA REFERENCES/PHOTO CREDITS

1: Low Estimates from Wisconsin DOA Demographic Services Lab Population Projections. High Estimates based on 5-year growth trend according to U.S. Census Bureau; Middle Estimate based on average of 5-, 15-, and 25-year growth rates from U.S. Census and Wisconsin DOA and Wisconsin DOA Projections through 2040. Sources: Decennial U.S. Census; U.S. Census Bureau Annual Population Estimates; U.S. Census Bureau ACS 1-Year Table DP05; Wisconsin DOA Annual Population Estimates; Wisconsin DOA Demographic Services Lab Population Projections; City of Madison Planning Division

2: ACS 2014 1-Year Table DP03

3: ACS 2006 1-Year Table DP5; ACS 2014 1-Year Table DP05

4: ACS 2014 5-Year Tables S1501, C15002B, D, H, I

5: ACS 2006 1-Year Table DP05; ACS 2014 1-Year Table DP05; ACS 2014 1-Year Tables B01001B, D, H, & I

6: ACS 2014 5-Year Tables B08006 & B08105H

7: ACS 2014 1-Year Table DP04

8: HUD 2009-2013 Comprehensive Housing Affordability Strategy - Table 9

9: ACS 2007 1-Year Table B25007; ACS 2015 1-Year Table B25007

10: ACS 2014 5-Year Table DP04, City Building Permits 2010-2015

11: MG&E Multifamily Rental Vacancy Rates

12: City Assessor, Planning Division

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28: According to www.gasbuddy.com, gas prices have fluctuated widely for the Madison area from 2008 through 2018, varying from about $4.10 per gallon to about $1.50 per gallon. These calculations assume a price of $3.62 per gallon.

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