2018-2038
STUDENT ENROLLMENT
PROJECTIONS UPDATE

REPORT FOR:

THE MADISON METROPOLITAN SCHOOL DISTRICT

APRIL 30, 2019

Madison Metropolitan School District

Final Report

for the

Madison Metropolitan School District

regarding

Student Enrollment Projections Update 2018-2038

APRIL 30, 2019

VANDEWALLE & ASSOCIATES, INC.
Madison, Wisconsin

Acknowledgements:

Executive Summary

<u>Study Purpose</u>

As part of its long-range facility planning efforts, MMSD requires a refined approach for predicting enrollment arising from new development and changes in enrollment within existing developed areas. As urban development approaches the outer edges of the District's boundary, and as redevelopment becomes an increasingly important source of new housing, these issues are critical.

<u>Study Approach</u>

The study period examined MMSD enrollment through the 2037-2038 school year in five-year segments. The projection model applied current MMSD student enrollment rates to 26 specific residential building forms, ranging from single-family homes to downtown redevelopment mixed-use buildings. Using these "residential typologies", future development was mapped on more than 300 redevelopment locations and more than 2,000 greenfield locations on the periphery of the District.

Development locations, typologies, and timing were confirmed by planning department staff in Madison and Fitchburg. The model also factored in the continued decline in students per household at a rate of about 1% for every five-year period, consistent with official projections. The Development Scenario in this report was patterned on a time-adjusted methodology most similar to Scenario 3 in the 2016 Student Enrollment Projections report, which is based on an extrapolation of actual population growth in MMSD between 2010 and 2017 and was identified as most likely among three Scenarios that were originally developed.

<u>Key Changes in Enrollment Projections since 2016</u>

Development is much more concentrated in the next five years (Lustrum 1) and beyond twenty years (Lustrum 5), suggesting that the district may not be built out as soon as originally projected (around 2040). However, total enrollment at the end of Lustrum 4 is slightly ahead of the 2016 model. While this U-shaped pattern feels somewhat counterintuitive, this likely has much to do with accelerating trends toward mixed-use redevelopment, the higher residential densities called for in the new Madison Comprehensive Plan and being developed on the edges of both Madison and Fitchburg, and the more robust sample data used to derive student generation rates per unit type this time around, as well as some shifting of the estimated timing for some single-family edge development into later lustrums than previously estimated.

With some exceptions (e.g. family-oriented multifamily with higher bedroom counts), denser units yield fewer students per dwelling unit, and with the remaining edge greenfield areas of the district seeing more dense development and a longer projected absorption by City staff for larger-lot single family homes, an increase in land use efficiency and intensity suggests a longer buildout within existing boundaries. Hence a larger "remainder" of students is generated beyond twenty years when metered at the recent 2010-2017 rate of growth of approximately 9,000 dwelling units per lustrum, or 1,800 DUs per year district-wide.

Note that some manual adjustments of City Staff/V&A development sequencing estimates in later lustrums – particularly as it pertains to edge development in the District – has been performed to satisfy a level of sensitivity analysis that is necessary and appropriate for a Study update that relies on a single buildout Scenario, as opposed to the three presented in the original 2016 projections.

Key Findings

1. District Territory is Approaching Build-Out by 2050

As noted above, under the updated development Scenario, all the developable lands in MMSD's territory (including the transferring areas from the Middleton-Cross Plains and Verona Area School Districts) may not be fully developed as soon as the originally projected 2040 date, but buildout remains well within view. After all remaining greenfield lands within existing District boundaries are exhausted, all future changes in land use will occur solely through redevelopment. The economics of redevelopment require greater densities, resulting in a larger proportion of apartments than the already accelerating trend for central Dane County – which have lower student generation rates. As a result, MMSD enrollment is likely to decline after greenfield build-out. If current household size trends hold constant, the resulting rate of enrollment decline will be about 1% for every five years during and following the twenty-year planning period.

2. Future Development has Very Low Student Generation Rates

About 60% of new dwelling units constructed within MMSD during the study period will be in large-scale multi-family and mixed-use buildings. Student generation rates within such buildings are currently very low – about 0.03 MMSD students per dwelling unit. When combined with fewer MMSD students originating from existing development, future development yields only 1,560 additional MMSD students, despite a growth in general population of 65,132 persons. A notable exception is multi-family development with three or more bedrooms. This unit type has the highest student generation rate of any development typology.

3. Future Development Results in a Modest Increase in Total MMSD Enrollment

The combination of redevelopment throughout the District and greenfield development concentrated in the Kennedy, Elvehjem, Olson, and Stephens attendance areas, will likely offset shrinking enrollment from existing homes and lead to a gradual increase in overall enrollment through the study period – from about 27,100 in 2018 to about 28,600 in 2038.

4. Enrollment change is not equally distributed throughout MMSD between 2018 and 2038

The Memorial High School attendance area will gain about 753 students by 2038, and LaFollette's attendance area will gain about 448 students. The West attendance area will increase by about 219 students, while the East attendance area will increase by about 77 students. The following table provides enrollment projections within each attendance area by five-year periods.

Projected MMSD Enrollment by High School Attendance Area					
High School Attendance Areas:	2018-2019	2018-2023	2023-2028	2028-2033	2033-2038
East Attendance Area	5,964	6,063	6,031	6,055	6,041
LaFollette Attendance Area	5,415	5,761	5,781	5,783	5,863
Memorial Attendance Area	6,974	7,256	7,401	7,572	7,727
West Attendance Area	7,454	7,477	7,649	7,640	7,673
Other Schools	1,263	1,297	1,311	1,319	1,331
Total MMSD Enrollment	**27,070**	**27,855**	**28,173**	**28,369**	**28,634**

<u>Key Variables</u>

Many factors could affect these projections. These have the greatest potential effect:

- About 25,000 owner-occupied homes within MMSD are currently occupied by a head of household age 55 or greater. Most of these homes will be up for sale at least once during the study period through 2038. If these homes become popular with young fecund Millennial households, the projections in this Study could be low. This possibility is greatest in the Schenk, Allis, Kennedy, Glendale, and Crestwood attendance areas. The Randall, Shorewood, Van Hise, and Marquette attendance areas could also see enrollment gains due to this factor.
- If existing Millennial residents in new urban apartments in central neighborhoods desire to remain in their neighborhoods as parents, the residential market is likely to respond with significant reinvestment in older Isthmian homes, flats, and new townhouse units. This could result in enrollment gains, particularly for the Lapham and Franklin attendance areas.
- New schools in adjacent districts, or *particularly* within MMSD, will alter these projections. MMSD has documented the effects of proximity and new facilities. These factors affect future MMSD enrollment both ways.

The projection methodology employed by these projections was originally designed to be continually updated as District needs require, so as to provide indication of these and other key variables as early as possible.

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I. Introduction

A. Purpose of the Study – More Accurate Long-Range Enrollment Projections

The Madison Metropolitan School District (MMSD) recognizes that long-range enrollment projections provide a critical foundation for long-range planning. The results of this Study will be incorporated into MMSD's Long-Range Facility Plan (LRFP).

MMSD has a long history of success in projecting enrollment resulting from *existing* residential development. Based on existing and short-term enrollment patterns with a focus on cohort-survival analysis, as modified by trends in the general population and live birth data, this historic approach has produced generally accurate results.

The "wild card" in these historic projections has been the more unpredictable influence of areas of *new* residential development. Such development has been located in subdivisions located near the perimeter of MMSD's attendance area in acreage parcels converting from farmland to projects with a suburban character. These "greenfield" subdivisions have historically been dominated by single-family detached homes, with a sprinkling of duplexes, townhouses, and small- and mid-scale multi-family development.

Over the last fifteen years, however, such greenfield residential development has greatly diversified in format and density – adding small-lot single-family, alley-loaded single-family, large-scale multi-family (with under-building parking), and a variety of neighborhood scale mixed-use development providing between one to three stories of residential development located over commercial and office land uses.

A second important development trend has been the strong emergence of mixed-use redevelopment. Between 1995 and 2005, such redevelopment was generally located near the Capitol Square and focused on high-end condominium development. As the development market has recovered from the Great Recession, residential redevelopment has greatly diversified in both format and location. Additional residential redevelopment locations are being added to municipal and neighborhood plans to the extent that redevelopment now represents a dominant form of new development in many parts of MMSD's attendance area.

It has become apparent to MMSD leadership that a refined approach to predicting student enrollment is possible. The purpose of this Study is to provide increased accuracy for long-range enrollment projections. To accomplish this, a new methodology is required that combines the historic strengths of MMSD's cohort survival approach, with an approach that reflects the diversifying nature of housing types and their unique enrollment signatures, combined with an approach that is more predictive for the location and format of new greenfield and redevelopment. Beyond predictive advantages, this new methodology is designed to be easy to update – so as to remain a useful tool well into the future.

B. Fundamental Question
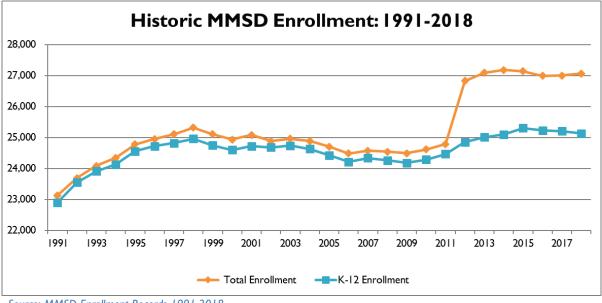
Enrollment in MMSD schools exhibits a long-standing conundrum:
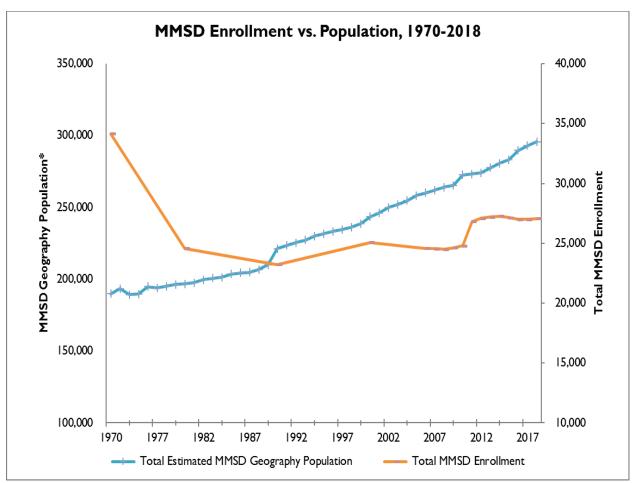
Why has MMSD enrollment remained so stable since 1991 – in the face of steady population gain within the District's boundaries?

As the following table and graph show, K-12 enrollment has centered on about 24,500 students since the mid-1990s despite an increase in the population of the District's territory of about 55,000 residents. In fact, K-12 enrollment variation has never exceeded more than 1,500 students from year to year. Note the "bump" in total enrollment resulting from the addition of 4K classes in 2011-2012.

Historic MMSD K-12 Enrollment 1991 through 2018						
School Year: ⇒	1991 -1992	1995 -1996	2000 -2001	2005 -2006	2010 - 2011	2018 -2019
Elementary Schools	11,696	12,201	10,915	10,879	11,960	11,797
Middle Schools	4,776	5,470	5,765	5,146	5,059	5,634
High Schools	6,435	7,054	8,044	8,193	7,452	7,707
Total MMSD K-12 Students	22,907	24,725	24,724	24,218	24,471	25,138
MMSD Area Population	≈186,500	≈194,500	≈202,000	≈214,000	226,308	249,104

Source: MMSD Enrollment Records 1991-2018, U.S. Census Bureau, and Vandewalle & Associates

Source: MMSD Enrollment Records 1991-2018

MMSD Enrollment vs. Population, 1970-2018

Source: MMSD Enrollment Records 1991 – 2018

*Historic estimates for actual MMSD geography are unavailable prior to 2010. District population estimated from combined annual DOA population estimates and official decennial Census counts (where applicable) for the City of Madison, Village of Maple Bluff, Village of Shorewood Hills, Town of Blooming Grove, Town of Burke, Town/City of Fitchburg, and Town of Madison.

This report will help address that fundamental question, and others facing the District:

- Is total enrollment likely to remain stable?
- Where and when will new development likely occur?
- What is the likely impact of redevelopment?
- If MMSD's borders remain fixed, when will new development fill all vacant land?
- What schools are likely to undergo significant changes in enrollment, and when?

C. Organization of this Report

This report is organized to present key findings in a series of clear statements, followed by the most important supporting data and trends. A summary of study conclusions is presented in the last chapter. The bulk of contributing data, analysis, and maps are presented in the separate appendix to this report or are housed in digital form.

D. Future Applications of this Methodology

An important objective of the project team has been to undertake a methodology that is transparent so as to draw a clear connection between data and conclusions; and to facilitate keeping the data base, Geographic Information Systems (GIS) mapping, and analysis current.

To fulfill this objective and avoid a "black box" experience, no packaged analysis software was employed. Analysis and production were limited to Arc GIS for mapping and calculating Student Generation Rates and Projections, MS Excel for data compilation and trend analysis, and MS Word for the report itself. The "Potential Areas and Agents of Change" graphic was produced in Adobe Illustrator. MMSD has in-house capabilities with each of these. Use of these commonplace products also enables a quick learning curve and ensures the ability to maintain the methodology into the future.

Municipal planning department staff and data bases have provided a rich source of the essential data related to adopted comprehensive and neighborhood plans, recently approved and proposed development projects, and detailed building permit information.

MMSD's current and historic enrollment database has been invaluable. The availability of detailed enrollment records covering more than a decade, in a geo-coded digital format, has been fundamental to this analysis.

Finally, this analysis has also tapped into a significant range of U.S. Census data related to household characteristics (which is now available for MMSD's 2010 geography), official population projections provided by the Wisconsin Department of Administration, and enrollment data provided from the Wisconsin Department of Public Instruction and MMSD.

E. Resulting Implications for MMSD

MMSD will be able to continue to apply the methodology used in this Study well into the future, given its reliance on readily available data sources and commonplace analytical tools. The same combination of data sources, in-house staff, municipal planning department insights, and supplementary expertise for emerging household and population characteristics and broad metropolitan trends, will be sufficient to maintain this valuable analytical tool.

II. Factors Affecting Development-Related Enrollment

Key Finding: MMSD is located at the center of a dynamic metropolitan area.

The following five factors support the areas and agents of change identified in this Study. Specifically, these factors are at the root of the forces affecting the pace of development and population growth, the location of residential development, and the rate at which new housing generates school age children. These factors are fundamental to predicting future enrollment for MMSD and its almost 50 schools.

Potential Areas and Agents of Change Map
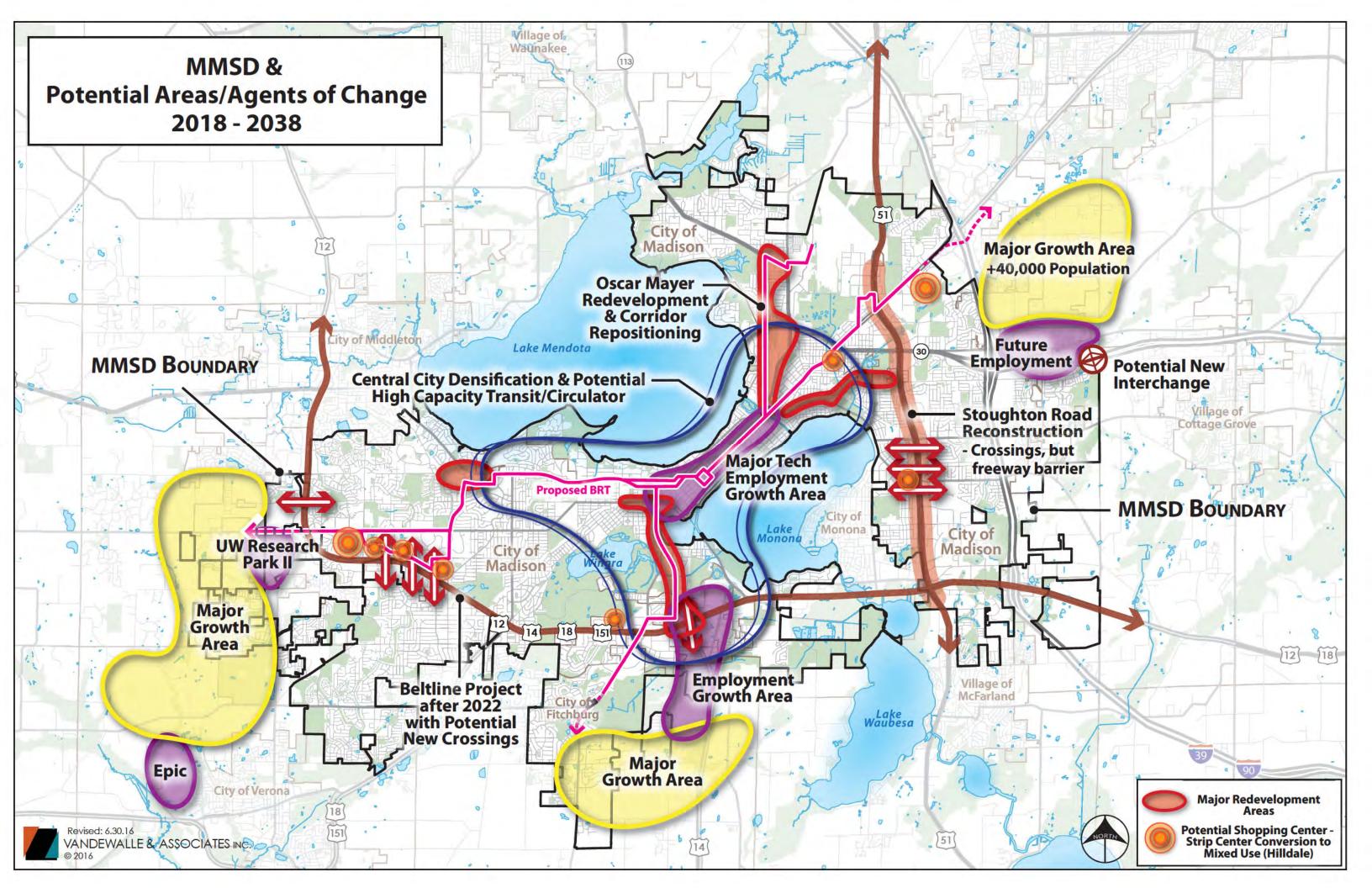
This discussion is focused on the following map of Potential Areas and Agents of Change. MMSD's border is depicted with a solid black line on this map.

A. Stable and Evolving Regional Economy – shown in purple

The economy of Dane County, including Madison, is nimble and evolves to keep pace with local, statewide, and regional needs, and to a growing degree is interconnected with national and international economies. As a result, while Dane County represents 9 percent of the state's population, but accounted for 56 percent of job growth between 2001 and 2015, an increase of about 43,000 jobs. This success has continued remarkably stable population growth. MMSD is positioned at the center of a vital and diversifying regional economy.

The region's economic backbone has historically focused on government, education, medical care, research, finance/insurance, food processing, and skilled light manufacturing. Madison remains unusual in the continued dominance of strong employment located in the central city. Significant employment in technology development has recently become a critical growth factor. The map on the following page highlights future employment development areas affecting MMSD in *purple.*

- In addition to the West and East Washington Avenue axis between Park Street and the Yahara River, the Park Street / USH 14 corridor centered on the Beltline and the Alliant Energy Center/John Nolen Drive corridor in the southern part of the District are likely to see significant employment growth.
- The new UW Research Park II will begin to development on the south side of Mineral Point Road west of CTH M just within the District's border, and Epic is likely to continue to expand just beyond the southwest corner of the District.
- A large potential east side growth node is located along I-94, east of I-39, between CTH TT on the north and Milwaukee Street on the south – just within MMSD's eastern border. The development of this area as a major employment node is dependent upon the placement of a potential new interchange where Reiner Road and Sprecher Road cross under I-94. Although employment has been long planned in this location, only recently has the Wisconsin Department of Transportation (WisDOT) been receptive to interchange development.

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MMSD & Potential Areas/Agents of Change 2018 - 2038

MMSD Boundary

MMSD Boundary

Village of Waunakee

City of Madison

City of Middleton

Lake Mendota

Oscar Mayer Redevelopment & Corridor Repositioning

Central City Densification & Potential High Capacity Transit/Circulator

Major Growth Area +40,000 Population

Future Employment

Potential New Interchange

Village of Cottage Grove

Stoughton Road Reconstruction - Crossings, but freeway barrier

Major Tech Employment Growth Area

Proposed BRT

Lake Monona

City of Monona

City of Madison

UW Research Park II

City of Madison

Lake Wingra

Major Growth Area

Beltline Project after 2022 with Potential New Crossings

City of Fitchburg

Employment Growth Area

Lake Waubesa

Village of McFarland

Epic

City of Verona

Major Growth Area

Legend
- **Major Redevelopment Areas**
- **Potential Shopping Center - Strip Center Conversion to Mixed Use (Hilldale)**

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NORTH

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B. Isthmian Madison is Unique and Vibrant – shown in charcoal and red

Our lakes are at the heart of what makes central Dane County unique. They create a truly unique setting for government, commerce, and neighborhoods. The historically strong activity axis along State Street expanded around the Capitol Square in the 1990s. The reinvigorated city vibe is now extending out from downtown along Madison's three central isthmi – northeast along East Washington Avenue to the Yahara River; south along Park Street to Wingra Creek; and west along University Avenue. Redevelopment is appearing in each corridor. Isthmian Madison, the location of MMSD's oldest schools, is thriving.

- The City of Madison's new Long-Range Transportation Plan: *Madison in Motion*, calls for the development of a Bus Rapid Transit (BRT) system in key corridors. This will result in more frequent bus service, reduced travel times, and improved rider amenities. This system prioritizes key corridors that emanate from the Capitol Square. In order of predicted ridership levels, these include the West Route along University Avenue, the Northeast Route along East Washington Avenue, the South Route along Park Street, and the North Route along Sherman Avenue. Later, a central city circulator, called for in the *Isthmus 2020* plan, may service the central city. Each of these transit routes will likely spur continued redevelopment nearby – in the form of larger and taller buildings with upper story residential apartments – a source of future MMSD students.

- Near Sherman Avenue, the Oscar Mayer site may be ready for redevelopment during the study period. A mixture of transportation, employment, and residential use is likely to develop on and around the site. The large size of this area will likely spur redevelopment up and down the Sherman Avenue corridor, resulting in enrollment for MMSD schools in the East High attendance area.

- Additional redevelopment will likely continue in the Williamson Street / Atwood Corridor to the east. Redevelopment initiatives are also likely along Regent Street, south of the UW campus, where development is mostly one-story.

- Finally, at the periphery of the central city, redevelopment nodes at Union Corners and near Hilldale are likely to result in the significant densification of these areas.

C. Madison has Strong Neighborhoods – shown in clear with the neighborhood street pattern

Most Madison's neighborhoods provide a high quality of life, convenient access to goods and services, and remain attractive options for families.

- Active neighborhood associations are a civic force throughout much of the community. They play a vital role in engaging and empowering residents and grooming local political leadership. Currently, over 120 active neighborhood associations in the city provide a wide variety of services and roles. MMSD's elementary school attendance areas each contain several. The potential for effective school / neighborhood partnerships is high.

- Madison's Abundant Open spaces bolster neighborhood success. These areas are *shown in blue, green, and olive* on the preceding map. Few areas within MMSD are more than one mile from significant natural areas. In addition to providing a wide variety of recreational amenities, these features support strong property values.

D. Madison and Fitchburg have Room to Expand – shown in yellow

Unlike most central cities in Wisconsin and the northern states, Madison has room to grow. This fact is critical for the future enrollment in MMSD.

- Madison adopted boundary agreements in the 1990s with the Cities of Sun Prairie, Middleton, Verona, Fitchburg, the Village of McFarland, and the Town of Middleton. These created annexation limits for Madison located well-beyond the city limits at that time (and MMSD). As a result, the City is expanding beyond the boundaries of MMSD to the east, northwest, and southwest.

- The large residential growth area on the west side of the central urban area – between Mineral Point Road and Midtown Road – is mainly located within the inter-district transfer area with the Middleton-Cross Plains School District (M-CPSD). When specific trigger events occur (such as annexation to the City of Madison or land sales) parcels within most of this area will become part of MMSD's territory. The growth of this area will be bolstered by the planned UW Research Park II. The area located north of Mineral Point Road will remain in the M-CPSD.

- Two similar peripheral growth areas are likely to occur just beyond the southern and eastern edges of MMSD. However, currently, there are no inter-district transfer agreements affecting these areas.
  - o The southern residential growth area is largely located in the northern reaches of the Oregon School District. Only the far western edge of this area is located in MMSD, along Nobel Drive. As many as 10,000 residents could ultimately live in this area, called the "Northeast Neighborhood" by the City of Fitchburg. Growth in this area is spurred by the new interchange of Lacy Road with US 14. Many parents living in this area will have to travel south to reach the schools – located well within the Village of Oregon limits, and then travel back north (past their homes) to go to work.
  - o The eastern residential growth area is largely located in the western reaches of the Sun Prairie School District. *Also, called the "Northeast Neighborhood"*, according to the City of Madison's Northeast Neighborhood Plan, as many as 40,000 residents could ultimately live in this area. Many parents living in this area will have to travel east to reach the schools – and then travel back west (past their homes) to go to work. The growth of this area will be spurred by the potential development of an interchange of Reiner and Sprecher Roads with I-94.

