2017-18 SCHOOL ENROLLMENT PROJECTION STUDY
FOR
THE HERMON SCHOOL DEPARTMENT

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EXECUTIVE SUMMARY

One model, called the "best fit" model, was used to project future enrollment in Hermon. The "best fit" model is a standard statistical model which projects enrollment based on historical trends, and is considered to be the most likely scenario to occur in Hermon **IF** future enrollment follows historical patterns of enrollment.

- The term "best fit" refers to the strongest statistical correlation between historical trends. The reader should keep in mind the "best fit" model is not always the best fit for predicting future enrollment. This is often the case in situations where the "best fit" model does not adequately account for the impact of resident development, when residential development, economic or population changes are occurring in the area, or when significant changes in migration trends or resident births trends occur.

- When looking at the enrollment figures it is important for the reader to pay close attention to the type of enrollment being discussed, i.e., whether the data is referring to resident enrollment, resident attending enrollment, non-resident students attending district schools, resident students attending non-district schools, or total attending enrollment. Additionally, due to limitations on availability of certain types of enrollment data, these figures do not include 100% home schooled students, or students attending privately paid for schools, but do include students at Charter Schools.

To provide reasonable cushions for use in planning school facilities, the enrollment projections are presented in the report **Appendix** within ranges of plus and minus 10% for the PreK-8 grade groups, and plus and minus 5% for grades 9-12. In addition, more conservative ranges of plus and minus 3% across all grade levels are supplied. In completing the enrollment projections for Hermon, the major findings of this study are as follows:

Resident Birth Trends:

Resident births during the ten-year period influencing first grade enrollment over the last ten years (2001-02 to 2010-11), increased, on average. The average number of births over the last five years of the period, (2006-07 to 2010-11), was 55 births, which was higher than the previous five-year period (2001-02 to 2005-06), or 47 births. What this means is, on average, Hermon had 8 more children born to residents. Over the last ten-year period of available resident birth data, 2007-08 to 2016-17, births to residents of Hermon averaged 65 births annually, with births fluctuating year-to-year, to range between 51 and 80 births. The most recent five-year period (2012-13 to 2016-17) averaged 73 births, while over the last three years (2014-15 to 2016-17) the average of births to residents increased slightly, to average 76 births. The increase in births over the last ten years is notable, with births over the last five years (2012-13 and 2016-17) increasing by an average of 15 births per year compared to the previous five-year period (2007-08 to 2011-12.) The "best fit" projections used the five-year average (2012-13 to 2016-17) of births to estimate future births, or the 2017-18 "best fit" model assumes resident births should average about 73 births annually.

Preschool Migration Trends:

In the first five years of the last decade, (2008-09 to 2012-13), Hermon experienced an in-migration of preschool-aged children. The level of preschool migration remained fairly stable over last five years (2013-14 to 2017-18), and over the last three years, (2015-16 to 2017-18).

Taken together, an increase in the average level of resident births along with an average preschool in-migration resulted in entering first grade class sizes that, on average, have increased significantly over the last five years. In addition, fluctuations in the level of resident births and preschool migration levels caused year-to-year fluctuations in first grade class sizes.

Elementary Migration Trends:

Over the last three years one grade level experienced a significantly higher level of in-migration when compared with previous trends, and then another grade level experienced an out-migration compared with the in-migration trends seen previously. Additionally, a few other grade levels also had notable migration changes, with some grades experiencing an out-migration compared with a previous historical in-migration, and then some grade levels experienced an in-migration compared to an out-migration. The changes in migration trends mean the school population outlook would likely have been somewhat different five years ago compared with what the outlook is today.

Economic Influences on Enrollment:

A decline in the unemployment rate indicates recovery from the recession has occurred, and an increase in the Civilian Labor Force has also increased the number of workers in the area. In addition, while the increase in the Civilian Labor Force may have had an impact on school enrollment over the last five years, any impact would already be accounted for in the last three to five-year historical enrollment trends used to make projections.

New Housing Development Impact on Enrollment:

While it appears new housing unit development has had some impact on preschool in-migration, there was no correlation found between elementary migration and housing unit development. In addition, the 2017-18 "best fit" model adequately accounted for the in-migration of preschool-aged students. Therefore, an additional model based on new housing unit development was not needed.

- **2017-18 Best Fit Projections for Hermon Resident Students:**

  The 2017-18 "best fit" model is based on average births occurring between 2012-13 and 2016-17, and on a continuation of preschool in-migration similar to the level occurring over the last four years. Since no strong correlation between first and births was found, and due skewing of the trends from the small population sizes involved, the more recent four-year first to birth preschool migration trends were used to project future first grade enrollment.

First Grade Class Size:

- Under the 2017-18 "best fit" model, first grade enrollment is projected to experience yearly swings corresponding with swings in resident births, with enrollment ranging between 80 and 106 students, and averaging 95 students annually through 2027-28.

Grade Group Enrollment:

- PreK-4 resident attending enrollment will increase yearly from the current enrollment of 439 students to reach 530 students by 2021-22. Following 2021-22, enrollment will increase further but should level off to range between 548 and 560 students through 2027-28. Another 5 to 7 Hermon resident students are projected to attend non-district schools each year through 2027-28.

- Grades 5-8 resident attending enrollment will increase from the current enrollment of 296 students to reach 419 students by 2027-28. Another 5 to 6 Hermon resident students are projected to attend non-district schools each year through 2027-28.

- Grades 9-12 resident attending enrollment is projected to decline from the current enrollment of 282 students to range between 266 and 280 students through 2020-21. Following 2020-21, enrollment is projected to increase, reaching 350 students in 2027-28. Another 6 to 7 Hermon resident students are projected to attend non-district schools each year through 2027-28.

Recommendations:

Outside forces such as changes in the economy, housing prices and/or new housing starts, job losses or changes, or unexpected national, state or local events can have an impact on enrollment trends which could in turn alter the outlook of enrollment in Hermon. Future enrollment should routinely be monitored for potential changes in trends, specifically looking to see if future enrollment deviates significantly from what is projected. In addition, the School Department should continue to routinely monitor births to residents, preschool migration trends, grade-to-grade migration trends, and local housing development trends for any notable changes.

Appendix Table 1 - Entering Class to Births Ratio Worksheet
Resident Enrollment - Hermon Resident Students - 2017-18 Best Fit Model

Oct 15-Oct 14 Births	Number Births	KG Year	KG Class Size	1st Grade Year	1st Class Size	Ratio 1st/Birth	Ratio 1st/K	Proj. 1st Grade	Net Preschool Migration
2001-02	39	10/07	60	10/08	63	1.615	1.050		24
2002-03	37	10/08	46	10/09	48	1.297	1.043		11
2003-04	49	10/09	64	10/10	61	1.245	0.953		12
2004-05	49	10/10	73	10/11	75	1.531	1.027		26
2005-06	60	10/11	67	10/12	70	1.167	1.045		10
2006-07	45	10/12	72	10/13	72	1.600	1.000		27
2007-08	54	10/13	61	10/14	65	1.204	1.066		11
2008-09	59	10/14	69	10/15	82	1.390	1.188		23
2009-10	65	10/15	77	10/16	78	1.200	1.013		13
2010-11	51	10/16	67	10/17	77	1.510	1.149		26
2011-12	60	10/17	77	10/18		1.326	1.033	80	20
2012-13	71	10/18		10/19		1.326		94	23
2013-14	65	10/19		10/20		1.326		86	21
2014-15	80	10/20		10/21		1.326		106	26
2015-16	76	10/21		10/22		1.326		101	25
2016-17*	73	10/22		10/23		1.326		97	24
2017-18 est	73	10/23		10/24		1.326		97	24
2018-19 est	73	10/24		10/25		1.326		97	24
2019-20 est	73	10/25		10/26		1.326		97	24
2020-21 est	73	10/26		10/27		1.326		97	24
10yr Total (02-11)	508	10yr Total (07-16)	656	10yr Total (08-17)	691	1.360	1.053	Last 10yr	18.3
10yr Avg (02-11)	51	10yr Avg (07-16)	66	10yr Avg (08-17)	69	1.376	1.053	Last 5yr	20.0
5yr Avg (13-17)	73							Last 3yr	20.7
5yr Max (13-17)	80							Proj.	23.4
5yr Min (13-17)	65								
3 yr Avg (15-17)	76								

First Grade to Births Correlation Coefficients	
10 YEAR	0.706
9 YEAR	0.701
8 YEAR	0.389
7 YEAR	0.267
6 YEAR	0.313
5 YEAR	0.450
4 YEAR	0.412
3 YEAR	0.269

First Grade to Kindergarten Correlation Coefficients	
10 YEAR	0.885
9 YEAR	0.880
8 YEAR	0.659
7 YEAR	0.593
6 YEAR	0.603
5 YEAR	0.588
4 YEAR	0.695
3 YEAR	-0.143

Ratios	1st/Birth	1st/K
Avg last 10	1.376	1.053
Avg last 9	1.349	1.054
Avg last 8	1.356	1.055
Avg last 7	1.372	1.070
Avg last 6	1.345	1.077
Avg last 5	1.381	1.083
Avg last 4	**1.326**	1.104
Avg last 3	1.367	1.117
av 1st 5	1.371	1.024
10yr Weighted	1.363	1.071
5yr Weighted	1.369	1.100

Notes: Enrollment data contains all resident students except home schooled students and private school students. Five-year average of births (2012-13 to 2016-17) used to estimate births from 2017-18 to 2020-21. *2017 birth data is preliminary and provisional from the Maine Department of Health and Human Services, Office of Data, Research, and Vital Statistics. Due to skewing of the data from the smaller population sizes and the correlations coefficients not being strong for any time period, the 4-year ratio of first to births was used to project future first grade class sizes.

2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018

Data produced by Wandell Consulting

Appendix Table 4 - Enrollment Trends & Projections - Hermon Resident Enrollment - 2017-18 Best Fit Model

October 1st Enrollment

School Year	Resident Students Attending District Schools					Resident Students at NON-District Schools					Total All Hermon Students				
	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12
Historical															
2007-08	355	275	630	275	**905**	2	0	2	2	**4**	357	275	632	277	**909**
2008-09	356	274	630	278	**908**	2	0	2	2	**4**	358	274	632	280	**912**
2009-10	354	257	611	275	**886**	2	1	3	0	**3**	356	258	614	275	**889**
2010-11	348	278	626	290	**916**	2	1	3	2	**5**	350	279	629	292	**921**
2011-12	357	285	642	289	**931**	2	1	3	2	**5**	359	286	645	291	**936**
2012-13	372	289	661	275	**936**	0	1	1	4	**5**	372	290	662	279	**941**
2013-14	377	271	648	257	**905**	1	4	5	6	**11**	378	275	653	263	**916**
2014-15	397	264	661	272	**933**	0	3	3	7	**10**	397	267	664	279	**943**
2015-16	423	270	693	276	**969**	1	6	7	5	**12**	424	276	700	281	**981**
2016-17	412	279	691	271	**962**	3	2	5	5	**10**	415	281	696	276	**972**
2017-18	437	296	733	282	**1,015**	7	6	13	6	**19**	444	302	746	288	**1,034**
Projected															
2018-19	459	299	758	271	**1,029**	5	5	10	6	**16**	464	304	768	277	**1,045**
2019-20	485	307	792	266	**1,058**	6	5	11	6	**17**	491	312	803	272	**1,075**
2020-21	509	312	821	280	**1,101**	6	5	11	6	**17**	515	317	832	286	**1,118**
2021-22	530	313	843	296	**1,139**	6	5	11	6	**17**	536	318	854	302	**1,156**
2022-23	548	331	879	298	**1,177**	6	5	11	6	**17**	554	336	890	304	**1,194**
2023-24	550	352	902	306	**1,208**	6	5	11	7	**18**	556	357	913	313	**1,226**
2024-25	560	363	923	311	**1,234**	7	5	12	7	**19**	567	368	935	318	**1,253**
2025-26	552	392	944	312	**1,256**	6	6	12	7	**19**	558	398	956	319	**1,275**
2026-27	548	416	964	328	**1,292**	6	6	12	7	**19**	554	422	976	335	**1,311**
2027-28	548	419	967	350	**1,317**	6	6	12	7	**19**	554	425	979	357	**1,336**

Notes: Enrollment data contains all resident students EXCEPT homeschooled students and students attending privately paid schools, it does however contain any resident students attending a Charter School or non-district publicly funded school.

2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018
Data produced by Wandell Consulting

I. INTRODUCTION

Change in school enrollment derives from two sources, changes in the number of births to residents, and the net migration of preschool and school-aged children into and out of a community. These projections reflect both sources of change.

The projections are based on an in-house cohort survival model which contains two steps.

- First, historical trends and relationships between entering class sizes (first grade enrollment) and resident births in the year that is six years before the enrollment year is analyzed. Correlation coefficients (using Pearson's r-squared) are calculated for the last three, four, five, six, seven, eight, nine and ten-year periods regarding the relationship between first grade enrollment and births. The correlation coefficients are examined to determine which period represents the statistical "best fit" for projecting future first grade enrollment based on resident birth data.

- Second, historical trends at each grade level are analyzed, specifically looking at the grade-to-grade survival ratios. These ratios represent the number of students in a grade in one year (i.e., 1st grade in 2016-17) in relation to the number of students in the next grade the following year (i.e., 2nd grade in 2017-18). Then correlation coefficients (using Pearson's r-squared) are calculated for the last three, four, five, six, seven, eight, nine and ten-year periods regarding the relationship between enrollment in a grade in one year and the next grade the following year to determine which period represents the statistical "best fit" at each of the grade levels. The grade-to-grade ratios that represent the "best fit" are then applied to the current enrollment in each grade and projected first grade classes to project enrollment for the next ten years.

- To provide reasonable cushions for use in the planning of school facilities, school enrollment projections are summarized by grade group and presented the projections within ranges of plus and minus 10% for grades K-8 and plus and minus 5% for grades 9-12, and plus and minus 3% for grades K-12. These ranges and details on the enrollment data and methodologies used for making the projections can be found in the report **Appendix**.

Sections II and IV of this report provide historical enrollment trends and one set of enrollment projections which projects enrollment through 2027-28 for each grade and by grade group. **Section III** discusses the historical grade-to-grade migration trends used to complete the projections.

Section VI of this report presents economic trends, population trends, and residential development factors that may influence enrollment projections.

Grade by grade historical and projected enrollment, and ranges for use in school facilities planning are presented in the report **Appendix** along with a detailed explanation of the data used and methodologies.

