

Future School Needs Committee

Enrollment Projections for School Years Beginning in 2010 Discussion and Analysis October 29, 2010

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 limited data to analyze the impact of Section 40B. The school system's transportation data shows that 16 students (3 at the high school, 3 at Pollard, 3 at High Rock, 7 at Eliot) live in the largest 40B project at Charles River Landing. Our projections reflect these students but we do not know how many of these students are new to Needham since the January 1, 2010 census. Our understanding is that the building is currently approximately 80% occupied. We expect the January 1, 2011 census data and 2011 enrollment projections will provide a clearer picture of the impact.

Birth Trends

The births reflect reported births from September 1 to August 31 of each year. The reported births in the 2009/2010 year were 290. This figure is comparable to the figures in 4 of the past 5 years (315 in 04/05, 306 in 05/06, 288 in 06/07 and 295 in 08/09). These 4 years plus the current year represent the five lowest counts in the past 10 years. We used a six year average from 2005-2010 to estimate future assumed births (305 per year). Last year's figure was 318 and the figure two years ago was 325. Declining births affect our projections and we monitor this each year.

Accuracy of Prior Year Projections

Last year we projected total enrollment of 5,258 for the 2010/2011 school year. Actual enrollment is 5,301 -- a difference of 43 students. This represents a 0.8% understatement. We have shown our projection results for the last 15 years on the next page.

Year	Projected	Actual	% Understated (overstated)
2010	5,258	5,301	0.8%
2009	5,143	5,238	1.8%
2008	5,034	5,059	0.5%
2007	5,060	5,003	(1.1%)
2006	5,013	4,979	(0.7%)
2005	4,915	4,879	(0.7%)
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	0.5%
2000	4,411	4,374	(0.8%)
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	(0.6%)

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% (14 of the last 15 years). In 8 of the last 15 years the projections were within 1.0%. Since the revised kindergarten methodology was adopted 13 years ago (see below), only once (in 1998, the first year of the new method) was the projection off by more than 2.0%. We always need to keep in mind that these 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, only in kindergarten is the number of students less than projected. We saw a similar occurrence last year in which every grade had the number of students greater than expected. We had never seen such an occurrence in the past 20 years and now it has essentially happened two years in a row. Public kindergarten attendance has declined slightly from 92% to 89% of all kindergartners. The 92% figure last year is the highest percentage we have seen in measuring this over the past 13 years. We used a factor of 90% for public kindergarten this year. This slightly decreases our projected kindergartners for the next few years as compared to last year. However, the increased enrollment at all other grade levels increases the projected enrollments for the next three years by approximately 50-65 students.

The actual figure for 9th grade is significantly higher than projected. This is also true to a lesser extent for 10th grade. There are 31 more 9th and 10th graders this year than projected. In last year's projections, 9th grade had 13 more students than projected. It is not clear whether this represents a trend, but the impact of these two grades has driven up the current high school enrollment as well as the retention factors (see next paragraph) in 9th and 10th grades. These factors along with greater enrollment at earlier grades (especially 7th grade) have combined to increase the high school figures going forward compared to last year's projections. For example, we are projecting 1,789 high school students in 2015/2016. Last year the figure for that year was 1,725.

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 1.0187 which equals 436 (third grade enrollment for 10/11 school year) divided by 428 (second grade enrollment for 09/10 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 1.0143.

Census Data and Kindergarten Methodology

Thirteen 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 two years ago that this trend may be topping out. The figures were 89% for 2005, 90% in 2006 and 85% in both 2007 and 2008. The figure for 2009 jumped to 92% and the estimated figure for 2010 is 89%. We used a figure of 90% in our projections this year.

The accuracy of the overall projections is based largely on the accuracy of kindergarten. The following table demonstrates our kindergarten results over the past 13 years. Our understatements in 2004 and 2005 were primarily due to understating METCO kindergartners.

Year	Projected	Actual	Proj. – Actual
2010	386	363	23
2009	404	423	(19)
2008	385	399	(14)
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 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).

