Enrollment Projections for ORCSD, 2009-2019

Long Range Planning Committee

Michael Goldberg   Tom Merrick   Ann Lane   Tim Burke   Teddy Bensaid
Frank Radack   Lorna Jacobsen   Nancy Hoff
Lisa Allison, Chair   David Taylor, School Board Liaison

December, 2008

Overview of Presentation

- Explain why Projections are being presented in December this year

- Describe process used by the LRPC to derive enrollment projections

- Discuss Accuracy of Projections last 3 years

- Summarize current projections through 2019

- Look at what statewide studies are predicting.

- Review points for School Board consideration relating to the projections

Change in LRPC Timetable

- Enrollment Figures Drive Projections
- Births and Housing Starts less Important
- Births and Housing Starts can be Estimated in Advance
- Projections delivered in the fall will be useful in Budgeting for Next Year
- Projections can be revisited after year-end birth and housing information is available, and revised if necessary
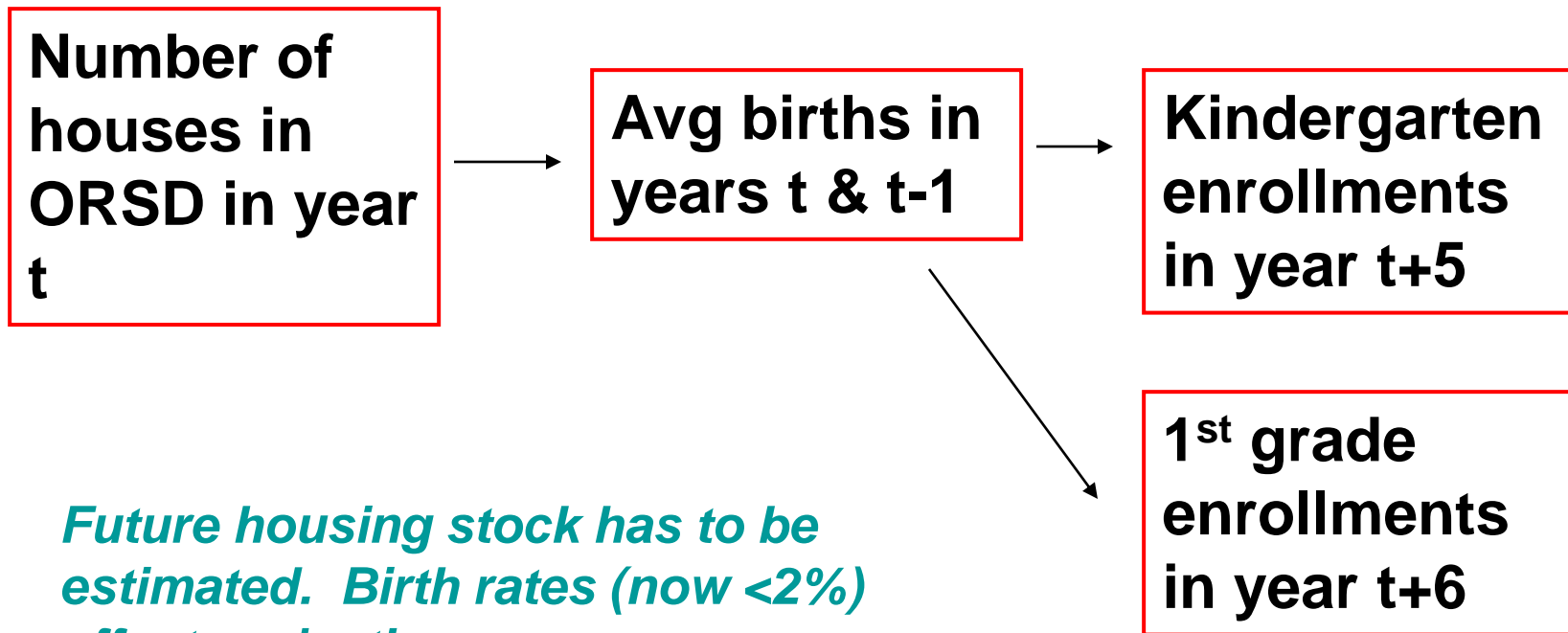
Overview:
ORSD Enrollment Projection Process

Projection model is an Excel spreadsheet that has been used for 10+ years.