- In the last ten years, the City of Madison has secured its ability to further expand by entering into binding intergovernmental agreements that will result in the dissolution of the Town of Madison (in 2022), the Town of Blooming Grove (in 2027), and the Town of Burke (in 2036). Madison and several of its neighboring cities and villages will absorb former town areas, and thus expand their municipal boundaries. MMSD will benefit from the improved predictability of municipal services and development resulting from this local cooperation. Incorporation of these largely rural areas into Madison will likely spur development through the extension of public water and sewer lines and urban street and bike networks.

E. Developers are Embracing Density and Redevelopment – shown in orange

Sustained municipal and regional planning efforts to promote density and redevelopment are now being realized throughout Dane County, and particularly within MMSD. Since the recovery from the Great Recession, a growing number of developers are providing high-quality neighborhood design and redevelopment projects that are coming close to doubling the number of dwelling units per acre common in the 1980s – potentially offsetting the effect of continued declining household size on enrollment totals.

In this Study's investigation of building permit data from the City of Madison, about 57% of the over 9,500 dwelling units approved since 2014 are located in redevelopment areas, rather than in greenfield sites located at the periphery of the urban area.

In addition to the redevelopment opportunities discussed above, the preceding map also depicts locations where aging shopping centers may be ripe for redevelopment during the study period. These are shown with *orange bull's-eyes*.

- Many of these sites are located the Odana Road corridor including the West Towne Mall and Westgate Shopping Centers. When constructed between 1960 and 1975, most of the development in this corridor was at the periphery of the urban area. Now located in the center of the greater west side, and nearing the end of their useful life, the many buildings in this area could be replaced by denser mixed-use development. Although likely student generation rates will be low, the size of this area (about a square mile) could lead to impacts on MMSD.

- Other scattered post-war shopping areas could also see redevelopment, including the East Towne area, the Todd Drive area, and the Stoughton Road corridor.

- This kind of redevelopment could be spurred by major highway projects along the Beltline and Stoughton Road (US 51), which are shown in *brown* on the preceding map. WisDOT is currently studying both corridors for major improvements, including potential additional lanes. Both studies have identified numerous locations for additional roadway bridges – which would provide new links between neighborhoods, and between residential and commercial areas. In addition to spurring mixed-use redevelopment, these new bridges will provide more convenient connections for MMSD school buses, employees, and parents. These crossing points are shown in *crimson*.

The patterns of development activity created by the interaction of the forces described above are illustrated on the following map depicting areas of likely land use change and stability.

Areas of Likely Land Use Change and Stability Map
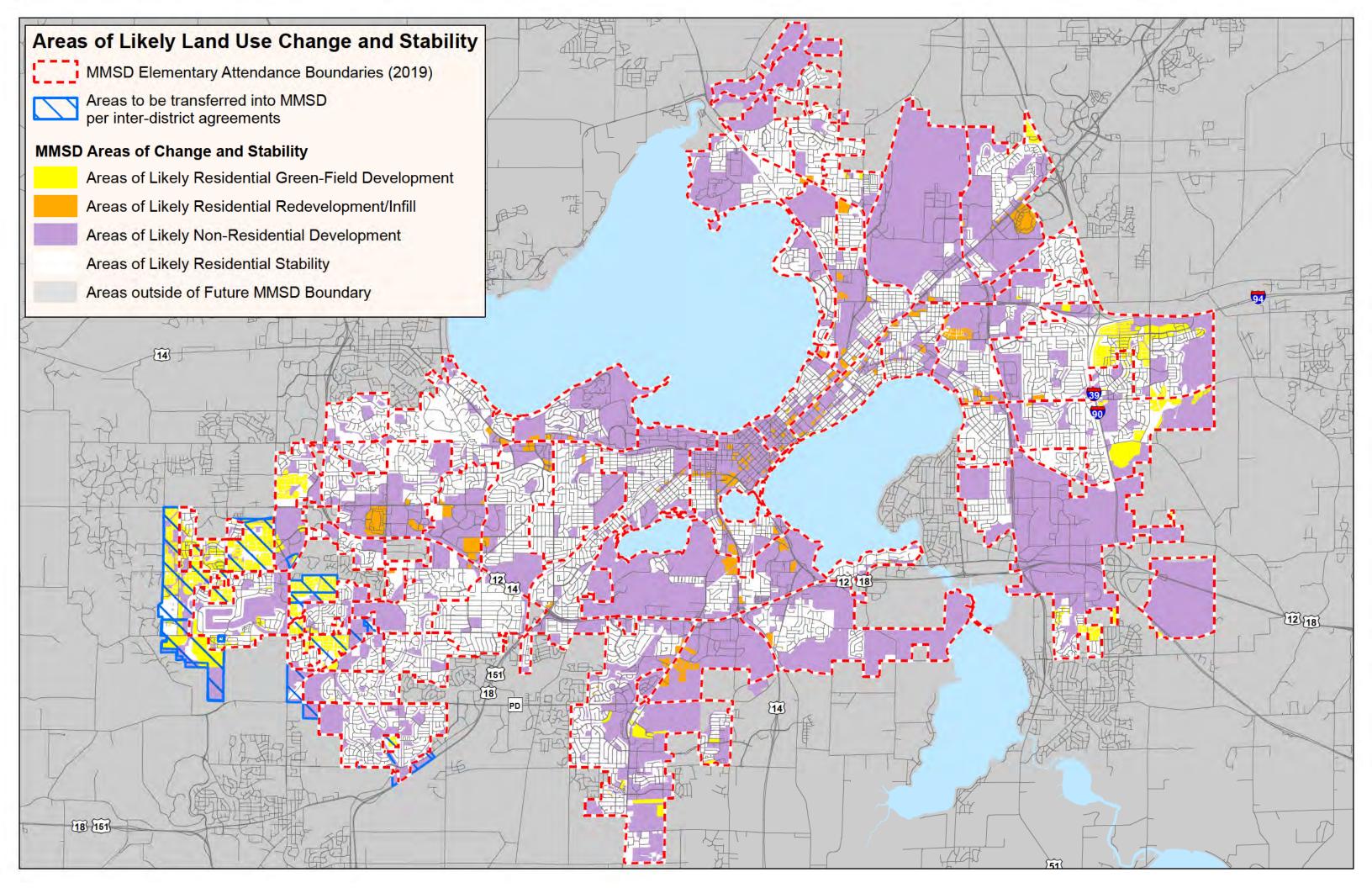
These background factors are combining to reshape the residential geography of MMSD. These factors combine with community and neighborhood plans, and city zoning maps, to produce a pattern of likely areas of land use change and stability that guide the geographic investigations in this Study. These areas are depicted *for precise lots and parcels* on the following map.

- MMSD's elementary school attendance area boundaries are shown in *dashed red*.
In combination, they map MMSD's <u>current</u> territory. Note the irregular lines around the perimeter of the District. These are the result of years of varying state laws regulating whether or not school district boundaries change with annexations of land into the central city of large urban district, and – irregular annexation areas decided by individual property owners. On the far west side of the District, the perimeter boundary is especially irregular where inter-district boundary transfers are pending.

- Areas to be transferred into MMSD per inter-district agreements are shown in *blue*.
Located south of Mineral Point Road and west of the Beltline, these areas have yet to experience an event that triggers transfer into MMSD. Annexation, or sale of land, is the most frequent trigger event identified by the various agreements. Almost all of these areas are adjacent to the Olson Elementary School attendance area. Smaller areas are adjacent to attendance areas for Stephens and Chávez Elementary Schools.

- Areas not in MMSD are shown in *gray*.
These include all areas beyond the future boundaries of MMSD, after the transfer areas identified in inter-district agreements come within MMSD boundaries.

The remainder of the map depicts areas currently within MMSD boundaries:

- Areas of Likely Residential Greenfield (new) Development are shown in *yellow*.
These areas are in various states of planning and development – from conceptually planned in the Comprehensive Plans of Madison or Fitchburg – all the way through the development process to vacant homes.

- Areas of Likely Residential Development are shown in *orange*.
These are areas that of existing development that are likely to redevelop during the time of this Study – 2018 through 2038. Most of these projects will be "mixed-use" redevelopment, with residential units on upper floors over commercial or office. Some of the projects will be entirely residential. Redevelopment projects typically have to attain higher density than current development to be profitable. This is achieved by constructing larger and taller buildings than previously on the site.

- Areas of Likely Residential Stability are shown in *clear* with the underlying streets.
These areas are generally fully developed, with few vacant parcels. The contain most of MMSD's current students. They will continue to be the most important source for MMSD students throughout the Study period.

- Areas of Non-Residential Development are shown in *light purple*.
These are areas of both existing and likely future development and open space land uses that are likely to produce no current or future MMSD students.

The mapping of *new* residential development and redevelopment at the heart of this Study will focus on the *yellow and orange* areas, respectively. The investigation of enrollment from *existing* residential development will focus on the *clear* areas within MMSD.

Areas of Likely Land Use Change and Stability

- ⬛ MMSD Elementary Attendance Boundaries (2019)
- ⬛ Areas to be transferred into MMSD per inter-district agreements

MMSD Areas of Change and Stability

- ⬛ Areas of Likely Residential Green-Field Development
- ⬛ Areas of Likely Residential Redevelopment/Infill
- ⬛ Areas of Likely Non-Residential Development
- ⬛ Areas of Likely Residential Stability
- ⬛ Areas outside of Future MMSD Boundary

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III. Ten Key Challenges, Trends, and Assumptions for Projections

Key Finding: Despite Challenges, Trends inform Logical Assumptions.

MMSD has an outstanding track record of projecting enrollment based on a sophisticated cohort survival methodology, typically within an accuracy of one-half of one percent. However, longer-range projections have struggled with accounting for enrollment resulting from new development and redevelopment. This section provides an overview of the challenges presented by this task, the key trends that provide insights into future enrollment locations, numbers, and characteristics. The first set of challenges relate to factors affected by MMSD and other school district decisions.

1. Available Population and Household Data has Significant Limitations

   ### Census Geography

   The most important population data limitation encountered by this Study is that U.S. decennial census information for MMSD's specific geography is only available for the latest census, in 2010. The decennial USC provides actual counts of population, dwelling units, households, and economic conditions. Counts are provided for smaller geographic units including municipalities, census tracts, census block groups, and census blocks (for some data sets). However, these generally accurate counts are only available every ten years. Access to individual census returns – which would enable precise associations between population, housing, and economic characteristics -- is not available. This is a high-quality data source, but becomes obsolete with passing years.

   A further challenge is that census data prior to 2010 is not available for school district geographies. Further, school district boundaries and attendance area boundaries are generally not reflected in the boundaries of census tracts or block groups, or in the many locations where district or attendance area boundaries split blocks. Although the 2010 USC does provide a specific geography for MMSD, it is only for the district as a whole, and not for attendance areas.

   ### ACS Sampling

   A second important data limitation relates to the U.S. Census American Community Survey (ACS), provided annually by the U.S. Census Bureau. The ACS is a running sample-based methodology, using sample data from either 1-year, 3-year, or 5-year spreads. Although annual updates are available for MMSD geography, because the ACS provides only sample-based estimates, and because it blends sample years, its effectiveness in enrollment projections is limited.

   In contrast, the decennial census uses counts for (at least theoretically) a complete measurement of population and households, and their characteristics. Years of working with ACS data for Dane County, Madison, and many other Wisconsin communities has uncovered large variations between data from the decennial census data and the ACS for population, household, and income statistics. This is a significant limitation, and this Study minimizes a reliance on information from the ACS.

<u>Resulting Study Approach</u>
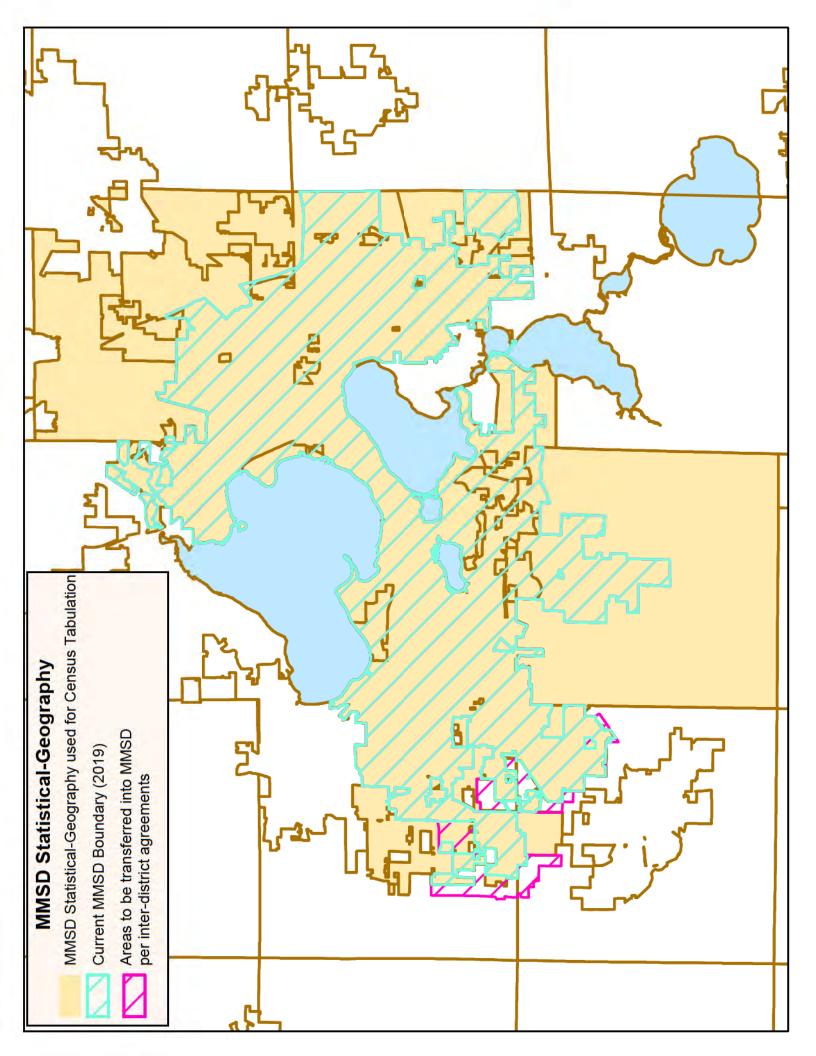
Therefore, this Study relies on the 2010 Census to provide the primary baseline of comparison between MMSD geography and readily available historical census data for MMSD area municipalities – particularly for 2010.
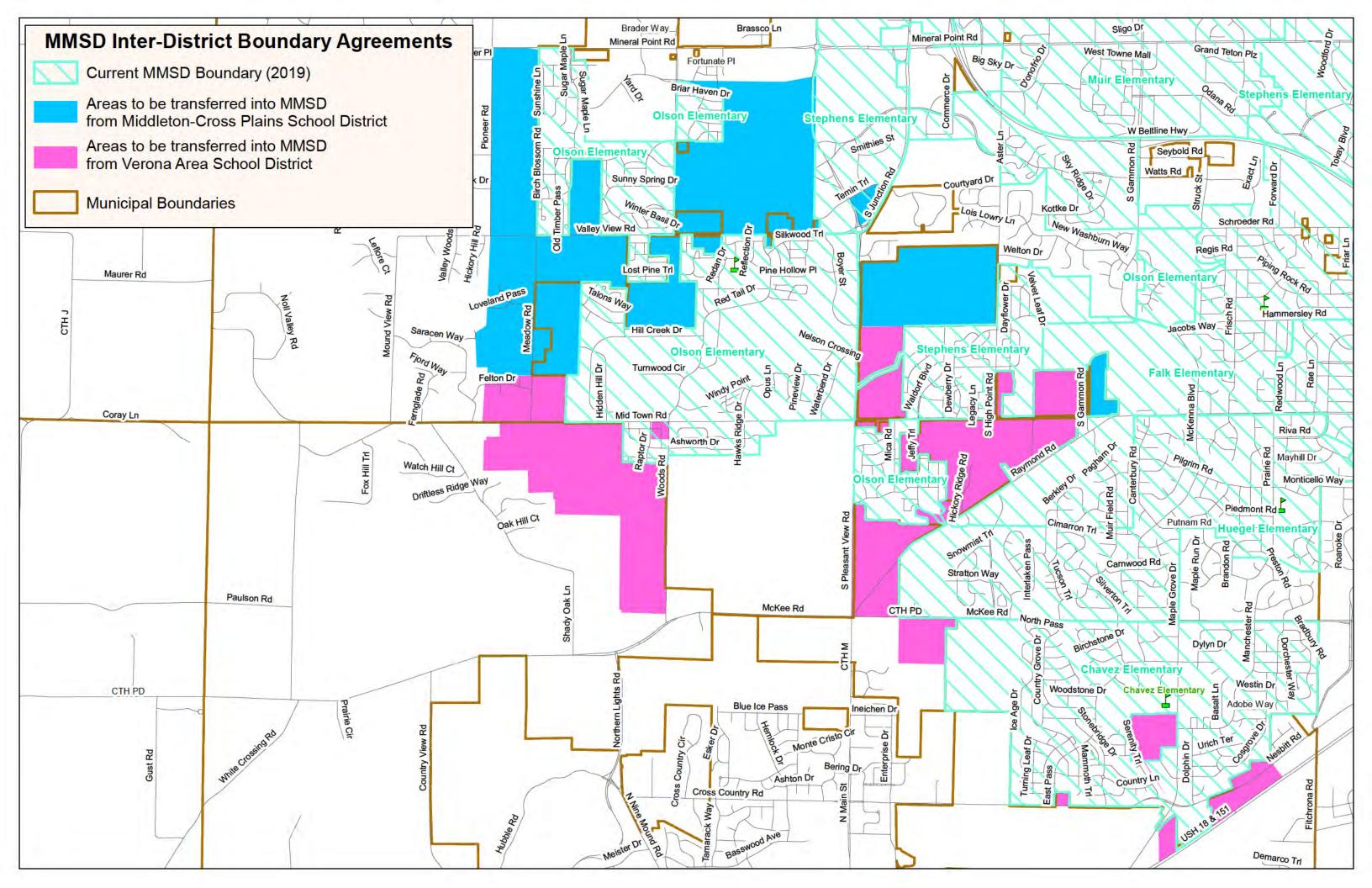
Specifically, this Study employs a "Statistical Geography" comprised of the "MMSD Municipalities". This grouping – unique to this Study -- is comprised of municipalities with populations (as opposed to area) mostly located within MMSD's territory. These include the cities of Madison and Fitchburg, the villages of Shorewood Hills and Maple Bluff, and the towns of Madison, Blooming Grove, and Burke. Notably, all of the Town of Madison is located in MMSD, while most of Blooming Grove and Burke will be coming within the City of Madison's limits during the projections period.

A map showing the precise boundaries of this "MMSD Statistical Geography", shown in *beige*, is presented on the following page. The current MMSD boundary is shown in *light blue*. The inter-district transfer areas are shown in *red*.

A close-up map of this Inter-District Transfer Area is provided following the Statistical Geography Map.

This Study employs population estimates provided annually for states, counties, and municipalities. Although not as accurate as the decennial census, they provide an up to date estimate for a single year. This Study updates the methodology employed for Scenario 3 of the original 2016 Enrollment Projections, utilizing 2017 U.S. Census Bureau estimates of population for this Study's estimated MMSD Statistical Geography described above, which when compared to the 2010 U.S. Census forms the baseline of population growth trends for <u>the District's preferred projection scenario over the next twenty years</u>.

MMSD Statistical-Geography

Legend

MMSD Statistical-Geography used for Census Tabulation

Current MMSD Boundary (2019)

Areas to be transferred into MMSD per inter-district agreements

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MMSD Inter-District Boundary Agreements

Current MMSD Boundary (2019)

Areas to be transferred into MMSD from Middleton-Cross Plains School District

Areas to be transferred into MMSD from Verona Area School District

Municipal Boundaries

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<u>Official Population Projections</u>

Data limitations related to MMSD geography extend to other data sources. The Wisconsin Department of Administration, WisDOA is the official source of population and household projects for the state. WisDOA provides projection updates every few years, which must total to a control number provided by the U.S. Census Bureau. Population estimates and projections are provided for counties and municipalities only. They are not provided for school districts or attendance areas, or for other geographies such as neighborhoods, subdivisions, or annexation areas. The most recent WisDOA population projections extend to 2040, and formed the basis for <u>Scenario 2</u> under the original Study; this Scenario has not been updated for this report.

Given current extremely strong housing market conditions, this Study again employs the opinions of planning and development experts to establish population projections, which formed the basis for <u>Scenario 1 </u>under the original Study and were "metered" according to recent trends under<u> Scenario 3 </u>(and updated for this report). Planning and development consultants from Vandewalle & Associates met in development projection workshops with City Planners for Madison and Fitchburg in February 2019 to discuss and refine estimated locations, timing, and types of development expected during the projection period from 2018 through 2038. A high degree of consensus was evident in these meetings.

Significant limitations also exist for official projections for general population growth. Since the mid-1980s, WisDOA population projections for Dane County as a whole, and for its constituent cities, villages, and towns, have consistently been lower than those actually counted by the decennial census. Projections are comprised of two components -- net natural increase (births minus deaths) and net migration. WisDOA projections have been quite accurate for net natural increase (births minus deaths), where sophisticated cohort survival methodologies are successfully employed.

Historically, where actual population change varies significantly from WisDOA projections, differences tend to occur with net migration. This can occur in areas where economic conditions vary significantly from national and state levels. For example, economically stable Dane County was projected to add about 50,000 persons between 1990 and 2000, and again between 2000 and 2010. Instead, Dane County grew by about 60,000 persons each decade.

There is currently strong evidence that official projections for Dane County's population growth between 2010 and 2040 are again too low. Whereas WisDOA is projecting an average *annual* increase of 4,255 Dane County residents between 2010 and 2020, according to the US Census Bureau actual County population has been increasing by an average of about 6,900 residents annually between 2010 and 2017-- with the City of Madison and the MMSD Statistical Geography capturing about 47% of that new population growth. With seven-year growth exceeding projections by over 60%, the general unpredictability of population trends for small geographic areas is highlighted.

This Study uses this extended seven-year growth trend in actual population growth (per U.S. Census Bureau annual estimates) within MMSD's Statistical Geography to provide the baseline population projection trend for the updated projection Scenario. To minimize statistical variance and provide greater consistency for the enrollment projections. this updated Scenario further "meters" the raw development projections of Vandewalle & Associates and City Staff to correspond to the actual number and types of dwelling units added per year according to City of Madison and Fitchburg construction permit data for new residential structures over the last five years.

Finally, conventional data sources struggle with accurately counting and projecting homeless and undocumented immigrant families and children. There is considerable evidence for differences in the degree of undercounting varying by source, year, and location. MMSD has significant populations of homeless and undocumented children.

<u>MMSD Data is High Quality and Robust</u>

Whereas limitations exist with most outside data sources, MMSD's student enrollment data is robust and readily accessible, enrollment projections are also complicated by the limitation of other population data sources. These limitations affect the ability to confidently project important population and household characteristics – particularly when considered in light of the mobility of households in the United States. On average, the typical American household moves every five years. Moves are much more frequent for households with young children or households with low incomes. Because of these factors, MMSD enrollment data provides the richest source of data, the most accurate data source, and to a high degree the most current source of student location information and population and household characteristics of the student body. This Study relies heavily on MMSD enrollment data to establish the current baseline of student characteristics, and to establish recent trends for projecting student characteristics.

An important emerging trend in Dane County is the growing lack of affordable housing. Under current market conditions, developers are focusing on higher profit luxury apartments and new homes, and the supply of affordable housing will likely not keep pace with the need. Income recovery since 2010 is likely a contributing factor for some households.

<u>Key Trend:</u>

- Opinions vary for population growth trends in Dane County, Madison, and MMSD's Statistical Geography. Dane County growth trends between 1990 and 2010 averaged about 6,000 additional persons per year. Official population projections from WisDOA predict a slowing of growth to an average of about 4,000 additional persons per year through 2040. In contrast, between January 1, 2010 and July 1, 2017, actual population growth in Dane County has accelerated to about 6,900 persons per year.

<u>Key Assumption:</u>

1. The projections in this Study further assume the potential for considerable variation in population within MMSD, and resulting variation in the total enrollment:

    - The updated enrollment projections are based on pace of development predictions provided by experts in local planning and development from the City of Madison, City of Fitchburg, and Vandewalle & Associates, and "metered" based on the actual rate of population growth within MMSD's Statistical Geography between January 1, 2010 and July 1, 2017.

    - This Study assumes that household size will continue to decline per WisDOA's projections.

2. MMSD has a Dynamic and Diversifying Residential Market

<u>Challenge:</u>

Residential development within MMSD's territory is among the most dynamic in the Midwest. Projections must account for a wide range of factors and trends. Specifically, enrollment projections are complicated by the recent appearance of new development forms and formats within MMSD's territory.

In Madison, residential development continues to diversify. A number of residential formats are now developing that were not present in the market area more than ten years ago, including luxury downtown and neighborhood apartments There is little enrollment data for these formats, and no published long-term insights into how the early resident profiles will evolve in general, or in specific locations. School enrollment projection studies typically rely on assumptions about enrollment coming from only three broad categories of residential development: single-family, duplex, and multi-family. This approach is insufficient for Madison's rapidly evolving housing mix.