II. FIRST GRADE ENROLLMENT

A. Historical First Grade Enrollment

First grade enrollment over the last ten years (2008-09 to 2017-18) fluctuated year-to-year while increasing, on average. During this ten-year period, first grade enrollment ranged between 48 and 82 students, with an average enrollment of 69 students. The average first grade enrollment over the last five years (2013-14 to 2017-18), was 75 students, a higher level of average enrollment compared with the average of the previous five-year period (2008-09 to 2012-13), or 63 students. Enrollment over the last three years (2015-16 to 2017-18) was higher than the five-year average, with first grade enrollment averaging 79 students. ***(See Table II-1 and Figure II-2).***

B. Resident Births Influencing Historical Enrollment

Resident births during the ten-year period influencing first grade enrollment over the last ten years (2001-02 to 2010-11), increased, on average. The average number of births over the last five years of the period, (2006-07 to 2010-11), was 55 births, which was higher than the previous five-year period (2001-02 to 2005-06), or 47 births. What this means is, on average, Hermon had 8 more children born to residents. **The increase in average resident births over the last five years of the period placed upward pressure on average entering first grade class sizes, while fluctuations in the level of resident births year-to-year caused fluctuations in first grade class sizes.** ***(See Table II-1 and Figure II-1).***

C. Resident Births Influencing Future Enrollment

Over the last ten-year period of available resident birth data, 2007-08 to 2016-17, births to residents of Hermon averaged 65 births annually, with births fluctuating year-to-year, to range between 51 and 80 births. The most recent five-year period (2012-13 to 2016-17) averaged 73 births, while over the last three years (2014-15 to 2016-17) the average of births to residents increased slightly, to average 76 births. The increase in births over the last ten years is notable, with births over the last five years (2012-13 and 2016-17) increasing by an average of 15 births per year compared to the previous five-year period (2007-08 to 2011-12.) ***(See Table II-1 and Figure II-1).***

The "best fit" projections used the five-year average (2012-13 to 2016-17) of births to estimate future births, or the 2017-18 "best fit" model assumes resident births should average about 73 births annually. **Since Hermon has experienced fluctuations in the number of resident births in the past, it is reasonable to assume these fluctuations will continue to occur in the future. However, it is impossible to predict which years will see higher birth levels verse lower birth levels. Therefore, due to the influence resident births have on future first grade enrollment, the Hermon School Department will need to keep an eye on future resident births.**

D. Net Preschool Migration Trends

In the first five years of the last decade, (2008-09 to 2012-13), Hermon experienced an in-migration of preschool-aged children, with an average migration ratio of 1.371. In the past five years, (2013-14 to 2017-18), Hermon experienced a similar preschool in-migration, with an average migration ratio of 1.381. Additionally, over the last three years, (2015-16 to 2017-18), preschool in-migration continued to remain strong, with an average ratio of 1.361. **Over the last ten years, average preschool in-migration has remained fairly stable, placing upward pressure on first grade class sizes over the last five years.** ***(See Table II-1).***

NOTE: Taken together, an increase in the average level of resident births combined with an average preschool in-migration resulted in entering first grade class sizes that, on average, have increased significantly over the last three to five years. In addition, fluctuations in the level of resident births and preschool migration levels caused year-to-year fluctuations in first grade class sizes.

E. Projections of Entering First Grade Class Sizes

The 2017-18 "best fit" model is based on average births occurring between 2012-13 and 2016-17, and on a continuation of preschool in-migration similar to the level occurring over the last four years. Since no strong correlation between first and births was found, and due skewing of the trends from the small population sizes involved, the more recent four-year first to birth preschool migration trends were used to project future first grade enrollment. ***(See Table II-1 and Figure II-2).***

- Under the 2017-18 "best fit" model, first grade enrollment is projected to experience yearly swings corresponding with swings in resident births, with enrollment ranging between 80 and 106 students, and averaging 95 students annually through 2027-28.

Table II-1 - Relationship of Entering First Grade Class Size to Resident Births
Hermon School Department

Birth Year (Oct. 15 - Oct. 14)	# of Resident Births	First Grade Year	Best Fit Model	
			1st Grade Enrollment	Ratio 1st/Births
2001-02	39	2008-09	63	1.615
2002-03	37	2009-10	48	1.297
2003-04	49	2010-11	61	1.245
2004-05	49	2011-12	75	1.531
2005-06	60	2012-13	70	1.167
2006-07	45	2013-14	72	1.600
2007-08	54	2014-15	65	1.204
2008-09	59	2015-16	82	1.390
2009-10	65	2016-17	78	1.200
2010-11	51	2017-18*	77	1.510
2011-12	60	2018-19	80	1.333
2012-13	71	2019-20	94	1.324
2013-14	65	2020-21	86	1.323
2014-15	80	2021-22	106	1.325
2015-16	76	2022-23	101	1.329
2016-17 pre	73	2023-24	97	1.329
2017-18*	73	2024-25	97	1.329
2018-19*	73	2025-26	97	1.329
2019-20*	73	2026-27	97	1.329
2020-21*	73	2027-28	97	1.329
10-Yr Avg. (2001-02 to 2010-11)	51	**10-Yr Avg. (2008-09 to 2017-18)**	69	1.376
5-Yr Avg. (2001-02 to 2005-06)	47	**First 5-Yr Avg. (2008-09 to 2012-13)**	63	1.371
5-Yr Avg. Births (2006-07 to 2010-11)	55	**Most Recent 5-Yr Avg. (2013-14 to 2017-18)**	75	1.381
Births 3-Yr Avg. (2008-09 to 2010-11)	58	**Most Recent 3-Yr Avg. (2015-16 to 2017-18)**	79	1.367
Most Recent 10-Yr Avg. (2007-08 to 2016-17)	65	**Projected 10-Yr Avg. (2018-19 to 2027-28)**	95	1.328
First 5-Yr Avg. (2007-08 to 2011-12)	58			
Most Recent 5-Yr Avg. (2012-13 to 2016-17)	73			
Most Recent 3-Yr Avg. (2014-15 to 2016-17)	76			

Births - Maine Center for Disease Control and Prevention, Data, Research and Vital Statistics. 2017 births are preliminary; *2017-18 to 2020-21 births estimated based on average births between 2012-13 and 2016-17. **Note:** Enrollment includes all resident students attending Hermon schools and resident students attending school out-of-district, except 100% home schooled students and students attending privately paid for schools. **Source:** 2008-09 to 2016-17 -October 1st, resident enrollment from MDOE, 2017-18 date from the Hermon School Department. All else calculated by Wandell Consulting.

Figure II-1

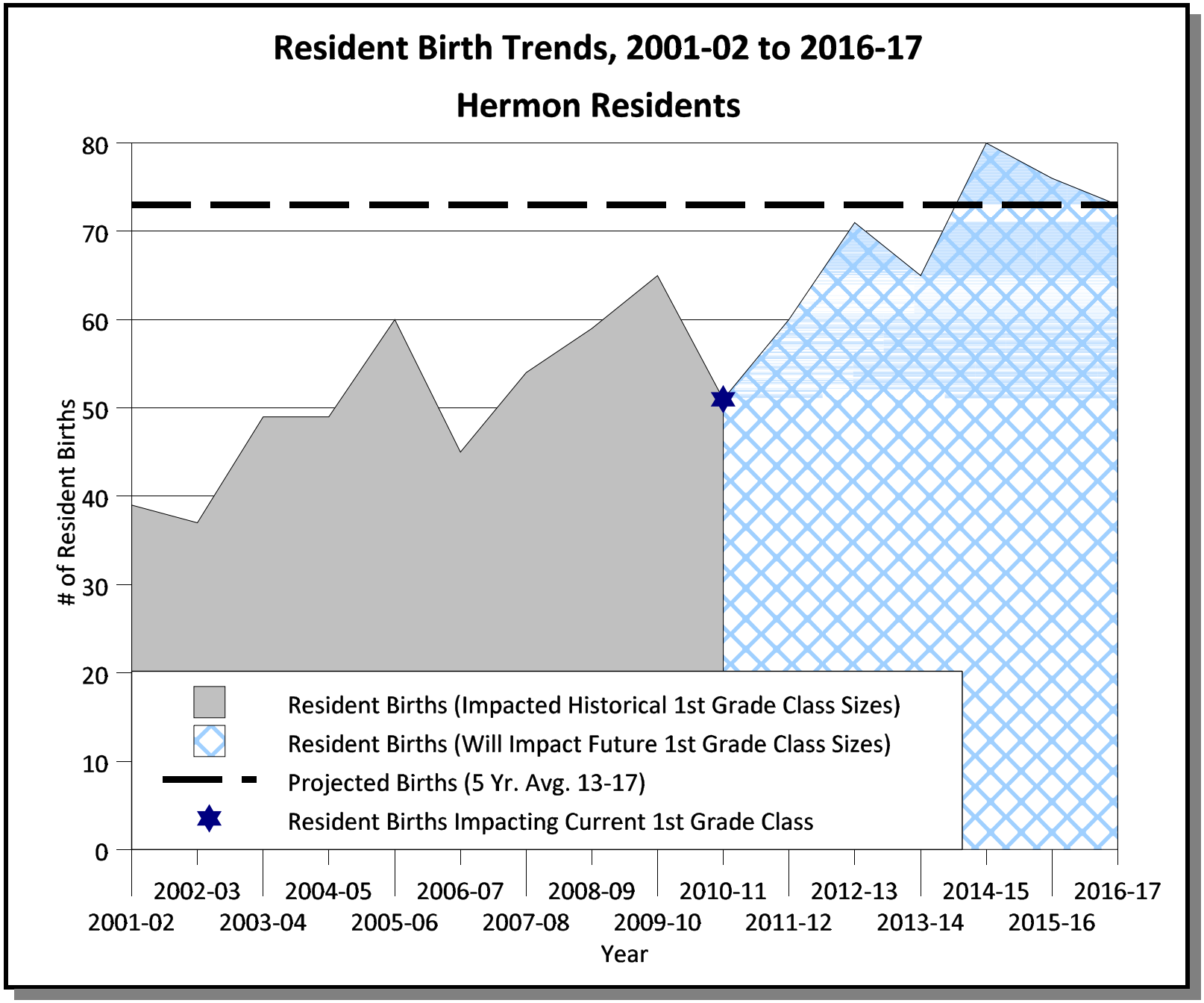
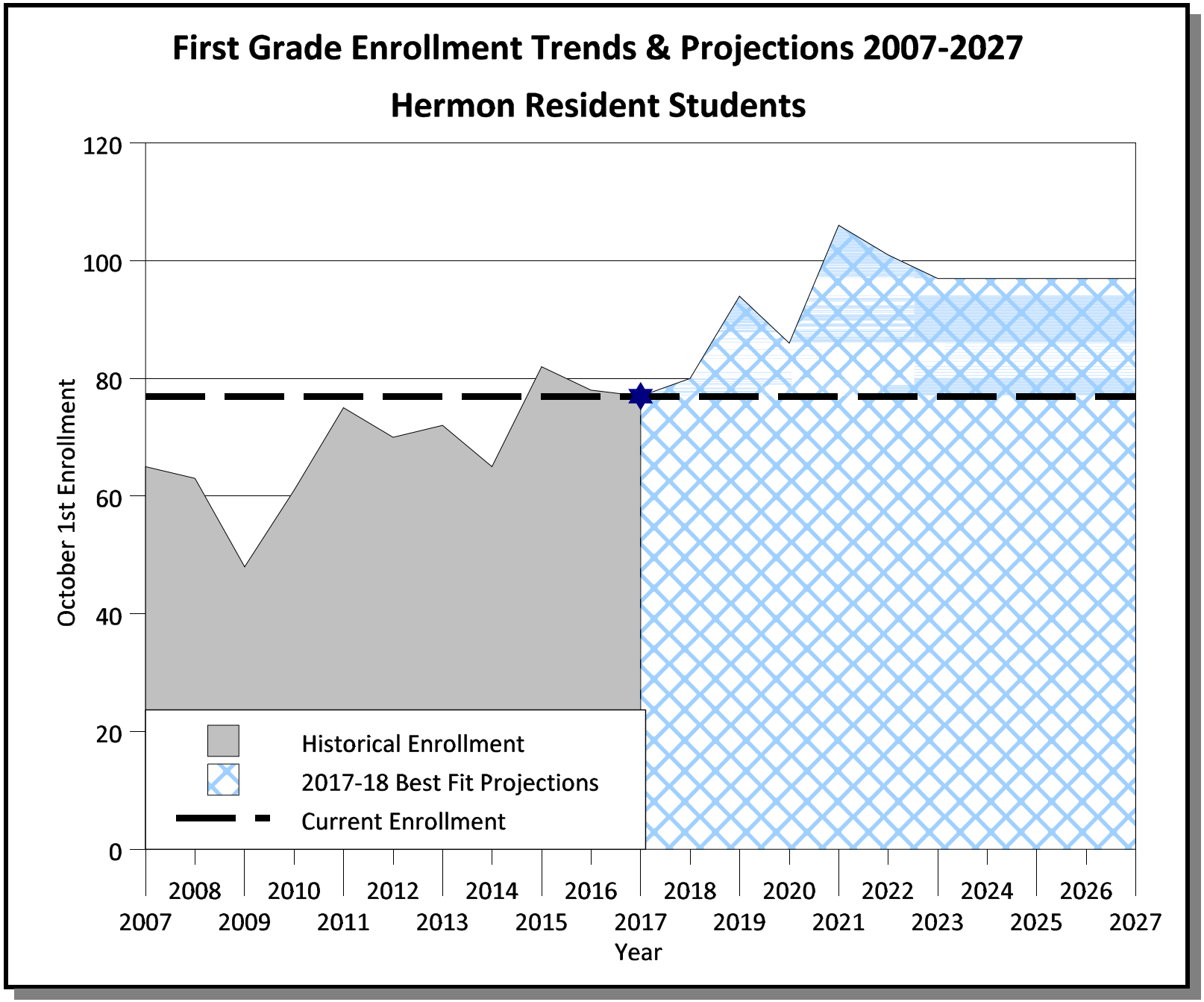

Resident Birth Trends, 2001-02 to 2016-17
Hermon Residents
# of Resident Births
80
70
60
50
40
30
20
10
0
Resident Births (Impacted Historical 1st Grade Class Sizes)
Resident Births (Will Impact Future 1st Grade Class Sizes)
Projected Births (5 Yr. Avg. 13-17)
Resident Births Impacting Current 1st Grade Class
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
Year

Figure II-2


First Grade Enrollment Trends & Projections 2007-2027
Hermon Resident Students
October 1st Enrollment
120
100
80
60
40
20
0
Historical Enrollment
2017-18 Best Fit Projections
Current Enrollment
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
Year

III. GRADE-TO-GRADE MIGRATION TRENDS

After assessing preschool-migration trends and establishing first grade enrollment, the migration trends between grades are examined and grade-to-grade survival ratios are established. These ratios represent the number of students in a grade in one year (i.e., 1st grade in 2016-17) in relation to the number of students in the next grade the following year (i.e., 2nd grade in 2017-18). The historical average grade-to-grade survival ratios for the last three, four, five, six, seven, eight, nine and ten-year periods are analyzed to determine which period represents the statistical "best fit" at each of the grade levels. The grade-to-grade ratios that represent the "best fit" are then applied to the current enrollment in each grade and projected first grade classes to project enrollment for the next ten years. This section will show how the grade-to-grade migration trends have changed, on average, in Hermon.

