

## MEMORANDUM

**TO:** Board of Directors, Massachusetts School Building Authority  
**FROM:** James A. MacDonald, First Deputy Treasurer, Chief Executive Officer  
John K. McCarthy, Executive Director, Deputy Chief Executive Officer  
**DATE:** February 4, 2021  
**RE:** Enrollment Projection Methodology Review

---

The MSBA has developed a data-driven enrollment projection methodology to establish the appropriate design enrollments for MSBA-funded school construction projects, which is in furtherance of the MSBA's mission to partner with Massachusetts communities to support the design and construction of educationally-appropriate, flexible, sustainable, and cost-effective public school facilities. This tool allows districts to design the right-sized facilities resulting in schools that are more affordable to construct and less costly to operate.

In 2018, the MSBA issued a procurement to hire a consultant to review and evaluate the MSBA's enrollment methodology and generate enrollment projections for core program projects in the grant program. Based on a review of the two responses received, the MSBA hired the University of Massachusetts Donahue Institute (the "UMDI") to conduct the following tasks:

- review the MSBA's current enrollment projection methodology;
- compare the MSBA's methodology to other industry standard methodologies or models;
- study the MSBA's base projection methodology and compare outcomes to actual enrollment retrospectively;
- recommend modifications, if any, to the MSBA's methodology based on their analysis to improve the accuracy of enrollment projections; and
- build organizational resilience through backup capacity in generating enrollment projections.

UMDI conducted a study focused only on the MSBA's current base, or unmodified, projection methodology at a district level and did not evaluate individual enrollments associated with school projects supported by the MSBA, which will be considered as part of the Post Occupancy Program.

### Scope

The UMDI performed a detailed review of the MSBA's current enrollment methodology by comparing it to the methodologies and models used nationwide and evaluated its performance through a retrospective analysis. Furthermore, the UMDI tested potential modifications to the enrollment methodology and considered external variables that may be applied to assess potential opportunities for improvement.

MSBA staff presented a summary of work completed to date to the MSBA Facilities Assessment Subcommittee ("FAS") on January 13, 2021. The presentation included a comparison of the

MSBA's enrollment methodology to industry standards, a summary of UMDI's retrospective enrollment projections (over 33,500 retrospective projections comprised of each district, each grade, and each year 2009 through 2018), a comparison of these the projections for grades K-5, grades 6-8, and grades 9-12 to actual enrollments in 2018 (7,716 comparisons), and potential areas for future study. A copy of the presentation is attached for reference. The UMDI is finalizing a summary of the work and its findings in a final report that will be shared with the MSBA Board. The final report will include the following information:

- School Projection Methodology Overview - Compared the MSBA's enrollment methodology to 12 other methodologies used by cities and states across the country.
- Retrospective Analysis – Projected the enrollment for every public school district in Massachusetts for the years of 2009 through 2018 based on information available in 2008 and compared those projections to the actual enrollments in 2018. UMDI tested various modifications to gauge the impact of potential improvements.

#### Observations

- The MSBA's grade-to-grade cohort survival methodology is the most common approach used for estimating future school enrollment. This methodology is used in 11 of the 12 jurisdictions from the study.
- The simulated enrollment projections came within 13 percent of actual enrollment on average and within 1% of actual enrollment when over and under projections are accounted for in the analysis.
- The UMDI investigated eight potential adjustments to the MSBA's base methodology and observed that none had an unambiguously positive or negative impact on universal performance (i.e., universally reduced the 13 percent difference on average).
- Additional analyses based on district typology (e.g., size, location, or economics) may reveal something more conclusive and actionable.
- Housing turnover in each district should be studied further to understand its impact, if any, on enrollment needs.

MSBA staff believe that the enrollment methodology may benefit from additional analysis on the potential benefits of considering housing turnover, district size, location, economic trends in a district or region, and sharply rising or falling enrollments. However, staff recommend that we hold on any additional analysis referenced in the aforementioned observations to allow for the 2020 Census data to become available and for the impacts of the COVID-19 Health Crisis on public school enrollment and housing changes to become clearer.

#### Recommendations

- Continue working with the UMDI to generate enrollment projections for Core Program projects in the grant program through the end of the current Master Services Agreement.
- Conduct a procurement for enrollment related services in Fiscal Year 2022 to provide for another three years of capacity for generating enrollment projections and additional investigations, as referenced in the observations above.