The single-family residential construction market is currently in uncharted territory. Interviews with local real estate experts indicate the presence of a unique mix of market circumstances currently present in central Dane County. These include:

- A continuation of very low mortgage interest rates that are drive strong single-family home construction – a strong source of students;
- These low interest rates, in combination with a strong professional job market in Dane County, are enabling an unusually high rate of new home construction for first-time home buyers – who typically have younger children and growing families;
- Many home construction companies are working at full capacity, despite adding crews since the Great Recession. For many builders the pace of construction is limited by a shortage of labor rather than a weak market. This leads to pent-up demand that is likely to buffer the emergence of construction extremes and extend solid local market conditions for residential development;
- Subdivision developers remain reluctant to construct new projects in large, multi-year phases, and continue to implement development in phases intended to sell-out in one or two years – reinforcing a generally consistent rate of construction;
- In this strong market, lot pricing tends to reflect the value buyers place on location to a greater extent than prices in periods of low demand – with school attendance areas and proximity to place(s) of employment being the most important decision factors about neighborhoods that are considered by buyers;
- Lot pricing in central Dane County currently demonstrates a preference of first: west side of the metropolitan area over east side; and then: suburban school districts over subdivisions in MMSD;
- The demand for new single-family homes remains very strong everywhere in central Dane County, including new areas within the City of Madison and within MMSD; and,
- With the exception of several high-end neighborhoods largely located in rural subdivisions, the average size and amenities of new single-family homes has remained generally consistent for about a decade – with an average of close to 4 bedrooms.

Together, these trends point to continued rapid single-family development within MMSD, with many new homes likely to have younger school age children immediately move in, and many homes likely to produce new students within 0-5 years of initial occupancy.

The multi-family residential construction market also remains strong. Interviews with local real estate experts indicates the very likely continuation of multi-family vacancy rates that are among the lowest in the nation (+\- 2%), with many of the factors listed above contributing to this situation. Although the large-scale multi-family projects in the Downtown area and along East Washington Avenue garner the most attention, the majority of multi-family projects have been developed in greenfield locations throughout central Dane County. Key factors include:

- A general shift away from two- and three-bedroom multi-family units to one-bedroom and efficiency units – with lower student generation rates;
- The inclusion of a significant multi-family component in almost all new greenfield development subdivisions; and,
- The growing size of multi-family buildings within new subdivisions – resulting in a greater number of multi-family dwelling units per building and per subdivision;
- A common policy of suburban cities and villages to control the percentage of multi-family and attached single-family dwelling units (duplexes and townhouses) compared to single-family dwelling units – with a minimum 60% share for single-family and a maximum share of 25% for multi-family dwelling units representing commonly-used percentages. Other neighboring communities employ a simple cap on multi-family building permits.

The result continues a post-recession trend that multi-family dwelling units comprise a growing percentage of total residential construction throughout Dane County. This trend is strongest throughout the City of Madison, and in suburban downtowns. In both instances density is encouraged and multi-family limits are not typically imposed by municipal policies.

Redevelopment is an increasingly important factor in enrollment. Redevelopment comprises an increasing percentage of new residential dwelling units – both in the upper floors of mixed-use buildings and in residential-only projects. This trend is very likely to continue through the next twenty years, as the amount of land available for greenfield development within MMSD's territory continues to decrease. Several key factors contribute to this trend:

- The City of Madison and the City of Fitchburg actively plan for redevelopment. Significant general areas of redevelopment are identified in Comprehensive Plans, and in plans for existing neighborhoods adopted over the last 20 years;
- Redevelopment is often eligible for Tax Increment Finance (TIF) assistance, particularly when proposed redevelopment is consistent with adopted plans. TIF often addresses demolition and site preparation expenses, helping to lower up-front costs;
- Permitted building size are typically larger and have higher densities
- Although redevelopment construction is complicated by surrounding development, the expensive utility and road network is in-place;
- Although often controversial, redevelopment projects that are found to be consistent with adopted plans tend to be approved, with adjustments required to address site-specific concerns;

As a result of a longer review process followed by months of demolition and site preparation, redevelopment projects typically have a significantly longer lead-time between initial proposal and occupancy than do greenfield projects – often stretching to several years in comparison to several months. This time lag between initial proposal and occupancy provides opportunities for school districts to prepare for new students.

During the next twenty years, the residential decisions of thousands of empty nester Baby Boomers, and Millennials entering prime childbearing years, will strongly influence the pattern of enrollment within MMSD.
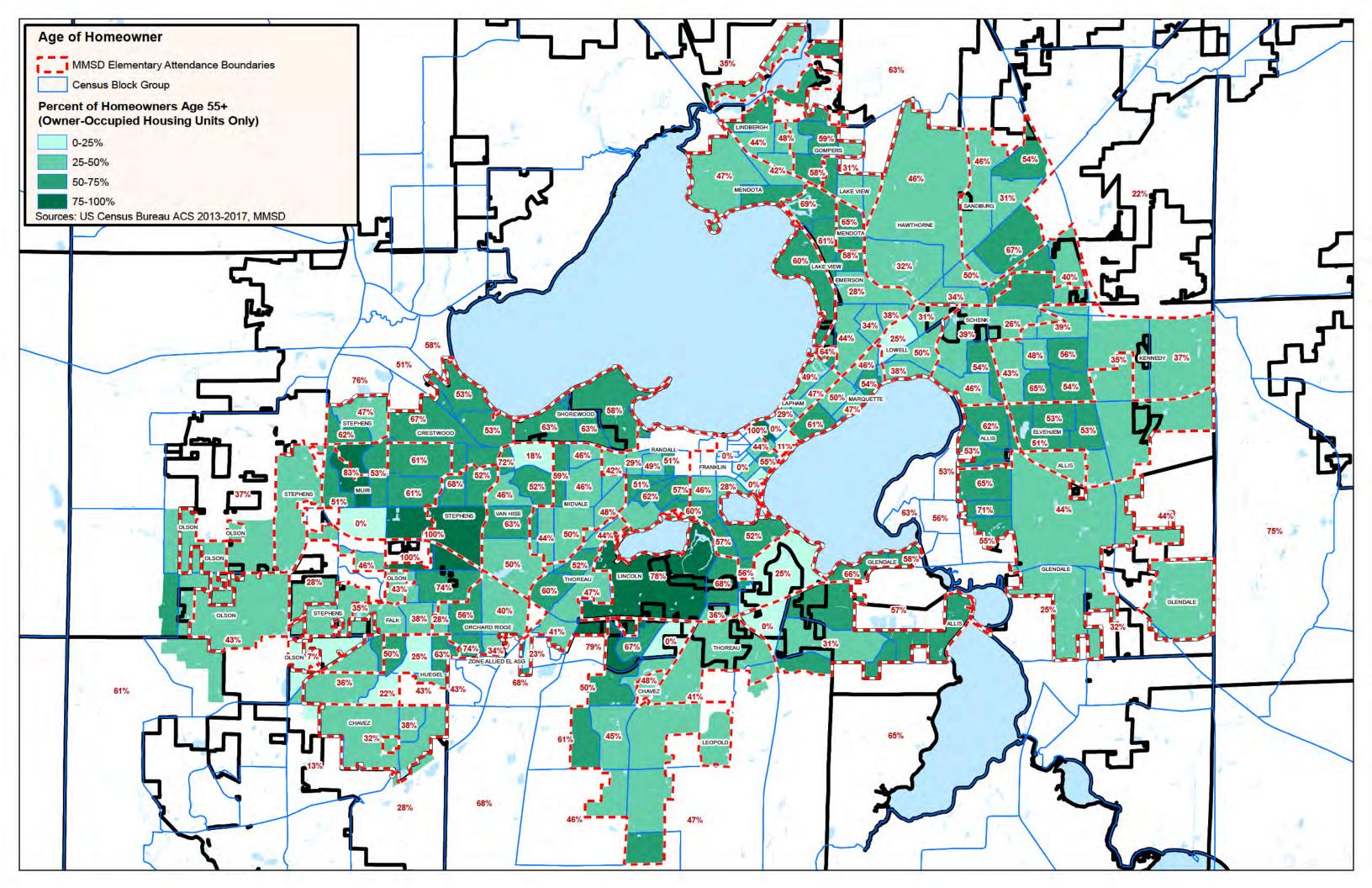
Madison has many Baby Boom empty nesters occupying a significant supply of family-friendly housing. These residents range in age from 55 to about 70. Over the course of the next 20 years, many will be moving out of their 3-, 4-, and 5-bedroom homes. However, the timing of these moves is unpredictable because they usually relate to personal circumstances rather than mass behavior. Madison is often cited as one of the best communities for seniors in the nation, and evidence strongly indicates that remaining in a personal residence is preferred as a healthy choice.

The analysis for this Study indicates that many homes owned by Baby Boomers are located in the attendance areas of MMSD schools with strong student achievement scores. Randall, Shorewood Hills, Van Hise, Marquette, Crestwood, Stephens, Muir, Lowell, Lincoln, and Thoreau Elementary Schools attendance areas are particularly notable for the intersection of strong schools with neighborhoods full of empty nester Baby Boomers. Homes in the Lindbergh, Gompers, Lakeview, Kennedy, Elvehjem, Leopold, Orchard Ridge, and Falk Elementary schools' attendance areas are also flush with Boomers. As a result, all of these attendance areas are likely to experience a high turnover of residents through the next 20 years, which could lead to growing enrollment for these schools.

Madison has a rapidly growing population of Millennial generation residents who are currently occupying multi-family housing with efficiency, one-bedroom, and two-bedroom units. Although visibly present in new downtown apartments, Millennials have a strong presence in multi-family dwellings throughout central Dane County. Most of these households currently do not yet have school-age children.

There is much speculation about these residents – who comprise the largest generation in American history. Just as for seniors, Madison makes all the lists as a great place for young adults and young families. Their residential choices will be of utmost importance to future MMSD enrollment. For example, many growing family households could relocate to houses vacated by aging Baby Boomers. Another possibility, cited by several experts, is Millennial households relocating to older single-family and two-flat housing in revitalizing central neighborhoods – close to their current apartments. This choice could significantly grow enrollment in the Lapham, Franklin, and Midvale Elementary School attendance areas.

The following map, displaying the pattern of Baby Boomer home ownership, may signal locations where more affluent Millennials may find an abundance of owner-occupied homes coming on the market through the period of this Study.

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Age of Homeowner

- - - - MMSD Elementary Attendance Boundaries
———— Census Block Group

**Percent of Homeowners Age 55+
(Owner-Occupied Housing Units Only)**

- 0-25%
- 25-50%
- 50-75%
- 75-100%

Sources: US Census Bureau ACS 2013-2017, MMSD

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STUDENT ENROLLMENT PROJECTIONS UPDATE REPORT

<u>Key Trends:</u>

- Residential trends for both single-family and multiple-family development are historically strong and appear to have longevity. Building permit information from the City of Madison indicates that 83% of the more than 9,500 new residential dwelling units added from 2014 through 2018 are in multi-family projects, while 17% are for single-family homes.

- Redevelopment yielding residential units is also historically strong, with trends spreading from central Madison throughout Dane County;

- There are some market weaknesses, particularly related to harsh lending requirements for multi-family condominium development. This limits opportunities for homeowners to relocate out of single-family homes and rollover their equity.

<u>Key Assumptions:</u>

1. The projections in this Study are based on an assumption that current development rates and formats will continue. Although annual variations from this trend will undoubtedly occur, Madison and Dane County have experienced remarkably consistent population growth since 1985. This assumption provides a standardized baseline that can be readily understood and modified in future enrollment projection studies to account for current and emerging conditions.

2. Projections further assume stable economic conditions throughout the projection period. Again, this assumption is <u>not</u> likely to be precisely accurate through 2038. However, historically, Madison and Dane County have proven to be among the most stable metropolitan economies in the nation. Again, this assumption provides a standardized baseline that can be readily understood and modified in future enrollment projection studies to account for current and emerging conditions.

3. Land Use Data is Not Collected for MMSD and is frequently Out-of-Date

<u>Challenge:</u>

Enrollment projections are complicated by the fact that land use data is not collected for MMSD's specific geography. As a result, existing sources of land use data must be manually compiled and reconciled to reflect the differences between municipal and district geography. Beyond this limitation, District enrollment data is typically current and detailed – rectified with the official enrollment records collected on the third Friday in September. This contrasts with land use data, which is frequently out-of-date and too general to be of use in making "accurate" student generation projections.

Documentation about the amount of existing development is usually not current. Specifically, there is no exact source of data about the number of dwelling units in existing development that is geo-coded. This is a reflection of the constant state of development in the community, more than about a lack of record keeping.

Information about the form of development is too generalized. The best records for current land use – City of Madison Department of Planning, Development, and Economic Development; the Madison Metropolitan Planning Organization (MPO); the Dane County Planning Department; and the Capital Area Regional Planning Commission (CARPC) group residential development into very broad land use categories. Typical categories include "single-family", "attached single-family and two-family", and "multi-family". These fail to differentiate between significant differences in density or

between substantial differences in building location, size or height. These building features result in significant differences in student generation rates but are not reflected in available existing land use data.

Similarly, available records for existing land use do not clearly distinguish between future development sites that are located on raw land, on vacant sites with immediate access to infrastructure, or on sites that require redevelopment of existing buildings. This data is essential to predict the relative sequencing of development and must be identified and analyzed through manual efforts at the time of enrollment projection studies.

As a result of the limitations described above, school enrollment projections for future development have historically assumed student generation rates, rather than basing rates on measurements specific to the school district or local development practices. This approach compounds the shortcomings of using generalized land use data, discussed above.

Key Trends:

- Student generation rates vary significantly between locations within a metropolitan area and between different forms of development. However, they can be measured by using geo-coded enrollment data. This requires a large amount of time and cost.
- MMSD has supported the required effort in this Study.

Key Assumption:

1. Future enrollment rates will generally reflect current rates for recent comparable development types within the District.

4. Intergovernmental Agreements will Change Boundaries

Challenge:

Enrollment projections are complicated by municipal intergovernmental agreements that will significantly change the boundaries of the City of Madison. This severely compromises the application of extrapolated trends specifically related to the population growth of the City of Madison. However, these agreements must be taken into account where they affect land planned for residential development. The following map depicts these agreements.

The City of Madison has established boundary agreements with the Cities of Sun Prairie, Verona, and Middleton; with the Village of McFarland; and with the Town of Middleton. These agreements established a mapped annexation limit line that both parties respect, and therefore avoid competing for development. These agreements affect enrollment by firmly establishing the municipality with long-term control over development and resulting forms of development and enrollment levels and patterns. Agreement lines affect the west and southeast edges of MMSD's territory. These areas are shown in *purple* on the following map.

Beyond the *limits* on annexation discussed above, over the last ten years, the City of Madison has entered into binding agreements that will cause the *dissolution* of three towns, and the resulting transferring of town areas into the surrounding cities and villages:

- In 2022, the Town of Madison will be divided into areas transferring into the City of Madison and the City of Fitchburg. Most of these areas are already developed. All are within MMSD's territory. These areas are shown in *light blue*.

- In 2027, the Town of Blooming Grove will be divided into areas transferring into the City of Madison. About two-thirds of these areas are currently undeveloped. Some are within MMSD's territory. These areas are shown in *blue*.

- In 2036, the Town of Burke will be divided into areas transferring into the Cities of Madison and Sun Prairie, and the Village of DeForest. Most of these areas are currently undeveloped. Few are within MMSD's territory. These areas are shown in *cobalt*.

These agreements affect enrollment by firmly establishing the municipality with long-term control over development, and thus the resulting form of development and its influence on enrollment levels and patterns. Also, access to city services will like spur redevelopment activity in areas with low-value development that can be assembled by redevelopers.
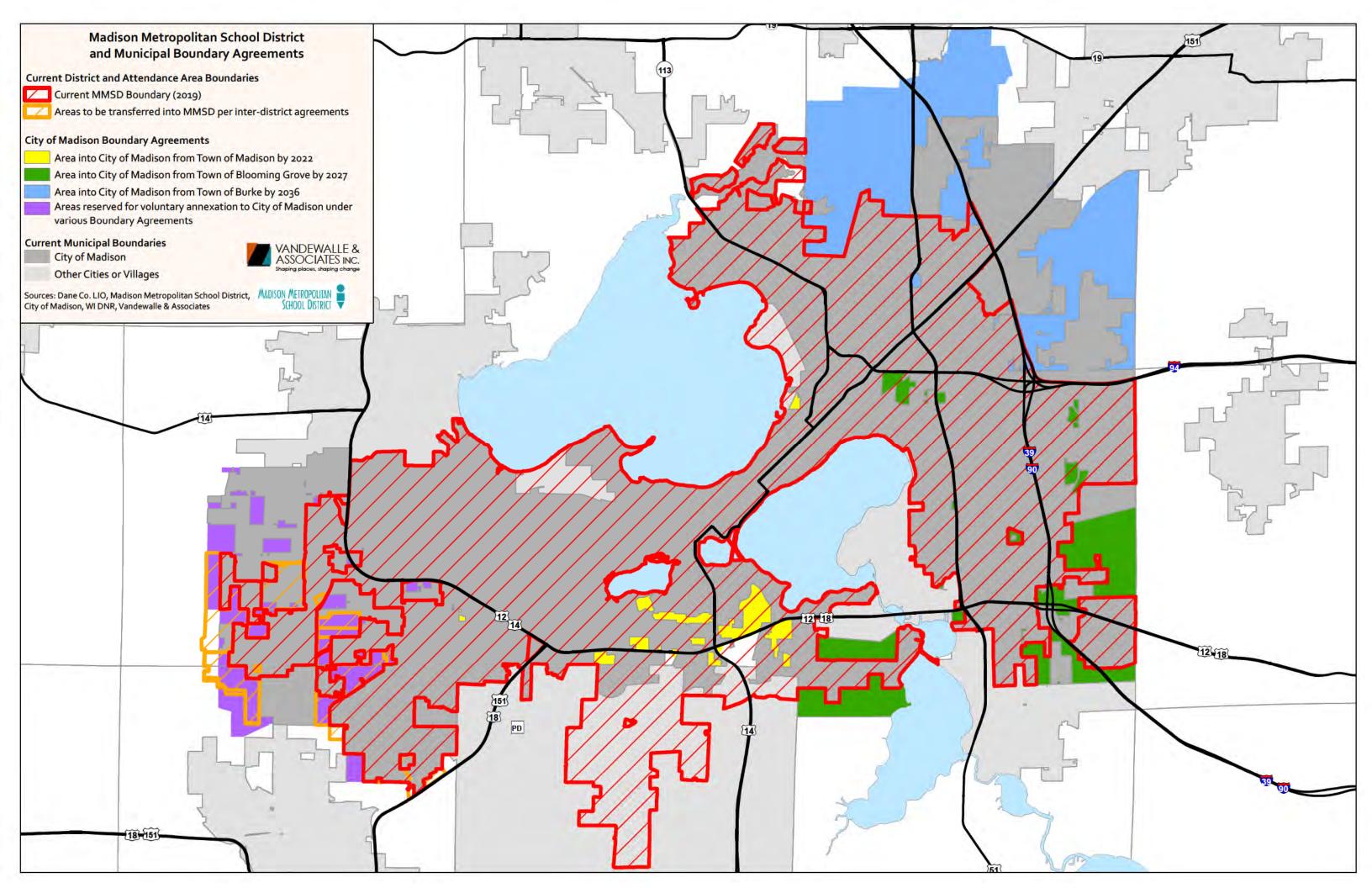
These agreements are depicted on the following map, entitled Madison Metropolitan School District and Municipal Boundary Agreements.

Key Trends:

- The City of Madison's long-range expansion is ensured by pending town dissolutions.

- Most the town areas affected by these agreements within MMSD are already developed, with the exception of small areas located south of Cottage Grove Road / CTH BB.

Key Assumption:

1. The projections in this Study assume that these intergovernmental agreements will be implemented, resulting in greenfield, infill, and redevelopment opportunities.

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Madison Metropolitan School District and Municipal Boundary Agreements

Current District and Attendance Area Boundaries

Current MMSD Boundary (2019)

Areas to be transferred into MMSD per inter-district agreements

City of Madison Boundary Agreements

Area into City of Madison from Town of Madison by 2022

Area into City of Madison from Town of Blooming Grove by 2027

Area into City of Madison from Town of Burke by 2036

Areas reserved for voluntary annexation to City of Madison under various Boundary Agreements

Current Municipal Boundaries

City of Madison

Other Cities or Villages

VANDEWALLE & ASSOCIATES INC.
Shaping places, shaping change

Sources: Dane Co. LIO, Madison Metropolitan School District, City of Madison, WI DNR, Vandewalle & Associates

MADISON METROPOLITAN SCHOOL DISTRICT

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5. Community Plans are designed to Guide Municipalities, Not to Facilitate Projections

Challenge:

In Dane County, community plans tend to be followed. However, these plans are designed to guide municipal growth and development, and not to make school enrollment projections easier.

MMSD's territory extends into twelve municipalities. Each of these cities, villages, and towns, uses a different combination of land use categories in its comprehensive plans – all with different residential densities and building forms – which result in widely-varying school enrollment generation rates for similarly labeled land use categories.

Plans tend to over-generalize the range of future residential densities. Comprehensive and neighborhood plans rarely provide enough land use categories to account for significant differences in residential density, particularly for a single "multi-family development" class – which can vary from a three-unit townhouse format to a twelve-story apartment building, with a resulting density range of between 6 and 206 dwelling units per acre.

Comprehensive plans, which have a ten-year lifespan mandated by state statutes, are expensive and time-consuming to undertake. Hence, in a dynamic community such as central Dane County, adopted comprehensive plans often become out-of-date well before the state-required decennial revision. Although subsequent small area plans can focus on rapidly changing areas, without more frequent plan updates to the comprehensive plan, actual community intentions and practices can evolve without being depicted in official planning documents. This makes land use, and therefore enrollment projections difficult. A full update of the City of Madison Comprehensive Plan's Future Land Use Map was adopted in 2018, and a number of Neighborhood Development Plans (NDPs) have been adopted or updated since 2016 or are currently in process. The City of Fitchburg Comprehensive Plan Future Land Use Map was last updated in 2018.

Fortunately, plans adopted by both cities tend to be implemented. Development on greenfields within the cities of Madison and Fitchburg tends to closely reflect adopted plans. Although variations occur, they are typically about modifying the pattern of roads and blocks, rather than major changes in land use or residential densities. Through neighborhood and small area planning processes, both cities frequently work closely with landowners and development interests and neighbors, to design detailed plans that meet the objectives of both the developer, and the general public.

Similarly, redevelopment projects are frequently "teed-up" by municipalities through detailed redevelopment plans and related detailed plans for associated Tax Increment Finance Districts. Potential redevelopment sites are often identified well in advance of specific development proposals.

Even more lead time is available for large transportation projects that can alter development and trip-routing patterns. Working under the procedures required by the National Environmental Policy Act (NEPA) and its state counterpart (WEPA), the Southwest Regional Office of the Wisconsin Department of Transportation's (WisDOT) has a strong track record of close coordination with municipal and regional transportation, public works, and planning staff on long-range highway planning projects. Adopted plans tend to become reality, although transportation improvement funding may be subject to lean years that delay construction. In central Dane County, WISDOT is currently working on a wide range of highway planning projects, including for the Beltline, Stoughton Road, I-39/90, US 51 from the Beltline to Stoughton, and evaluation of the potential for a new interchange on I-94 between I-39/90 and CTH N. Both the Beltline Study and the Stoughton Road

Study are evaluating the potential to create additional crossing points – thus improving local road connections between neighborhoods now isolated by the freeway corridor. These may significantly reduce travel time between homes and schools, including for school bus routes.

<u>Key Trends:</u>

- Adopted plans for land use and transportation tend to be implemented.
- Detailed neighborhood and redevelopment plans provide more current and precise information about recommended land use and density patterns.
- Plans provide little insight into the precise timing of development or redevelopment.

<u>Key Assumptions:</u>

1. Adopted neighborhood, redevelopment and comprehensive plans will be implemented.
2. Long-range transportation plans will be implemented, including Madison's BRT system and WisDOT plans for the Beltline and Stoughton Road.
3. The timing of development is the key variable in the updated projection Scenario postulated and evaluated by this Study, a combination of the knowledge of development experts and extrapolation of recent trends.

6. MMSD "Leavers" and "Enterers" are a Significant Enrollment Factor

<u>Challenge:</u>

District leavers include students living in the MMSD territory who choose to attend non-MMSD schools. These include students choosing open enrollment at other public schools, and students attending private and non-MMSD charter schools.

Overall net open enrollment patterns show more students living in the MMSD area choosing open enrollment in other districts, than students living in other districts choosing open enrollment in MMSD. In the fall of 2018, the net loss of 709 students was a result of 516 entering students and 1,225 leaving students. This is about 2.6% of MMSD's total enrollment, down from about 4% in fall 2015. According to 2017 American Community Survey 5-Year Estimates, there are also about 3,000 District resident students that are enrolled in private schools in the region, representing about 12% of MMSD's current K-12 enrollment.

Many factors are involved in open enrollment decisions, including the availability of space and new schools coming online in other districts. The Monona Grove School District (MGSD) is the most popular destination of students leaving MMSD through open enrollment. Several MGSD schools are at capacity, and MGSD staff has indicated that they maintain full capacity by adjusting the number of open enrollment attendees. Other important considerations, cited by studies and MMSD staff, include the proximity of other schools, the condition and range of school facilities, and resulting travel distances and routes.

Key Trends:

- MMSD net "Leavers" comprise roughly 700 public school students, and about 3,000 private school students residing within MMSD territory.