Appendix Table-3 shows average grade-to-grade survival ratios in Hermon for grades K-12 along with how the ratios translate into a loss or addition of new students. For example, the 10-year K-1 average ratio was 1.053, this translates to an average annual student in-migration of 5.3% between Kindergarten and first grade over the last decade. When looking at these grade-to-grade ratios, student migration trends in Hermon have changed across a number of grade levels.

When looking at the average trends over the last three years of the past decade, the most significant change occurred between grades K-1 and 8-9 over the last 3-year period (2015-16 to 2017-18.) At grades K-1 a higher in-migration occurred over the last three years compared to the in-migration occurring in the first 5-year period (2008-09 to 2011-12), while in grades 8-9 and out-migration occurred over the last 3-year period compared to the in-migration occurring in the first five years of the period.

Notable, but not significant, changes also occurred between grades 1-2, 2-3, 4-5, 5-6 and 7-8. Historical migration between grades 1-2 and 2-3 had always been an average in-migration, but over the last 3-year period an average out-migration occurred. At grades 4-5 less in-migration occurred over the last three years, while between grades 5-6 more in-migration occurred. When looking at grades 7-8, more recent trends indicate an in-migration occurred verse an out-migration of students occurring during the first five-year period.

NOTE: The "best fit" model is based on historical migration trends and takes into account changes in trends over the last three years. However, if something unexpected occurs to impact overall average migration trends in Hermon beyond what is estimated using the historical trends, the enrollment projections would need to be reassessed.

Appendix Table 3 - Hermon Attending Resident Enrollment - Average Grade-To-Grade Survival Ratios

2017-18 Best Fit Model

School Year	Grade											
	K-1		1-2		2-3		3-4		4-5		5-6	
	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-
10 Year Avg. (08-17)	1.053	5.3%	1.019	1.9%	1.013	1.3%	1.008	0.8%	1.031	3.1%	1.018	1.8%
1st 5-Year Avg. (08-12)	1.024	2.4%	1.037	3.7%	1.023	2.3%	1.009	0.9%	1.043	4.3%	1.007	0.7%
Last 5-Year Avg. (13-17)	1.083	8.3%	1.001	0.1%	1.002	0.2%	1.007	0.7%	1.020	2.0%	1.029	2.9%
Last 4-Year Avg. (14-17)	1.104	10.4%	1.005	0.5%	1.016	1.6%	1.013	1.3%	1.011	1.1%	1.048	4.8%
Last 3-Year Avg. (15-17)	1.117	11.7%	0.997	-0.3%	0.983	-1.7%	1.027	2.7%	1.000	0.0%	1.047	4.7%

School Year	Grade											
	6-7		7-8		8-9		9-10		10-11		11-12	
	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-
10 Year Avg. (08-17)	1.001	0.1%	0.989	-1.1%	1.026	2.6%	0.993	-0.7%	1.008	0.8%	0.978	-2.2%
1st 5-Year Avg. (08-12)	1.000	0.0%	0.978	-2.2%	1.080	8.0%	0.978	-2.2%	0.998	-0.2%	0.982	-1.8%
Last 5-Year Avg. (13-17)	1.003	0.3%	1.000	0.0%	0.971	-2.9%	1.009	0.9%	1.018	1.8%	0.974	-2.6%
Last 4-Year Avg. (14-17)	1.007	0.7%	1.017	1.7%	0.979	-2.1%	1.015	1.5%	1.034	3.4%	0.978	-2.2%
Last 3-Year Avg. (15-17)	1.004	0.4%	1.027	2.7%	0.977	-2.3%	1.003	0.3%	1.027	2.7%	0.981	-1.9%

2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018
Data produced by Wandell Consulting

IV. RESIDENT ENROLLMENT TRENDS

These figures include all resident students attending Hermon schools, and all resident students attending school outside of the district with the exception of 100% home schooled students and any students attending private schools. ***(See Appendix Tables 2 and 4, and Figure IV-1 through Figure IV-4).***

A. Resident Enrollment Trends and Projections for Grades PreK-4

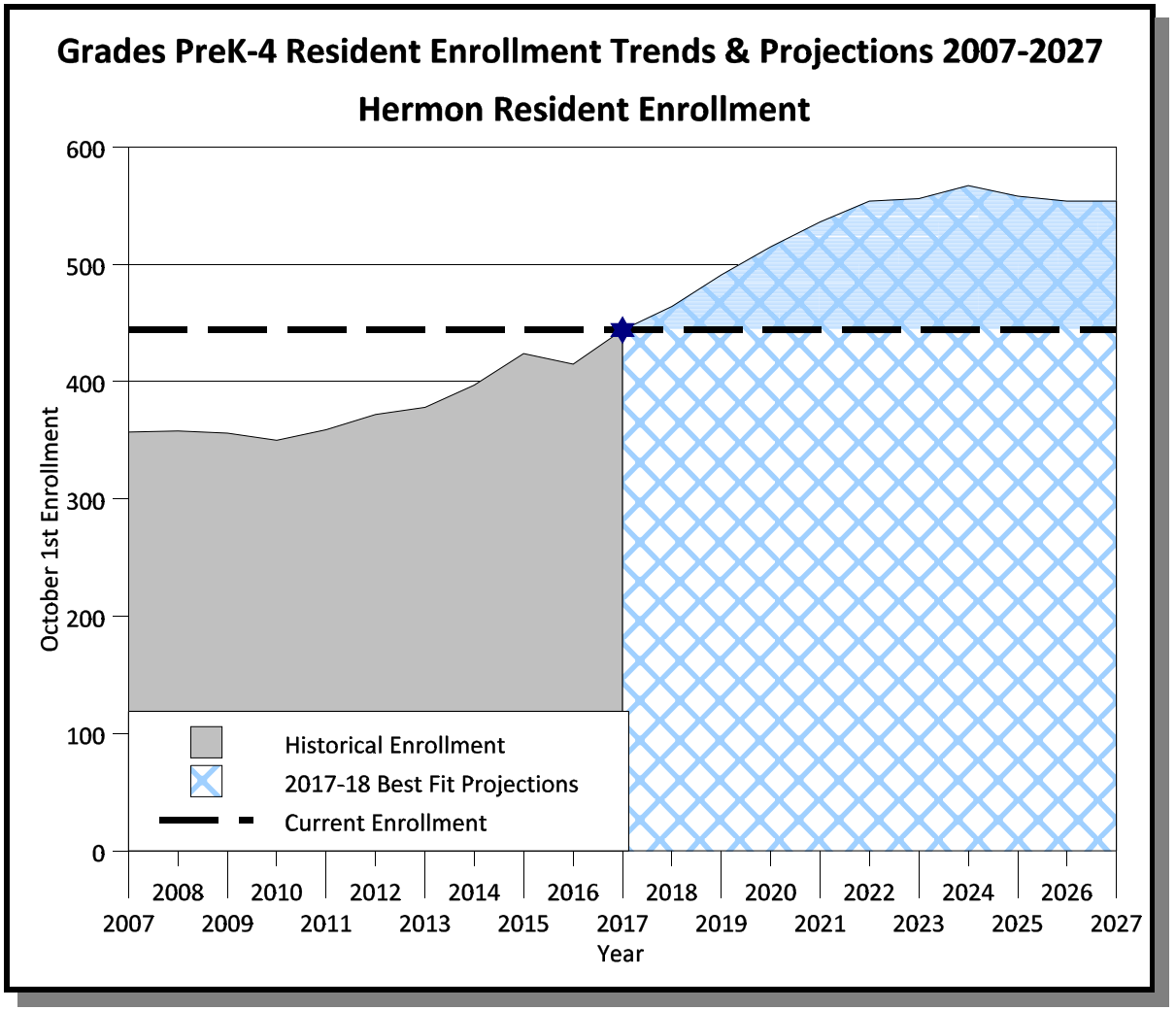
Historical Trends:

- Since 2007-08, resident attending enrollment in grades PreK-4 ranging between 348 and 357 students through 2012-13. Following 2012-13, resident attending enrollment increased to reach 437 students in 2017-18.
- In addition, enrollment of Hermon students attending out of district schools ranged between zero and 7 students through 2017-18.

2017-18 Best Fit Model:

- Under the 2017-18 "best fit" model, PreK-4 resident attending enrollment will increase yearly from the current enrollment of 437 students to reach 530 students by 2021-22. Following 2021-22, enrollment will increase further but should level off to range between 548 and 560 students through 2027-28.
- Another 5 to 7 Hermon resident students are projected to attend non-district schools each year through 2027-28.

Figure IV-1



B. Resident Enrollment Trends and Projections for Grades 5-8

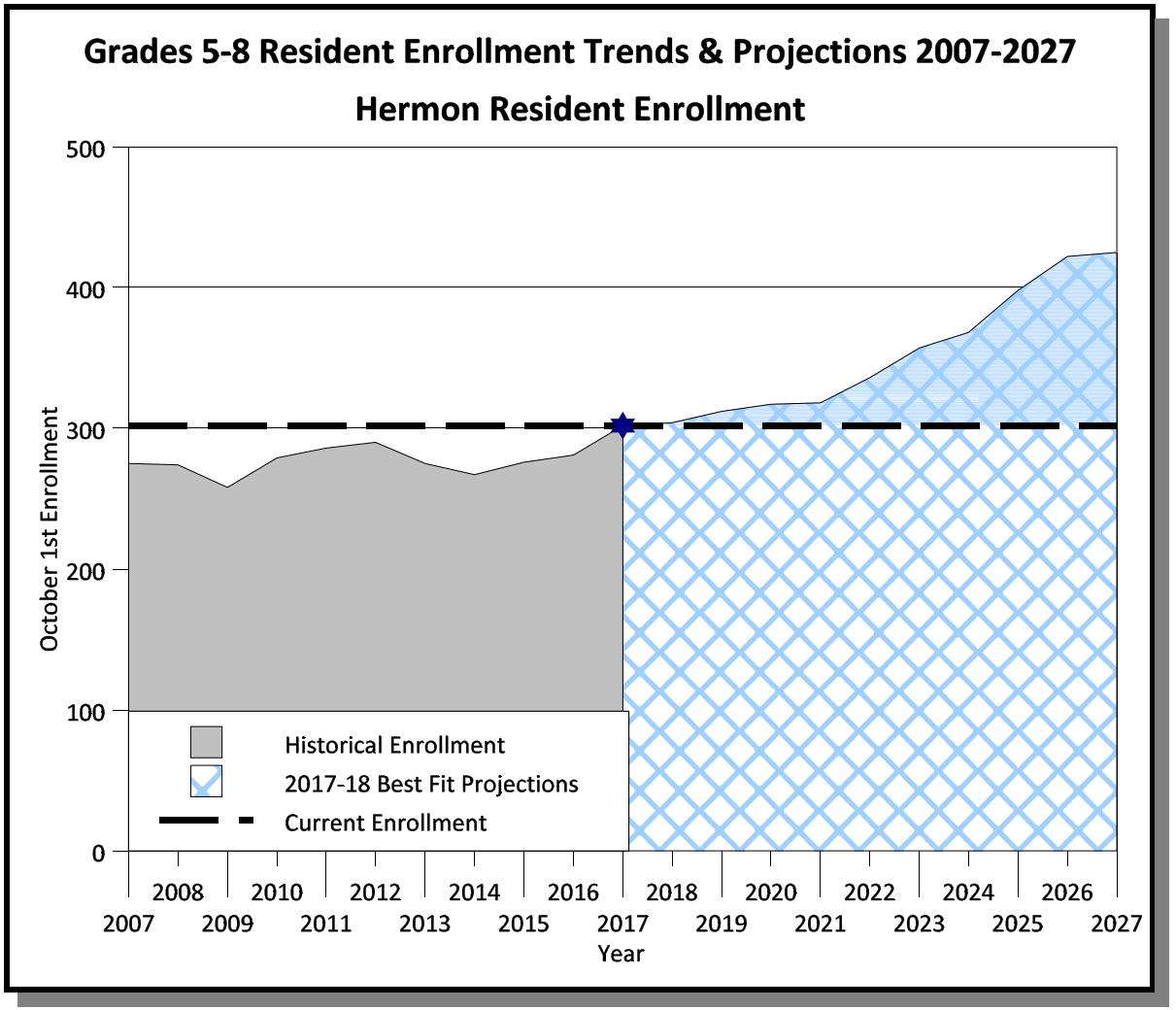
Historical Trends:

- Since 2007-08, grades 5-8 enrollment fluctuated year to year, ranging between 257 and 296 students through 2017-18.
- Since 2007-08, enrollment of Hermon students at non-district schools ranged between zero and 6 students through 2017-18.

2017-18 Best Fit Model:

- Under the 2017-18 "best fit" model, 5-8 resident attending enrollment will increase from the current enrollment of 296 students to reach 419 students by 2027-28.
- Another 5 to 6 Hermon resident students are projected to attend non-district schools each year through 2027-28.