Our methodology reflects our best estimate for the projected number of children eligible for kindergarten in September 2011. To do this we used our estimate of 90% for public kindergarten enrollment and a METCO kindergarten enrollment of 10 students. We assumed that the children eligible for kindergarten in September 2011 would increase to 442 (an increase from the current level of 406 as of 1/1/10). 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

90% of the 442 attend public school and there are 10 METCO kindergartners, there would be 408 kindergartners in 2011 ($442 \times .90 + 10 = 408$).

For years beyond 2013, we used a factor of 1.24 times the number of births to estimate the number of kindergarten students. This factor is based on an approximation using the actual and estimated ratios from 2007 through 2013. This factor is close to last year's factor of 1.22.

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, 2010 data. By the time we reach the kindergarten estimate for the school year 2016/2017 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. Our results from this year illustrate that one year can significantly affect the prior year projections. 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 2011, 2012, and 2013. We assumed it would be 20 students lower than expected in 2014 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 2011, 2012, and 2013 and 20 students greater than expected in 2014 and beyond.

The range for kindergarten was coupled with birth assumptions after fiscal year 2009 of 285 children each year (low-end) and 325 children each year (high-end). This was determined as a difference of 20 (plus or minus) from the estimated births beyond fiscal year 2011 of 305.

Total

Year

15/16

20/21

Low end of range	5,448	5,012
FSN projection	5,520	5,326
High end of range	5,592	5,634

K-5

Year	<u>15/16</u>	<u>20/21</u>
Low end of range	2,345	2,111
FSN projection	2,417	2,370
High end of range	2,489	2,626

6-8

Year	<u>15/16</u>	<u>20/21</u>
Low end of range	1,314	1,200
FSN projection	1,314	1,244
High end of range	1,314	1,286

9-12

Year	<u>15/16</u>	<u>20/21</u>
Low end of range	1,789	1,701
FSN projection	1,789	1,712
High end of range	1,789	1,722

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

					FUTURE SCHOOL NEEDS COMMITTEE								
					ENROLLMENT PROJECTIONS								
YEAR		2004/2005			05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14
BIRTHS*		315			306	288	334	295	290	305	305	305	301
SCHOOL YEAR		2010/2011		PROJ -	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20
	GRADE	PROJECTED	ACTUAL	ACTUAL									
	K	386	363	23	408	393	405	366	360	378	378	378	371
	1	438	439	(1)	379	426	410	423	382	376	395	395	391
	2	420	422	(2)	442	382	429	413	426	385	378	398	391
	3	433	436	(3)	428	448	387	435	419	432	391	383	401
	4	480	485	(5)	439	431	451	390	438	422	435	394	381
	5	428	430	(2)	487	441	433	453	392	440	424	437	391
	6	443	448	(5)	430	487	441	433	453	392	440	424	431
	7	413	424	(11)	442	424	480	435	427	447	387	434	411
	8	405	405	0	423	441	423	479	434	426	446	387	431
	9	362	380	(18)	417	435	454	435	493	447	438	459	391
	10	360	373	(13)	377	414	432	451	432	489	444	435	451
	11	367	367	0	367	371	407	425	444	425	481	437	421
	12	323	329	(6)	363	363	366	402	420	439	420	475	431
	TOTAL	5,258	5,301	(43)	5,402	5,456	5,518	5,540	5,520	5,498	5,457	5,436	5,351
	K-5	2,585	2,575	10	2,583	2,521	2,515	2,480	2,417	2,433	2,401	2,385	2,351
	6-8	1,261	1,277	(16)	1,295	1,352	1,344	1,347	1,314	1,265	1,273	1,245	1,281
	9-12	1,412	1,449	(37)	1,524	1,583	1,659	1,713	1,789	1,800	1,783	1,806	1,711
		5,258	5,301	(43)	5,402	5,456	5,518	5,540	5,520	5,498	5,457	5,436	5,351
* REFLECTS JULY 1 TO JUNE 30 BIRTHS													

Actual figures shaded

K adjusted for METCO

Constant births after FY08 based on 6 year average FY 05-10

October 2010