- Reduced capacity in many schools in adjacent districts, reflecting strong suburban population growth, is becoming a more frequent limiting factor on MMSD leavers being accepted through open enrollment in other school districts.

- Rapidly evolving options, particularly for charter schools and distance learning, make projecting future enrollment changes through net leavers very difficult.

Key Assumption:

1. MMSD net "leavers" will be consistent with their current levels – flat or slightly declining.

7. Programming Changes Affect Total Enrollment Numbers

Challenge:

Major programmatic changes, such as the addition of the 4K program in 2011-2012, have the potential to significantly alter MMSD enrollment.

MMSD programming, particularly related to pre-kindergarten instruction and community schools, continue to evolve. The most significant recent change has been the addition of a strong 4K program. This "additional grade" has contributed much of MMSD's enrollment growth in recent years, most notably as the main cause of the "Total Enrollment Bump of 2011", when total MMSD enrollment grew by about 2,000 students between the 2010-2011 and the 2011-2012 school years. However, 4K was *not* implemented at all elementary schools in that year, and additional schools have been added since. As of the 2018-2019 school year, all but six elementary schools offer 4K, but it remains a voluntary program and therefore subject to greater potential fluctuation. Other programming variations relate to alternative school offerings, which are continually evolving, and expanding the community school concept to more locations.

Based on the *Madison Community School Framework* developed in 2015, the District is now providing coordinated services and supports to students and families in the schools' neighborhoods, which may have a positive effect on enrollment and student outcomes in the future. The first two such schools, Leopold Elementary and Mendota Elementary, were selected in the 2016-2017 school year, and two more schools -- Hawthorne and Lake View -- are now Community Schools as of the 2018-19 school year.

Key Trends:

- The addition of the 4K program added approximately 2,000 students to MMSD's total enrollment in 2011-2012, and this figure has remained relatively stable since then.

- MMSD will continue to expand the Community School concept to more locations.

Key Assumption:

1. The projections in this Study are based on current programmatic offerings.

8. Evolving MMSD Boundaries Make Trends Difficult to Discern

<u>Challenge:</u>

Enrollment projections are complicated by the fact that MMSD's boundaries have changed significantly in the past and will continue to do so. Enrollment projections must account for school district boundary agreements, particularly where they affect land planned for residential development. Boundaries have evolved through three methods.

First, until the 1990s, MMSD's boundary was enlarged as a matter of course to reflect *annexation* of territory into the City of Madison. Enrollment coming from these growth areas offset the historic decline in persons per household that peaked in the mid-1960s at the end of the Baby Boom. This type of "automatic" boundary expansion ceased by 1995.

Second, as a result of no longer being able to employ the first method, beginning in the 1990s MMSD undertook significant statutory boundary swaps (Wis. Stats §117) with the Sun Prairie School District (SPSD) and Oregon School District (OSD). These swaps generally traded new students in areas planned for new residential development for tax base in areas planned for nonresidential development. Specifically, in the case of Sun Prairie, they provided MMSD areas of new residential development (e.g. the Grandview neighborhood on the far east side) while providing SPSD with areas of new non-residential development (e.g. the East Springs Drive commercial area). In the case of Oregon, they provided MMSD areas of new residential development (e.g. the Swan Creek neighborhood east of Syene Road) while providing the OSD with areas of new non-residential development (e.g. the Hatchery Hill commercial area).

Third, MMSD's boundary is currently static, except on the west side of the District, where agreements with the M-CPSD and the Verona Area School District (VASD) adopted in 1999 require the transfer of certain parcels into MMSD when certain trigger events occur. A change of parcel ownership is a common trigger event, as is annexation of a parcel into the City of Madison. Typically, trigger events require transfer of a parcel into MMSD prior to development. These transferring parcels are generally located adjacent to the Memorial High School attendance area – west of CTH M, south of Mineral Point Road, and north of Midtown Road. District boundaries will likely continue to change in the future through this method. However, the trigger events have uncertain timing. This enlarged MMSD area is referred to as the *"Future MMSD Area"* in this report.

<u>Key Trends:</u>

- MMSD and the adjacent M-CPSD and VASD have been adhering to their boundary agreements.
- MMSD has not pursued a boundary attachment per Wis. Stats. §117 for many years.

<u>Key Assumptions:</u>

1. MMSD will continue to expand into the Future MMSD Area as a result of inter-district boundary transfers per existing agreements with M-CPSD and VASD.
2. Other MMSD boundary changes will not occur within the Study period of 2018-2038.

9. Attendance Area Policies Complicate Projections

Challenge:

Enrollment projections are complicated by the fact that, like most school districts, MMSD attendance area maps have a few quirks. With the exception of territorial additions in the areas governed by agreements with neighboring school districts on the west side, MMSD has had relatively stable attendance areas since the opening of Olson Elementary in 2008. However, a few geographic complexities for projections persist. These include:

- Several leap-frog attendance areas such as Stephens Elementary School;

- Several school pairings, such as Lapham/Marquette, Franklin/Randall, and Midvale/Lincoln; and,

- Lottery and charter schools including James C. Wright Middle School, Badger Rock Middle School, Spring Harbor Middle School, and Nuestro Mundo Charter Elementary School – all of which tend to fill to capacity – with students originating throughout MMSD's area.

Key Trends:

- Attendance area policies and practices have been relatively stable.

- DLI program decisions have an impact on enrollment. To ensure a viable program with a presence of both native languages, DLI schools can draw students from an area larger than the school's attendance area. The evolving language needs of the district and geographies within the district will also guide the location of new or expanded DLI offerings. Today's projections make no assumptions about new or expanded DLI locations.

Key Assumption:

1. The projections in this Study are based on current attendance area policies.

10. School Openings and Closings Alter Enrollment by Shifting Attendance Areas

Challenge:

Enrollment projections are complicated by the opening and closing of schools, thus changing attendance area boundaries.

Key Trends:

- MMSD is planning to enlarge some schools and repurpose underutilized spaces to address overcrowding issues and anticipated enrollment gains.

- Neighboring school districts have acquired school sites and are planning additional school facilities, including a new elementary school in Fitchburg's Northeast Neighborhood and a new high school on the west side of Sun Prairie.

Key Assumption:

1. The projections in this Study are based on current schools and attendance areas.

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IV. Projection Methodology

Key Finding: Useful Methodologies can be Readily Updated.

To project future enrollment for MMSD as a whole, and its individual schools, the methodology used in this Study combines projected trends for population, urban infrastructure, land use, development density and building format, and the location and timing of development, for each of the four *lustrums* (five-year periods) through the 20-year projection period.

The projection methodologies described in this section are designed to be easily updated on a rolling basis as new enrollment, development, land use planning and demographic data becomes available in future years. MMSD intends to informally adjust its internal projections on an annual basis using this framework, with Vandewalle & Associates undertaking formal updates to all facets of the report on a three- to five-year cycle based on perceived District needs and capacity. Notwithstanding the "Ten Key Challenges" outlined in Section III, ongoing volatility and diversification within the national and local residential developments market particularly underscore the need for close monitoring and fine-tuning of long-term trend lines to prevent large diversions from the initial findings of this report between formal updates.

For example, since the initial study was conducted in mid-2016, actual enrollment resulting from greenfield development on the Far East and Far West Sides of Madison has exceeded V&A's and MMSD's original projections – which were based on extrapolating recent enrollment trends. The precision of projections for these areas of rapid residential growth is admittedly limited by small sample sizes and can vary widely from year to year, which without regular adjustments to the underlying datasets to reflect current market conditions and student trends could result in significant margins of error during the 20-year study period. Indeed, annualized projections in the near-term for the Olson or Kennedy attendance areas can be affected by the accelerated construction of even a single subdivision, which may in turn sway enrollment yields based on unforeseen variances in unit density, pricing, and new resident demographics. The same holds true for areas of concentrated redevelopment with relatively little precedent, such as the high-rise residential construction along East Washington Avenue that holds yet-unrealized consequences for the Lapham and Marquette areas. While the actual enrollment resulting from these buildings has been exceedingly low for most buildings based on only a handful of data years, this does not necessarily imply that student yields will remain such as these buildings age, other high-density housing types emerge (such as low-rise townhomes) and as family dynamics and locational tastes evolve. In fact, one recently completed family-oriented multi-family townhome complex on the isthmus has already seen a significant number of students enroll in MMSD.

A. Updated Development Scenario

This Study utilizes a combination of factors in the resulting enrollment projections based on assumptions about the <u>pace</u> of development.

First, estimates of the timing and location of development were identified by **land use and development experts** at the Cities of Madison and Fitchburg, and Vandewalle & Associates. A combined 150 years of experience observing, planning for, and reviewing area development, in conjunction with local developers. This "raw" data is a reflection of estimated timing and sequencing of development and estimated capacity based on current anecdotal *information* by local experts, which was then "metered" according to **extrapolated seven-year trends** based on the assumption that MMSD's territory adds population in a manner consistent with the actual total population and residential construction growth between 2010 and 2017. An assumed continuation of recent growth in net in-migration is a critical factor in this methodology, which results in an *acceleration* of population growth through the study period.

The District selected this Scenario as the most accurate and realistic picture of development and the most useful data points to inform facility decisions since receiving the final Enrollment Projections report in summer 2017. This hybrid approach - most resembling Scenario 3 in the previous Enrollment Projections Study and updated for this report - results in a projected total household growth within MMSD territory between 2018 and 2038 of 62,166 persons in 34,683 households. In practice, the above combination of factors reflects the very strong tendency of actual development in central Dane County to implement adopted municipal plans provided at the neighborhood planning or redevelopment planning level. This level of planning covers approximately 95% of the remaining greenfield areas within the future boundaries of MMSD.

B. General Description of Projection Methodology
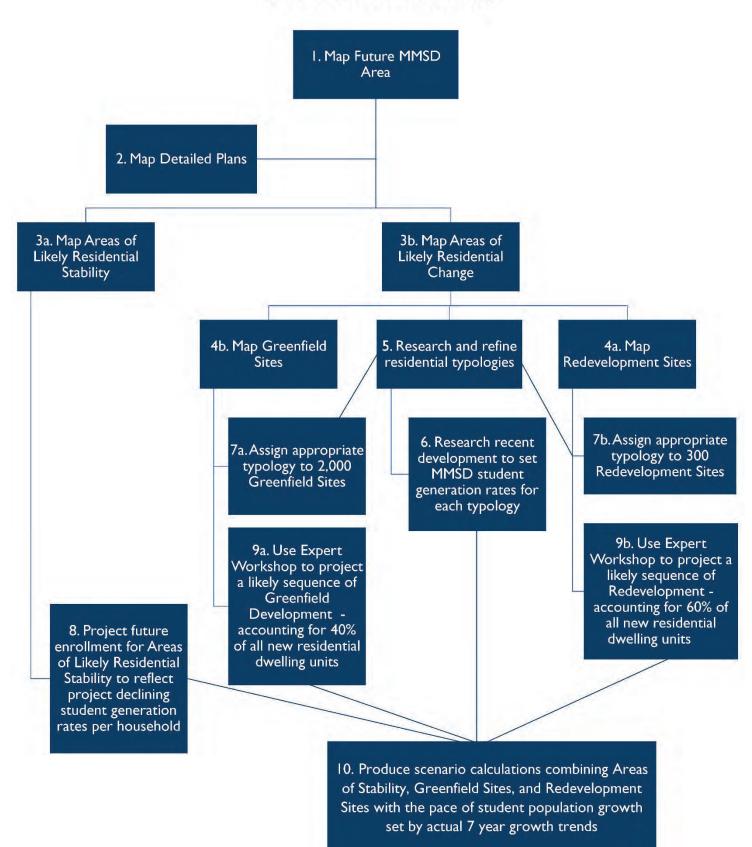
The following methodology is employed to produce enrollment projections:

1. A "Future MMSD Area" is precisely mapped to reflect both current MMSD boundaries and inter-district agreement transfer areas located on the far west side of Madison.

2. The Future MMSD Area is researched and mapped for in GIS to depict existing parcels, current land use, zoning, and planned land use (in comprehensive plans and detailed neighborhood plans), as adopted by each of the area's 12 cities, villages, and towns.

3. The Future MMSD Area is analyzed by planning and development experts to distinguish "Areas of Likely Residential Stability" from "Areas of Likely Residential Change." These areas are mapped.

4. Areas of Likely Residential Change are divided into "Redevelopment Sites" which are already in some form of development, and "Greenfield Sites" – usually farm fields or former farm fields.

5. Recent development projects within the Future MMSD Area are analyzed for building form and density; and then classified by planning and development experts into 26 distinct Development Typologies covering the full range of building formats and density present in central Dane County.

6. Unique student generation rates are established for each development typology based on current (2018-2019) MMSD enrollment records for recent development.

7. Greenfield Sites – comprised of approximately 2,000 "pseudo-parcels" – are individually classified into one of 26 development typologies suited for greenfield development. Redevelopment Sites – comprised of approximately 300 pseudo-parcels – are individually assigned one of the development typologies suited for redevelopment.

8. Future enrollment is projected for Areas of Likely Residential Stability. Enrollment for each attendance area is projected for each lustrum, based on current enrollment ratios – as reduced to reflect the on-going decline in average household size projected by WisDOA for the MMSD area.

9. Development scenarios are sequenced – using the map of all predicted Redevelopment and Greenfield development sites compiled for the Future MMSD Area in Steps 1-4. In a series of workshops, planning and development experts predict the likely timing of development by lustrum for each site. The same relative sequence of development is used independently for greenfield sites, and redevelopment sites, in all Scenarios. Scenarios largely differ by the amount of development in each lustrum. As a result, in different Scenarios, development of the same site can be predicted to occur in a different lustrum. See Section D. for detailed sequencing methodology.

10. The projected number of students is calculated by applying the generation rates from Step 6. The amount of development in each lustrum is based on the consensus opinions of land use and development experts as to what development typologies occur where and when. The amount of development in each lustrum is adjusted to produce population levels consistent with actual 2010-2017 population and residential construction trends for the MMSD area. The projected number of students from new residential development is then added to the projected number of students from existing residential development calculated in Step 8.

C. Projection Methodology Flow Chart

The approach described above is depicted on the following flowchart.

Projection Methodology

1. Map Future MMSD Area

2. Map Detailed Plans

3a. Map Areas of Likely Residential Stability

3b. Map Areas of Likely Residential Change

4b. Map Greenfield Sites

5. Research and refine residential typologies

4a. Map Redevelopment Sites

7a. Assign appropriate typology to 2,000 Greenfield Sites

6. Research recent development to set MMSD student generation rates for each typology

7b. Assign appropriate typology to 300 Redevelopment Sites

9a. Use Expert Workshop to project a likely sequence of Greenfield Development - accounting for 40% of all new residential dwelling units

9b. Use Expert Workshop to project a likely sequence of Redevelopment - accounting for 60% of all new residential dwelling units

8. Project future enrollment for Areas of Likely Residential Stability to reflect project declining student generation rates per household

10. Produce scenario calculations combining Areas of Stability, Greenfield Sites, and Redevelopment Sites with the pace of student population growth set by actual 7 year growth trends

D. Detailed Scenario Sequencing Methodology

Projected enrollment for the updated development Scenario was conducted by calculating a total estimated population for MMSD for each lustrum through 2038. This was then converted to an estimated number of occupied households based on the DOA's weighted projected number of persons per household for the municipalities' in this Study's MMSD Statistical-Geography. Finally, this result was back-converted to a target number of housing-units (which may be occupied or unoccupied) per lustrum based on V&A's interpolation of the 2018 HUD housing vacancy rate for MMSD of 2.4%.

Simultaneously, the database of anticipated residential development sites was compiled (Methodology Steps 3-4, 7) and each site was assigned a likely residential typology. Then a projected number of housing units was either tabulated or calculated for each site.

In instances where an exact housing unit count was known, this was used. For instance, platted parcels intended for single-family homes were given a projected housing unit count of 1, while many near-term or under-construction multi-family projects have already published exact anticipated unit counts, which were collected and used.

For all remaining sites, the projected housing units count was calculated by multiplying the acreage of the site by the estimated density of dwelling units per acre for that site's typology, as seen in the typology table on page 52.

From these, counts of anticipated students were calculated for each site (in breakdowns of total students, elementary students, middle school students, and high school students) by multiplying the projected housing unit count by the student generation rates for the site's corresponding typology based on recent comparable development (see the table on page 54).

An estimate of the timing of each site to develop by lustrum was provided by municipal staff and the other experts consulted, as well as knowledge of specific imminent developments.

The likelihood of each site to develop was then ranked in sequence – separately for redevelopment and greenfield sites. The sites were then assigned a lustrum, starting with the first lustrum, for each Scenario until the target number of housing units for each five-year interval had been hit. About 57% of the housing units in each lustrum were assigned to redevelopment sites, and about 43% of the housing units were assigned to greenfield sites since this was the overall ratio of anticipated housing units within the Future MMSD boundary.

For both the redevelopment and greenfield sites, the sequencing was based first on known approved projects, which were all assigned to the first lustrum. From that point on the methodology for sequencing diverged between the redevelopment and greenfield sites. For the redevelopment sites, educated estimates were made based initially on the lustrum assigned according to Development Expert Opinion. For the greenfield sites, an extensive GIS-based analysis was conducted to help further refine the timing of likely development on a site-by-site basis.

An analysis for each greenfield site was run as to whether the land in question met a number of geographic criteria. These criteria, listed in hierarchical order below, were also ranked by their relative estimated importance in determining the timing of development.

1. Housing Unit Built but Unoccupied
2. Approved Building Permit or Specific Implementation Plan
3. Improved Lot (supporting street and utility networks installed)
4. Platted
5. Zoned for Residential Development
6. Annexed by a City or Village
7. In Urban Service Area
8. Adjacent to Utility Network
9. Planned for Development in Detailed Neighborhood Plan
10. Planned for Development in Comprehensive Plan
11. Planned for Development in Build-out Plan

See Section H. Map of Anticipated Residential Development on page 57 for additional detail.
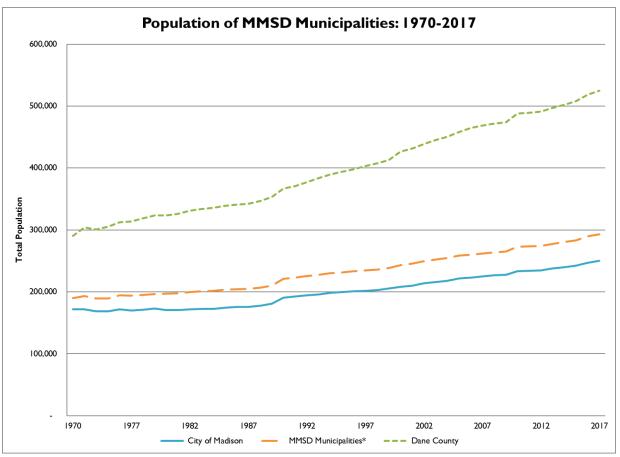
E. Detailed Data

The following pages present the data used to establish the projection Scenarios.

1. Population Growth

The following graph and table track the historic population growth of Dane County, the City of Madison, and all combined MMSD municipalities from 1970 to 2017. Dane County is now adding people even faster than the steady growth trend of the 1980 to 2010 30-year period. Specifically, between 2010 and 2017 Dane County grew from a total population of 488,075 as counted in the January 1, 2010 U.S. Census, to a total population of 536,416 as estimated by the U.S. Census Bureau as of July 1, 2017. This is an increase in total population of 48,341 persons, or about 6,900 persons per year – which exceeds the 30-year annual average of about 5,500 persons.

Within the MMSD territory during the same 2010-2017 period, total population has increased from 226,308 as counted in the 2010 U.S. Census to a total population of about 249,104 as estimated by the U.S. Census Bureau in 2017. This is an increase in total population of 22,796 persons, or 3,256 per year – which exceeds the30-year average of about 2,500 persons per year. Throughout the last 30 years, almost all population gain (and associated development) within MMSD's territory has occurred within the City of Madison or the City of Fitchburg.

Population of MMSD Municipalities: 1970-2017

Source: U.S. Census Bureau and Vandewalle & Associates

Total Population Change in the MMSD Area: 1970 - 2017

Area	1970	1980	1990	2000	2010	2017
Dane County	290,272	323,545	367,085	426,526	488,073	536,416
Avg. Pop. Change		+ 3,327 / yr	+ 4,354 / yr	+ 5,944 / yr	+ 6,158 / yr	+ 6,906 / yr
MMSD Statistical Geography*	189,789	196,871	220,967	243,408	272,725	300,197
Avg. Pop. Change / Year		+ 708 / yr	+ 2,410 / yr	+ 2,244 / yr	+ 2,932 / yr	+ 3,925 / yr
City of Madison	171,809	170,616	190,766	208,054	233,209	255,214
Avg. Pop. Change / Year		- 1,19 / yr	+2,015 / yr	+ 1,729 / yr	+ 2,516 / yr	+ 3,144 / yr
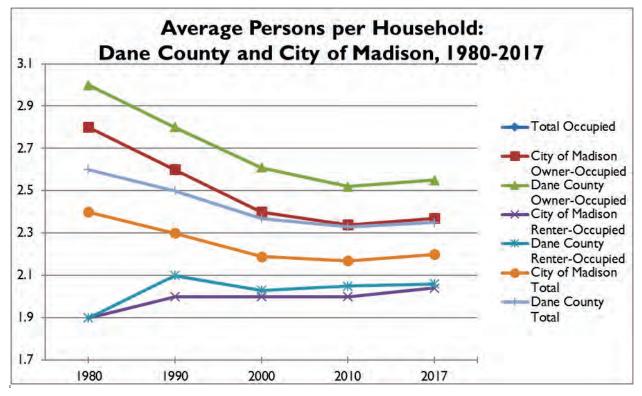
Source: U.S. Census Bureau (2017) & Vandewalle & Associates

2. Declining Average Household Size Continues per WisDOA Projections

Like most of the nation, MMSD has seen average household size shrink throughout its long history, though according to American Community Survey estimates, these figures have increased slightly since 2010. The only significant variation to more than 150 years of steady decline in persons per household was the increase associated with the Baby Boomers, born between 1946 and 1964. The table and chart below depict historic change since 1980.

Average Household Size 1980 - 2017					
Location and Tenure:	1970	1980	2000	2010	2017
Madison: Owner-Occupied	2.8	2.6	2.4	2.3	2.37
Dane County: Owner-Occupied	3.0	2.8	2.6	2.5	2.55
Madison: Renter-Occupied	1.9	2.0	2.0	2.1	2.04
Dane County Renter-Occupied	1.9	2.1	2.0	2.1	2.06
Madison: Total Households	2.4	2.3	2.2	2.2	2.22
Dane County: Total Households	2.6	2.5	2.4	2.3	2.35

Source: U.S. Census Bureau and Capital Area Regional Planning Commission

Source: U.S. Census Bureau and Capital Area Regional Planning Commission

The Wisconsin Department of Administration has made projections about household size for many years, with a high degree of accuracy. Projections are currently available to 2040 and continue to indicate that average household size will decline by about 1% in every five-year period used in this report – particularly between 2020 and 2040.

The projections in this report are based on the assumption that WisDOA's projections for persons per household decline are accurate throughout the 20-year projection period, and that the rate of enrolled MMSD students per household will decline at the same percentage. This approach will result in the same number of dwelling units producing a slightly lower enrollment every year. This can lead to long-term enrollment reductions in attendance areas with a fixed number of dwelling units.

Specifically, projections provided by WisDOA in 2013 projects a decline of average household size for Madison as shown in the table, below.

Projected Average Household Size for the City of Madison

Source: Wisconsin Department of Administration (2013)

The study team has interpolated these projections to match up with the projection period of 2018 to 2038 as follows, for the Future MMSD Area:

Projected Average Household Size for the Future MMSD Area						
Year or Lustrum ⇒	2010	2018	2018-2023	2023-2028	2028-2033	2033-2038
Future MMSD Area	2.17	2.11	2.09	2.07	2.05	2.04
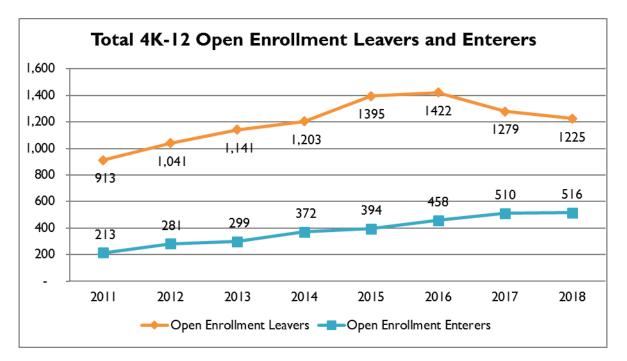
Source: Vandewalle & Associates (2019), from Department of Administration (2013)

3. Net Leavers are Declining

The last two years have seen a fairly substantial decline in net leavers for MMSD after increasing steadily between 2011 and 2016. Data for MMSD enters and leavers is presented in the table and chart below.

MMSD Historic Leavers and Enterers through Open Enrollment

	2011	2012	2013	2014	2015	2016	2017	2018
Enterers	291	281	299	372	316	458	510	516
Leavers	913	1,041	1,141	1,203	1,315	1422	1279	1225
Net	- 700	- 760	- 842	- 841	- 999	-964	-769	-709

Source: Vandewalle & Associates, based on MMSD Enrollment Data 2011-2018.