- Model has been modified over time (most recently in October 2008)

- Uses housing stock and births to predict K and 1st grade enrollments

- Uses current and projected enrollment and grade progression ratios (GPR's) to predict enrollments in grades 2-12

Kindergarten and First Grade Enrollment Projections

Number of houses in ORSD in year t → **Avg births in years t & t-1** → **Kindergarten enrollments in year t+5**

1st grade enrollments in year t+6

Future housing stock has to be estimated. Birth rates (now <2%) affect projections.

Details of K and 1ˢᵗ Grade Projections

- Housing stock projected based on existing homes plus average housing starts over a 30 year period (72/year).
- Projected Births based on linear relationship between births and housing stock.
- Projected Kindergarten based on linear relationship between average births in years t-5 and t-6 and Kindergarten enrollments in the current year.
- Projected First Grade enrollments based on linear relationship between average births in years t-6 and t-7 and First Grade enrollments in the current year.

What is a "Grade Progression Ratio?"

		A numerical example:
	Number of students in grade J and year t	
+	Add students who move to ORSD in grade J+1 and year t+1	200 students in 5th grade in 2008 + 10 new students join ORSD at the 6th grade for 2009
-	Subtract students who leave ORSD before grade J+1 and year t+1	-15 students leave ORSD before 6th grade in 2009
=	Number of students in grade J+1 and year t+1	= 195 students in 6th grade in 2009

GPR (5th to 6th = 195/200 = .975

Projections for Grades 2-12

- Calculate GPR's for each grade and year
- Find the 5 year average GPR for each grade.
- Apply 5-year average GPR's to actual and predicted enrollments to predict enrollments into the future.
- Takes into account the net migration (in-migration and out-migration) over time and by grade (different GPR for each grade).

How Accurate Have the Projections Been?

- Historically Very Accurate

- Grade Progression Ratios are very accurate

- Recently K and 1 had been overestimated.

- Model Changes in 2007 addressed the K and 1 overestimation issues.

- Accuracy is greatest for the near-term projections. Average error of estimate increases as we project further into the future, but levels off at about 6 years out.

Comparing Accuracy: Old vs. New Model

Old Model
Projected vs Actual 2006-2007 Enrollment

Grade	LRPC 06-07	Actual 10/06	Difference	% Difference
K	153	128	25	19.50%
1	171	147	24	16.30%
2	157	161	-4	-2.50%
3	129	135	-6	-4.40%
4	151	152	-1	-0.70%
ELEM	**761**	**723**	**38**	**5.30%**
5	151	163	-12	-7.40%
6	159	168	-9	-5.40%
7	148	159	-11	-6.90%
8	166	177	-11	-6.20%
MS	**624**	**667**	**-43**	**-6.40%**
9	177	188	-11	-5.90%
10	177	179	-2	-1.10%
11	160	164	-4	-2.40%
12	177	186	-9	-4.80%
HS	**691**	**717**	**-26**	**-3.60%**
Total	**2076**	**2107**	**-31**	**-1.50%**

New Model
Projected vs Actual 2007-2008 Enrollment

Grade	LRPC 07-08	Actual 10/07	Difference	% Difference
K	128	127	1	0.8%
1	156	145	11	7.6%
2	149	152	-3	-2.0%
3	162	160	2	1.3%
4	135	130	5	3.8%
ELEM	**730**	**714**	**16**	**2.2%**
			0	
5	152	157	-5	-3.2%
6	160	158	2	1.3%
7	168	164	4	2.4%
8	160	159	1	0.6%
MS	**640**	**638**	**2**	**0.3%**
			0	
9	168	168	0	0.0%
10	186	188	-2	-1.1%
11	175	182	-7	-3.8%
12	159	164	-5	-3.0%
HS	**688**	**702**	**-14**	**-2.0%**
			0	
Total	**2058**	**2054**	**4**	**0.2%**