Figure IV-2



C. Resident Enrollment Trends and Projections for Grades 9-12

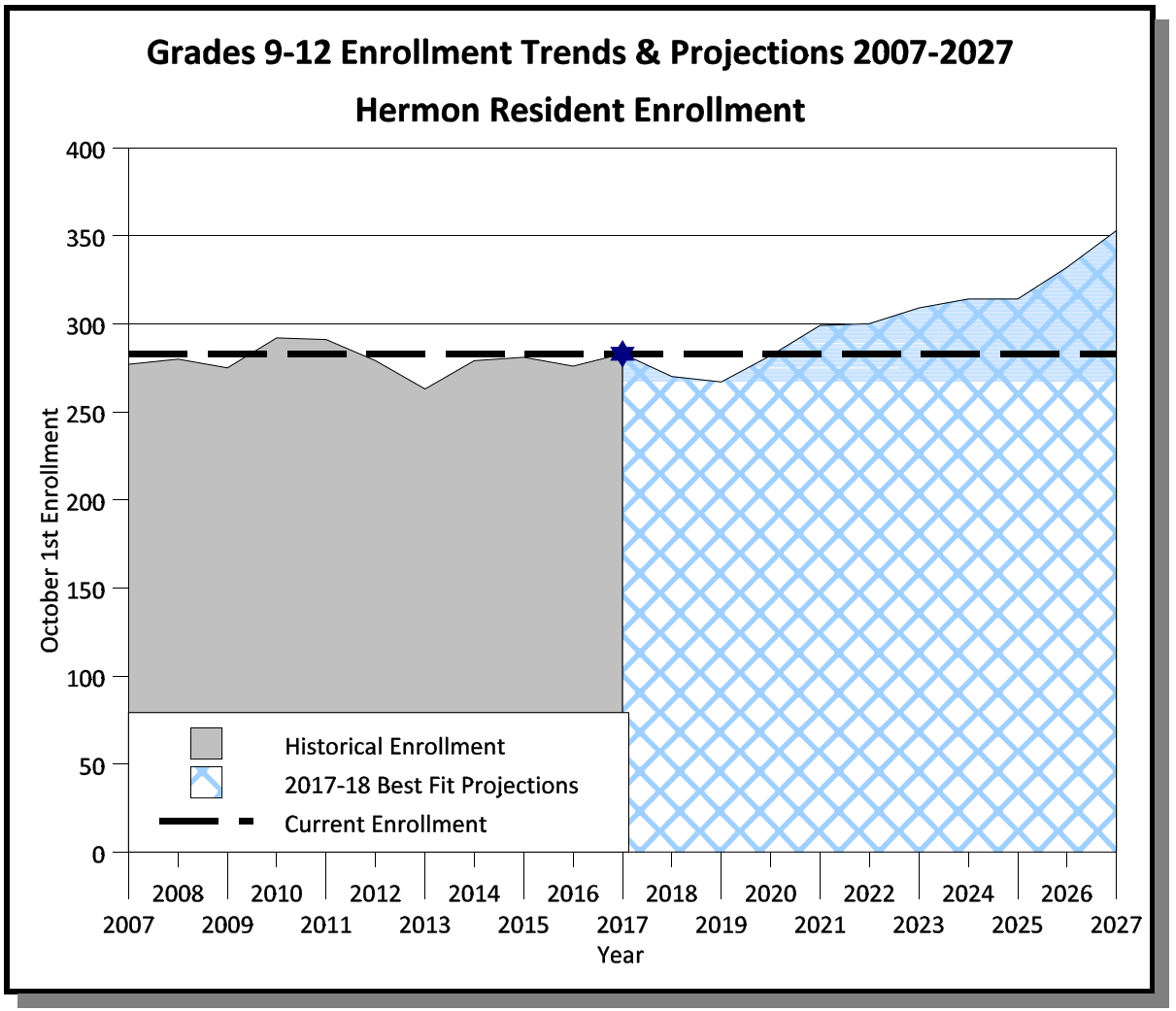
Historical Trends:

- Attending resident enrollment in grades 9-12 ranged between 257 and 290 students through 2017-18.
- Since 2007-08, enrollment of Hermon students attending non-district schools ranged between zero and 7 students through 2017-18.

2017-18 Best Fit Model:

- Under the 2017-18 "best fit" model, 9-12 resident attending enrollment is projected to decline from the current enrollment of 282 students to range between 266 and 280 students through 2020-21. Following 2020-21, enrollment is projected to increase, reaching 350 students in 2027-28.
- Another 6 to 7 Hermon resident students are projected to attend non-district schools each year through 2027-28.

Figure IV-3



Appendix Table 2 - Enrollment Trends & Projections - Hermon Resident Students - 2017-18 Best Fit Model

October 1st Enrollment

School Year	PreK	K	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12
Historical																			
2007-08	27	60	65	77	60	68	60	73	67	75	76	62	72	67	357	275	632	277	**909**
2008-09	34	46	63	69	81	65	72	61	72	69	81	70	61	68	358	274	632	280	**912**
2009-10	33	64	48	62	69	80	63	71	58	66	69	78	67	61	356	258	614	275	**889**
2010-11	34	73	61	49	64	69	86	62	74	57	74	70	82	66	350	279	629	292	**921**
2011-12	36	67	75	69	52	60	72	83	61	70	66	71	70	84	359	286	645	291	**936**
2012-13	35	72	70	74	67	54	64	78	86	62	73	68	71	67	372	290	662	279	**941**
2013-14	40	61	72	69	70	66	57	61	77	80	58	72	65	68	378	275	653	263	**916**
2014-15	44	69	65	74	77	68	69	60	62	76	79	61	76	63	397	267	664	279	**943**
2015-16	39	77	82	66	78	82	72	75	63	66	73	75	61	72	424	276	700	281	**981**
2016-17	47	67	78	81	64	78	75	71	70	65	63	75	78	60	415	281	696	276	**972**
2017-18	73	77	77	77	75	65	80	80	73	69	66	65	78	79	444	302	746	288	**1,034**
Projected																			
2018-19	64	89	80	77	78	76	67	84	80	73	67	67	67	76	464	304	768	277	**1,045**
2019-20	79	82	94	79	78	79	78	70	84	80	71	68	68	65	491	312	803	272	**1,075**
2020-21	75	101	86	94	80	79	81	82	70	84	78	72	69	67	515	317	832	286	**1,118**
2021-22	72	96	106	86	95	81	81	85	82	70	82	79	73	68	536	318	854	302	**1,156**
2022-23	72	92	101	106	87	96	84	85	85	82	68	83	81	72	554	336	890	304	**1,194**
2023-24	72	92	97	100	107	88	99	88	85	85	80	69	85	79	556	357	913	313	**1,226**
2024-25	72	92	97	96	102	108	91	104	88	85	83	81	71	83	567	368	935	318	**1,253**
2025-26	72	92	97	96	98	103	111	95	104	88	83	84	83	69	558	398	956	319	**1,275**
2026-27	72	92	97	96	98	99	106	117	95	104	85	83	86	81	554	422	976	335	**1,311**
2027-28	72	92	97	96	98	99	102	111	117	95	101	86	86	84	554	425	979	357	**1,336**

Notes: Enrollment data contains all resident students EXCEPT homeschooled students and students attending privately paid schools, it does however contain any resident students attending a Charter School or non-district publicly funded school.

2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018

Data produced by Wandell Consulting

Appendix Table 4 - Enrollment Trends & Projections - Hermon Resident Enrollment - 2017-18 Best Fit Model

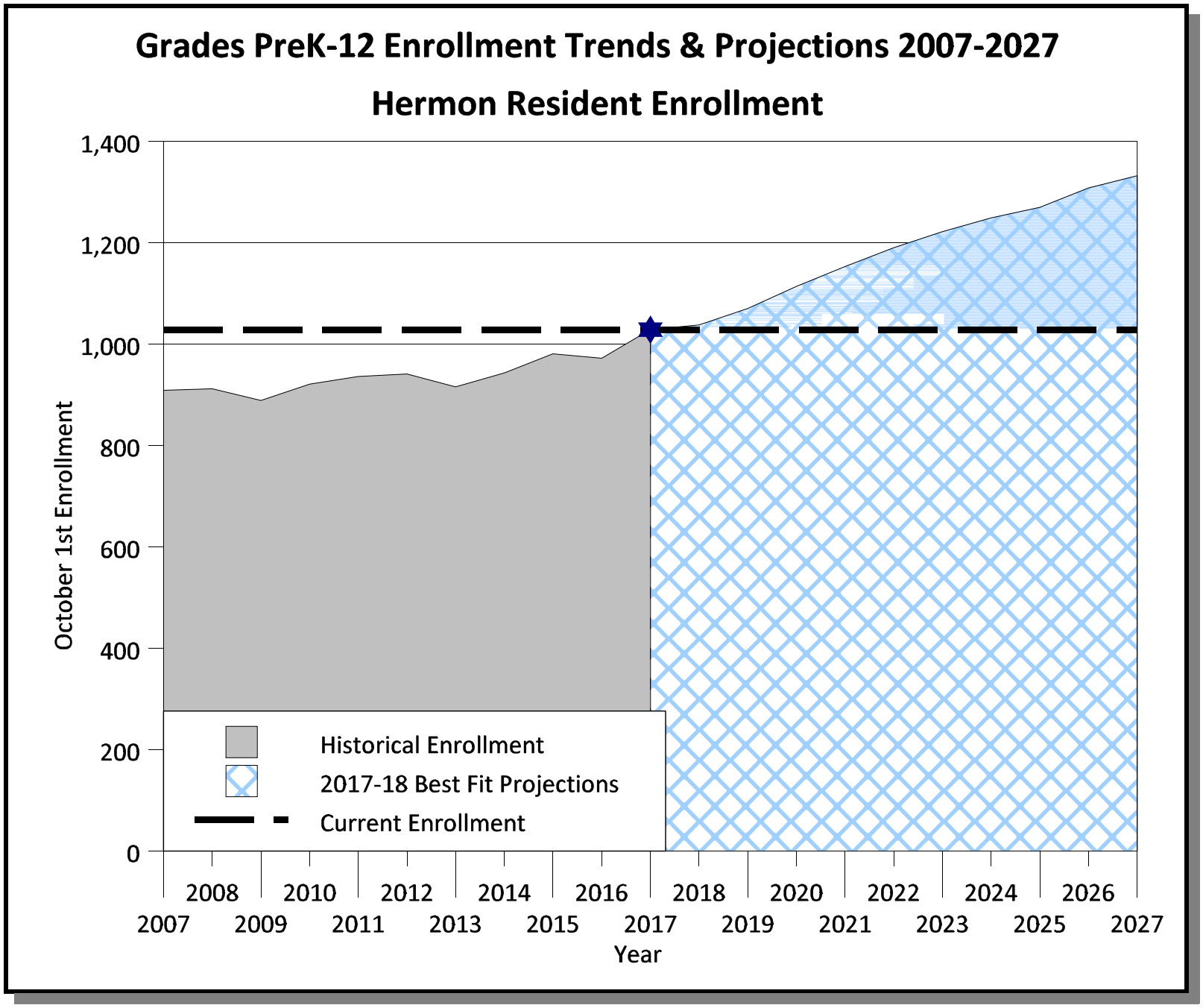
October 1st Enrollment

School Year	Resident Students Attending District Schools					Resident Students at NON-District Schools					Total All Hermon Students				
	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12
Historical															
2007-08	355	275	630	275	**905**	2	0	2	2	**4**	357	275	632	277	**909**
2008-09	356	274	630	278	**908**	2	0	2	2	**4**	358	274	632	280	**912**
2009-10	354	257	611	275	**886**	2	1	3	0	**3**	356	258	614	275	**889**
2010-11	348	278	626	290	**916**	2	1	3	2	**5**	350	279	629	292	**921**
2011-12	357	285	642	289	**931**	2	1	3	2	**5**	359	286	645	291	**936**
2012-13	372	289	661	275	**936**	0	1	1	4	**5**	372	290	662	279	**941**
2013-14	377	271	648	257	**905**	1	4	5	6	**11**	378	275	653	263	**916**
2014-15	397	264	661	272	**933**	0	3	3	7	**10**	397	267	664	279	**943**
2015-16	423	270	693	276	**969**	1	6	7	5	**12**	424	276	700	281	**981**
2016-17	412	279	691	271	**962**	3	2	5	5	**10**	415	281	696	276	**972**
2017-18	437	296	733	282	**1,015**	7	6	13	6	**19**	444	302	746	288	**1,034**
Projected															
2018-19	459	299	758	271	**1,029**	5	5	10	6	**16**	464	304	768	277	**1,045**
2019-20	485	307	792	266	**1,058**	6	5	11	6	**17**	491	312	803	272	**1,075**
2020-21	509	312	821	280	**1,101**	6	5	11	6	**17**	515	317	832	286	**1,118**
2021-22	530	313	843	296	**1,139**	6	5	11	6	**17**	536	318	854	302	**1,156**
2022-23	548	331	879	298	**1,177**	6	5	11	6	**17**	554	336	890	304	**1,194**
2023-24	550	352	902	306	**1,208**	6	5	11	7	**18**	556	357	913	313	**1,226**
2024-25	560	363	923	311	**1,234**	7	5	12	7	**19**	567	368	935	318	**1,253**
2025-26	552	392	944	312	**1,256**	6	6	12	7	**19**	558	398	956	319	**1,275**
2026-27	548	416	964	328	**1,292**	6	6	12	7	**19**	554	422	976	335	**1,311**
2027-28	548	419	967	350	**1,317**	6	6	12	7	**19**	554	425	979	357	**1,336**

Notes: Enrollment data contains all resident students EXCEPT homeschooled students and students attending privately paid schools, it does however contain any resident students attending a Charter School or non-district publicly funded school.