The number of net leavers from MMSD is decreasing. However, these numbers are susceptible to enrollment capacity at neighboring school districts. As schools in neighboring districts experience increased internal enrollment, they tend to reduce the number of students they accept from other districts. Therefore, the projections for this Study assume that net leavers will be constant with current totals.

F. Development Typology Used in this Study

The residential development typology employed in Steps Six through Ten of the projection methodology presented above is summarized in the following table.

The typology is designed to capture the unique student generation rates from 26 forms of development containing residential dwellings. These range from single-family homes served by private well and septic systems – located in the few remaining rural lands in the District, to "Constellation"-style seven- to twelve-story buildings with commercial and/or office uses on the ground and second floors.

The table on the following page organizes these typologies by typical location within the metropolitan area. These are displayed on the table rows with the shaded bands.

A unique identification map code is provided in the first column for each typology. Maps presented later in this report will display these letter codes.

The second column provides a brief description of the dwelling unit type. Abbreviations are found at the bottom of the table.

The third column lists the typical zoning districts that host each typology, from the City of Madison's new zoning code. Where zoning is present on vacant lots, the zoning code can provide a clue to the building typology before a building is erected.

The fourth column describes the general building form of the typology. UGP indicates the building is provided with Under Ground Parking, and /C indicates that residential units are found on upper stories, over Commercial uses.

The final column lists the density of development that is typically achieved, in dwelling units per acre. A dwelling unit provides accommodations for a single household. A single-family home is a dwelling unit, as is an efficiency apartment. By using development typologies, this Study can assign a unique MMSD student generation rate to each typology – based on current MMSD enrollment records. The typical density provides an estimate of the number of dwelling units likely to be built on a given parcel, based on that parcel's area. The densities provided in this table, are unique to central Dane County, as provided by experts in the planning department of Madison and Fitchburg, and at Vandewalle & Associates.

MMSD Projections: Residential and Mixed-Use Typologies

Map Code	Residential Type	Zoning Districts (City of Madison)	Typical Building	Typical Achieved (Gross) Density
Areawide Development Typologies *(may be residential only or mixed use)*				
A	Family Oriented M.F.	Variable	Multi-Family	Variable
Suburban Residential Only Development Typologies *(typically with medium sized lots and setbacks)*				
B	Medium Lot S.F.	SR-C1	Single-Family	3 du / ac
C	Small Lot S.F.	SR-C2	Single-Family	4 du / ac
D	Duplex	SR-C3	Duplex	6 du / ac
E	Two-Flat	PUD (rare)	2-Flat	8 du / ac
F	3-4 Unit M.F.	SR-V1	4 Unit	8 du / ac
G	5-8 Unit M.F.	SR-V2	8- Unit / Townhouse	12 du / ac
H	9-16 Unit M.F.	SR-V2	12 Unit / 16 Unit	16 du / ac
I	Large 3-Story M.F.	SR-V2	3-Story UGP	20 du / ac
J	Large 4-Story M.F.	SR-V2	4-Story UGP	30 du / ac
K	Large 5-8 Story M.F.	SR-V2	5+ Story UGP	50 du / ac
Urban Residential Only Development Typologies *(typically with small sized lots and setbacks)*				
L	Medium Lot S.F.	TR-C1	Single-Family	4 du / ac
M	Small Lot S.F.	TR-C2	Single-Family	5 du / ac
N	Duplex	TR-C3	Duplex	7 du / ac
O	Two-Flat / 3-Flat	TR-C4 / DR-1	Two-Flat	8 du / ac
P	3-4 Unit M.F.	TR-V1 / TR-V2	4 Unit	10 du / ac
Q	5-8 Unit M.F.	TR-U1 / TR-U2	8 Unit / Townhouse	15 du / ac
R	9-16 Unit M.F.	TR-P	12 Unit / 16 Unit	20 du / ac
S	Large 3-Story M.F.	TR-P	3-Story UGP	25 du / ac
T	Large 4-Story M.F.	TR-P	4-Story UGP	40 du / ac
U	Large 5-8 Story M.F.	PUD	5+ Story UGP	60 du / ac
V	Large 9+ Story M.F.	PUD	9+ Story UGP	100 du / ac
Mixed Use Development Typologies *(typically Residential over Commercial and/or Office)*				
W	Neighborhood M.U.	TSS, CC-T, NMX	2/3 floors Res / C	25 du / ac
X	Urban M.U.	DC, UMX, MXC	4-5 floors Res / C	40 du / ac
Y	Central M.U.	PUD	7+ floors Res / C	75 du / ac
Z	Core M.U.	PUD	7+ floors Res / 2+ C	100 du / ac
S.F: Single Family; M.F.: Multi Family; M.U.: Mixed Use; UGP: Underground Parking; du: dwelling unit; ac: acre				

Source: Vandewalle & Associates, City of Madison, and City of Fitchburg (2019)

G. Student Generation Rates Used in this Study

The student generation rates calculated in Step Six of the projection methodology described in Section D above are summarized in the following table. These rates were measured for a large sample of primarily recent residential greenfield development, infill development, and redevelopment within MMSD.

A sample of over 16,000 existing housing units (over double the sample size used in the previous version of this study) were mapped and categorized into one of the 26 development typologies. Student generation ratios were then calculated by mapping current student residences by grade group and aggregating them by the number of units of each typology in the sample.

To further increase sample size, ratios were aggregated for many corresponding rural, suburban and urban Typologies. These pairings include B and L, C, and M, D and N, F and P, and H and R.

Many of the rates provided in the table are very low. Specifically, in 2010 MMSD residences generated students at a rate of 0.23 students per occupied household. The rates measured in peripheral developing neighborhoods in the District range from highs of 0.385 PK-12 students per household for small lot single-family homes and 0.513 students per Family Oriented Multi-Family unit, down to practically no students generated by large multi-family buildings. These low rates are at the heart of the very modest growth projected for MMSD enrollment by this Study.

It is unknown if and how these rates will evolve. Future MMSD enrollment data should be compared to the table, and where different, should be adjusted to provide updated projections.

One potential cause of these low rates could be that many new multifamily buildings are predominantly occupied by a combination of Millennial young professionals and Empty Nester Baby Boomers. Both groups have very few school age children in the home.

MMSD Enrolled Student Generation Rates in Recent Developments, 2018-2019 (PK-12)

Typology Map Code	Residential Type	Elementary School Students	Middle School Students	High School Students	Total MMSD Students
Areawide Development Typology *(may be residential only or mixed use)*					
A	Family Oriented M.F.	0.292	0.11	0.112	0.513
Suburban Residential Only Development Typologies *(typically with medium sized lots and setbacks)*					
B*	Medium Lot S.F.	0.140	0.06	0.137	0.340
C*	Small Lot S.F.	0.192	0.08	0.112	0.385
D*	Duplex	0.041	0.02	0.034	0.097
E	Two-Flat	*New two-flat locations are not planned.*			
F*	3-4 Unit M.F.	0.050	0.03	0.025	0.101
G	5-8 Unit M.F.	0.032	0.00	0.009	0.043
H*	9-16 Unit M.F.	0.024	0.00	0.017	0.045
I	Large 3-Story M.F.	0.022	0.01	0.009	0.036
J	Large 4-Story M.F.	0.018	0.00	0.005	0.025
K	Large 5-8 Story M.F.	0.018	0.00	0.011	0.032
Urban Residential Only Development Typologies *(typically with small sized lots and setbacks)*					
L*	Medium Lot S.F.	0.500	0.50	0.000	1.000
M*	Small Lot S.F.	1.000	0.33	0.167	1.500
N*	Duplex	0.041	0.02	0.034	0.097
O	Two-Flat / 3-Flat	*New two-flat/3-flat locations are not planned.*			
P*	3-4 Unit M.F.	0.050	0.03	0.025	0.101
Q	5-8 Unit M.F.	0.019	0.00	0.019	0.038
R*	9-16 Unit M.F.	0.050	0.05	0.050	0.150
S	Large 3-Story M.F.	0.032	0.00	0.014	0.051
T	Large 4-Story M.F.	0.032	0.01	0.007	0.053
U	Large 5-8 Story M.F.	0.000	0.00	0.000	0.003
V	Large 9+ Story M.F.	0.001	0.00	0.000	0.003
Mixed Use Development Typologies *(typically Residential over Commercial and/or Office)*					
W	Neighborhood M.U.	0.010	0.00	0.002	0.012
X	Urban M.U.	0.009	0.00	0.004	0.018
Y	Central M.U.	0.011	0.00	0.002	0.017
Z	Core M.U.	0.002	0.00	0.000	0.003
S.F: Single Family; M.F.: Multi Family; M.U.: Mixed Use; UGP: Underground Parking; du: dwelling unit; ac: acre					

*Source: Vandewalle & Associates (2019) *To further increase sample size, ratios were aggregated for many corresponding rural, suburban and urban Typologies. These pairings include B and L, C, and M, D and N, F and P, and H and R.*

H. Map of Anticipated Residential Development

The following map depicts the pattern of residential and mixed-use development typologies that results from an intensive study of City of Madison and City of Fitchburg planning materials. Specific source materials were selected for all vacant (greenfield) areas within the future MMSD area, and for sites identified as likely to redevelopment between 2019 and 2038 by a team of planning and development experts.
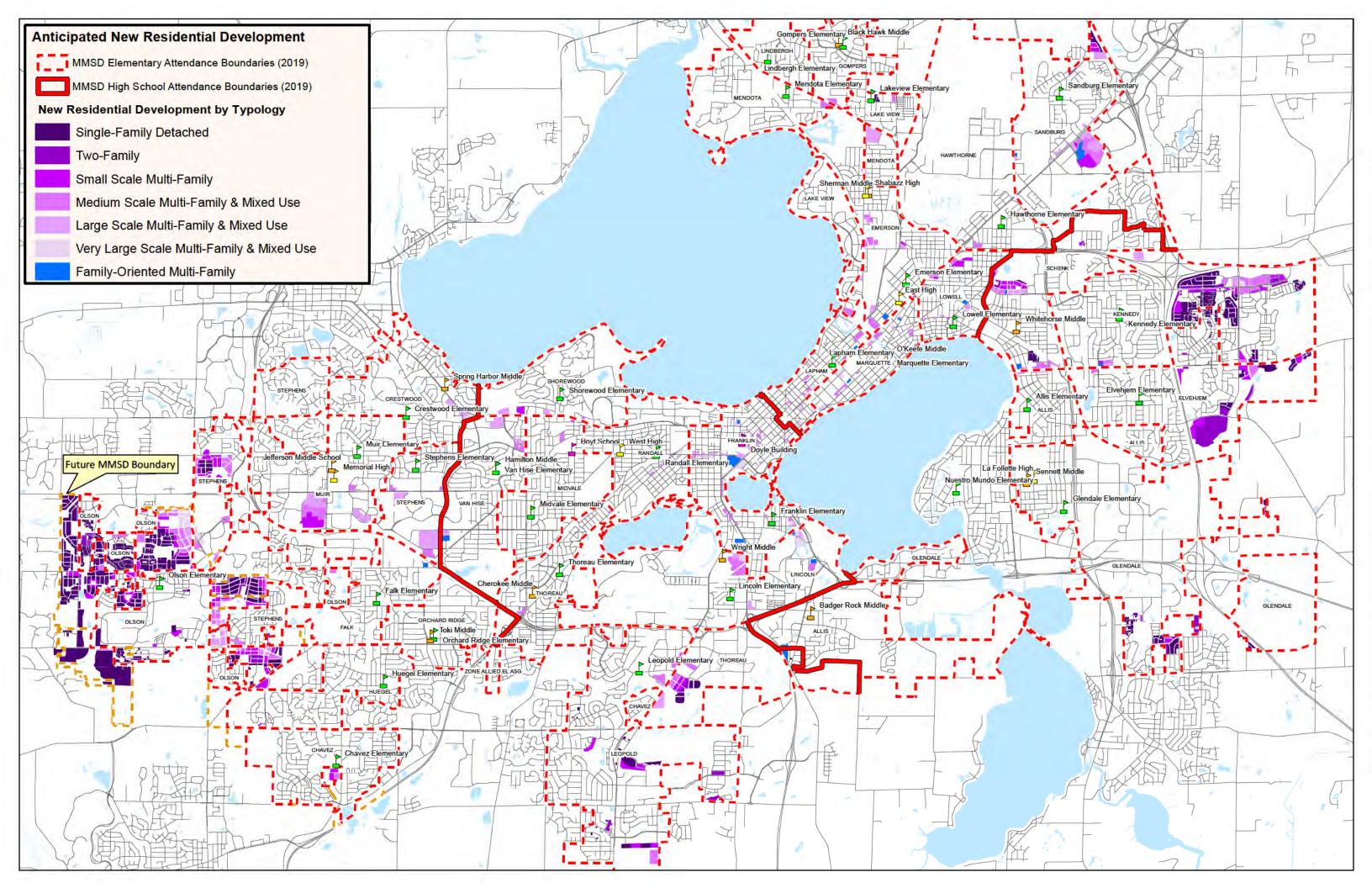
The following source materials were used, in the order of priority presented below:

- A windshield survey of projects recently completed or under construction
- Marketing materials for approved, but not yet built, residential and mixed-use projects
- Specific and Precise Implementation Plans depicting the exact nature of approved development for parcels with Planned Development zoning
- Zoning on platted individual lots
- General Development Plans depicting the general nature of approved development for parcels with Planned Development zoning
- Zoning on un-platted parcels where individual lots were not yet platted
- Approved Detailed Neighborhood Development Plans – typically employing proposed land use descriptions similar to the "Residential Type" or "Typical Building Type" columns shown in the preceding MMSD Projections: Residential and Mixed-Use Typologies table
- General land use categories employed on the Future Land Use Map in each municipality's Comprehensive Plan

This map clearly depicts the three concentrations of new greenfield development located at the far west and far east sides of Madison, and central Fitchburg, as shown on the Potential Areas and Agents of Change Map in Section II.A. Although single-family development typologies (B and C) are depicted on the largest amount of area, significant areas of dense multi-family and mixed-use development are found in much greater proportion than in most older Madison neighborhoods built-out between 1960 and 1990. In fact, projected multi-family dwelling units comprise 89% of all mapped units, while single-family and duplex dwelling units comprise only 11%. Blue sites represent the new typology defined for this updated projection: Family-Oriented Multi-Family Housing. These are planned multi-family buildings with more than 2 units per building that generally are targeted towards families by including two or three bedrooms in most units. The building density varies, but the projected students per unit does not.

Redevelopment parcels are scattered throughout the built-up urban areas – with clusters occurring within the central isthmus neighborhoods focused along the main arterial road; and in the redevelopment nodes and aging shopping centers. Again, see the Potential Areas and Agents of Change Map.

In total, more than 2,000 greenfield platted lots and unplatted pseudo-parcels are depicted – each with its own development typology. More than 300 redevelopment sites are also identified – each with its own development typology.

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Anticipated New Residential Development

- - - MMSD Elementary Attendance Boundaries (2019)
▬ MMSD High School Attendance Boundaries (2019)

New Residential Development by Typology

- Single-Family Detached
- Two-Family
- Small Scale Multi-Family
- Medium Scale Multi-Family & Mixed Use
- Large Scale Multi-Family & Mixed Use
- Very Large Scale Multi-Family & Mixed Use
- Family-Oriented Multi-Family

Future MMSD Boundary

Gompers Elementary   Black Hawk Middle
LINDBERGH
Lindbergh Elementary   GOMPERS
Mendota Elementary
MENDOTA
Lakeview Elementary   Sandburg Elementary
LAKE VIEW   SANDBURG
HAWTHORNE
MENDOTA
Sherman Middle Shabazz High
LAKE VIEW
Hawthorne Elementary
EMERSON
SCHENK
Emerson Elementary
East High
LOWELL
Lowell Elementary   Whitehorse Middle   KENNEDY
Kennedy Elementary
Lapham Elementary   O'Keefe Middle
STEPHENS
Marquette Elementary
LAPHAM   MARQUETTE
CRESTWOOD   Allis Elementary   Elvehjem Elementary
Spring Harbor Middle   SHOREWOOD   ALLIS   ELVEHJEM
Shorewood Elementary
Crestwood Elementary
Muir Elementary   Hoyt School West High
FRANKLIN
Jefferson Middle School   Stephens Elementary   RANDALL   Doyle Building
Memorial High   Hamilton Middle   Randall Elementary
MUIR   Van Hise Elementary   La Follette High Sennett Middle
STEPHENS   MIDVALE   Nuestro Mundo Elementary
OLSON   VAN HISE
OLSON   Midvale Elementary   Glendale Elementary
OLSON   Franklin Elementary
Olson Elementary   Thoreau Elementary   GLENDALE
Wright Middle
Falk Elementary   LINCOLN
STEPHENS   Cherokee Middle   Lincoln Elementary
OLSON   THOREAU   GLENDALE
FALK   Badger Rock Middle
ORCHARD RIDGE   ALLIS
Toki Middle
Orchard Ridge Elementary   THOREAU
Huegel Elementary   ZONE ALLIED EL ASG
HUEGEL   Leopold Elementary
CHAVEZ
Chavez Elementary   LEOPOLD
CHAVEZ
LEOPOLD

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The second map, "Anticipated New Residential Development: Northern Olson Elementary Attendance Area", provides a zoom-in sample of detailed typology mapping for the far west side.

- Each letter corresponds to the typology for an area with the same typology throughout that area. This could be an individual lot, or an entire block.
- Hence, Bs and Cs are well-scattered because single-family homes tend to fill entire blocks. In contrast, Fs, Ws, and Xs represent large multi-family buildings that typically are not clustered but have lots larger than needed for single-family development.
- The darkest colored areas represent single-family development.
- The lightest colored areas represent very high-density multi-family buildings of nine or more floors.
- This site-specific mapping is available in GIS for the entire MMSD future area and reflects a very useful database that should be updated as more details are known about new development projects.

The third map is a screen capture of the GIS layers partially used to construct the future development maps. A description of the layers shown on this screen capture follows.

- Areas outside the anticipated future MMSD boundary were not assigned typologies, even if in City of Madison Neighborhood Development Plans, such as in the Northwest corner of the map.
- The most general source drawn from was the City of Madison's Planned Land Use Map from the 2018 Comprehensive Plan.
- More detailed Neighborhood Development Plans created by the City of Madison were examined next. Planned possible right-of-way is mapped in these plans, and more specific land use densities and categories are identified.
- City of Madison Zoning can indicate when a greenfield area is nearing residential development.
- Platted parcels indicate even more imminent residential development, including likely density. These sometimes contradict, and when doing so supersede, mapped right-of-way and land use from the Neighborhood Development Plans.
- In some cases, residential parcel plats were approved but not yet recorded by the Dane County Land Information Office.
  o In one instance a CAD file was obtained from the developer and incorporated into the mapping database, such as the parcels highlighted in red.
  o If a CAD file was unavailable, a pdf of the parcel plats was obtained, digitized, traced, and incorporated into the mapping database. A partially transparent image of one such plan can be seen on the map between Harvest Moon Ln. and Valley View Rd.
- Other sources such as approved development plans, input from municipal planning staff or other experts, or plans from adjacent municipalities were consulted to determine the likely future residential typology.

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Anticipated New Residential Development:
Northern Olson Elementary Attendance Area

- Current MMSD Boundary (2019)
- Areas to be transferred into MMSD per inter-district agreements
- Likely Future Olson Attendance Area
- Likely Future Stephens Attendance Area

New Residential Development by Typology
- Single-Family Detached (B, C, L, M)
- Two-Family (D, E, N, O)
- Small Scale Multi-Family (F, G, H, P, Q, R)
- Medium Scale Multi-Family & Mixed Use (I, J, S, T, W)
- Large Scale Multi-Family & Mixed Use (K, U, X)
- Very Large Scale Multi-Family & Mixed Use (V, Y, Z)

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V. Big Picture Overview of Enrollment 2018-2038

A. General Enrollment Stability has been the Historic Trend

MMSD has had remarkably steady K-12 enrollment since 1980. Throughout this period enrollment has centered on 24,500 students, with an annual variation of no greater than 1,500 students above or below this average. This steady trend has been a coincidence of the counterbalancing trends of total population gain offset by declining household size and the concurrent decline in the number of school age children per capita. Enrollment trends at area private schools, net inter-district transfers, and home schooling also contribute in varying degrees to this enrollment plateau.

As such, in no way does MMSD's steady enrollment reflect the result of planning or development coordination between the District and its constituent municipalities. It is a *coincidence* of a wide range of demographic trends, economic conditions, and changes in municipal and school district boundaries.

This resulting stable enrollment has occurred when the overall population of the District's Statistical Geography has grown from 220,967 in 1990 to 300,197 in 2017. Essentially, despite the addition of nearly 80,000 residents over the last 27 years, there have been minimal changes on enrollment.

The following graph provides an overview of historic enrollment trends in MMSD.

Historic MMSD K-12 Enrollment Trends by School Level, 1970-2018
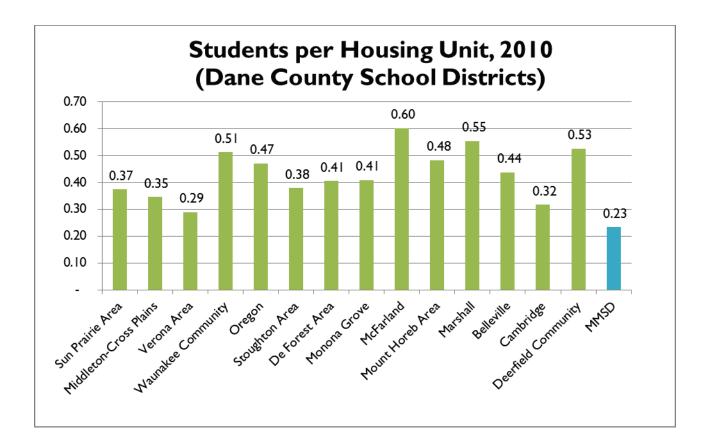
B. Future MMSD Enrollment is Likely to be Astonishingly Steady
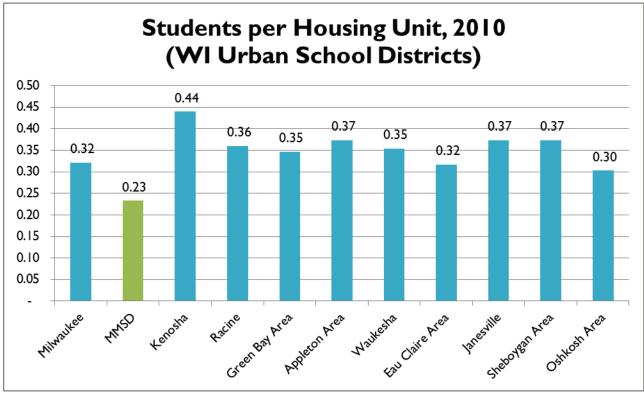
The updated Development Scenario (extrapolated based on 2010-2017 population trends) results in a slight increase in K-12 enrollment for MMSD as a whole, with significant enrollment increases in the Olson and Kennedy Elementary attendance areas, and moderate gains in the Stephens, Elvehjem, Schenk, Franklin, and Lincoln Elementary and Toki and Whitehorse Middle attendance areas. These enrollment gains directly reflect large areas of projected greenfield and limited infill development in these areas.

In total, the updated model results in about 35,000 additional households and about 1,560 additional MMSD students by 2038. In both instances, the strong rate of general population growth is offset by the continued decline of enrollment from existing households, and the low student generation rates of new development predominated by multi-family dwelling units, which are expected to dominate both urban and suburban areas of the District in the coming years.

Note that the projected rate of net student production per new household continues to be very low at 0.15 students per household, compared with 2010 data for MMSD which noted an overall student generation rate of 0.23 students per household for the District as a whole. Claims of Madison becoming more like San Francisco and Manhattan, in terms of low student generation rates, appear to be manifesting themselves in these projections. It is difficult to say with certainty whether the current very low student generation rates are a result of the Great Recession delaying the start of Millennial families or merely a short-term trend.

The following charts display the students per housing unit for Dane County school districts, and for the ten largest urban school districts in the state. Note that the student generation rate for MMSD at 0.23 students per household is the lowest among all districts examined. Through the projection period MMSD's student generation rate is likely to decline further. As a result of 83% of dwelling units constructed in the last five years being in multi-family buildings, with high percentages of efficiency and one-bedroom units, the average current student generation rates of such building typologies (in structures with 3+ units, and excepting projects designed to encourage family occupancy) that are increasingly present on the far east and far west sides of the District is approximately 0.04 students per household.

Students per Housing Unit, 2010 (Dane County School Districts)

District	Value
Sun Prairie Area	0.37
Middleton-Cross Plains	0.35
Verona Area	0.29
Waunakee Community	0.51
Oregon	0.47
Stoughton Area	0.38
De Forest Area	0.41
Monona Grove	0.41
McFarland	0.60
Mount Horeb Area	0.48
Marshall	0.55
Belleville	0.44
Cambridge	0.32
Deerfield Community	0.53
MMSD	0.23

Students per Housing Unit, 2010 (WI Urban School Districts)

District	Value
Milwaukee	0.32
MMSD	0.23
Kenosha	0.44
Racine	0.36
Green Bay Area	0.35
Appleton Area	0.37
Waukesha	0.35
Eau Claire Area	0.32
Janesville	0.37
Sheboygan Area	0.37
Oshkosh Area	0.30

Sources: Wisconsin Dept. of Public Instruction 2010-2011 Certified Enrollment Records; 2010 U.S. Census; 2006-2010 American Community Survey 5-Year Estimates.