Past Two Years' Forecasts Highly Accurate One Year Out

Projected vs Actual 2007-2008 Enrollment

Grade		LRPC 07-08	Actual 10/07	Difference	% Difference
K		128	127	1	0.8%
	1	156	145	11	7.6%
	2	149	152	-3	-2.0%
	3	162	160	2	1.3%
	4	135	130	5	3.8%
ELEM		**730**	**714**	**16**	**2.2%**
				0	
	5	152	157	-5	-3.2%
	6	160	158	2	1.3%
	7	168	164	4	2.4%
	8	160	159	1	0.6%
MS		**640**	**638**	**2**	**0.3%**
				0	
	9	168	168	0	0.0%
	10	186	188	-2	-1.1%
	11	175	182	-7	-3.8%
	12	159	164	-5	-3.0%
HS		**688**	**702**	**-14**	**-2.0%**
				0	
Total		**2058**	**2054**	**4**	**0.2%**

Projected vs Actual 2008-2009 Enrollment

Grade		LRPC 08-09	Prelim 10/1	Difference	% Difference
K		126	124	2	1.6%
	1	154	143	11	7.7%
	2	147	143	4	2.8%
	3	153	156	-3	-1.9%
	4	158	162	-4	-2.5%
ELEM		**738**	**728**	**10**	**1.4%**
	5	132	140	-8	-5.7%
	6	154	157	-3	-1.9%
	7	157	160	-3	-1.9%
	8	165	167	-2	-1.2%
MS		**608**	**624**	**-16**	**-2.6%**
	9	152	149	3	2.0%
	10	168	169	-1	-0.6%
	11	184	182	2	1.1%
	12	178	180	-2	-1.1%
HS		**682**	**680**	**2**	**0.3%**
Total		**2028**	**2032**	**-4**	**-0.2%**

Recent Changes to the Model

- Base year for births and houses is now the same as base year for enrollment (2008) with estimates used for full year birth and housing start data, as enrollment drives the projections, especially one year out.

- Confidence ranges based on housing start variability were replaced by average errors of estimate for each number of years out.

- In 2008, David Taylor expanded the model to include projections by school for elementary grades.

The Projections

Summary of Enrollment Projections
For Oyster River School District
2008 Actual to 2019 Projected

Average Absolute Error of Estimate
(Plus or Minus Range)

Year	K-4	5-8	9-12	Total		K-4	5-8	9-12	Total	Percent To Total
2008-09	728	624	680	2032	Actual Year					
2009-10	721	623	655	1999	One Year Out	16	17	16	24	1.2%
2010-11	721	616	628	1964	Two Years Out	32	26	23	54	2.7%
2011-12	728	602	614	1943	Three Years Out	45	34	30	73	3.7%
2012-13	733	608	599	1941	Four Years Out	56	49	30	101	5.2%
2013-14	733	599	598	1929	Five Years Out	56	59	34	134	6.9%
2014-15	735	598	592	1925	Over Five Years Out	56	62	42	146	7.5%
2015-16	738	608	578	1925						
2016-17	744	616	584	1943						
2017-18	751	613	575	1938						
2018-19	757	610	575	1942						

Baseline Projection: Housing Starts = Mean (72/year)

Highlights: Current to 2018-19:

(1) Gains in grades K-4 up 44 (Final projection year now 757)

(2) Middle School enrollments decline to 600 level, then gradually grow.

(3) High School enrollments decline by net 105 to 575.

(4) Total Enrollment decreases by 90 students (4.4%) over 10 years.