2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018
Data produced by Wandell Consulting

Figure IV-4

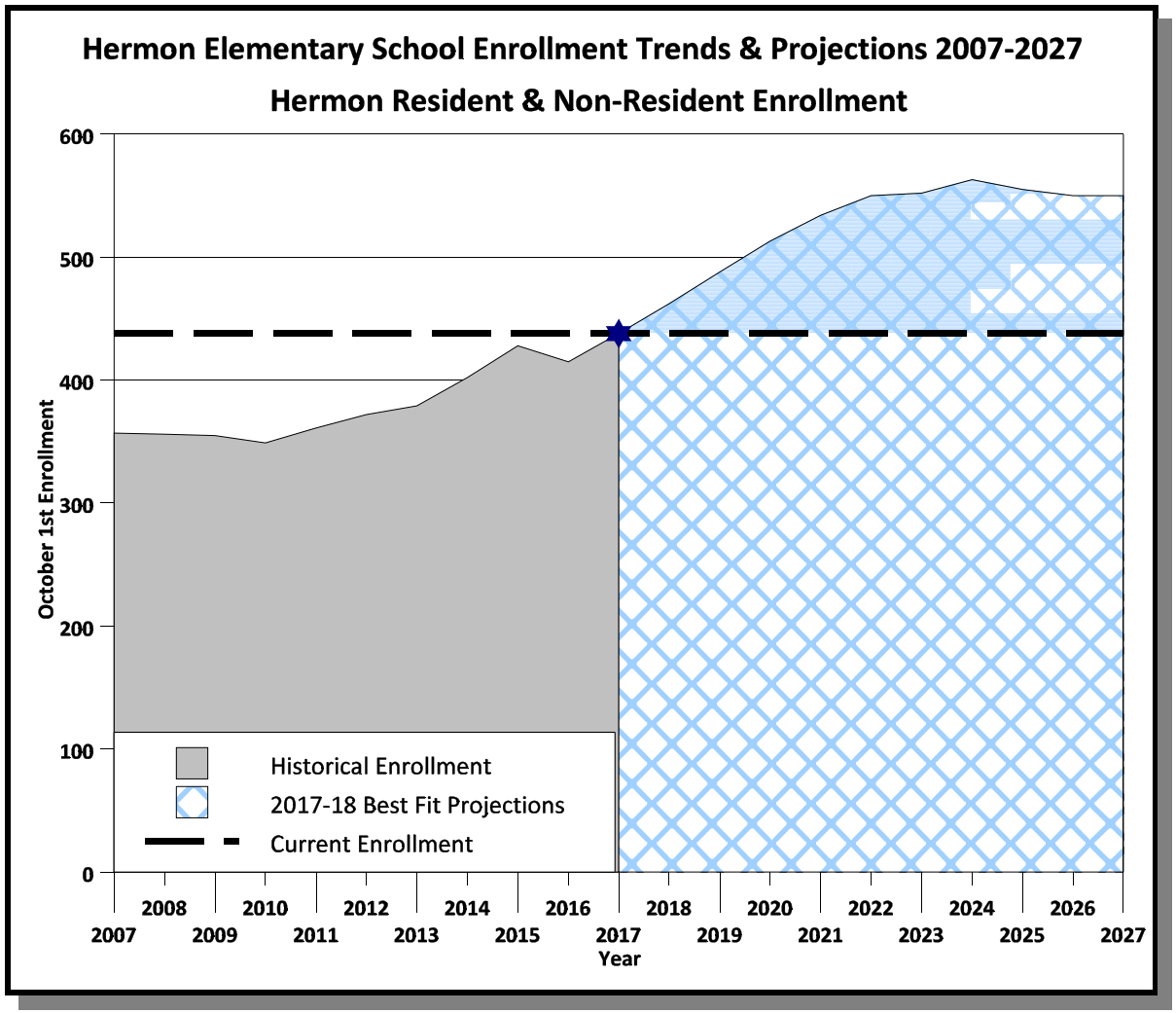

Grades PreK-12 Enrollment Trends & Projections 2007-2027
Hermon Resident Enrollment
1,400
1,200
1,000
800
600
400
200
0
October 1st Enrollment
Historical Enrollment
2017-18 Best Fit Projections
Current Enrollment
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
Year

V. TOTAL ATTENDING ENROLLMENT (RESIDENT AND NON-RESIDENT STUDENTS)

These projections include all resident and non-resident students attending Hermon Schools. (Data can be found in ***Appendix Table 6 and Figures V-1 through V-4***.)

A. Total Attending Enrollment in Grades PreK-4 (Hermon Elementary School)

Figure V-1



Historical Trends:

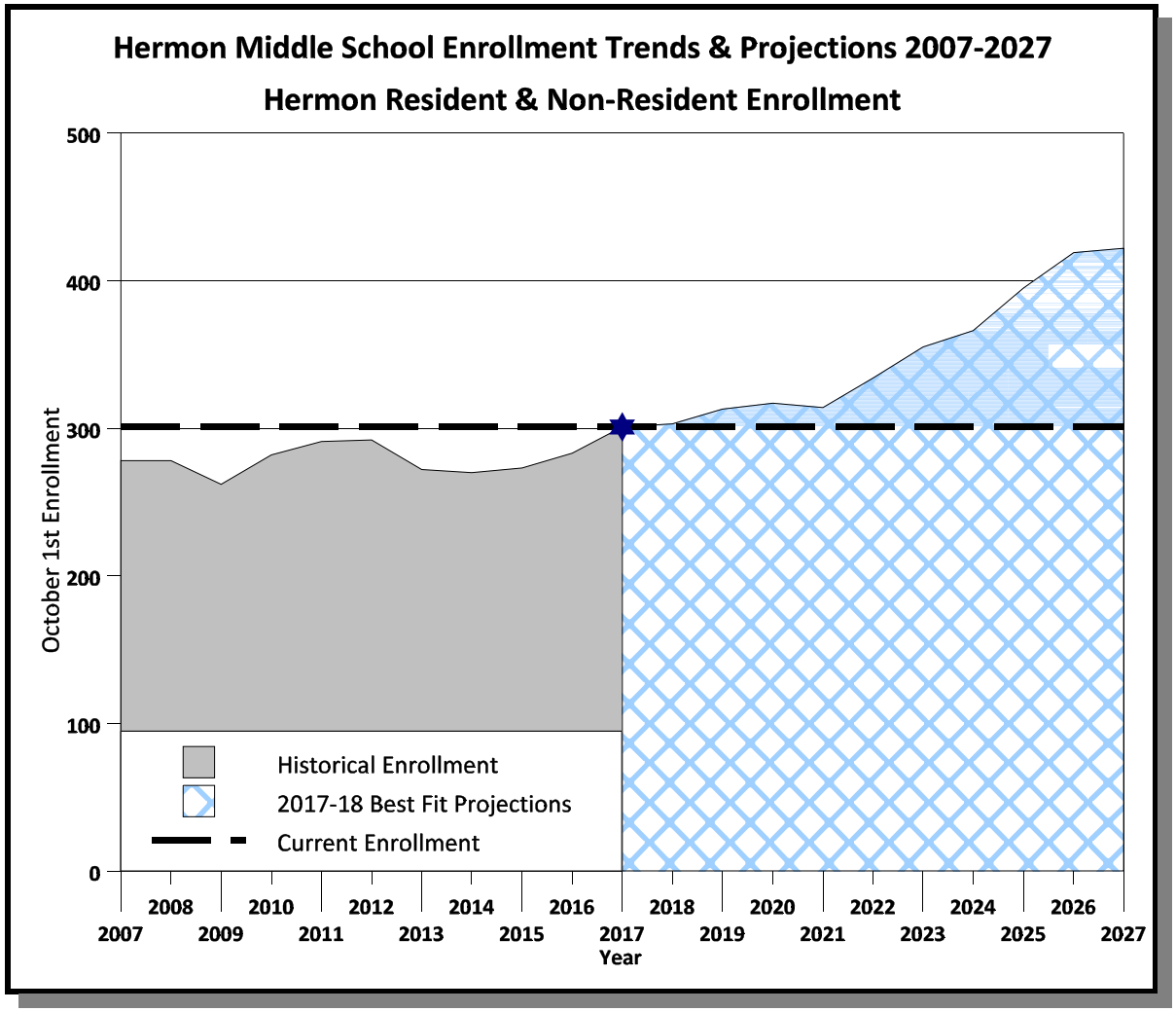
- Since 2007-08, total attending enrollment at the Hermon Elementary School fluctuated year-to-year, with enrollment ranging between 349 and 372 students through 2012-13. Following 2012-13, enrollment increased to reach 438 students by 2017-18.

2017-18 Best Fit Projections:

- Under the 2017-18 "best fit" model, PreK-4 total attending enrollment will increase from the current enrollment of 438 students to reach 534 students by 2021-22. Following 2021-22, enrollment is projected to increase further, but should level off to range between 550 and 563 students through 2027-28.

B. Total Attending Enrollment in Grades 5-8 (Hermon Middle School)

Figure V-2



Historical Trends:

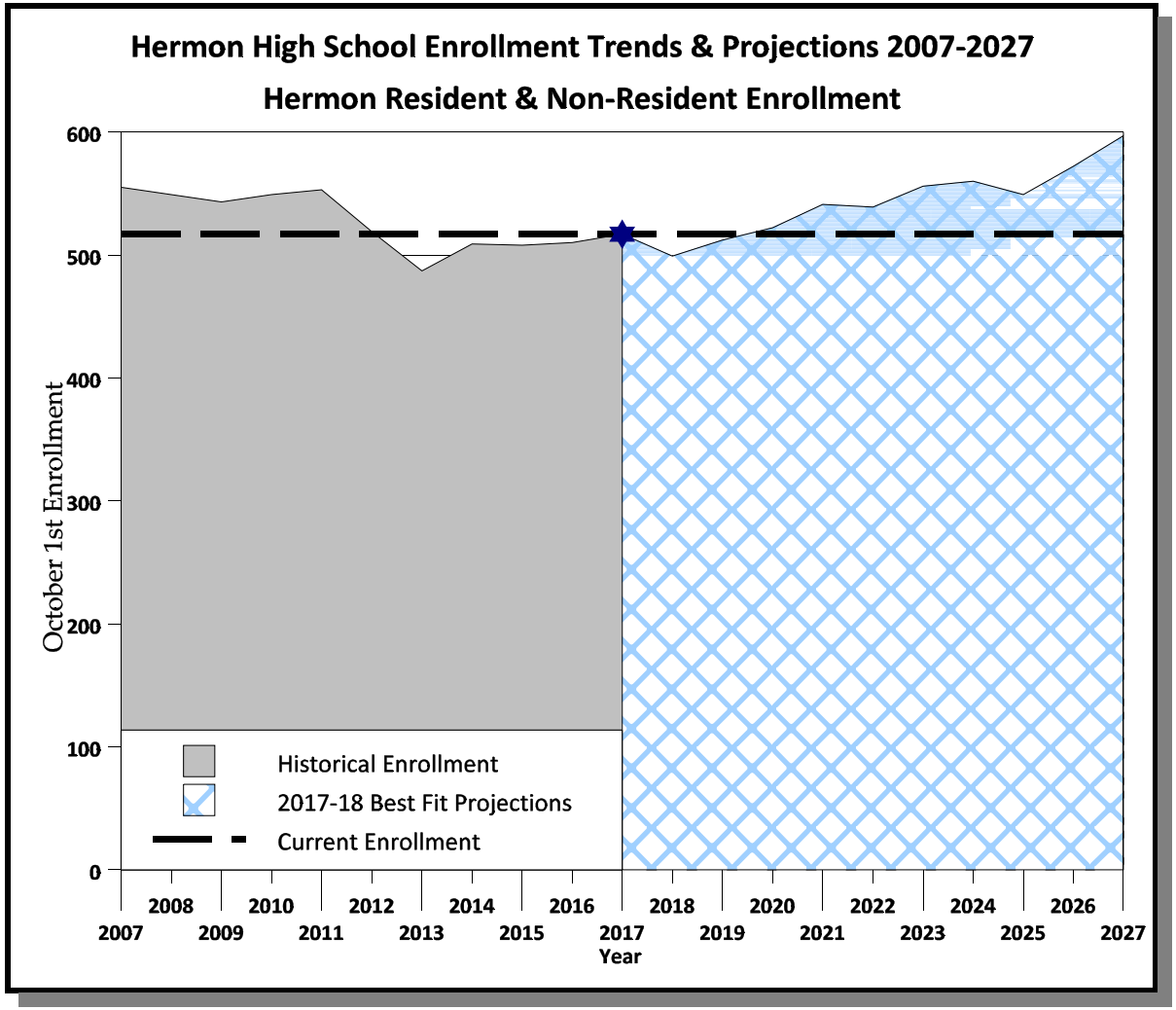
- Total attending enrollment (resident students and non-resident students) at the Hermon Middle School ranged between 262 and 301 students through 2017-18.

2017-18 Best Fit Model:

- Under the 2017-18 "best fit" model, total attending 5-8 enrollment will increase from the current enrollment of 301 students to reach 422 students by 2027-28.

C. Total Attending Enrollment in Grades 9-12 (Hermon High School)

Figure V-3



Historical Attending Enrollment Trends:

- Since 2007-08, grades 9-12 total attending enrollment (resident students and non-resident students) at the Hermon High School ranged between 543 and 555 students through 2011-12. Following 2011-12, enrollment declined to reach 487 students by 2013-14 then increased to range between 508 and 522 students through 2017-18.

2017-18 Best Fit Model:

- Under the 2017-18 "best fit" model, total attending enrollment at the Hermon High School will remain similar to the current enrollment of 522 students to range between 506 and 525 students through 2020-21. Following 2020-21, enrollment is projected to increase to 600 students by 2027-28.

