

# Report to Committee

Report from the "Foundation" Sub-Committee to the Middleton School Building Committee

## School Planning – Demographics and space needs

### Background:

The MSBC created the "Foundation" sub-committee to revisit available information related to school enrollment projections so that the MSBC can appropriately identify options and alternatives for educational space and/or recommend any additional studies that might be required for planning purposes. The sub-committee met three times and enlisted the assistance of two outside sources; Kosta Prentakis, a member of the Board of Selectmen, and, the Metropolitan Area Planning Council (MAPC) representative Sam Cleaves.

### Available sources of enrollment projections:

1. Commissioned New England School Development Council (NESDEC) Demographics Study by Tri Town Union/Masconomet School Committees – completed in February 2006 (pages 39 – 66 are Middleton) This report provided three models for enrollment estimates.
2. NESDEC Annual enrollment projections update, Ellen Kelly/Donald Kennedy Demographic Team to Dr. Bernard Creeden, dated 12/15/06
3. Single Family home ratio analysis, Kosta Prentakis, dated February 5, 2007.
4. Metropolitan Area Planning Council (MAPC) population by municipality and age (adjusted), [http://www.mapc.org/data\\_gis/data\\_center/2006\\_Projections/MAPCProjections013106.xls](http://www.mapc.org/data_gis/data_center/2006_Projections/MAPCProjections013106.xls), dated January 31, 2006.

There are several other available studies that were considered. However, most are several years old and the sub-committee felt the more recent information was more valuable to consider.

### Statistics of Projections:

Of the four sources of projections, two of them (both NESDEC projections) utilize a cohort survival technique and two utilize a ratio technique. It is important to note that all projection techniques make assumptions and, for the most part, assume that "what happened in the past, will happen in the future". A simplistic explanation of a cohort survival is that ratios are established between the enrollment of a certain grade and the number of live births in the age cohort. The ratio is impacted by "in-migration" and "out-migration" of children.

The other two approaches use a ratio approach for projecting enrollment. One uses a ratio of school age children to single family homes (K. Prentakis Study). The other uses a ratio between school age children to overall populations (MAPC).

### Use of projections:

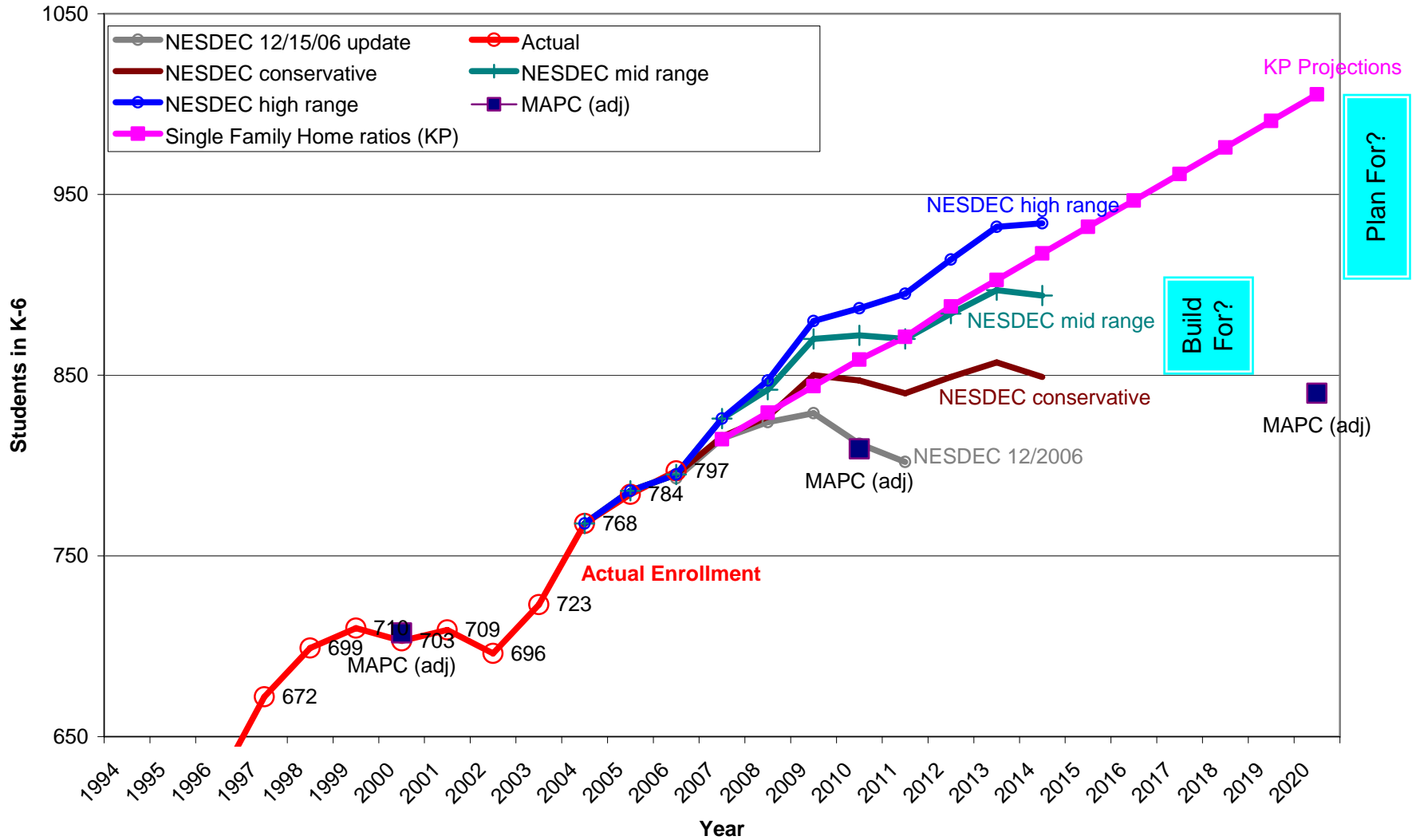
The sub-committee is tasked with providing a recommendation to the MSBC projecting the future number of elementary school students so that the committee can build and plan appropriately. It is clear that each projection yields a different final estimate. This is fully expected as different approaches are used. The best that can be expected for projections is to project for a range. It will be shown later that this does not result in significantly different guidance on building or planning.