Elementary School Projections

	Mast Way Projections						Moharimet Projections						Total
YEAR	K	1	2	3	4	Total	K	1	2	3	4	Total	Total Elem Sc
2008	**67**	**65**	**65**	**67**	**80**	**344**	**57**	**78**	**78**	**89**	**82**	**384**	**728**
2009	63	75	65	66	66	335	64	77	78	79	88	386	721
2010	63	76	75	66	65	345	64	77	77	79	78	375	721
2011	61	76	76	77	65	355	62	77	77	78	78	373	728
2012	61	74	76	77	75	363	61	76	77	79	77	370	733
2013	62	74	74	77	76	363	62	75	76	79	77	370	733
2014	64	75	74	76	76	364	65	76	75	77	77	371	735
2015	64	77	75	75	75	366	65	78	76	77	76	372	738
2016	65	77	77	76	74	368	66	78	78	77	75	375	744
2017	65	77	77	78	75	372	66	79	79	80	76	379	751
2018	65	77	77	78	77	375	66	79	79	80	78	382	757

Oyster River School District
Actual and Projected Enrollment by Grade Grouping
1969-2019
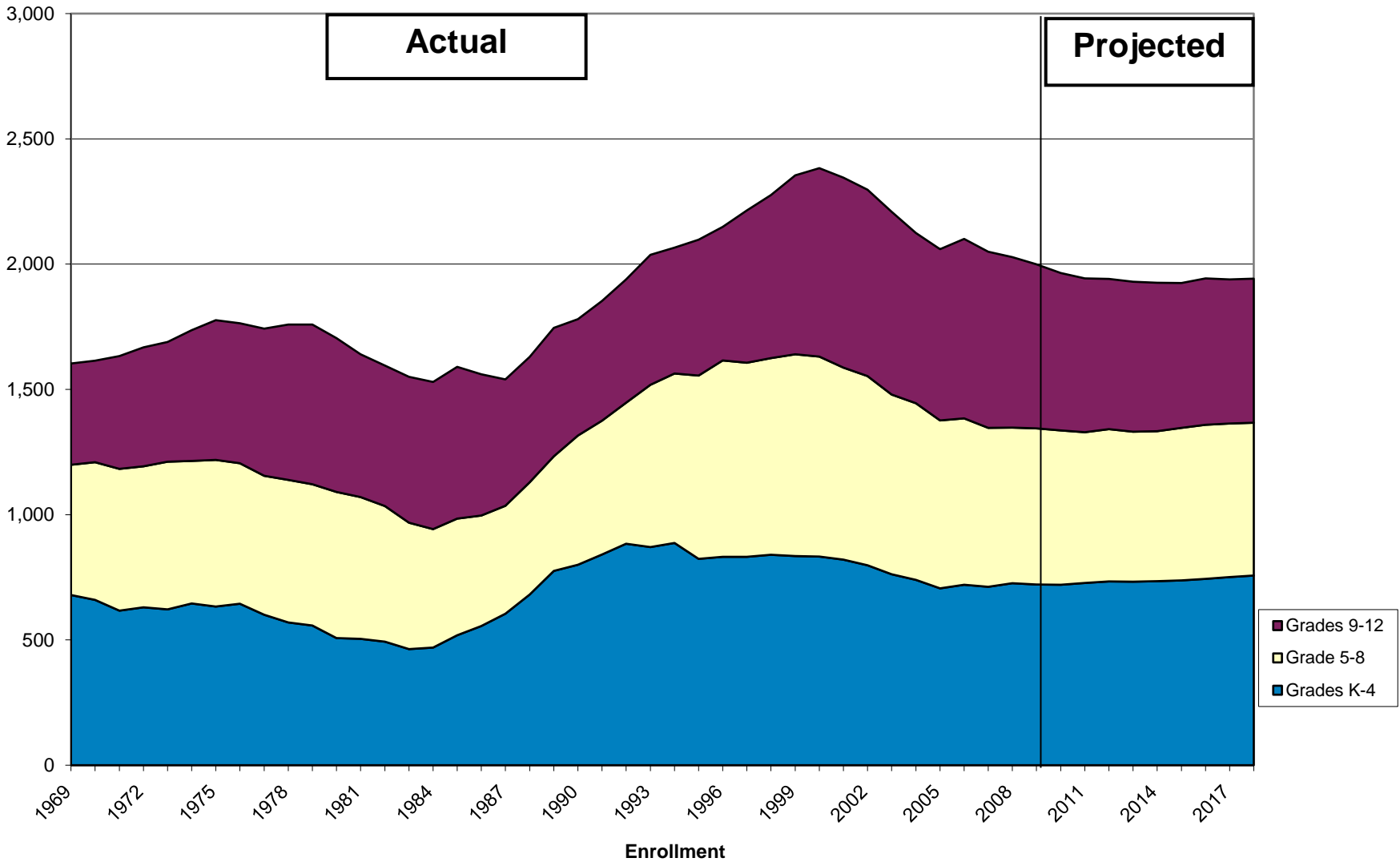
Actual and Projected Enrollment plus and minus Average Error of Estimate