Appendix Table 6 - Enrollment Trends & Projections - Hermon Attending Enrollment (Resident & Non-Resident) - 2017-18 Best Fit Model

October 1st Enrollment

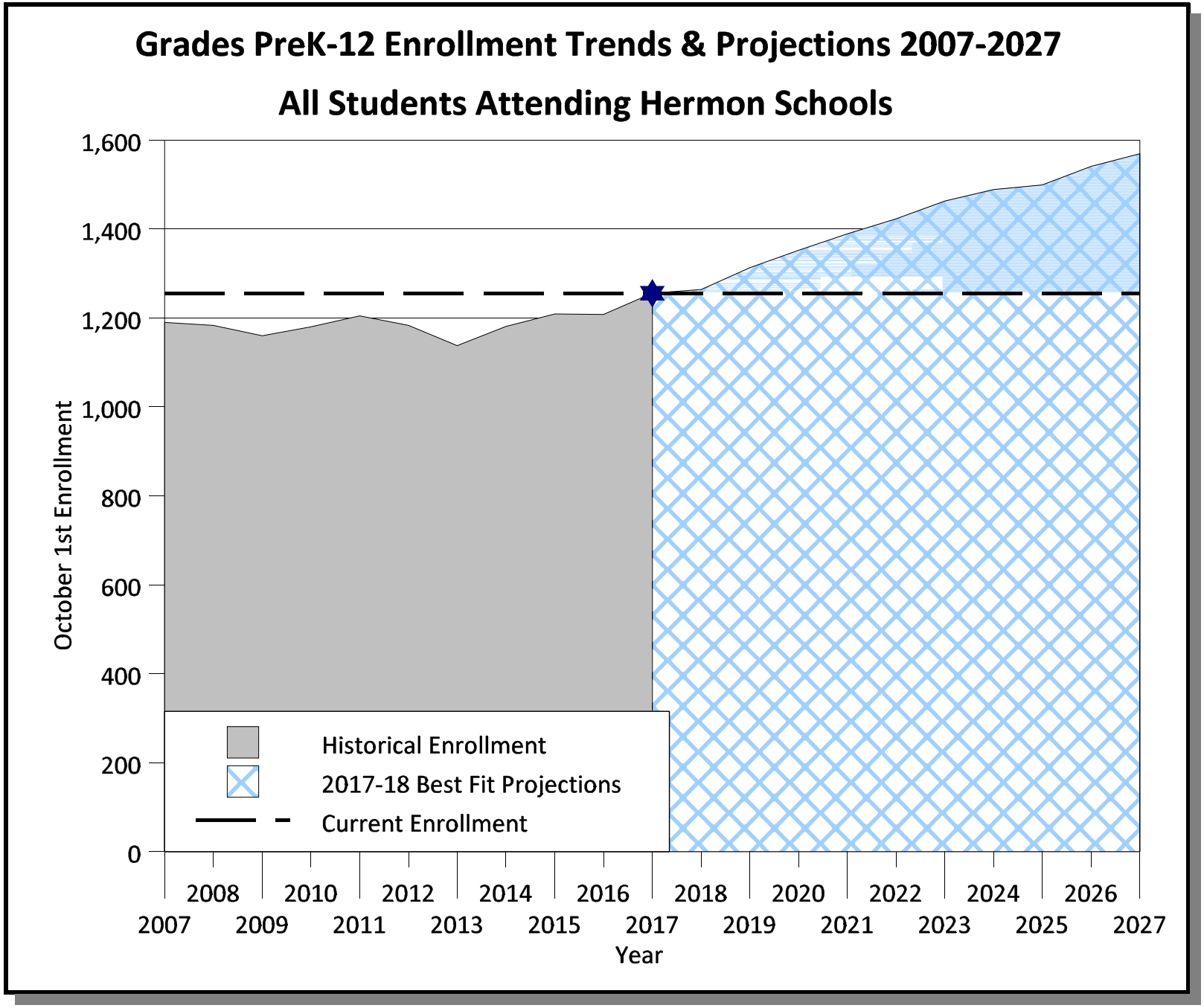
School Year	Resident Students Attending District Schools					NON Resident Students Attending District Schools					Total All Attending Students				
	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12
Historical															
2007-08	355	275	630	275	**905**	2	3	5	280	**285**	357	278	635	555	**1,190**
2008-09	356	274	630	278	**908**	0	4	4	271	**275**	356	278	634	549	**1,183**
2009-10	354	257	611	275	**886**	1	5	6	268	**274**	355	262	617	543	**1,160**
2010-11	348	278	626	290	**916**	1	4	5	259	**264**	349	282	631	549	**1,180**
2011-12	357	285	642	289	**931**	4	6	10	264	**274**	361	291	652	553	**1,205**
2012-13	372	289	661	275	**936**	0	3	3	244	**247**	372	292	664	519	**1,183**
2013-14	377	271	648	257	**905**	2	1	3	230	**233**	379	272	651	487	**1,138**
2014-15	397	264	661	272	**933**	5	6	11	237	**248**	402	270	672	509	**1,181**
2015-16	423	270	693	276	**969**	5	3	8	232	**240**	428	273	701	508	**1,209**
2016-17	412	279	691	271	**962**	3	4	7	239	**246**	415	283	698	510	**1,208**
2017-18	437	296	733	282	**1,015**	1	5	6	240	**246**	438	301	739	522	**1,261**
Projected															
2018-19	459	299	758	271	**1,029**	3	4	7	235	**242**	462	303	765	506	**1,271**
2019-20	485	307	792	266	**1,058**	3	6	9	250	**259**	488	313	801	516	**1,317**
2020-21	509	312	821	280	**1,101**	4	5	9	245	**254**	513	317	830	525	**1,355**
2021-22	530	313	843	296	**1,139**	4	1	5	247	**252**	534	314	848	543	**1,391**
2022-23	548	331	879	298	**1,177**	2	3	5	243	**248**	550	334	884	541	**1,425**
2023-24	550	352	902	306	**1,208**	2	3	5	252	**257**	552	355	907	558	**1,465**
2024-25	560	363	923	311	**1,234**	3	3	6	252	**258**	563	366	929	563	**1,492**
2025-26	552	392	944	312	**1,256**	3	3	6	240	**246**	555	395	950	552	**1,502**
2026-27	548	416	964	328	**1,292**	2	3	5	247	**252**	550	419	969	575	**1,544**
2027-28	548	419	967	350	**1,317**	2	3	5	250	**255**	550	422	972	600	**1,572**

Notes: Enrollment data contains all resident students and non-resident students attending district schools.

2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018

Data produced by Wandell Consulting

Figure V-4


Grades PreK-12 Enrollment Trends & Projections 2007-2027
All Students Attending Hermon Schools
October 1st Enrollment
1,600
1,400
1,200
1,000
800
600
400
200
0
Historical Enrollment
2017-18 Best Fit Projections
Current Enrollment
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
Year

VI. ASSESSMENT OF ECONOMIC CONDITIONS, POPULATION TRENDS, AND RESIDENTIAL DEVELOPMENT AND THEIR RELATION TO SCHOOL ENROLLMENT

Future school enrollment is impacted by past, current, and future trends in population, housing development, and economic conditions. With the growth of a population and development of new homes comes the potential for new students in the school system. Because school enrollment is impacted by residential development, development trends in the district are analyzed. This information is then used to test whether the "best fit" cohort survival enrollment projections adequately reflect the impact of potential residential development trends.

A. Economic Conditions

Table VI-1 presents trends in the Civilian Labor Force in Hermon, the **Bangor Metropolitan Area (Metro)**, and the State of Maine. Between 2013 and 2017, the **Bangor Metro's** Civilian Labor Force declined from 72,489 to 70,849, a decline of 1,640 workers, or a loss of 2.3%, while the State of Maine's Civilian Labor Force declined by less than 1% over the same time period. The number of people unemployed declined in the Metro with the unemployment rate declining from 6.2% in 2013 to 3.4% in 2017, while in the State of Maine, the unemployment rate declined from 6.6% in 2013 to 3.3% in 2017. The decline in the unemployment rate across the State of Maine reflects recovery from recessionary impacts on employment.

Hermon's Civilian Labor Force experienced an increase of 2.1%, with a gain of 71 workers between 2013 and 2017. Hermon experienced a gain in the Civilian Labor Force compared to the decline experienced in the **Bangor Metro** (loss of 2.3%), and in the State of Maine as a whole (loss of 0.8%.) Hermon also experienced a decline in the unemployment rate between 2013 and 2017, with the unemployment rate declining to 2.7% in 2017 from 4.9% in 2013.

The decline in unemployment rates indicates recovery from the recession has occurred, in addition the gain in Hermon's Civilian Labor Force has also increased the number of workers in the area. While the increase in the Civilian Labor Force likely has had an impact on school enrollment over the last five years, any impact would already be accounted for in the last three to five-year historical enrollment trends used to make projections. Therefore, no changes to the 2017-18 "best fit" model are necessary to account for changes in employment levels in Hermon at this time. However, if significant change in the Civilian Labor Force occurs in the future, then the potential impact on school enrollment from economic condition changes might need to be reassessed.

Table VI-1 - Trends in Civilian Labor Force, 2013 - 2017
Labor Market Area Influencing Hermon vs. State of Maine

	Hermon				Bangor Metro				State of Maine			
	2013	2017	Change (2013-17)		2013	2017	Change (2013-17)		2013	2017	Change (2013-17)	
			#	%			#	%			#	%
Civilian Labor Force	3,414	3,485	71	2.1%	72,489	70,849	(1,640)	-2.3%	705,417	700,099	(5,318)	-0.8%
Employment	3,247	3,391	144	4.4%	67,967	68,471	504	0.7%	658,522	677,141	18,619	2.8%
Unemployment	167	94	(73)	-43.7%	4,522	2,378	(2,144)	-47.4%	46,895	22,958	(23,937)	-51.0%
Unemployment Rate	4.9%	2.7%	-2.2%		6.2%	3.4%	-2.9%		6.6%	3.3%	-3.4%	

Source: Maine Department of Labor, Center for Workforce Research and Information

B. Population Trends

Table VI-2 presents the population trends for Hermon in comparison to Penobscot County and the State using data from the U.S. Census. Unfortunately, the Census data is now six years old, and estimates of current population is somewhat limited and comes with fairly high margins of error. The U.S. Census Bureau's 2016 American Community Survey provides estimates of population, but the margin of error can be quite significant. However, the margin of error on Hermon's total population estimate for 2016 was +/- 18 people, and the availability of projections by age and gender type used for this study was subject to some significant variations. For example, when looking at the estimates for Hermon, in some age ranges the margin of error was as much as +/- 147 people. Therefore, the estimated figures should be viewed with some caution.

In 2000, Hermon's total population was 4,437 people, increasing by 979 people to 5,416 by the year 2010, gaining 22.1% in total population. Penobscot County also experienced growth in total population, with an increase 6.2%, while the population of the State of Maine as a whole increased by 4.2%. Census population estimates for 2016 indicate total population in Hermon likely grew further, reaching an estimated population of around 5,738 people since 2010.

The under 18 years of age population of Hermon was 1,203 in 2000, by 2010, the under 18 population increased by 6.6% to 1,282 children, with a gain of 79 children. However, the population of people under 18 years of age declined by 8.3% in Penobscot County, while the State of Maine declined by 8.9%. The under 18 population estimates for 2016 indicate the population continued to increase, reaching an under 18 population of around 1,310 people since 2010.

The school-aged population of Hermon (5 to 17 years of age) was 947 in 2000. By 2010, that figure increased by 1.5% to 961 students, for a gain of 14 school-aged children. Looking at Penobscot County, the population of people 5 to 17 years of age declined by 11.7%, while the State of Maine experienced a decline of 11.1%. Therefore, the gain in the school-aged population did not occur throughout the rest of Penobscot County or the State of Maine. The school-aged population estimates for 2016 indicate the population continued to increase, reaching a school-aged population of around 1,024 children since 2010. Since the 10/1/2017 resident student population was 1,029 students, the 2016 school-aged population estimation is likely fairly accurate.

When we look at Hermon's population fertile females (women who are 18 to 44 years of age), in 2000 there were 877 fertile females. By 2010 that figure increased by 5.8% to 928, a gain of 51 fertile females. Looking at Penobscot County, the population of fertile females declined by 4.8%, and the State of Maine declined by 10%. The decline in the fertile female population in Penobscot County and the State helps to explain the loss in the under 18 population in those two areas. The 2016 estimated population of fertile females in Hermon projects a slight increase is continuing to occur, with population increasing to 951 women in 2016.

Looking at the population of women who are generally considered past their fertile age, or women 45 years of age or older, Hermon experienced a significant increase in population. Between 2000 and 2010, the population of women who are 45 years of age or older increased from 808 women to reach 1,198 women in 2010, for a gain of 390 women, or 48.3% over the period. The population of women who are 45 years of age or older increased by 23.1% in Penobscot County, while the State of Maine experienced an increase of 22.8% during the period. Therefore, the aging female population is a statewide trend, and the 2016 estimates indicate a continued increase in population of women who are 45+ years of age.

The implication is while the fertile female population has increased, there also has been growth in the population of women who have matured past the generally accepted age of fertility, or women who are 45 years of age or older. The growth in the 45 years of age or older female population will most likely continue, unless something occurs to reverse or slow this trend.

Table VI-2 - Population Trends 2000 and 2010, 2016 Estimated
Hermon vs. Penobscot County and the State of Maine

Area	2000	2010	2016 Estimated	2000-10	
				#	%
TOTAL POPULATION					
Hermon	**4,437**	**5,416**	**5,738**	**979**	**22.1%**
Penobscot County	144,919	153,923	152,978	9,004	6.2%
State	1,274,923	1,328,361	1,329,932	53,438	4.2%
POPULATION UNDER 18					
Hermon	**1,203**	**1,282**	**1,310**	**79**	**6.6%**
Penobscot County	33,100	30,355	28,608	(2,745)	(8.3)%
State of Maine	301,238	274,533	259,501	(26,705)	(8.9)%
SCHOOL-AGED POPULATION (5 to 17 Years of Age)					
Hermon	**947**	**961**	**1,024**	**14**	**1.5%**
Penobscot County	25,332	22,372	21,334	(2,960)	(11.7)%
State of Maine	230,512	205,013	194,355	(25,499)	(11.1)%
FERTILE FEMALE POPULATION (Females 18 to 44 years of age)					
Hermon	**877**	**928**	**951**	**51**	**5.8%**
Penobscot County	29,556	28,125	26,878	(1,431)	(4.8)%
State of Maine	240,816	216,748	210,937	(24,068)	(10.0)%
FEMALE POPULATION (Females 45+ years of age)					
Hermon	**808**	**1,198**	**1,310**	**390**	**48.3%**
Penobscot County	28,592	35,210	36,751	6,618	23.1%
State of Maine	267,123	328,076	341,453	60,953	22.8%

Source: 2000 and 2010 Decennial U.S. Census. 2016 American Community Survey U.S. Census.

C. Residential Development Trends

Trends in housing development are influenced by national and regional economic trends and local land-use policies. Two sets of data are used to examine residential development trends, the U.S. decennial Census for year-round housing units and annual local new housing unit data.

1. U.S. Census Data

In 2010, total year-round housing units in Hermon had increased to 2,178 units from 1,713 units in 2000, for an increase of 27.1% (465 units) since 2000, or on average, 47 new year-round units were added annually over the period. ***(See Table VI-3).*** The year-round housing unit increase experienced in Hermon during this period was more than the increase in Penobscot County (9.3%) and the increase experienced throughout the State of Maine (9.6%). While this data indicates strong new housing unit development in Hermon between 2000 and 2010, it does not take into account recent changes in development. To account for more recent development, the most recent year-to-year residential development trends will be analyzed next.

Table VI-3 - Year-Round Housing Unit Trends - 2000 - 2010
Hermon vs. Penobscot County and the State of Maine

Area	# of Year-Round Housing Units		Change (2000-2010)		Average # Added/ Year
	2000	2010	# of units	% Change	
Hermon	**1,713**	**2,178**	**465**	**27.1%**	**47**
Penobscot County	61,883	67,660	5,777	9.3%	578
State of Maine	550,361	603,360	52,999	9.6%	5,300

Source: 2000 and 2010 U.S. Census.

2. Local Housing Data

Table VI-4 presents trends in annual new housing units built in Hermon between 2007 and 2017. Local residential housing data is examined to estimate housing units in the future and to determine if residential development in Hermon is impacting school enrollment trends. Data on annual new housing units added since 2007 is used to analyze residential development trends, and was obtained from the Town of Hermon's Code Enforcement Office.

