

Future School Needs Committee

Enrollment Projections for School Years Beginning in 2006 Discussion and Analysis October 27, 2006

Each year the Future School Needs (FSN) Committee projects school enrollment for the next ten years. The goal of the projections is to both reflect an accurate picture of the next year's enrollment and determine general trends over the longer term. Historically, accurately projecting the number of students who will enter kindergarten has been the most difficult part of the projection.

We have been requested to estimate the impact of Section 40B on future enrollments. Our understanding is that the Town is in the process of doing analysis on this subject to be completed later this year. Based on a briefing to our Committee, we believe there will be a noticeable impact on total enrollment. We will complete a separate report on enrollment projections after we review the findings of that analysis. For the purpose of this study, we have made no adjustments to our projections or our methodology to reflect Section 40B.

Accuracy of Prior Year Projections

Last year we projected total enrollment of 5,013 for the 2006/2007 school year. Actual enrollment is 4,979 -- a difference of 34 students. This represents a .7% overstatement. We have shown our projection results for the last 15 years below.

Year	Projected	Actual	% Understated (overstated)
2006	5,013	4,979	(.7%)
2005	4,915	4,879	(.7%)
2004	4,780	4,838	1.2%
2003	4,611	4,667	1.2%
2002	4,513	4,565	1.2%
2001	4,417	4,439	.5%
2000	4,411	4,374	(.8%)
1999	4,378	4,334	(1.0%)
1998	4,393	4,303	(2.1%)
1997	4,209	4,281	1.7%
1996	4,134	4,110	(.6%)
1995	3,980	4,049	1.7%
1994	3,808	3,891	2.2%
1993	3,774	3,796	.6%
1992	3,632	3,706	2.0%

Percent understated reflects Actual/Projected in percentage terms.

The past projections show that FSN usually projects annual enrollment for the next year within 2.0% (13 of the last 15 years). In 7 of the last 15 years the projections were within 1.0%. Since the revised kindergarten methodology was adopted 9 years ago (see below), only once (in 1998, the first year of the new method) was the projection off by more than 2.0%. The past 8 years the variance has been within 1.2% each year. However, despite better accuracy, the historical results point to the fact that the projections are **estimates** and in any given year there could be as much as a 3.0% (or greater) variance.

On a grade by grade basis, the projections were on target this year. In no year were the projections different by more than 9 students. Usually one or two grades will be off significantly from expected for reasons that can sometimes be determined but are often unpredictable and due to an unusually large number of children moving into or out of the school system.

General Methodology

Projections for grades 1-12 are determined based on the average of retention factors for each grade for the past five years. A retention factor is the enrollment in a given grade this year divided by the enrollment for the preceding grade last year. A retention factor greater than one indicates there are more children in a grade this year than were in the preceding grade last year. For example, the current retention factor for third grade is 1.0222 which equals 415 (third grade enrollment for 06/07 school year) divided by 406 (second grade enrollment for 05/06 school year). This factor is averaged with the factors from the prior four years to produce the average retention factor this year for third grade of 1.0246.

Census Data and Kindergarten Methodology

Nine years ago, we began using annual census data to project kindergarten enrollment. The prior methodology used the annual birth rates to project the number of kindergarteners 5 years later. We found the prior methodology to be generally reasonable but inconsistent from year to year. The revised methodology uses the annual census to track pre-school age children in town to help estimate the number who will be kindergarten eligible each year. We then estimate the percentage that will attend public school upon entering kindergarten. Our prior results clearly indicate that this methodology has significantly improved kindergarten accuracy. Until 2005, there was a clear increasing trend of public kindergarten attendance (91% in 2004, 89% in 2003, 85% in 2002, 80% in 2001 and 77% in 2000). We indicated in our last report that this trend may now be topping out. This figure was 89% for 2005 and we estimated it will be 91% in 2006.

The accuracy of the overall projections is based largely on the accuracy of kindergarten. The following table demonstrates our kindergarten results over the past 9 years. Our understatements in 2004 and 2005 were primarily due to understating METCO kindergartners.