Total Enrollment for Grades K - 12

Legend:
- Projected Total Enrollment
- Total Plus Average Error
- Total Minus Average Error
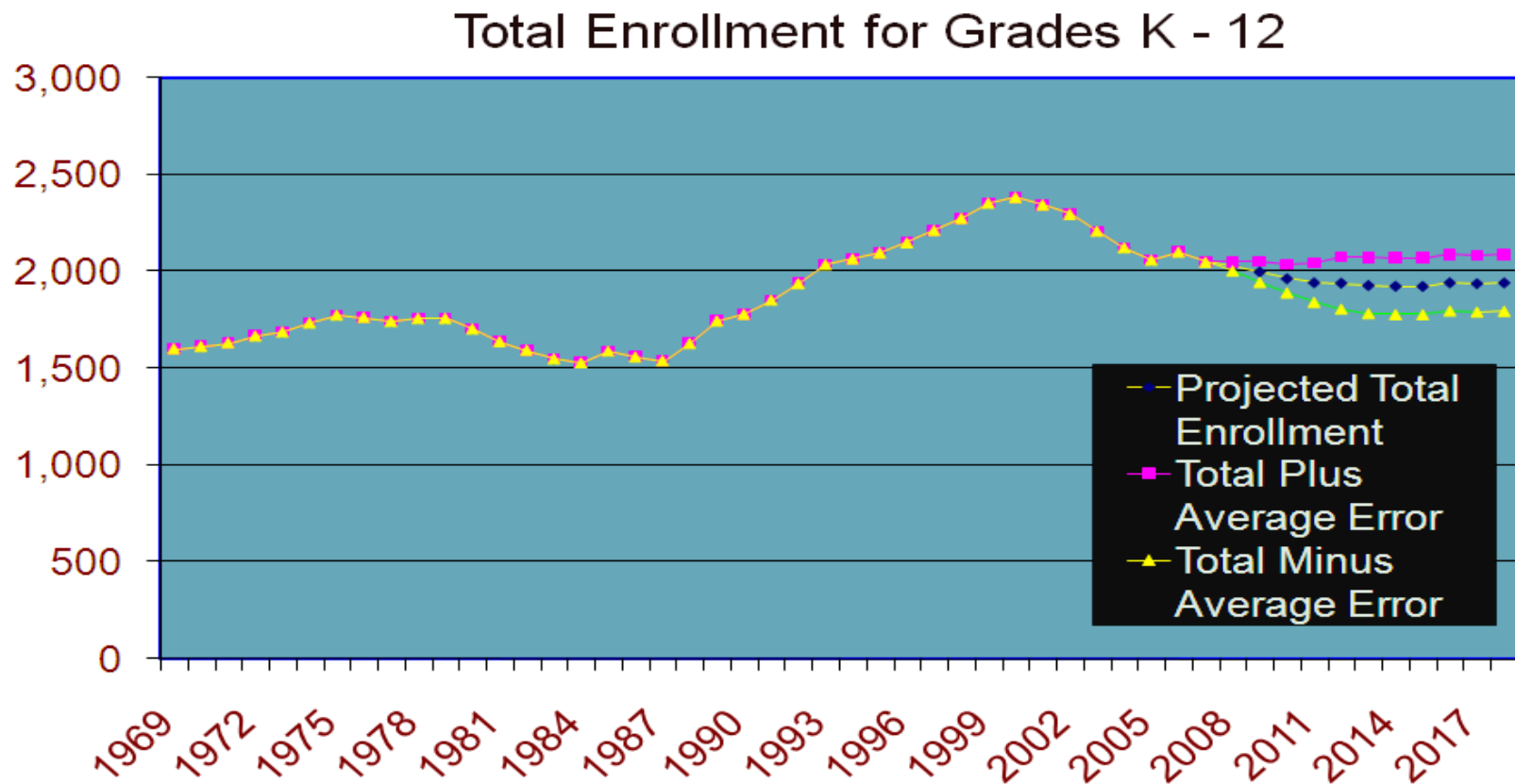
Other Points to Consider