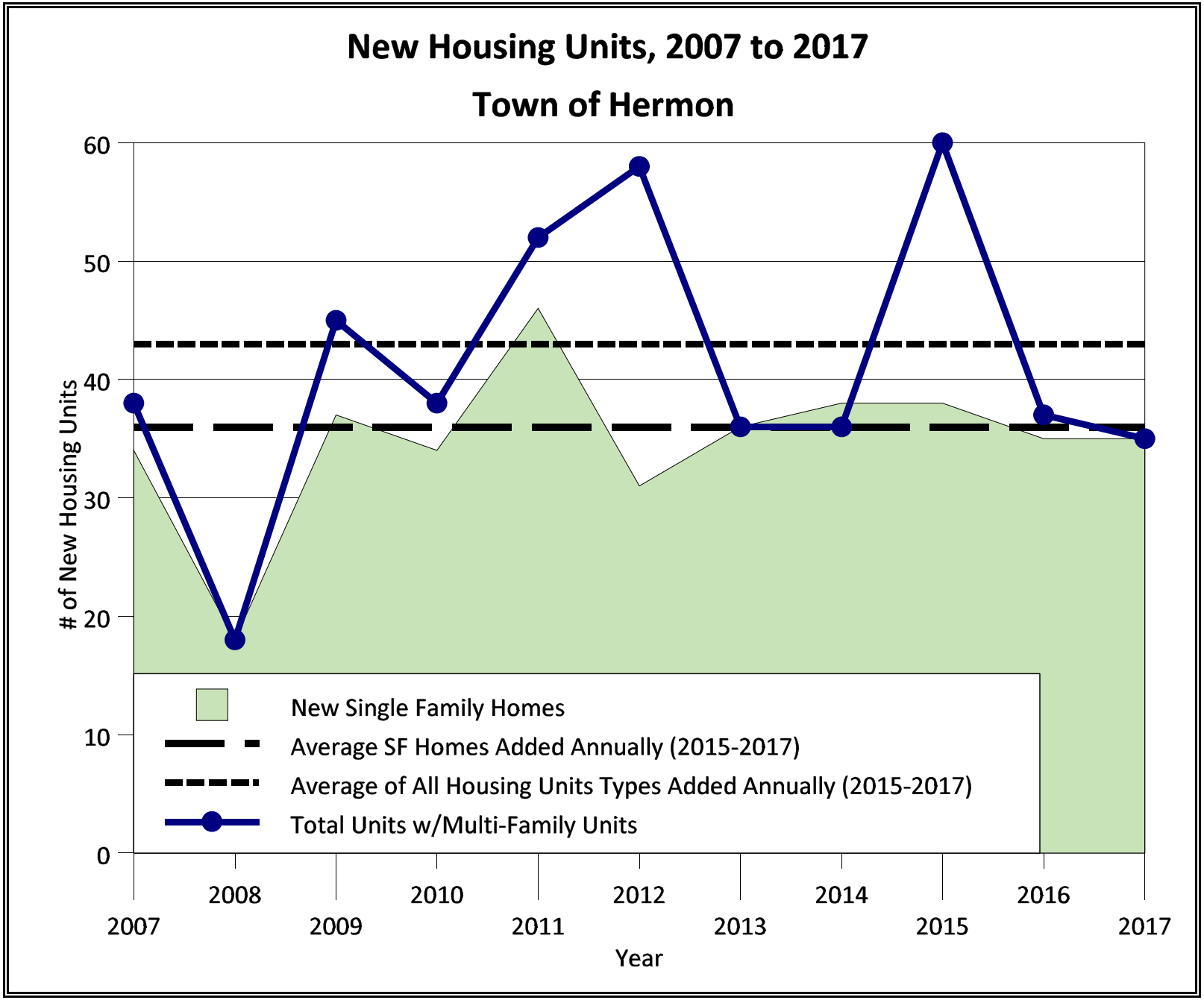
Since 2007, permits for new single-family homes and duplex homes fluctuated between 18 and 60 units annually through 2017. Looking at new homes added over the last 10-years, on average, 41 new housing units have been added annually in Hermon since 2008. Over the last five years (2013 to 2017), 41 new housing units were added annually while the previous five-year period (2008 to 2012) experienced average growth of 42 new homes per year. Looking at the last three years of data, (2015 to 2017), on average, 43 new homes were added annually.

Future new housing development is often difficult to predict and depends on demand, developer interest, availability of buildable lots and the economy. According to the Town Code Enforcement Officer development is expected to be a bit lower in 2018 with around 30 new housing units added. In addition, multi-family units are built inconsistently, however, development should occur at an average of 8 new housing units per year, with some years experiencing no multi-family development and others experiencing higher multi-family development.

Table VI-4 - New Housing Units, 2007 to 2017 Town of Hermon			
Year	**Single Family Homes**	**Multi-Family Housing**	**Total New Housing Development**
2007	34	4	**38**
2008	18	0	**18**
2009	37	8	**45**
2010	34	4	**38**
2011	46	6	**52**
2012	31	27	**58**
2013	36	0	**36**
2014	38	0	**38**
2015	38	22	**60**
2016	30	2	**32**
2017	37	0	**37**
Last 10 Year Avg. (2008 to 2017)	**35**	**7**	**41**
First 5 Year Avg. (2008 to 2012)	**33**	**9**	**42**
Last 5 Year Avg. (2013 to 2017)	**36**	**5**	**41**
Last 3 Year Avg. (2015 to 2017)	**35**	**8**	**43**

Source: US Census Bureau, Town of Hermon Code Enforcement Office

Figure VI-1


New Housing Units, 2007 to 2017
Town of Hermon
# of New Housing Units
60
50
40
30
20
10
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year
New Single Family Homes
Average SF Homes Added Annually (2015-2017)
Average of All Housing Units Types Added Annually (2015-2017)
Total Units w/Multi-Family Units

D. Relationship of Residential Development to School Enrollment

The "best fit" cohort survival does not directly incorporate the level of residential development and turnover in the existing housing stock when projecting school enrollment. Instead, the survival ratios used within cohort models reflect the historical impact of net migration (which is influenced by residential development and turnover) on school enrollment. What this means is, if future residential development levels, turnover levels, or their relationship to net migration is **significantly** different from levels experienced in the past ten years, then the "best fit" cohort survival model may overstate or understate future enrollment depends on the strongest statistical correlation of trends. For school planning purposes, understanding the degree to which residential development activity will impact school enrollment is important.

1. Net Preschool Migration

To show the relationship between residential development and preschool net migration, the ratios between net preschool migration reflected in the first grade enrollment and the number of new housing units built in Hermon between the year of the first grade enrollment year and the six years prior was examined. ***(See Table VI-5).***

On average, for each of the six-year periods examined, 267 new homes were built in Hermon. The average net migration of preschool-aged children for each of the first grade enrollment years was an in-migration of 20 children, for a ratio of 0.075 children per unit, or a gain of about 7 to 8 children for every 100 units built.

In addition, when looking at the trends over the last three years between 2010-15 and 2012-17, on average, 273 new homes were built in Hermon, a similar level compared with what occurred over the five-year period. The average in-migration of preschool-aged children for each of the first grade enrollment years was similar to the five-year average, or an average in-migration of 21 children occurred, for a ratio of 0.076 children per unit, or a gain of about 7 to 8 children for every 100 units built.

When looking at the level of residential development compared to preschool migration trends, new residential development in Hermon appears to have a fairly consistent influence on preschool migration. To determine the average impact on future preschool in-migration levels from projected residential development, the three-year experience in Hermon, or ratio of 0.076 will be used.

Table VI-5 - Births, First Grade Enrollment, Net Preschool Migration and New Housing Units Added Hermon							
Birth Year (Oct. 15-Oct. 14)	**# of Births**	**1st Grade Class Year**	**1st Grade Enrollment**	**Net Migration**	**6-Year Period**	**New Housing Units Added**	**Ratio Migr/HU**
2006-07	45	2013-14	72	27	2008-13	247	0.109
2007-08	54	2014-15	65	11	2009-14	267	0.041
2008-09	59	2015-16	82	23	2010-15	282	0.082
2009-10	65	2016-17	78	13	2011-16	276	0.047
2010-11	51	2017-18	77	26	2012-17	261	0.100
5 Year Avg. (07-11)	55	**5 Year Avg. (13-17)**	75	20	**Avg. (08-17)**	267	0.075
3 Year Avg. (09-11)	58	**3 Year Avg. (15-17)**	79	21	**Avg. (10-17)**	273	0.076

Sources: Births - Bureau of Health Statistics and Data Management, Maine Department of Health and Human Services, Bureau of Vital Records Administration. 1st Grade Enrollment - October 1st 2008 to 2016 from MDOE, 2017 from Hermon School Department. Residential New Housing Units - US Census Bureau, Town of Hermon, Code Enforcement Office

To account for the impact of recent residential development on preschool in-migration, the average ratio of preschool in-migration to new housing units over the last 3-year period is compared to recent residential development. By doing this, the impact of projected future residential development can be tested against preschool in-migration levels reflected in the 2017-18 "best fit" model, or in-migration of 23.4 students annually. Since future development is estimated to fall somewhere around 43 new housing units added annually, and the "best fit" model accounts for the development of around 51 new housing units, an additional model based on the impact of new home development on preschool in-migration is unnecessary. ***(See Table VI-6).***

Table VI-6 - Comparison of the Potential Impact of Future New Home Development on Preschool In-Migration to Enrollment Projections for Hermon	
	2017-18 Best Fit Model
Projected Annual New Homes Added	51
Projected Housing Added Over a Six-Year Period	306
Average Ratio of Preschool In-migration to New Homes (Average 2010 to 2017)	0.076
Potential Annual Preschool In-migration Resulting from Projected Future Development Levels	23.3
Average Annual Preschool In-migration Levels reflected in 2017-18 "best fit" model	23.4
Difference from Potential Impact	***(0.1)***

Source: Calculated by Wandell Consulting

2. Net Elementary (Grades 1-6) Migration

To assess the relationship between residential development levels and migration of students at the elementary grades (first to sixth), the ratio of annual net migration of students at each of the grade levels and annual new housing units built in Hermon during the year was analyzed. ***(See Table VI-7).***

In the ten years between 2008 and 2017, Hermon experienced an average net in-migration of elementary students while migration fluctuated year-to-year between an out-migration of 11 students and an in-migration of 20 students. The average ratio of in-migration of elementary students (1-6) to new housing units was 0.133, or, on average, over the last ten years for every 100 housing units built in Hermon an in-migration of about 13 elementary-aged students occurred.

Hermon continued to experience an average in-migration of elementary students over the last five years (2013 to 2017), with elementary migration continuing to fluctuate year-to-year, for an average in-migration ratio of 0.089. Or, on average, over the last five years for every 100 housing units built in Hermon an in-migration of about 8 to 9 elementary-aged students occurred.

Looking at development over the last three years (2015 to 2017), Hermon continued to experience a strong average in-migration of elementary students, with an in-migration ratio of 0.078. Or, on average, over the last three years for every 100 housing units built in Hermon an in-migration of about 7 to 8 elementary-aged students occurred.

Since elementary migration fluctuated between an out-migration and an in-migration of students despite the number of new housing units built, there does not appear to be a relationship between residential development and elementary migration in Hermon. Therefore, no adjustment to the 2017-18 "best fit" model will be necessary to account for the impact of new housing unit development on school enrollment.

Table VI-7 - Net Elementary (1-6) Migration and New Housing Units Hermon				
Enrollment Years	**Net Migration (Grades 1-5 - 2-6)**	**Year**	**# of New Homes**	**Ratio Migr/HU**
2007-08 to 2008-09	18	2008	18	1.000
2008-09 to 2009-10	(5)	2009	45	(0.111)
2009-10 to 2010-11	8	2010	38	0.211
2010-11 to 2011-12	7	2011	52	0.135
2011-12 to 2012-13	9	2012	58	0.155
2012-13 to 2013-14	(6)	2013	36	(0.167)
2013-14 to 2014-15	14	2014	38	0.368
2014-15 to 2015-16	20	2015	60	0.333
2015-16 to 2016-17	(11)	2016	32	(0.344)
2016-17 to 2017-18	1	2017	37	0.027
10 Year Avg. (08-17)	6	**10 Year Avg. (08-17)**	41	0.133
5 Year Avg. (13-17)	4	**5 Year Avg. (13-17)**	41	0.089
3 Year Avg. (15-17)	3	**3 Year Avg. (15-17)**	43	0.078

Sources: Net Migration - Calculated based on October 1st Resident Enrollment data from MDOE and the Hermon School Department. Residential New Housing Units - 2008-2017 from the Hermon Code Enforcement Office.

