

## **Future School Needs Committee**

### **Enrollment Projections for School Years Beginning in 2007 Discussion and Analysis October 29, 2007**

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. The Town is considering several additional Section 40B projects. For the purpose of this report, the impact of Section 40B has not been included.

#### **Birth Trends**

The births reflect reported births from September 1 to August 31 of each year. The reported births in the 2006/2007 year were 288. This is the lowest since the 1990/1991 year total of 286. The figure from the 2004/2005 year was 315 and the figure from the 2005/2006 year was 306. These last 3 years represent the three lowest counts in the last 10 years. The next lowest was the 344 figure from the 1997/1998 year. The average births for the 7 preceding years was 368. We used a six year average from 2002-2007 to estimate future assumed births (330 per year). Last year's figure was 342. Declining births affect our projections and we monitor this each year.

#### **Accuracy of Prior Year Projections**

Last year we projected total enrollment of 5,060 for the 2007/2008 school year. Actual enrollment is 5,003 -- a difference of 57 students. This represents a 1.1% overstatement. We have shown our projection results for the last 15 years on the next page.

Year	Projected	Actual	% Understated (overstated)
2007	5,060	5,003	(1.1%)
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%

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 10 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 9 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 with the exception of kindergarten and 9<sup>th</sup> grade. Kindergarten was overstated by 30 students. It appears that this is the result of a higher percentage of children attending private kindergarten programs than the past few years. It is possible that the uncertainty regarding the KASE program this year may be a contributing factor. Our numbers do not reflect the possibility that a greater percentage of private kindergarten students may return to our system in first grade. We will be better able to assess this situation next year.

There was also an overstatement in 9<sup>th</sup> grade of 16 students. It is not uncommon to have a larger than anticipated variance in the 9<sup>th</sup> grade.

## **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 1.0093 which equals 432 (third grade enrollment for 07/08 school year) divided by 428 (second grade enrollment for 06/07 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 1.0213.

## **Census Data and Kindergarten Methodology**

Ten 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 have topped out. This figure was 89% for 2005 and 90% in 2006. The estimate for 2007 is 85%. It is not clear whether this indicates a declining trend or is an aberration from the last three years. We used an 88% figure in our projections this year to reflect this uncertainty.

The accuracy of the overall projections is based largely on the accuracy of kindergarten. The following table demonstrates our kindergarten results over the past 10 years. Our understatements in 2004 and 2005 were primarily due to understating METCO kindergartners.

Year	Projected	Actual	Proj. – Actual
2007	410	380	30
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 and perhaps decreasing in 2007), 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 88% going forward.

Our methodology reflects our best estimate for the projected number of children eligible for kindergarten in September 2008. We assumed that the children eligible for kindergarten in September 2008 would increase to 421 (net 19 increase from current level of 402 as of 1/1/07). 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 88% attend public school and there are 15 METCO kindergartners (see below), there would be 385 kindergartners in 2008 ( $421 \times .88 + 15 = 385$ ).

We used a similar methodology to estimate the number of children entering kindergarten in 2009 and 2010 as shown below.

Date of Birth	Yr Enter Kind.	07 Census Count	Projected K Eligible	Projected K Public*	Projected plusMETCO**
9/03-8/04	2009	396	433	381	396
9/04-8/05	2010	331	388	342	357

\* assumed to be 88% of Kindergarten eligible

\*\* assumes 15 METCO students for both 2009 and 2010

For years beyond 2010, we used a factor of 1.10 times the number of births to estimate the number of kindergarten students. This factor is based on an approximation using these factors from 2003 to 2010 with 2008-2010 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, 2007 data. By the time we reach the kindergarten estimate for the school year 2013/2014 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 2008, 2009, and 2010. We assumed it would be 20 students lower than expected in 2011 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 2008, 2009, and 2010 and 20 students greater than expected in 2011 and beyond.

The range for kindergarten was coupled with birth assumptions after fiscal year 2007 of 310 children each year (low-end) and 350 children each year (high-end). This was approximated as a difference of 20 (plus or minus) from the estimated births beyond fiscal year 2007 of 330.

**Total**

Year	<u>12/13</u>	<u>17/18</u>
Low end of range	5,044	4,745
<b>FSN projection</b>	<b>5,118</b>	<b>5,042</b>
High end of range	5,190	5,334

**K-5**

Year	<u>12/13</u>	<u>17/18</u>
Low end of range	2,172	1,958
<b>FSN projection</b>	<b>2,246</b>	<b>2,199</b>
High end of range	2,318	2,438

**6-8**

Year	<u>12/13</u>	<u>17/18</u>
Low end of range	1,361	1,115
<b>FSN projection</b>	<b>1,361</b>	<b>1,160</b>
High end of range	1,361	1,201

**9-12**

Year	<u>12/13</u>	<u>17/18</u>
Low end of range	1,511	1,672
<b>FSN projection</b>	<b>1,511</b>	<b>1,683</b>
High end of range	1,511	1,695

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
Heidi Black	appointed by Parent-Teachers' Council
Marjorie Margolis	appointed by Moderator
Mary Riddell	appointed by League of Women Voters
Roger Toran	appointed by Planning Board