### Projection Estimates:

For building purposes, February NESDEC study projections suggest a "conservative" estimate of ~850 students and a mid range projection of ~900. However, these estimates end in 2015. The MAPC 2020 estimate is ~850 students. (MAPC is adjusted by proportioning age segments and factoring in non-district students. The Kosta Prentakis estimate for 2019 is slightly over 950 students, however it lines up closely with the NESDEC mid range projection through the life of that study. The NESDEC 12/06 update suggests a drop in enrollment (or an increase depending on which graph.)

Future Projections based on available data: The basis of each projection is a series of assumptions.

### Enrollment Projections



### Size of Educational Space:

There are four parts to planning for school space:

1. Homerooms (assumes full-time Kindergarten)
2. Core Facility Space (Cafeteria, Gym, Library, storage, Teacher Room, Resource space)
3. Space for Specialty Teaching (Music, Art, Special Education, Computer Lab, Science Lab)
4. PreSchool (the School Committee has requested planning for three rooms for Preschool)

Homerooms are driven by the number of students at each grade along with the class size policies. For purposes of this study, the subcommittee used the current class size policies as provided by the School Committee. The class size policies are:

- Kindergarten not more than 18 children/class
- Grades 1 – 3 not more than 20 children/class
- Grades 4 – 6 not more than 22 children/class

For calculating the number of homerooms, the cumulative studies suggest a low end range of K-6 of approximately 850 students and a high end range of 900 students at 2015. The number of homerooms can be planned using the assumption of an “average” number of children per grade with planning for some “bubble” space, (swing space when a particular class cohort is larger):

	Low	High
Grades K - 6 enrollment Estimates	850	900
Average Children per grade	121	129

It is important to note that these estimates reflect an “average” class.

Maximum # children/class per district policy	Max Class size	Homerooms Required (Low)	Homerooms Required (High)	Practical # Homerooms Required for Town (Low to High)	
K	18	6.7	7.1	7	8
1	20	6.1	6.4	6	7
2	20	6.1	6.4	6	7
3	20	6.1	6.4	6	7
4	22	5.5	5.8	6	6
5	22	5.5	5.8	6	6
6	22	5.5	5.8	6	6
		41.5	44.0	43	47
Swing (bubble) Planning (When a grade cohort is particularly large)				3	2
				46	49
				Homerooms Required	

There can be an argument made to add or subtract one room from any of these calculations. However, it becomes fairly clear that the exact number of students in the enrollment projection does not have a significant impact on the overall space required.

Core space, which is over and above the projected homeroom requirements above, will be a function of the number of students in a building, the number of campus sites, and the educational specifications. It is reasonable to plan for one (Cafeteria, Gym, Library) per site. The size will depend on the building configuration.

Specialty space is also a function of the size of the building, the age of the children in a building, and the educational specifications. Planning this can be confusing. Typically, one room per specialty/per campus would be expected. However, there can be exceptions based on the building model chosen. For example, an early childhood center may teach music and art in the homeroom as part of the educational specifications. A large (e.g., greater than 500-600 students) building may require more than one specialty room.

### **Longer Term Planning:**

While longer term planning has even more areas of potential error, it is reasonable to consider planning for student enrollment up to 1000 based on reasonable estimates from the Single Family Home ratio analysis. This planning could be done in many ways such as expandability of campuses, core facility sizes, additional or sequential campus plans.

#### Summary:

1. The "Foundation" subcommittee believes there is adequate available information at this time for intelligent planning decisions for the 10-13 year window under consideration without further investment of town resources. At a later time an update may be required, possibly as part of the Massachusetts School Building process.
2. The MSBC should state their intent to plan for educational space for a projected student enrollment in the 850 to 900 student band (exclusive of preschool).
3. The MSBC should plan for potential enrollment within the window of the Committee charge of up to 1000 students.
4. The number of homerooms for planning purposes should be approximately 46 to 49. The capacity of any campus which will continue to exist can be subtracted from this number.
5. The MSBC should strongly consider two elements of space planning:
  - the number of campus sites
  - grade configuration of the buildings

These issues may have more significant impact on building size/costs, and operating costs than the projected enrollment.

Respectfully Submitted:  
MSBC "Foundation" Subcommittee  
February 15, 2007

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