C. MMSD's Future Area May be Approaching Greenfield Build-Out around 2050.

The updated Development Scenario combining development expert opinions and extrapolated 2010-2017 growth trends both nearly exhaust the supply of developable residential greenfield land within the MMSD Future Area by about 2050. The remaining land left for residential greenfield development after 2038 could supply another approximately 6,000 dwelling units, but it is comprised primarily of land owned by governmental entities that may never come available.

If recent trends continue, *and* such land is available, about 12 years of residential greenfield development capacity remain in the MMSD Future Area following the planning period of this Study. After these areas are developed and if no additional lands are annexed into the District, overall MMSD enrollment is likely to decline.

D. The Importance of Redevelopment in Enrollment

The updated development projections emphasize the potential role of redevelopment in maintaining MMSD's overall enrollment. Development experts identified over 300 potential redevelopment sites – mostly in Isthmian Madison. Although resulting multi-family development typically has low generation rates, the sheer quantity of dwelling units contribute a substantial share of future MMSD enrollment.

Specifically, the residential typology mapping conducted for this Study projects that of about 50,000 additional dwelling units in MMSD up to the time of full buildout, 4,300 will be single-family homes, 1,200 will be duplexes, and about 44,500 will be multi-family dwellings, mostly in large buildings on redevelopment sites.

It should be noted that current development financing qualifications have brought large-scale condominium development to a halt nationwide. If this changes, low-rise condominiums could generate students, and could provide a landing spot for empty-nesters – making their single-family homes available to younger families and their students.
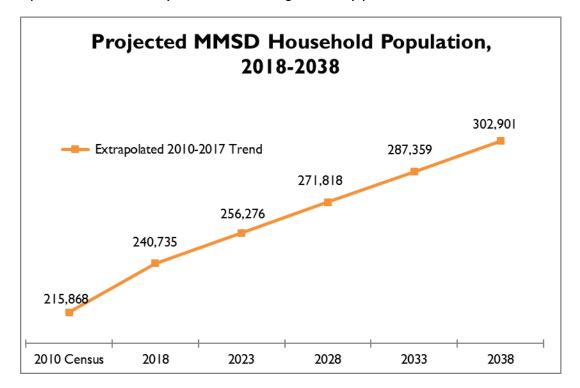
E. Significant Variations in the Amount of Development Occur in Attendance Areas

The limited locations of the greenfield and redevelopment sites direct most new development to a handful of attendance areas. With the Verona and Middleton-Cross Plains School Districts on the west side, most greenfield sites are in the currently unassigned inter-district transfer areas. About 90 percent of available greenfield sites are closest to Olson Elementary School, with 9 percent of the area closest to the far west side Stephens Elementary School attendance area. A few sites are close to Chávez Elementary School. Redevelopment sites are well-scattered, with the Randall Elementary School attendance area having the most. On the east side, about 45 percent of the greenfield sites are in the Elvehjem or Kennedy Elementary School attendance areas. Redevelopment sites are well-scattered, with Lapham Elementary School having the most sites. Several small greenfield and redevelopment sites are located in Fitchburg, in the Leopold Elementary School attendance area.

VI. Development Scenario Analysis

A. Scenario Overview for all of MMSD

The development Scenario for this Study is based on a combination of development knowledge held by planning department staff at the City of Madison and City of Fitchburg and by planning and development consultants at Vandewalle & Associates, and an extrapolation of actual population trends within MMSD for the period between 2010 and 2017. The following graph and table depict projected household population and corresponding District enrollment for the updated development Scenario in five-year lustrums through the study period.

Projected MMSD Household Population, 2018-2038

Development Scenario Summary					
2010-2017 Extrapolated Growth Trend	**2018-2023**	**2023-2028**	**2028-2033**	**2033-2038**	**20-Year Totals**
Households Added	8,629	8,637	8,772	8,645	**34,683**
Household Population Added	15,542	15,542	15,542	15,542	**62,166**
New MMSD Enrollment	785	319	195	266	**1,564**
Total Projected MMSD Enrollment	**27,855**	**28,173**	**28,369**	**28,634**	

The following tables (total enrollment and K-12 only) and maps reflect the estimated pattern and timing of development for the updated development Scenario in each attendance area.

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Projected Enrollment by School at Extended 2010-2017 Rate of Household Growth (including PK/4K)

School/Program	2018-19 MMSD Enrollment	Enrollment Change within Existing Development, 2018-2023[1]	Enrollment Change from New Development, 2018-2023[2]	2023 Total Projected Enrollment	Enrollment Change within Existing Development, 2023-2028[1]	Enrollment Change from New Development, 2023-2028[2]	2028 Total Projected Enrollment	Enrollment Change within Existing Development, 2028-2033[1]	Enrollment Change from New Development, 2028-2033[2]	2033 Total Projected Enrollment	Enrollment Change within Existing Development, 2033-2038[1]	Enrollment Change from New Development, 2033-2038[2]	2038 Total Projected Enrollment	Enrollment Change within Existing Development, Beyond 2038[1]	Enrollment Change from New Development, 2032-2038[2]	Beyond 2038 Total Projected Enrollment
		-1.04%			-0.92%			-0.91%			-0.73%			-0.73%		
Emerson Elementary	416	-4	11	422	-4	4	422	-4	7	425	-3	11	432	-3	0	429
Gompers Elementary	199	-2	0	197	-2	1	196	-2	0	194	-1	1	194	-1	0	192
Hawthorne Elementary	374	-4	0	370	-3	0	367	-3	0	363	-3	0	361	-3	1	359
Lake View Elementary	261	-3	4	262	-2	0	259	-2	0	257	-2	0	255	-2	0	253
Lapham Elementary	264	-3	20	281	-3	3	281	-3	13	292	-2	3	293	-2	1	292
Lindbergh Elementary	188	-2	0	186	-2	0	184	-2	0	183	-1	0	181	-1	0	180
Lowell Elementary	351	-4	31	378	-3	4	379	-3	1	376	-3	0	374	-3	0	371
Marquette Elementary	195	-2	12	205	-2	3	206	-2	20	224	-2	1	223	-2	0	222
Mendota Elementary	327	-3	2	326	-3	0	323	-3	1	321	-2	2	320	-2	1	319
Sandburg Elementary	486	-5	13	494	-5	0	489	-4	4	489	-4	0	486	-4	62	544
Black Hawk Middle	414	-4	1	411	-4	0	407	-4	0	403	-3	0	400	-3	0	397
O'Keeffe Middle	450	-5	24	469	-4	2	467	-4	15	478	-3	2	476	-3	0	473
Sherman Middle	428	-4	10	433	-4	1	430	-4	3	429	-3	6	432	-3	23	452
East High	1611	-17	35	1629	-15	6	1620	-15	15	1620	-12	5	1613	-12	27	1629
East Area Totals	**5964**	**-62**	**162**	**6063**	**-56**	**24**	**6031**	**-55**	**79**	**6055**	**-44**	**30**	**6041**	**-44**	**115**	**6112**
Allis Elementary	454	-5	50	499	-5	1	495	-5	1	491	-4	0	487	-4	0	484
Elvehjem Elementary	422	-4	16	434	-4	21	450	-4	9	456	-3	9	461	-3	22	480
Glendale Elementary	496	-5	21	512	-5	0	507	-5	6	508	-4	0	505	-4	22	523
Kennedy Elementary	509	-5	88	591	-5	11	597	-5	1	593	-4	11	600	-4	57	653
Nuestro Mundo Elementary[4]	306	-3	3	306	-3	3	306	-3	3	306	-2	2	306	-2	2	306
Schenk Elementary	409	-4	47	451	-4	6	454	-4	9	458	-3	48	503	-4	0	499
Badger Rock Middle[4]	85	-1	1	85	-1	1	85	-1	1	85	-1	1	85	-1	1	85
Sennett Middle	676	-7	34	703	-6	6	703	-6	6	702	-5	4	701	-5	21	717
Whitehorse Middle	478	-5	52	525	-5	5	525	-5	3	524	-4	20	540	-4	27	563
La Follette High	1580	-16	91	1655	-15	20	1660	-15	15	1660	-12	28	1676	-12	74	1738
La Follette Area Totals	**5415**	**-57**	**403**	**5761**	**-53**	**74**	**5781**	**-53**	**54**	**5783**	**-42**	**122**	**5863**	**-43**	**226**	**6046**
Chavez Elementary	673	-7	9	675	-6	0	668	-6	0	662	-5	0	658	-5	0	653
Crestwood Elementary	329	-3	2	327	-3	0	324	-3	3	324	-2	0	322	-2	0	320
Falk Elementary	401	-4	28	425	-4	4	424	-4	0	421	-3	0	418	-3	0	414
Huegel Elementary	487	-5	0	482	-4	0	478	-4	0	474	-3	0	470	-3	0	467
Muir Elementary	453	-5	0	448	-4	0	444	-4	2	442	-3	39	478	-3	17	491
Olson Elementary	441	-5	130	567	-5	76	638	-6	81	712	-5	59	767	-6	223	984
Orchard Ridge Elementary	257	-3	0	254	-2	0	252	-2	0	250	-2	0	248	-2	0	246
Stephens Elementary	552	-6	3	549	-5	22	566	-5	35	595	-4	11	602	-4	73	670
Jefferson Middle	556	-6	12	562	-5	7	564	-5	11	570	-4	20	586	-4	36	617
Spring Harbor Middle[4]	265	-3	3	265	-2	2	265	-2	2	265	-2	2	265	-2	2	265
Toki Middle	587	-6	58	639	-6	32	665	-6	35	694	-5	27	716	-5	91	801
Memorial High	1973	-21	110	2063	-19	69	2113	-19	69	2163	-16	52	2199	-16	179	2362
Memorial Area Totals	**6974**	**-73**	**355**	**7256**	**-67**	**212**	**7401**	**-68**	**238**	**7572**	**-55**	**210**	**7727**	**-56**	**620**	**8291**
Franklin Elementary	404	-4	25	425	-4	13	434	-4	13	443	-3	43	482	-4	2	481
Leopold Elementary	692	-7	10	695	-6	5	693	-6	5	692	-5	1	687	-5	32	714
Lincoln Elementary	443	-5	2	441	-4	65	502	-5	13	510	-4	0	507	-4	11	513
Midvale Elementary	433	-5	1	429	-4	0	425	-4	0	421	-3	5	424	-3	0	420
Randall Elementary	354	-4	2	353	-3	1	351	-3	0	348	-3	0	345	-3	0	343
Shorewood Elementary	471	-5	2	468	-4	1	465	-4	0	461	-3	1	459	-3	0	455
Thoreau Elementary	434	-5	1	431	-4	16	443	-4	2	441	-3	0	438	-3	24	459
Van Hise Elementary	439	-5	0	435	-4	35	466	-4	0	461	-3	0	458	-3	0	455
Cherokee Middle	548	-6	4	547	-5	30	572	-5	8	575	-4	0	571	-4	26	592
Hamilton Middle	746	-8	13	751	-7	21	765	-7	6	764	-6	19	778	-6	2	774
Wright Middle[4]	245	-3	3	245	-2	2	245	-2	2	245	-2	2	245	-2	2	245
West High	2245	-23	37	2259	-21	51	2289	-21	11	2280	-17	17	2280	-17	34	2298
West Area Totals	**7454**	**-78**	**101**	**7477**	**-69**	**241**	**7649**	**-70**	**61**	**7640**	**-56**	**88**	**7673**	**-56**	**132**	**7749**
4K PK Off Site	809	-8	30	831	-8	16	840	-8	13	845	-6	13	852	-6	33	879
Capital High	156	-2	6	160	-1	3	162	-1	2	163	-1	3	164	-1	6	169
Innovative & Alt High	139	-1	5	143	-1	3	144	-1	2	145	-1	2	146	-1	6	151
Metro School Middle and High	38	0	1	39	0	1	39	0	1	40	0	1	40	0	2	41
Shabazz High	121	-1	5	124	-1	2	126	-1	2	126	-1	2	127	-1	5	131
Other School Totals[3]	**1263**	**-13**	**48**	**1297**	**-12**	**26**	**1311**	**-12**	**20**	**1319**	**-10**	**21**	**1331**	**-10**	**51**	**1372**
MMSD Grand Totals	**27070**	**-283**	**1067**	**27855**	**-257**	**576**	**28173**	**-257**	**452**	**28369**	**-206**	**472**	**28634**	**-208**	**1144**	**29570**
Net change per lustrum			**785**	**2.9%**		**319**	**1.1%**		**195**	**0.7%**		**266**	**0.9%**		**936**	**3.3%**

1. Percent change in number of persons per household in the estimated MMSD attendance area per five-year lustrum, or portion thereof, interpolated from "Household Projections for Wisconsin Municipalities: 2010 - 2040," Wisconsin Department of Administration, vintage 2013.

2. Derived by "metering" Vandewalle & Associates and municipal staff estimates of new development by typology and anticipated density, assuming the number of dwelling units added to the District per year through 2038 and beyond continues at the observed annual rate for the period 2010-2017.

3. Estimates for enrollment growth for schools and alternative programs without a defined geographic attendance area are assumed to grow at the overall pace for all new development in the four high school attendance areas.

4. Charter/magnet schools that draw students from across the entire District are assumed to fill to capacity, with future changes in enrollment due to new development or redevelopment offsetting anticipated declines from demographic change (resulting in no net change in enrollment during the 20-year study period).

Madison Metropolitan School District

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Projected Enrollment by School at Extended 2010-2017 Rate of Household Growth (K-12 Only)

School/Program	2018-19 MMSD Enrollment	Enrollment Change within Existing Development, 2018-2023[1]	Enrollment Change from New Development, 2018-2023[2]	2023 Total Projected Enrollment	Enrollment Change within Existing Development, 2023-2028[1]	Enrollment Change from New Development, 2023-2028[2]	2028 Total Projected Enrollment	Enrollment Change within Existing Development, 2028-2033[1]	Enrollment Change from New Development, 2028-2033[2]	2033 Total Projected Enrollment	Enrollment Change within Existing Development, 2033-2038[1]	Enrollment Change from New Development, 2033-2038[2]	2038 Total Projected Enrollment	Enrollment Change within Existing Development, Beyond 2038[1]	Enrollment Change from New Development, 2032-2038[2]	Beyond 2038 Total Projected Enrollment
		-1.04%			-0.92%			-0.91%			-0.73%			-0.73%		
Emerson Elementary	382	-4	9	387	-4	3	386	-4	6	389	-3	10	396	-3	0	393
Gompers Elementary	180	-2	0	178	-2	1	177	-2	0	176	-1	1	175	-1	0	174
Hawthorne Elementary	340	-4	0	336	-3	0	333	-3	0	330	-2	0	328	-2	1	327
Lake View Elementary	261	-3	3	261	-2	0	259	-2	0	257	-2	0	255	-2	0	253
Lapham Elementary	185	-2	17	200	-2	3	201	-2	12	211	-2	3	213	-2	1	212
Lindbergh Elementary	141	-1	0	140	-1	0	138	-1	0	137	-1	0	136	-1	0	135
Lowell Elementary	323	-3	25	345	-3	4	346	-3	1	344	-2	0	341	-2	0	339
Marquette Elementary	195	-2	11	203	-2	3	204	-2	17	219	-2	1	219	-2	0	217
Mendota Elementary	292	-3	2	291	-3	0	288	-3	1	287	-2	1	286	-2	1	284
Sandburg Elementary	430	-4	11	436	-4	0	432	-4	3	432	-3	0	429	-3	53	479
Black Hawk Middle	414	-4	1	411	-4	0	407	-4	0	403	-3	0	400	-3	0	397
O'Keeffe Middle	450	-5	24	469	-4	2	467	-4	15	478	-3	2	476	-3	0	473
Sherman Middle	428	-4	10	433	-4	1	430	-4	3	429	-3	6	432	-3	23	452
East High	1611	-17	35	1629	-15	6	1620	-15	15	1620	-12	5	1613	-12	27	1629
East Area Totals	**5632**	**-59**	**147**	**5720**	**-53**	**23**	**5690**	**-52**	**74**	**5712**	**-42**	**28**	**5699**	**-41**	**106**	**5764**
Allis Elementary	380	-4	41	417	-4	1	414	-4	0	411	-3	0	408	-3	0	405
Elvehjem Elementary	388	-4	14	398	-4	18	413	-4	8	417	-3	8	422	-3	17	436
Glendale Elementary	445	-5	18	458	-4	0	454	-4	5	455	-3	0	452	-3	19	467
Kennedy Elementary	471	-5	75	542	-5	9	546	-5	1	542	-4	11	549	-4	50	595
Nuestro Mundo Elementary[4]	306	-3	3	306	-3	3	306	-3	3	306	-2	2	306	-2	2	306
Schenk Elementary	409	-4	39	444	-4	5	445	-4	8	449	-3	41	488	-4	0	484
Badger Rock Middle[4]	85	-1	1	85	-1	1	85	-1	1	85	-1	1	85	-1	1	85
Sennett Middle	676	-7	34	703	-6	6	703	-6	6	702	-5	4	701	-5	21	717
Whitehorse Middle	478	-5	52	525	-5	5	525	-5	3	524	-4	20	540	-4	27	563
La Follette High	1580	-16	91	1655	-15	20	1660	-15	15	1660	-12	28	1676	-12	74	1738
La Follette Area Totals	**5218**	**-54**	**369**	**5533**	**-51**	**69**	**5550**	**-51**	**51**	**5551**	**-40**	**114**	**5625**	**-41**	**211**	**5795**
Chavez Elementary	607	-6	8	608	-6	0	603	-5	0	597	-4	0	593	-4	0	589
Crestwood Elementary	313	-3	1	311	-3	0	308	-3	3	308	-2	0	306	-2	0	304
Falk Elementary	329	-3	23	349	-3	3	349	-3	0	346	-3	0	343	-2	0	341
Huegel Elementary	448	-5	0	443	-4	0	440	-4	0	436	-3	0	433	-3	0	429
Muir Elementary	391	-4	0	387	-4	0	383	-3	2	381	-3	32	411	-3	16	424
Olson Elementary	406	-4	114	516	-5	67	578	-5	71	644	-5	52	691	-5	196	882
Orchard Ridge Elementary	235	-2	0	233	-2	0	230	-2	0	228	-2	0	227	-2	0	225
Stephens Elementary	496	-5	2	493	-5	19	507	-5	29	532	-4	9	537	-4	64	597
Jefferson Middle	556	-6	12	562	-5	7	564	-5	11	570	-4	20	586	-4	36	617
Spring Harbor Middle[4]	265	-3	3	265	-2	2	265	-2	2	265	-2	2	265	-2	2	265
Toki Middle	587	-6	58	639	-6	32	665	-6	35	694	-5	27	716	-5	91	801
Memorial High	1973	-21	110	2063	-19	69	2113	-19	69	2163	-16	52	2199	-16	179	2362
Memorial Area Totals	**6606**	**-69**	**332**	**6869**	**-63**	**199**	**7005**	**-64**	**222**	**7164**	**-52**	**194**	**7306**	**-53**	**582**	**7835**
Franklin Elementary	354	-4	22	372	-3	11	380	-3	11	387	-3	36	421	-3	2	420
Leopold Elementary	643	-7	8	645	-6	5	643	-6	4	642	-5	1	637	-5	28	661
Lincoln Elementary	408	-4	2	406	-4	55	457	-4	12	465	-3	0	461	-3	10	468
Midvale Elementary	401	-4	0	397	-4	0	394	-4	0	390	-3	5	392	-3	0	389
Randall Elementary	354	-4	2	353	-3	1	351	-3	0	347	-3	0	345	-3	0	342
Shorewood Elementary	442	-5	2	439	-4	1	436	-4	0	432	-3	1	430	-3	0	427
Thoreau Elementary	403	-4	1	400	-4	15	412	-4	2	410	-3	0	407	-3	21	425
Van Hise Elementary	439	-5	0	435	-4	29	460	-4	0	456	-3	0	452	-3	0	449
Cherokee Middle	548	-6	4	547	-5	30	572	-5	8	575	-4	0	571	-4	26	592
Hamilton Middle	746	-8	13	751	-7	21	765	-7	6	764	-6	19	778	-6	2	774
Wright Middle[4]	245	-3	3	245	-2	2	245	-2	2	245	-2	2	245	-2	2	245
West High	2245	-23	37	2259	-21	51	2289	-21	11	2280	-17	17	2280	-17	34	2298
West Area Totals	**7228**	**-75**	**95**	**7248**	**-67**	**222**	**7403**	**-68**	**57**	**7392**	**-54**	**81**	**7419**	**-54**	**124**	**7490**
4K PK Off Site	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capital High	156	-2	6	160	-1	3	162	-1	3	163	-1	3	164	-1	6	170
Innovative & Alt High	139	-1	5	143	-1	3	144	-1	2	145	-1	2	146	-1	6	151
Metro School Middle and High	38	0	1	39	0	1	39	0	1	40	0	1	40	0	2	41
Shabazz High	121	-1	5	124	-1	2	126	-1	2	126	-1	2	127	-1	5	131
Other School Totals[3]	**454**	**-5**	**17**	**466**	**-4**	**9**	**471**	**-4**	**7**	**474**	**-3**	**8**	**478**	**-3**	**18**	**493**
MMSD Grand Totals	**25138**	**-262**	**961**	**25836**	**-238**	**522**	**26120**	**-238**	**411**	**26293**	**-191**	**425**	**26527**	**-193**	**1043**	**27377**
Net change per lustrum			**698**	**2.8%**		**284**	**1.1%**		**173**	**0.7%**		**234**	**0.9%**		**850**	**3.2%**

1. Percent change in number of persons per household in the estimated MMSD attendance area per five-year lustrum, or portion thereof, interpolated from "Household Projections for Wisconsin Municipalities: 2010 - 2040," Wisconsin Department of Administration, vintage 2013.

2. Derived by "metering" Vandewalle & Associates and municipal staff estimates of new development by typology and anticipated density, assuming the number of dwelling units added to the District per year through 2038 and beyond continues at the observed annual rate for the period 2010-2017.

3. Estimates for enrollment growth for schools and alternative programs without a defined geographic attendance area are assumed to grow at the overall pace for all new development in the four high school attendance areas.

4. Charter/magnet schools that draw students from across the entire District are assumed to fill to capacity, with future changes in enrollment due to new development or redevelopment offsetting anticipated declines from demographic change (resulting in no net change in enrollment during the 20-year study period).