- **Will economic conditions influence net migration to ORSD relative to last five years? This could impact GPRs and projections.**

- **Model does not measure impact of possible full day kindergarten on kindergarten enrollment.**

- **Model does not predict the number of tuition students at the High School and projections do not include them.**

- **Model does not forecast changes in population subsets that will impact space requirements (special needs children, PEP, home schooling, etc.)**

Births and Housing Starts

Model assumes relationship between housing stock, births and enrollment applies into the future. However…

- As average age distribution increases, there will be fewer people in prime child-bearing ages in ORSD.

- Difficult to tell for ORSD since UNH numbers skew the U.S. Census data.

- Enrollment declines are forecasted in state-wide research studies.

NH Center for Public Policy Predicts Stabilizing School Enrollments

"...to raise new ideas and improve policy debates through quality information and analysis on issues shaping New Hampshire's future."

One Eagle Square
Suite 510
Concord, NH 03301-4903

(603) 226-2500
Fax: (603) 226-3676

www.nhpolicy.org

New Hampshire Center for
PUBLIC POLICY
Studies

Board of Directors
Martin L. Gross, Chair
John B. Andrews
John D. Crosier
Gary Matteson
Chuck Morse
Todd I. Selig
Stuart V. Smith, Jr.
Donna Sytek
Georgie A. Thomas
James E. Tibbetts
Brian F. Walsh
Kimon S. Zachos