Year	Projected	Actual	Proj. – Actual
2006	447	456	(9)
2005	405	414	(9)
2004	422	433	(11)
2003	366	394	(28)
2002	347	383	(36)
2001	337	339	(2)
2000	346	346	0
1999	338	323	15
1998	365	315	50

There are several items that should be pointed out from the above chart. First, kindergarten is extremely difficult to estimate and the results can vary significantly from year to year. It is unreasonable to expect to be consistently within 10 students. Second, although the first year of the revised methodology (1998) produced a difference of 50 students, it was a better estimate than the prior methodology would have produced. Third, when a trend begins or changes (in this case the percentage of students attending public kindergarten began increasing in 2001), our figures will tend to lag for several years before catching up.

We analyze census data each year in determining our projections. We continue to track the census until January 1 of the year following the entrance of kindergarten (we assume for this purpose that the number of children in a grade will be the same on a given September 1 and the following January 1).

As noted above, the percentage of students attending public kindergarten had been increasing until 2005. For our projections this year we assumed the figure to be 91% going forward which is the same assumption we used last year.

Our methodology reflects our best estimate for the projected number of children eligible for kindergarten in September 2007. We assumed that the children eligible for kindergarten in September 2007 would increase to 433 (net 17 increase from current level of 416 as of 1/1/06). This estimate is based on our analysis of town census data (net in-migration) over the past five years at the pre-school ages. Assuming 91% attend public school and there are 16 METCO kindergartners (see below), there would be 410 kindergartners in 2007 ($433 \times .91 + 16 = 410$).

We used a similar methodology to estimate the number of children entering kindergarten in 2008 and 2009 as shown below.

Date of Birth	Yr Enter Kind.	06 Census Count	Projected K Eligible	Projected K Public*	Projected plusMETCO**
9/02-8/03	2008	385	420	383	399
9/03-8/04	2009	382	440	400	416

* assumed to be 91% of Kindergarten eligible
 ** assumes 16 METCO students for both 2008 and 2009

For years beyond 2009, we used a factor of 1.20 times the number of births to estimate the number of kindergarten students. This factor is based on an approximation using these factors from 2005 to 2009 with 2007-2009 being estimated.

Effect of Alternative Kindergarten and Future Birth Assumptions

The assumed values for kindergarten enrollment each year have a significant impact on the long-term projections. We become less confident of our kindergarten estimates (and correspondingly our total estimates) as we move further away from the January 1, 2006 data. By the time we reach the kindergarten estimate for the school year 2012/2013 and beyond, the children have not yet been born and our calculation is based entirely on estimates of future births. Therefore we have estimated an expected range for enrollment in 5 years and in 10 years based on alternative assumptions. The ranges are intended to show a reasonable range in future years (both above and below our estimate), but there is no guarantee that the actual enrollment in 10 years will be within the ranges shown. It is much more likely (but again certainly not guaranteed) that the enrollment 5 years from now will be within the ranges shown.

For alternative kindergarten assumptions, we assumed low-end enrollment would be 10 students less than the figures on our spreadsheet for school years beginning in 2007, 2008, and 2009. We assumed it would be 20 students lower than expected in 2010 and beyond. For the high-end assumption, we assumed enrollment would be 10 students greater than the figures on our spreadsheet for the school years beginning in 2007, 2008, and 2009 and 20 students greater than expected in 2010 and beyond.

The range for kindergarten was coupled with birth assumptions after fiscal year 2006 of 317 children each year (low-end) and 367 children each year (high-end). This was approximated as a difference of 25 (plus or minus) from the estimated births beyond fiscal year 2006 of 342.

Total	Year	11/12	16/17
Low end of range		5,231	5,222
FSN projection		5,303	5,560
High end of range		5,376	5,894

K-5

Year	<u>11/12</u>	<u>16/17</u>
Low end of range	2,445	2,223
FSN projection	2,517	2,504
High end of range	2,590	2,784

6-8

Year	<u>11/12</u>	<u>16/17</u>
Low end of range	1,305	1,226
FSN projection	1,305	1,270
High end of range	1,305	1,312

9-12

Year	<u>11/12</u>	<u>16/17</u>
Low end of range	1,481	1,773
FSN projection	1,481	1,786
High end of range	1,481	1,798

The Committee welcomes any comments regarding these projections.

Respectfully submitted,

James Lamenzo, Chairman	appointed by Moderator
David Coelho	appointed by Selectmen
Marianne Cooley	appointed by School Committee
Ann DerMarderosian	appointed by Finance Committee
Lynn Gotwals	appointed by Parent-Teachers' Council
Marjorie Margolis	appointed by Moderator
Mary Riddell	appointed by League of Women Voters
Roger Toran	appointed by Planning Board

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