Madison Metropolitan School District

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2010-17 Extrapolated Growth Trend

Timing of Development

- 0-5 Years
- 6-10 Years
- 11-15 Years
- 16-20 Years
- Beyond 20 Years

New Students (PK-12): 0-5   6-10   11-20   20+

Elementary School Attendance Areas (2019)

Future MMSD Boundary

LINDBERGH
Gompers Elementary   Black Hawk Middle
Lindbergh Elementary
GOMPERS
Mendota Elementary   Lakeview Elementary
MENDOTA
LAKE VIEW
Sandburg Elementary
MENDOTA   HAWTHORNE   SANDBURG
LAKE VIEW
Sherman Middle   Shabazz High
EMERSON
Emerson Elementary   SCHENK
East High
LOWELL   Lowell Elementary   Kennedy Elementary
Whitehorse Middle   KENNEDY
Lapham Elementary   O'Keefe Middle
Marquette Elementary
LAPHAM   MARQUETTE
Allis Elementary   Elvehjem Elementary
Spring Harbor Middle   Shorewood Elementary   ALLIS   ELVEHJEM
STEPHENS   CRESTWOOD   Crestwood Elementary   SHOREWOOD   ALLIS
Muir Elementary   Hoyt School   West High   Doyle Building
Jefferson Middle School   Stephens Elementary   Hamilton Middle   Randall Elementary   La Follette High   Sennett Middle
Memorial High   Van Hise Elementary   Nuestro Mundo Elementary
MUIR   STEPHENS   RANDALL
OLSON   STEPHENS   VAN HISE   Midvale Elementary   Glendale Elementary
OLSON   MIDVALE   Franklin Elementary
OLSON   FRANKLIN
Wright Middle
Thoreau Elementary   GLENDALE   GLENDALE
OLSON   Cherokee Middle   LINCOLN
STEPHENS   Falk Elementary   THOREAU   Lincoln Elementary
FALK   ORCHARD RIDGE   Badger Rock Middle   GLENDALE
OLSON   Orchard Ridge Elementary   Toki Middle   ALLIS
ZONE ALLIED EL ASG
Huegel Elementary   Leopold Elementary
HUEGEL   THOREAU
CHAVEZ
CHAVEZ   Chavez Elementary
LEOPOLD

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2010-17 Extrapolated Growth Trend

Timing of Development

0-5 Years			
6-10 Years			
11-15 Years			
16-20 Years			
Beyond 20 Years			

New Students (PK-12): 0-5 6-10 11-20 20+

Middle School Attendance Areas (2019)

Future MMSD Boundary

Gompers Elementary · Black Hawk Middle
Lindbergh Elementary
Black Hawk Middle
Mendota Elementary · Lakeview Elementary
Sandburg Elementary
Sherman Middle Shabazz High
Sherman Middle
O'Keeffe Middle
Hawthorne Elementary
Sherman Middle
Emerson Elementary
East High
Whitehorse Middle
Lowell Elementary
Whitehorse Middle · Kennedy Elementary
Lapham Elementary · O'Keefe Middle
Marquette Elementary
Allis Elementary · Elvehjem Elementary
Spring Harbor Middle · Shorewood Elementary
Crestwood Elementary
Hoyt School West High · Doyle Building
Jefferson Middle
Stephens Elementary · Hamilton Middle · Hamilton Middle
La Follette High · Sennett Middle
Jefferson Middle School · Memorial High · Van Hise Elementary
Nuestro Mundo Elementary
Midvale Elementary
Franklin Elementary
Glendale Elementary
Zone Opt Cher/Ham
Thoreau Elementary
Wright Middle
Sennett Middle
Toki Middle
Cherokee Middle
Lincoln Elementary
Olson Elementary
Zone Opt Toki/Jef
Jefferson Middle · Orchard Ridge Elementary · Toki Middle
Badger Rock Middle
Cherokee Middle
Sennett Middle
Toki Middle
Sennett Middle
Huegel Elementary · Zone Opt Allied Ms
Leopold Elementary
Toki Middle
Chavez Elementary

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2010-17 Extrapolated Growth Trend

Timing of Development

- 0-5 Years
- 6-10 Years
- 11-15 Years
- 16-20 Years
- Beyond 20 Years

New Students (PK-12): 0-5   6-10   11-20   20+

High School Attendance Areas (2019)

Future MMSD Boundary

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B. Overview of High School Attendance Area Total Enrollment

2016 Scenario 3 was previously selected as the most likely development scenario and was updated for this Study. This Scenario is based on actual population growth trends for 2010 – 2017 and demonstrates the effects of future District greenfield buildout in the "Beyond 2038" lustrum.
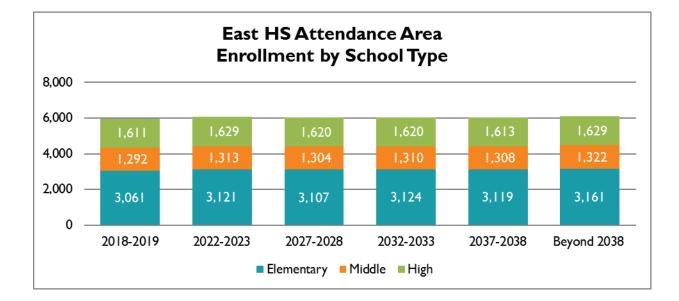
Projected Total Enrollment by High School Attendance Area						
School	2018-2019	2018-2023	2023-2028	2028-2033	2033-2038	Beyond 2038
East Attendance Area	5,964	6,063	6,031	6,055	6,041	6,112
LaFollette Attendance Area	5,415	5,761	5,781	5,783	5,863	6,046
Memorial Attendance Area	6,974	7,256	7,401	7,572	7,727	8,291
West Attendance Area	7,454	7,477	7,649	7,640	7,673	7,749
Other Schools	1,263	1,297	1,311	1,319	1,331	1,372
Totals	**27,070**	**27,855**	**28,173**	**28,369**	**28,634**	**29,570**
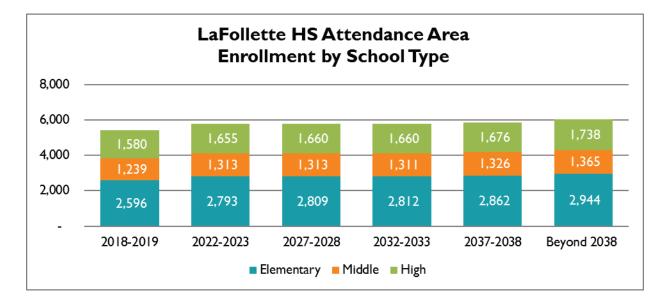
C. Detailed Enrollment Breakdown by High School Attendance Area

The following detailed data represents a summary of extensive projection spreadsheets.
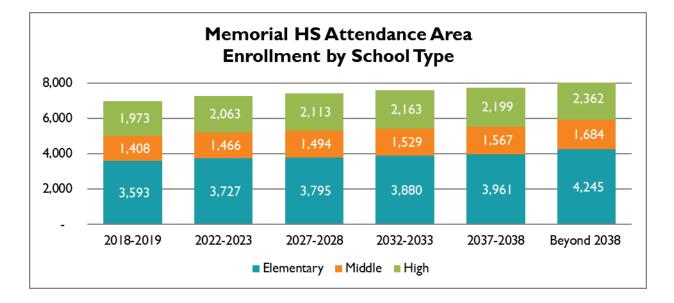
East Attendance Area Enrollment Projections by School

Gompers Elementary	199	197	196	194	194	192
Lake View Elementary	261	262	259	257	255	253
Lindbergh Elementary	188	186	184	183	181	180
Marquette Elementary	195	205	206	224	223	222
Sandburg Elementary	486	494	489	489	486	544
O'Keeffe Middle	450	469	467	478	476	473
East High	1,611	1,629	1,620	1,620	1,613	1,629
Totals	**5,964**	**6,063**	**6,031**	**6,055**	**6,041**	**6,112**

East HS Attendance Area Enrollment by School Type
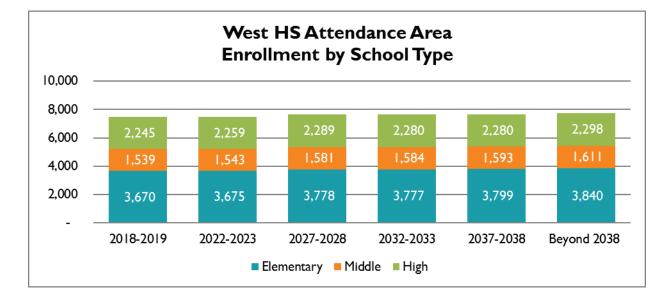
LaFollette Attendance Area Enrollment Projections by Schools

School	2018-2019	2022-2023	2027-2028	2032-2033	2037-2038	Beyond 2038
Allis Elementary	454	499	495	491	487	484
Elvehjem Elementary	422	434	450	456	461	480
Glendale Elementary	496	512	507	508	505	523
Kennedy Elementary	509	591	597	593	600	653
Nuestro Mundo Elementary	306	306	306	306	306	306
Schenk Elementary	409	451	454	458	503	499
Badger Rock Middle	85	85	85	85	85	85
Sennett Middle	676	703	703	702	701	717
Whitehorse Middle	478	525	525	524	540	563
LaFollette High	1,580	1,655	1,660	1,660	1,676	1,738
Totals	**5,415**	**5,761**	**5,781**	**5,783**	**5,863**	**6,046**

LaFollette HS Attendance Area Enrollment by School Type
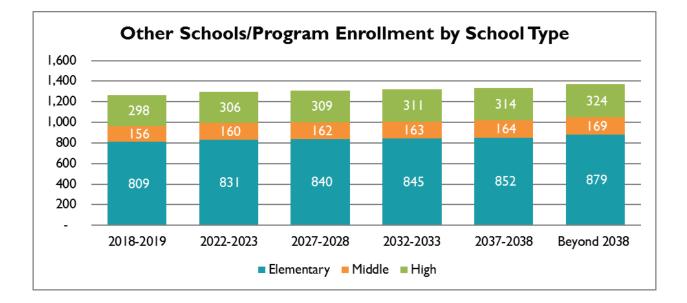
Memorial Attendance Area Enrollment Projections by School

School	2018-2019	2022-2023	2027-2028	2032-2033	2037-2038	Beyond 2038
Chavez Elementary	673	675	668	662	658	653
Crestwood Elementary	329	327	324	324	322	320
Falk Elementary	401	425	424	421	418	414
Huegel Elementary	487	482	478	474	470	467
Muir Elementary	453	448	444	442	478	491
Olson Elementary	441	567	638	712	767	984
Orchard Ridge Elementary	257	254	252	250	248	246
Stephens Elementary	552	549	566	595	602	670
Jefferson Middle	556	562	564	570	586	617
Spring Harbor Middle	265	265	265	265	265	265
Toki Middle	587	639	665	694	716	801
Memorial High	1,973	2,063	2,113	2,163	2,199	2,362
Totals	**6,974**	**7,256**	**7,401**	**7,572**	**7,727**	**8,291**

Memorial HS Attendance Area Enrollment by School Type

West Attendance Area Enrollment Projections by Schools

School	2018-2019	2022-2023	2027-2028	2032-2033	2037-2038	Beyond 2038
Franklin Elementary	404	425	434	443	482	481
Leopold Elementary	692	695	693	692	687	714
Lincoln Elementary	443	441	502	510	507	513
Midvale Elementary	433	429	425	421	424	420
Randall Elementary	354	353	351	348	345	343
Shorewood Elementary	471	468	465	461	459	455
Thoreau Elementary	434	431	443	441	438	459
Van Hise Elementary	439	435	466	461	458	455
Cherokee Middle	548	547	572	575	571	592
Hamilton Middle	746	751	765	764	778	774
Wright Middle	245	245	245	245	245	245
West High	2,245	2,259	2,289	2,280	2,280	2,298
Totals	**7,454**	**7,477**	**7,649**	**7,640**	**7,673**	**7,749**

West HS Attendance Area Enrollment by School Type

Other MMSD Enrollment Projections by Schools/Programs

School	2018-2019	2022-2023	2027-2028	2032-2033	2037-2038	Beyond 2038
4K PK Off Site	809	831	840	845	852	879
Capital High	156	160	162	163	164	169
Innovative & Alt High	139	143	144	145	146	151
Metro School Middle & High	38	39	39	40	40	41
Shabazz High	121	124	126	126	127	131
Totals	**1,305**	**1,306**	**1,307**	**1,308**	**1,309**	**1,310**

Other Schools/Program Enrollment by School Type

	2018-2019	2022-2023	2027-2028	2032-2033	2037-2038	Beyond 2038
High	298	306	309	311	314	324
Middle	156	160	162	163	164	169
Elementary	809	831	840	845	852	879

Legend: ■ Elementary ■ Middle ■ High

D. Focus Area Case Studies

Each of the following pages presents total enrollment projections for four elementary schools, one special area with split elementary school attendance areas, and two high schools in five-year lustrums. Following the eight case study tables, we have presented a map depicting the timing of new development and the number of new elementary MMSD students resulting from such development for each of the seven case study schools/areas.

1. Allis Elementary

   The table below indicates that Allis Elementary School will experience a relatively significant increase in enrollment in the next five years before attributable to projected buildout of a large greenfield parcel south of the Novation Business Park between Rimrock Road and Highway 14. area. In the following lustrums, little to no development is projected in any segment of the school's split geography, leading to long-term enrollment stability or slight decline.

Allis Elementary	2018 2019 Enrollment	Enrollment Change within Existing Development	Enrollment Change from New Development	Total Projected Enrollment
	454			
2023-2028 Projected Enrollment Change	-5	1	495	
2033-2038 Projected Enrollment Change	-4	0	487	

2. Olson Elementary

   The table below indicates that Olson Elementary School will experience substantial greenfield development that results in strong enrollment gains throughout the study period. Large sites of dense development are projected on the south side of Midtown Road, west of Woods Road, and are shown in red on the case study map. This Study projects such development to occur in newly developing neighborhoods that are currently located outside of MMSD's territory, but will be transferring into the District per agreements with the Middleton/Cross Plains School District. These transferring areas are currently not assigned to a specific attendance area since they are not yet in the District.

Olson Elementary	2018 2019 Enrollment	Enrollment Change within Existing Development	Enrollment Change from New Development	Total Projected Enrollment
	441			
2018-2023 Projected Enrollment Change	-5	130	567	
2023-2028 Projected Enrollment Change	-5	76	638	
2028-2033 Projected Enrollment Change	-6	81	712	
2033-2038 Projected Enrollment Change	-5	59	767	
Beyond 2038 Projected Enrollment Change	-6	223	984	

3. **Leopold Elementary**

The table below indicates that Leopold Elementary School will experience a modest level of infill development that will offset the minimal decline of students from existing development. This Study projects scattered site development throughout the projection period, with small sites located south of Post Road, the redevelopment of apartments on Breckenridge Court, and greenfield development south of Nobel Drive. There appears to be room for additional greenfield construction and/or redevelopment in the years beyond 2038.

Leopold Elementary	2018 2019 Enrollment	Enrollment Change within Existing Development	Enrollment Change from New Development	Total Projected Enrollment
	692			
2023-2028 Projected Enrollment Change		-6	5	**693**
2033-2038 Projected Enrollment Change		-5	1	**687**

4. **Lindbergh Elementary**

The table below indicates that Lindbergh Elementary School will experience little to no change in enrollment during the study period. No new residential construction, infill or redevelopment is projected.

Lindbergh Elementary	2018 2019 Enrollment	Enrollment Change within Existing Development	Enrollment Change from New Development	Total Projected Enrollment
	188			
2018-2023 Projected Enrollment Change		-2	0	**186**
2023-2028 Projected Enrollment Change		-2	0	**184**
2028-2033 Projected Enrollment Change		-2	0	**183**
2033-2038 Projected Enrollment Change		-1	0	**181**
Beyond 2038 Projected Enrollment Change		-1	0	**180**

5. Sprecher Area

    The Sprecher Road special area generally bounded by WI-30, I-90, CTH BB, and a large green space is contemplated for a future new MMSD elementary school. It is currently split between the Elvehjem and Kennedy attendance areas, with attendance scattered among these and several other elementary schools. The table below indicates that the area is expected to experience steady greenfield development that results in enrollment gains throughout the study period. This Study projects such development to occur within the Grandview Commons Neighborhood in the short term with longer term development occurring south of Cottage Grove and ultimately on the south side of Buckeye Road.

Sprecher Area (Elementary Only)	2018 2019 Enrollment	Enrollment Change within Existing Development	Enrollment Change from New Development	Total Projected Enrollment
	282			
2023-2028 Projected Enrollment Change		-3	11	**372**
2033-2038 Projected Enrollment Change		-3	8	**374**

6. Memorial High School
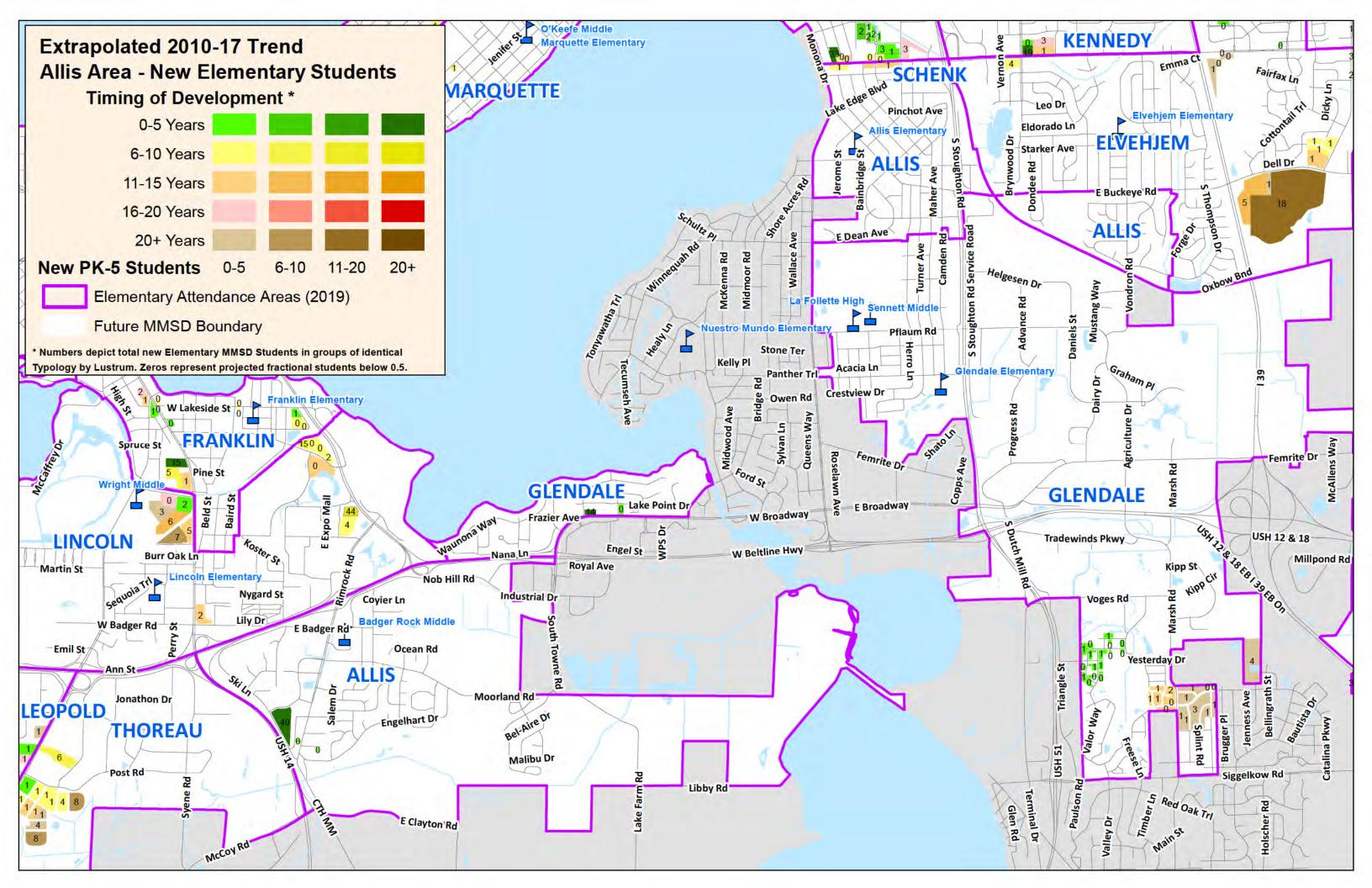
    The table below indicates that Memorial High School will experience fairly steady enrollment gains throughout the projection period, largely through greenfield buildout of the far west side. There appears to be significant potential for additional long-term student generation in the future transfer areas to the west and southwest of the current attendance area boundary.
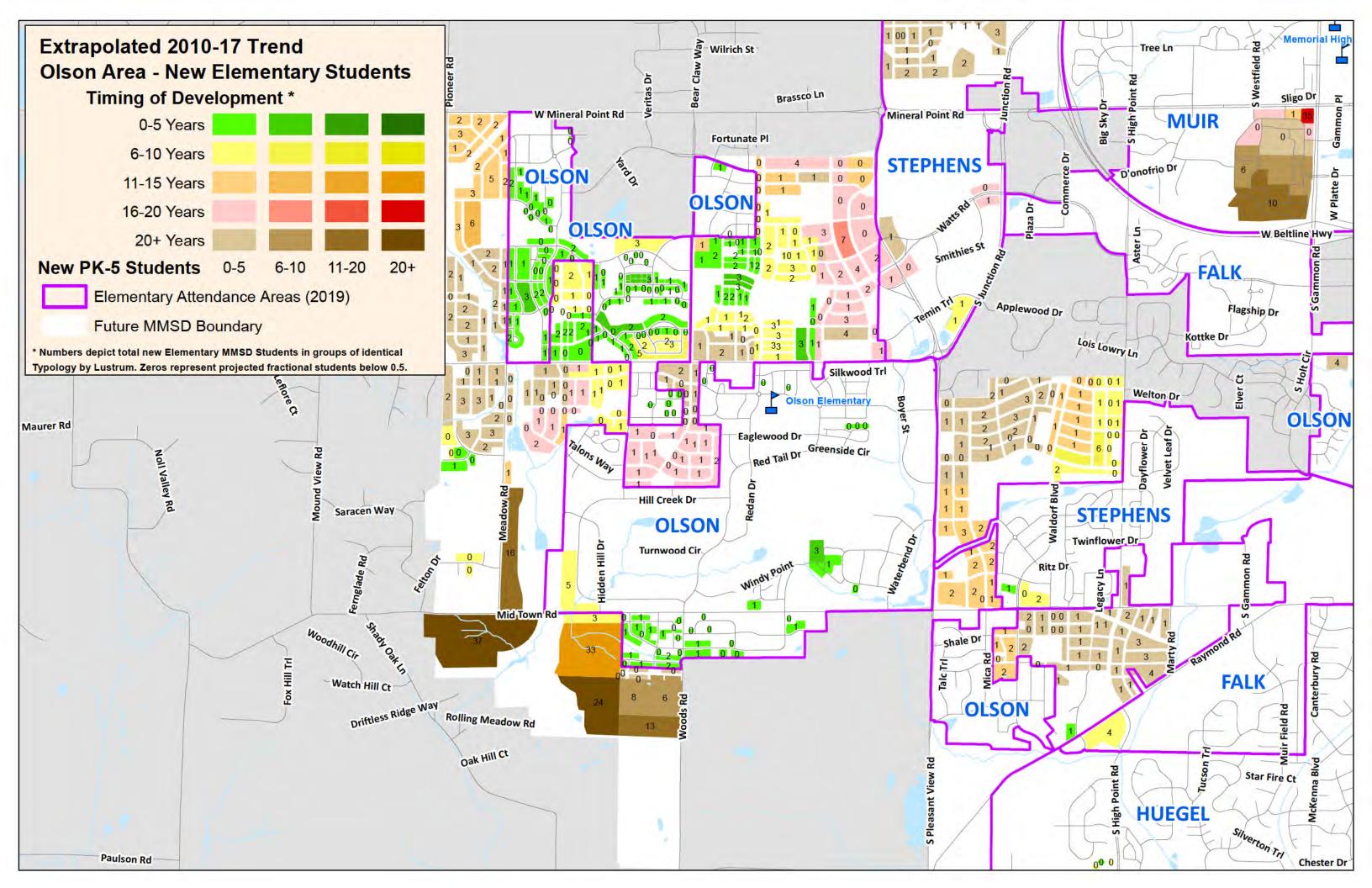
Memorial High	2018 19 Enrollment	Enrollment Change within Existing Development	Enrollment Change from New Development	Total Projected Enrollment
	1,973			
2018-2023 Projected Enrollment Change		-21	110	**2,063**
2023-2028 Projected Enrollment Change		-19	69	**2,113**
2028-2033 Projected Enrollment Change		-19	69	**2,163**
2033-2038 Projected Enrollment Change		-16	52	**2,199**
Beyond 2038 Projected Enrollment Change		-16	179	**2,362**
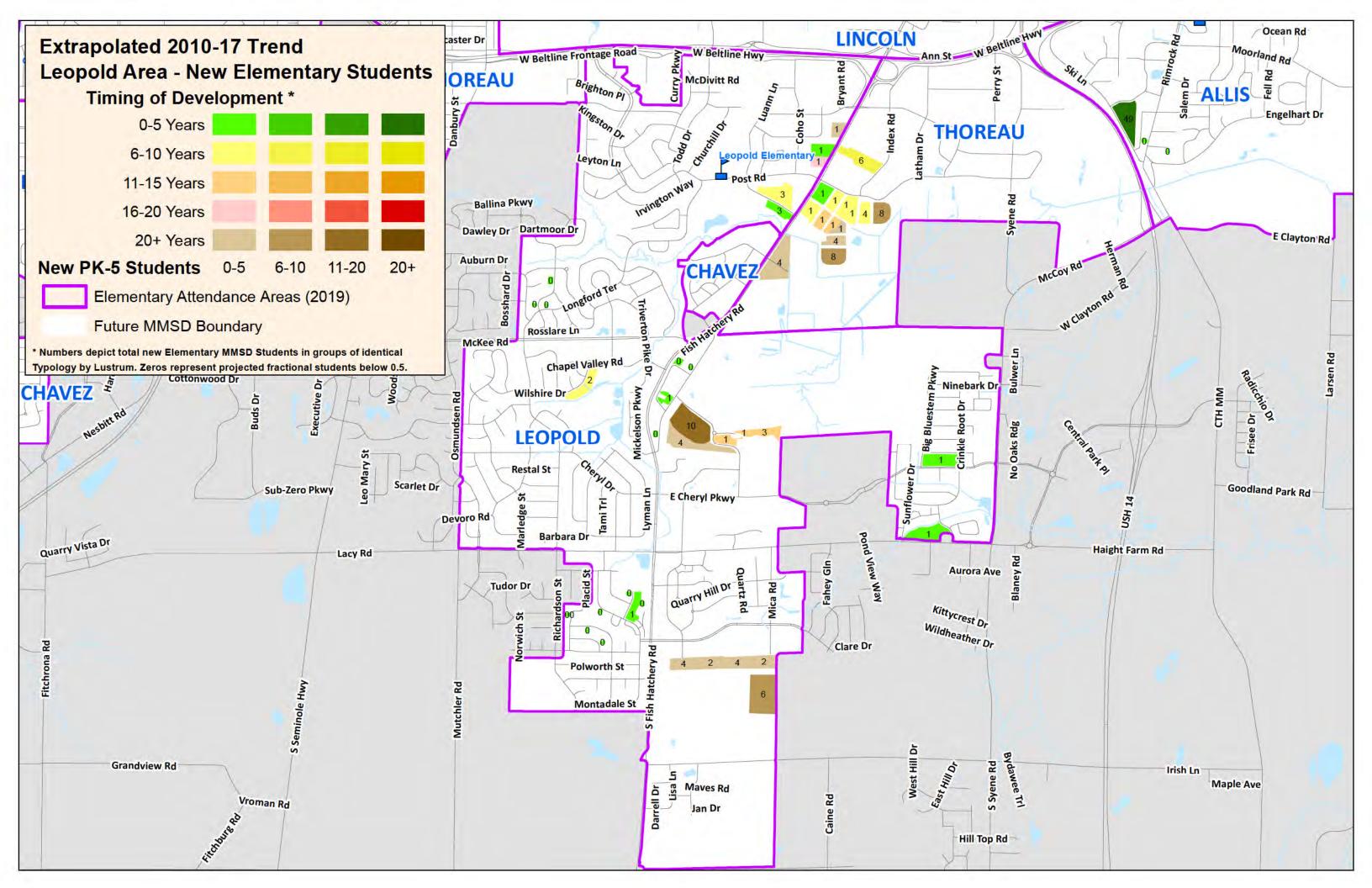
7. West High School
   The table below indicates that West High School will experience a modest level of
   infill development over the next ten years that will offset the minimal decline of students from
   existing development. In later lustrums and over the long-term, enrollment is expected to
   stabilize at around 2,300 students.
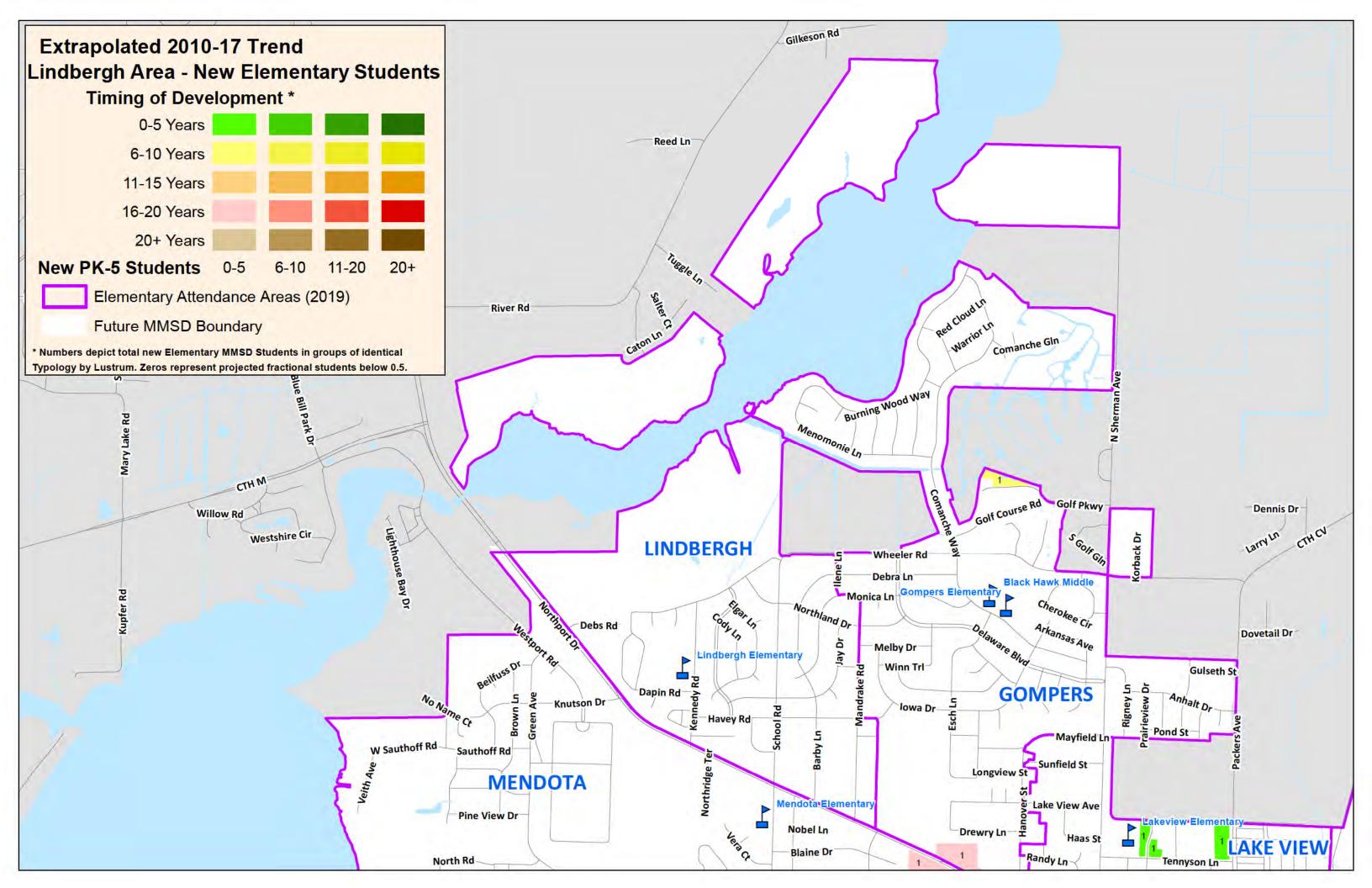
West High	2018 2019 Enrollment		Enrollment Change within Existing Development	Enrollment Change from New Development	Total Projected Enrollment
	2,245				
2018-2023 Projected Enrollment Change			-23	37	**2,259**
2023-2028 Projected Enrollment Change			-21	51	**2,289**
2028-2033 Projected Enrollment Change			-21	11	**2,280**
2033-2038 Projected Enrollment Change			-17	17	**2,280**
Beyond 2038 Projected Enrollment Change			-17	34	**2,298**