Executive Director
Stephen A. Norton
snorton@nhpolicy.org

Deputy Director
Dennis C. Delay
ddelay@nhpolicy.org

Research Associate
Ryan J. Tappin
rjtappin@nhpolicy.org

Office Manager
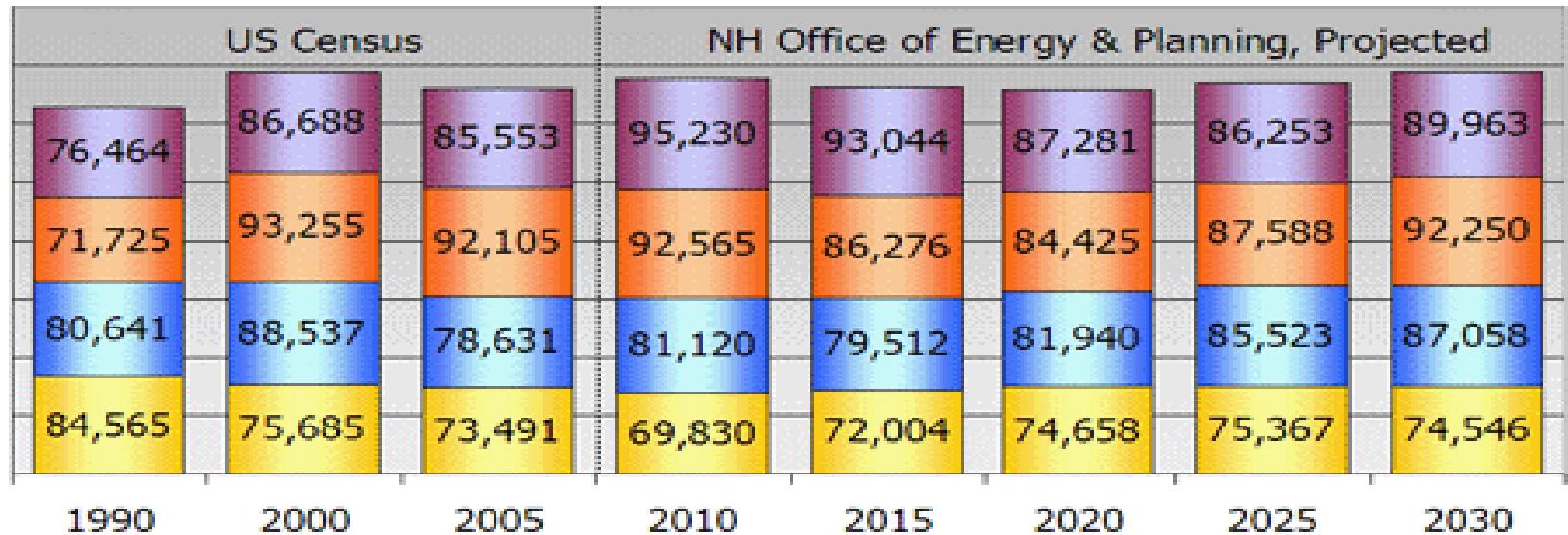Cathleen K. Arredondo
carredondo@nhpolicy.org

Executive Director
Emeritus
Douglas E. Hall
doughall@nhpolicy.org

What Is
New Hampshire?
A collection of data for those seeking answers

Compiled for Leadership New Hampshire

September 2007

- New Hampshire's 25 to 34 year-old population has dropped since 1990, even as the total population grew.

- From 1990 to 2000 the school-aged population grew, but it is now expected to level off and decline slightly by 2020.

- This trend is driven by the aging of the "baby boom" population—their children are growing up.

Statewide Population Projections

Population Under Age 20
Estimated and Projected

| | < 5 | 5-9 | 10-14 | 15-19 |

	US Census			NH Office of Energy & Planning, Projected				
15-19	76,464	86,688	85,553	95,230	93,044	87,281	86,253	89,963
10-14	71,725	93,255	92,105	92,565	86,276	84,425	87,588	92,250
5-9	80,641	88,537	78,631	81,120	79,512	81,940	85,523	87,058
< 5	84,565	75,685	73,491	69,830	72,004	74,658	75,367	74,546
	1990	2000	2005	2010	2015	2020	2025	2030

Source: US Census Bureau May-02; American Community Survey Jan-07;
NH Office of Energy & Planning Jan-07
Prepared by: Economic & Labor Market Information Bureau, NHES
Next Scheduled Update: 2010 Census

Statewide Study in 2005 Predicted Declining School Enrollment

Housing and School Enrollment in New Hampshire: An Expanded View

May 2005

Prepared For: New Hampshire Housing Finance Authority

Prepared By: Applied Economic Research Laconia New Hampshire

- Demographic forces have a more powerful impact than housing growth on enrollment
- New Hampshire's period of rapid enrollment growth is all but over

http://www.nhhfa.org/rl_docs/housingdata/school_enrollment/SchoolStudy.pdf

Summary

- Total ORCSD enrollments projected to decline (Losing about 90 students in total over ten years.) Total enrollment, at 2,032 this year, drops below 2,000 in 2009-2010, reaches a low of about 1,925 for three years in 2013-2016, then rises to 1,940 by 2019.

- K through 4 enrollment projected to remain stable at 720 – 730 until 2014, then grow to reach 757 in 2018-2019.

- Middle school enrollment, now 624, projected to drop below 600 for two years 2013 - 2015, but rebound to about 610 in the last 4 years of the projection period.

- Declines at the high school level are projected to continue. High school enrollment, now 680 from the district, drops below 600 by 2012, then falls more slowly, to 575 in the last two years of the ten-year projection.