Extrapolated 2010-17 Trend
Allis Area - New Elementary Students

Timing of Development *

0-5 Years			
6-10 Years			
11-15 Years			
16-20 Years			
20+ Years			

New PK-5 Students   0-5   6-10   11-20   20+

Elementary Attendance Areas (2019)

Future MMSD Boundary

* Numbers depict total new Elementary MMSD Students in groups of identical Typology by Lustrum. Zeros represent projected fractional students below 0.5.

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Extrapolated 2010-17 Trend
Olson Area - New Elementary Students
Timing of Development *

Timing of Development *
- 0-5 Years
- 6-10 Years
- 11-15 Years
- 16-20 Years
- 20+ Years

New PK-5 Students   0-5   6-10   11-20   20+

Elementary Attendance Areas (2019)

Future MMSD Boundary

* Numbers depict total new Elementary MMSD Students in groups of identical Typology by Lustrum. Zeros represent projected fractional students below 0.5.

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Extrapolated 2010-17 Trend
Leopold Area - New Elementary Students
Timing of Development *

	0-5	6-10	11-20	20+
0-5 Years				
6-10 Years				
11-15 Years				
16-20 Years				
20+ Years				

New PK-5 Students 0-5 6-10 11-20 20+

Elementary Attendance Areas (2019)

Future MMSD Boundary

* Numbers depict total new Elementary MMSD Students in groups of identical Typology by Lustrum. Zeros represent projected fractional students below 0.5.

LINCOLN

THOREAU

ALLIS

CHAVEZ

LEOPOLD

Leopold Elementary

Map labels:
W Beltline Frontage Road, W Beltline Hwy, Ann St, Ocean Rd, Moorland Rd, caster Dr, Brighton Pl, McDivitt Rd, Bryant Rd, Perry St, Ski Ln, Rimrock Rd, Salem Dr, Engelhart Dr, Fell Rd, Danbury St, Kingston Dr, Curry Pkwy, Luann Ln, Coho St, Index Rd, Latham Dr, Todd Dr, Churchill Dr, Leyton Ln, Irvington Way, Post Rd, Syene Rd, E Clayton Rd, Ballina Pkwy, McCoy Rd, Herman Rd, W Clayton Rd, Dawley Dr, Dartmoor Dr, Auburn Dr, CHAVEZ, Bosshard Dr, Longford Ter, Triverton Pike Dr, Fish Hatchery Rd, Bulwer Ln, Rosslare Ln, McKee Rd, Chapel Valley Rd, Ninebark Dr, Big Bluestem Pkwy, Crinkle Root Dr, No Oaks Rdg, Central Park Pl, Radicchio Dr, Frisee Dr, Larsen Rd, Cottonwood Dr, Wilshire Dr, Wood, Osmundsen Rd, Mickelson Pkwy, Sunflower Dr, CTH MM, Goodland Park Rd, Nesbitt Rd, Buds Dr, Executive Dr, Leo Mary St, Scarlet Dr, Sub-Zero Pkwy, Restal St, Cheryl Dr, E Cheryl Pkwy, USH 14, Devoro Rd, Marledge St, Tami Trl, Lyman Ln, Pond View Way, Aurora Ave, Blaney Rd, Haight Farm Rd, Barbara Dr, Quarry Vista Dr, Lacy Rd, Kittycrest Dr, Wildheather Dr, Tudor Dr, Richardson St, Placid St, Quarry Hill Dr, Quartz Rd, Mica Rd, Fahey Gln, Clare Dr, Norwich St, Polworth St, S Fish Hatchery Rd, Montadale St, Fitchrona Rd, Grandview Rd, S Seminole Hwy, Darrell Dr, Lisa Ln, Maves Rd, Jan Dr, Caine Rd, West Hill Dr, East Hill Dr, S Syene Rd, Bydawee Trl, Irish Ln, Maple Ave, Vroman Rd, Fitchburg Rd, Hill Top Rd

Numbers on map: 49, 0, 1, 1, 6, 3, 1, 1, 1, 3, 1, 1, 4, 8, 4, 8, 4, 0, 0, 0, 0, 0, 2, 10, 4, 1, 3, 1, 1, 0, 0, 1, 0, 0, 4, 2, 4, 2, 6

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Extrapolated 2010-17 Trend
Lindbergh Area - New Elementary Students

Timing of Development *

0-5 Years			
6-10 Years			
11-15 Years			
16-20 Years			
20+ Years			

New PK-5 Students 0-5   6-10   11-20   20+

— Elementary Attendance Areas (2019)

Future MMSD Boundary

* Numbers depict total new Elementary MMSD Students in groups of identical Typology by Lustrum. Zeros represent projected fractional students below 0.5.

Gilkeson Rd
Reed Ln
River Rd
Tuggle Ln
Salter Ct
Caton Ln
Mary Lake Rd
Blue Bill Park Dr
CTH M
Willow Rd
Westshire Cir
Lighthouse Bay Dr
Kupfer Rd
Red Cloud Ln
Warrior Ln
Comanche Gln
N Sherman Ave
Burning Wood Way
Menomonie Ln
Comanche Way
Golf Course Rd
Golf Pkwy
S Golf Gln
Korback Dr
Dennis Dr
Larry Ln
CTH CV
LINDBERGH
Wheeler Rd
Ilene Ln
Debra Ln
Monica Ln
Gompers Elementary
Black Hawk Middle
Cherokee Cir
Elgar Ln
Cody Ln
Northland Dr
Jay Dr
Melby Dr
Arkansas Ave
Delaware Blvd
GOMPERS
Dovetail Dr
Debs Rd
Lindbergh Elementary
Winn Trl
Gulseth St
Northport Dr
Westport Rd
Beilfuss Dr
Brown Ln
Green Ave
Knutson Dr
Dapin Rd
Kennedy Rd
Havey Rd
School Rd
Barby Ln
Mandrake Rd
Iowa Dr
Esch Ln
Rigney Ln
Prairieview Dr
Anhalt Dr
Pond St
Packers Ave
No Name Ct
Mayfield Ln
Sunfield St
W Sauthoff Rd
Sauthoff Rd
Longview St
Lake View Ave
Hanover St
MENDOTA
Veith Ave
Northridge Ter
Mendota Elementary
Nobel Ln
Drewry Ln
Haas St
Lakeview Elementary
Pine View Dr
Vera Ct
Blaine Dr
Randy Ln
Tennyson Ln
LAKE VIEW
North Rd

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Extrapolated 2010-17 Trend
Sprecher Area - New Elementary Students

Timing of Development *

0-5 Years			
6-10 Years			
11-15 Years			
16-20 Years			
20+ Years			

New PK-5 Students 0-5 6-10 11-20 20+

Elementary Attendance Areas (2019)

Future MMSD Boundary

* Numbers depict total new Elementary MMSD Students in groups of identical Typology by Lustrum. Zeros represent projected fractional students below 0.5.

Kennedy Elementary

KENNEDY

ELVEHJEM

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Extrapolated 2010-17 Trend
Memorial High - New High School Students

Timing of Development *

0-5 Years			
6-10 Years			
11-15 Years			
16-20 Years			
20+ Years			

New 9-12 Students   0-5   6-10   11-20   20+

High School Attendance Areas (2019)

Future MMSD Boundary

* Numbers depict total new High School MMSD Students in groups of identical
Typology by Lustrum. Zeros represent projected fractional students below 0.5.

Spring Harbor Middle
Shorewood Elementary
Crestwood Elementary
Hoyt School
Muir Elementary
Jefferson Middle School
Stephens Elementary
Hamilton Middle
Van Hise Elementary
Memorial High
Midvale Elementary
WEST
OPEN
Thoreau Elementary
Olson Elementary
Cherokee Middle
Falk Elementary
Orchard Ridge Elementary Toki Middle
MEMORIAL
Huegel Elementary
Chavez Elementary

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Extrapolated 2010-17 Trend
West High - New High School Students

Timing of Development *

0-5 Years			
6-10 Years			
11-15 Years			
16-20 Years			
20+ Years			

New 9-12 Students   0-5   6-10   11-20   20+

High School Attendance Areas (2019)

Future MMSD Boundary

* Numbers depict total new High School MMSD Students in groups of identical
Typology by Lustrum. Zeros represent projected fractional students below 0.5.

LAFOLLETTE

Lapham Elementary
O'Keefe Middle
Marquette Elementary
EAST
Spring Harbor Middle
Shorewood Elementary
Allis Elementary
Doyle Building
WEST
Sennett Middle
phens Elementary
Hamilton Middle Hoyt School
West High
Van Hise Elementary
Nuestro Mundo Elementary
La Follette High
Glendale Elementary
Midvale Elementary
Franklin Elementary
Thoreau Elementary
Wright Middle
OPEN
Cherokee Middle
Lincoln Elementary
Falk Elementary
Badger Rock Middle
Orchard Ridge Elementary Toki Middle
LAFOLLETTE
MEMORIAL
Huegel Elementary
Leopold Elementary
Chavez Elementary

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VII. Important Moving Parts

The projections in this Study are subject to many outside forces. At present, the study team is confident that projections of future land use and development locations and typology are as accurate as possible. The presence of detailed neighborhood development plans, and Madison and Fitchburg's tradition of implementing those plans is the foundation of this confidence. Redevelopment is more susceptible to market shifts, but as discussed, Madison and central Dane County are among the most stable and steadily-performing metropolitan markets in the nation.

The timing of development is also susceptible to broad factors. Again, the region's steady past may be well-indicative of its future. However, the current condominium conundrum is a good example of the strong influence of certain market factors, particularly as they relate to lending practices.

Other key influences include the following.

A. Household Characteristics

This Study originally employed projection of simple recent trends related to household characteristics regarding race/ethnicity, English language learners, and recipients of free or reduced lunch. While the 2016 student demographic projections were not updated as part of this Study, the trends identified in that original report are still deemed valued and are expected to continue through the projection period of 2018 through 2038. The nature of the Madison region's economy, and the retention of major employment in the central city, provides stabilizing forces on these characteristics that are not present in most of Madison's peer communities (in terms of state capital, major university, and population size). The lakes and lakefront neighborhoods play a similar role. As a result, many locations in Madison are experiencing gentrification – as did the Marquette neighborhood during the 1980s and 1990s. All of these factors make housing more expensive. In total, recent enrollment statistics point to a short-term equilibrium for household characteristics that may continue.

B. Enrollment Leavers

This is a complicated issue, with many factors beyond the District's control.

1. Other Public Schools

Evidence exists that neighboring public school districts meter the number of entering students from MMSD's territory to reach enrollment goals. Most of these districts are experiencing significant suburban development that is leading to projects to enlarge or construct schools.

MMSD is also planning significant expansions and upgrades at a number of schools. A number of developers and planners interviewed for this project mentioned the distance of Madison schools from their projects, including the crossing of major barriers, such as the Beltline or Interstate freeway network.

As a result of all these moving pieces, it is very difficult to make projections for this factor. To simplify the use of these projections tools, this Study projects net leavers to stabilize. This is not likely to be case. Because these projections are for stable levels, actual trends will be easier to explore as they evolve.

2. Charter and Private Schools

Historically private schools have been a relatively steady influence on MMSD attendance. This Study projects that to continue.

While charter schools have historically not played a significant role in enrollment fluctuations, their cumulative effects are just beginning to be felt by the District. This Study projects that to continue as well – again, primarily to ease the future use and flexibility of these projections as a tool.

The potential for a "university school" to affect MMSD enrollment is a factor, in part due to the long projection period used by this Study. If located in central Madison, or the near west side, an academically-oriented curriculum would likely be an attraction.

Similarly, an "academy" that specializes in an established curriculum could also be a factor. These are present in other major cities in the Upper Midwest and may be attractive to current MMSD parents and students looking for a different experience.

C. Existing Housing Stock

Madison's existing housing stock remains a very important factor in these projections. A range of community or generational trends could play a key role.

1. Isthmian Neighborhoods

Trends point to a new wave of gentrification in the central areas of Madison, in part spurred on by upscale multi-family development, and the community's continued investment in recreation and entertainment amenities. Very recent trends in the Lapham and Franklin Elementary School attendance areas may signal resurgence in family living in these areas – if household dollars can compete with Empty Nester Baby Boomers and Millennials living as singles and couples.

These projections do not reflect this trend, as it is currently stymied by lending practices that make condominium development virtually impossible. However, these limitations could change, and a new wave of young parents could appear. This should be monitored through the projection period.

2. Baby Boomer Neighborhoods

The map of older home owners identifies concentrations of thousands of owner-occupied homes that are very likely to come up for sale during the projection period. These tend to be located in the "sweet spot" for commuting both to the isthmian employment centers and cultural amenities, and to peripheral jobs and shopping. These neighborhoods are more affordable than comparably-sized homes or equipped homes -- both closer in and farther out; and as such have always been attractive to families – when they come up for sale. This likely trend will mainly affect homes in the West and Memorial High School attendance areas, but such neighborhoods are also present in the East and LaFollette High School areas.

D. New Schools

A common complaint from developers in the periphery of MMSD's territory involves the long trips needed to reach the school from the outlying parts of its attendance area. Trips from central Fitchburg to middle schools north of the Beltline, and from far west and southwest Madison and all of Fitchburg to Memorial and West High Schools are frequently mentioned, as are trips from the Owl Creek neighborhood in southeast Madison and Grandview neighborhood in far east Madison to all their schools.

It is unknown how many MMSD "leavers" would remain enrolled in the District, or how many residents of other school districts would enroll in MMSD schools, but proximity is clearly a factor, as is a commute that does not cross major freeways at congested crossing points.

Conversely, the location of schools in other districts is clearly a draw. Monona Grove and Verona have schools virtually on the border of MMSD. These locations are popular with MMSD leavers. Oregon and Sun Prairie are also planning new schools just beyond the boundaries of MMSD.

At this time, the Sun Prairie School District does not have a nearby school but is facing the strong need to be in continuous building mode. Servicing Madison's planned Northeast Neighborhood will be a challenge, with approximately 40,000 new residents locating between Reiner Road, I-94, and U.S. 151.

VIII. Conclusions

This Study leads to several important conclusions and observations.

A. Madison is Unique

MMSD is located in a unique setting. Madison lacks a true peer community to compare enrollment projection trends and related issues with. Factors and trends associated with school districts in central cities, growing suburban edges, and reviving urban neighborhoods are partially present for the District as a whole, and within each high school attendance area, demonstrated by the Anticipated Residential Development Map on page 57.

This combination of unique advantages and challenges makes projections difficult. However, the region's stable economic environment and strong neighborhoods bolster long-term trends that are likely to continue – or change slowly – into the future.

B. Overall District Enrollment Will Continue to Increase Modestly through about 2050

As depicted by the Projected Enrollment graph on page 81, MMSD is projected to increase enrollment by about 1,560 students between 2018 and 2038, with modest enrollment gains continuing to about 2050. This increase results from continued residential development concentrated in several greenfield development clusters near the District's edges, and at numerous scattered infill and redevelopment sites. The population and enrollment gains from this development will offset declines caused by continued shrinking household size for the next 25 to 30 years.

However, as the year 2050 approaches, the lack of additional greenfield, infill, and redevelopment opportunities will result in continued shrinking household size, gradually reducing enrollment within every attendance area and the District as a whole.

C. Affordable Housing Initiatives are Increasing Enrollment

The use of the new Family-Oriented Housing type in this study demonstrates that affordable housing units generate the highest enrollment rate of any housing type. The City of Madison has become a leading in creating additional affordable housing units. If the City's current initiative is extended, the District may see enrollment gains above those projected in this study. This factor will become particularly important as greenfield development sites are exhausted within the District limits as estimated around the year 2050.

D. Baby Boomer Homeowners Create an Opportunity

In large parts of MMSD (as mapped on page 27) homeownership is dominated by a significant Baby Boomer demographic "bubble." Most Boomers have reached an age of 60, with the oldest approaching an age of 75. Very few MMSD students originate from these 3-, 4-, and 5-bedroom homes. Thousands of these potentially student-producing residences will come on the market during the period of these projections. If MMSD schools become a more attractive option for families due to facility investments and more convenient locations, MMSD could significantly extend the longevity of stable enrollment well beyond the study period.

E. New Elementary Schools will be Needed on the Far East and West Sides

The largest concentrations of new greenfield residential development will occur in the Kennedy and Olson Elementary Schools' attendance areas. These areas will see the greatest enrollment gains throughout the projection period, and beyond, until buildout occurs. Specifically, enrollment at Kennedy is projected to increase from 509 to 600 students in the next twenty years. Enrollment at Olson is projected to increase from 441 to 767 student during the same period.

These increases inform the need for one new elementary school serving the Far East Side of Madison, and one or two new elementary schools serving the Far West Side. Discussions with developers and planning department staffs indicate that these areas will experience significant enrollment growth in every lustrum. Enrollment details are presented for every school and are aggregated for each of the four high school attendance areas in Section VI, beginning on page 69.

F. Elvehjem, Stephens, and Toki will Experience Growth Bursts

Enrollment growth resulting from greenfield development on the District's edges will also significantly impact Elvehjem and Stephens Elementary Schools, and at Toki Middle School. Although it remains to be seen whether projected enrollment growth at these schools could be accommodated by the current facilities through adjustments to maximum class sizes, classroom configurations, or other means, the projected timing of such growth depicted on pages 75 and 77 has these bursts occurring within different lustrums throughout the next twenty years.

G. Potential New School Sites, if Not Reserved by MMSD, are Rapidly Disappearing

In the process of researching newly-approved developments and neighborhood plans for this study, it has become evident that development interests now control almost all property planned for greenfield development within the boundaries of MMSD. Based on the projections in this report, the District may need to acquire and develop several more school sites in addition to its parcel off Sprecher Road and the parcel north of Valley View Road.

Schools are the foundation of equitable and sustainable neighborhoods. In the large and rapidly growing neighborhoods near the edges of the District, particularly the far east, south, and southeast

sides, Open Enrollment rates to other public school districts rates are exceedingly high. Under the current school funding formula, and in light of the historic decline of enrollment per household documented by this study, enrollment stabilization by providing conveniently accessed schools is an important agent of change available to the District.

H. The Barriers Created by the Beltline and Interstate Lead to Long Student Commutes

Each of MMSD's high school attendance areas contains a mix of older, newer, and greenfield development sites, which is a strength for the District. However, the increasingly populated parts of the District beyond the Beltline and Interstate face commutes that are unusually long and convoluted for an urban school district, especially to high schools and middle schools. These freeways exacerbate the long travel distances and have the strongest negative effect on low-income and single-parent households, discouraging or completely precluding parent involvement in school activities. Additionally, south of the Beltline, the highly irregular southern boundary of the District and split attendance areas (both within MMSD and with surrounding districts) divide neighborhoods, presenting a significant marketing challenge in attracting families to new development within the District and making it difficult for households to share resources to address the physical separation from schools.

I. Adjacent Districts Are Investing in Significant Facility Improvements Close to MMSD

The end of greenfield development and redevelopment opportunities projected in this study will lead to the decline of MMSD enrollment, beginning in about 2050. However, enrollment decline could be accelerated by continued new school construction close to MMSD's borders. Historically, such projects were centered around the city and village cores of the adjacent districts but have recently been locating near the edges of these districts.
Notable recent examples are Sun Prairie Area District voters approving a new West Side High School (about 1 mile from MMSD's northeastern boundary), a new High School for Verona (about 1.5 miles from MMSD's southwest boundary), a new elementary school for Oregon/Fitchburg along CTH MM (about 1/2 mile south of MMSD's southern boundary), and Monona Grove District approving a new Intermediate School on Cottage Grove Road (about 1 mile east of MMSD's eastern boundary). These new facilities will be both very attractive compared to aging MMSD schools, and for the first time will be located in the same direction as major commuting paths to central urban area employment. The significant attraction of these new and nearby facilities may accelerate enrollment decline within MMSD to within the 20-year projection period of this study.

J. The Physical Conditions and Appearance of MMSD's Schools Discourages Enrollment

For many parents and students, school conditions are a physical manifestation of the community's support of education. New and upgraded schools attract families, while aging facilities tend to push enrollment away. Given the residential options available to metropolitan families in competing districts and open enrollment options, expectations remain high in areas of new development within MMSD that ongoing investments in District facilities will meet those of families who often make locational decisions in large part due to school quality. Indeed, grades of "C" and "D" under MMSD's facility grading system often serve as a warning sign for earlier than projected enrollment decline.

The District's current initiative for re-investment in its high schools is a strong start if such investment at each school includes facility upgrades that are readily apparent to potential residents and their children, on the outside of the facility, at its main entrances, within its public spaces, and to its instructional technology within each classroom. Such replacements have the potential to keep enrollment stable and potentially increasing for years into the future, provide inspirational spaces for students, and assist with staff retention and recruitment.