E. Summary and Recommendations Regarding Economic Conditions, Population Trends, and Residential Development

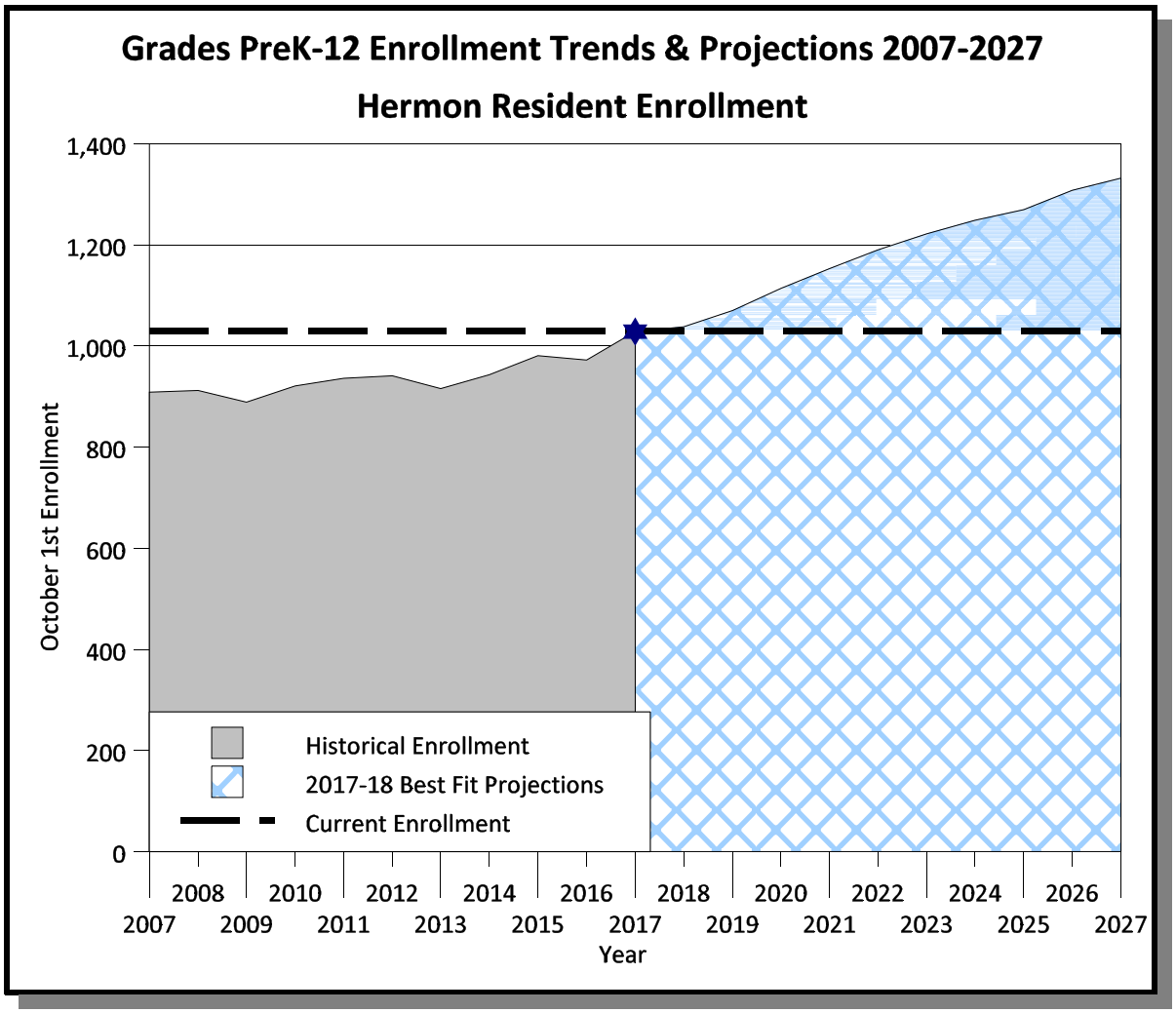
Based on recent trends, Hermon most likely will continue to experience a level of growth similar to what has occurred over the last three to five years, with residential development of around 43 housing units added annually. Looking at residential development compared preschool migration, the impact from new housing units on preschool migration was adequately accounted for by the "best fit" model. When looking at residential development compared elementary migration, significant fluctuations in the level of elementary migration were noted despite the number of new housing units added. Therefore, no relationship between the addition of new housing units and elementary migration school enrollment was found.

The 2017-18 "best fit" model is a standard statistical model which projects enrollment based on historical trends and is considered to be the most likely scenario to occur in Hermon if future enrollment follows the historical pattern of enrollment. It is important to note that if future recessions or economic booms occur, or if significant residential development and/or population changes occur, these enrollment projections would need to be reassessed. However, at this time, nothing indicates an additional model based on the impact of housing development, economic conditions or population trends would be necessary.

VII. SUMMARY OF ENROLLMENT PROJECTIONS FOR SCHOOL PLANNING PURPOSES

To provide reasonable cushions for use in planning school facilities, the enrollment projections by grade group and presented the projections within ranges of plus and minus 10% for the PreK-8 grade groups, and plus and minus 5% for grades 9-12. In addition, more conservative ranges of 3% across all grade levels are supplied. These ranges should provide the school department with some idea of what future enrollment would look like under different scenarios. The report **Appendix** contains grade by grade historical and projected enrollment.

Figure VII-1



Appendix Table 5 - All Hermon Resident Students - 2017-18 Best Fit Model
Enrollment Projection Ranges (+/-5% and +/-10%) - October 1st Enrollment

School Year	Grades PreK-4			Grades 5-8			Grades 9-12			Total All Grades PreK-12		
	-10%	Proj.	+10%	-10%	Proj.	+10%	-5%	Proj.	+5%	-Range	Proj.	+Range
2017-18*		**444**			**302**			**288**			**1,034**	
2018-19	418	**464**	510	274	**304**	334	263	**277**	291	955	**1,045**	1,135
2019-20	442	**491**	540	281	**312**	343	258	**272**	286	981	**1,075**	1,169
2020-21	464	**515**	567	285	**317**	349	272	**286**	300	1,021	**1,118**	1,216
2021-22	482	**536**	590	286	**318**	350	287	**302**	317	1,055	**1,156**	1,257
2022-23	499	**554**	609	302	**336**	370	289	**304**	319	1,090	**1,194**	1,298
2023-24	500	**556**	612	321	**357**	393	297	**313**	329	1,118	**1,226**	1,334
2024-25	510	**567**	624	331	**368**	405	302	**318**	334	1,143	**1,253**	1,363
2025-26	502	**558**	614	358	**398**	438	303	**319**	335	1,163	**1,275**	1,387
2026-27	499	**554**	609	380	**422**	464	318	**335**	352	1,197	**1,311**	1,425
2027-28	499	**554**	609	383	**425**	468	339	**357**	375	1,221	**1,336**	1,452

Enrollment Projection Ranges (+/-3%) - October 1st Enrollment

School Year	Grades PreK-4			Grades 5-8			Grades 9-12			Total All Grades PreK-12		
	-3%	Proj.	+3%	-3%	Proj.	+3%	-3%	Proj.	+3%	-3%	Proj.	3%
2017-18*		**444**			**302**			**288**			**1,034**	
2018-19	450	**464**	478	295	**304**	313	269	**277**	285	1,014	**1,045**	1,076
2019-20	476	**491**	506	303	**312**	321	264	**272**	280	1,043	**1,075**	1,107
2020-21	500	**515**	530	307	**317**	327	277	**286**	295	1,084	**1,118**	1,152
2021-22	520	**536**	552	308	**318**	328	293	**302**	311	1,121	**1,156**	1,191
2022-23	537	**554**	571	326	**336**	346	295	**304**	313	1,158	**1,194**	1,230
2023-24	539	**556**	573	346	**357**	368	304	**313**	322	1,189	**1,226**	1,263
2024-25	550	**567**	584	357	**368**	379	308	**318**	328	1,215	**1,253**	1,291
2025-26	541	**558**	575	386	**398**	410	309	**319**	329	1,236	**1,275**	1,314
2026-27	537	**554**	571	409	**422**	435	325	**335**	345	1,271	**1,311**	1,351
2027-28	537	**554**	571	412	**425**	438	346	**357**	368	1,295	**1,336**	1,377

Notes: Enrollment data contains all resident students EXCEPT homeschooled students and students attending privately paid schools it does however contain any resident students attending a Charter School or non-district publicly funded school.

2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018

Data produced by Wandell Consulting

Appendix Table 7 - Hermon Attending Enrollment (Resident & Non-Resident) - 2017-18 Best Fit Model
Enrollment Projection Ranges (+/-5% and +/-10%) - October 1st Enrollment

School Year	Grades PreK-4			Grades 5-8			Grades 9-12			Total All Grades PreK-12		
	-10%	Proj.	+10%	-10%	Proj.	+10%	-5%	Proj.	+5%	-Range	Proj.	+Range
2017-18*		**438**			**301**			**522**			**1,261**	
2018-19	416	**462**	508	273	**303**	333	481	**506**	531	1,170	**1,271**	1,372
2019-20	439	**488**	537	282	**313**	344	490	**516**	542	1,211	**1,317**	1,423
2020-21	462	**513**	564	285	**317**	349	499	**525**	551	1,246	**1,355**	1,464
2021-22	481	**534**	587	283	**314**	345	516	**543**	570	1,280	**1,391**	1,502
2022-23	495	**550**	605	301	**334**	367	514	**541**	568	1,310	**1,425**	1,540
2023-24	497	**552**	607	320	**355**	391	530	**558**	586	1,347	**1,465**	1,584
2024-25	507	**563**	619	329	**366**	403	535	**563**	591	1,371	**1,492**	1,613
2025-26	500	**555**	611	356	**395**	435	524	**552**	580	1,380	**1,502**	1,626
2026-27	495	**550**	605	377	**419**	461	546	**575**	604	1,418	**1,544**	1,670
2027-28	495	**550**	605	380	**422**	464	570	**600**	630	1,445	**1,572**	1,699

Enrollment Projection Ranges (+/-3%) - October 1st Enrollment

School Year	Grades PreK-4			Grades 5-8			Grades 9-12			Total All Grades PreK-12		
	-3%	Proj.	+3%	-3%	Proj.	+3%	-3%	Proj.	+3%	-3%	Proj.	3%
2017-18*		**438**			**301**			**522**			**1,261**	
2018-19	448	**462**	476	294	**303**	312	491	**506**	521	1,233	**1,271**	1,309
2019-20	473	**488**	503	304	**313**	322	501	**516**	531	1,278	**1,317**	1,356
2020-21	498	**513**	528	307	**317**	327	509	**525**	541	1,314	**1,355**	1,396
2021-22	518	**534**	550	305	**314**	323	527	**543**	559	1,350	**1,391**	1,432
2022-23	534	**550**	567	324	**334**	344	525	**541**	557	1,383	**1,425**	1,468
2023-24	535	**552**	569	344	**355**	366	541	**558**	575	1,420	**1,465**	1,510
2024-25	546	**563**	580	355	**366**	377	546	**563**	580	1,447	**1,492**	1,537
2025-26	538	**555**	572	383	**395**	407	535	**552**	569	1,456	**1,502**	1,548
2026-27	534	**550**	567	406	**419**	432	558	**575**	592	1,498	**1,544**	1,591
2027-28	534	**550**	567	409	**422**	435	582	**600**	618	1,525	**1,572**	1,620

Notes: Enrollment data contains all resident students and non-resident students attending district schools.
2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018
Data produced by Wandell Consulting

APPENDIX A

GRADE BY GRADE HISTORICAL & PROJECTED ENROLLMENT

Appendix Table 1 - Entering Class to Births Ratio Worksheet
Resident Enrollment - Hermon Resident Students - 2017-18 Best Fit Model

Oct 15-Oct 14 Births	Number Births	KG Year	KG Class Size	1st Grade Year	1st Class Size	Ratio 1st/Birth	Ratio 1st/K	Proj. 1st Grade	Net Preschool Migration
2001-02	39	10/07	60	10/08	63	1.615	1.050		24
2002-03	37	10/08	46	10/09	48	1.297	1.043		11
2003-04	49	10/09	64	10/10	61	1.245	0.953		12
2004-05	49	10/10	73	10/11	75	1.531	1.027		26
2005-06	60	10/11	67	10/12	70	1.167	1.045		10
2006-07	45	10/12	72	10/13	72	1.600	1.000		27
2007-08	54	10/13	61	10/14	65	1.204	1.066		11
2008-09	59	10/14	69	10/15	82	1.390	1.188		23
2009-10	65	10/15	77	10/16	78	1.200	1.013		13
2010-11	51	10/16	67	10/17	77	1.510	1.149		26
2011-12	60	10/17	77	10/18		1.326	1.033	80	20
2012-13	71	10/18		10/19		1.326		94	23
2013-14	65	10/19		10/20		1.326		86	21
2014-15	80	10/20		10/21		1.326		106	26
2015-16	76	10/21		10/22		1.326		101	25
2016-17*	73	10/22		10/23		1.326		97	24
2017-18 est	73	10/23		10/24		1.326		97	24
2018-19 est	73	10/24		10/25		1.326		97	24
2019-20 est	73	10/25		10/26		1.326		97	24
2020-21 est	73	10/26		10/27		1.326		97	24
10yr Total (02-11)	508	10yr Total (07-16)	656	10yr Total (08-17)	691	1.360	1.053	Last 10yr	18.3
10yr Avg (02-11)	51	10yr Avg (07-16)	66	10yr Avg (08-17)	69	1.376	1.053	Last 5yr	20.0
5yr Avg (13-17)	73							Last 3yr	20.7
5yr Max (13-17)	80							Proj.	23.4
5yr Min (13-17)	65								
3 yr Avg (15-17)	76								

First Grade to Births Correlation Coefficients	
10 YEAR	0.706
9 YEAR	0.701
8 YEAR	0.389
7 YEAR	0.267
6 YEAR	0.313
5 YEAR	0.450
4 YEAR	0.412
3 YEAR	0.269

First Grade to Kindergarten Correlation Coefficients	
10 YEAR	0.885
9 YEAR	0.880
8 YEAR	0.659
7 YEAR	0.593
6 YEAR	0.603
5 YEAR	0.588
4 YEAR	0.695
3 YEAR	-0.143

Ratios	1st/Birth	1st/K
Avg last 10	1.376	1.053
Avg last 9	1.349	1.054
Avg last 8	1.356	1.055
Avg last 7	1.372	1.070
Avg last 6	1.345	1.077
Avg last 5	1.381	1.083
Avg last 4	**1.326**	1.104
Avg last 3	1.367	1.117
av 1st 5	1.371	1.024
10yr Weighted	1.363	1.071
5yr Weighted	1.369	1.100

Notes: Enrollment data contains all resident students except home schooled students and private school students. Five-year average of births (2012-13 to 2016-17) used to estimate births from 2017-18 to 2020-21. *2017 birth data is preliminary and provisional from the Maine Department of Health and Human Services, Office of Data, Research, and Vital Statistics. Due to skewing of the data from the smaller population sizes and the correlations coefficients not being strong for any time period, the 4-year ratio of first to births was used to project future first grade class sizes.

2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018

Data produced by Wandell Consulting

Appendix Table 2 - Enrollment Trends & Projections - Hermon Resident Students - 2017-18 Best Fit Model

October 1st Enrollment

School Year	PreK	K	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12
Historical																			
2007-08	27	60	65	77	60	68	60	73	67	75	76	62	72	67	357	275	632	277	**909**
2008-09	34	46	63	69	81	65	72	61	72	69	81	70	61	68	358	274	632	280	**912**
2009-10	33	64	48	62	69	80	63	71	58	66	69	78	67	61	356	258	614	275	**889**
2010-11	34	73	61	49	64	69	86	62	74	57	74	70	82	66	350	279	629	292	**921**
2011-12	36	67	75	69	52	60	72	83	61	70	66	71	70	84	359	286	645	291	**936**
2012-13	35	72	70	74	67	54	64	78	86	62	73	68	71	67	372	290	662	279	**941**
2013-14	40	61	72	69	70	66	57	61	77	80	58	72	65	68	378	275	653	263	**916**
2014-15	44	69	65	74	77	68	69	60	62	76	79	61	76	63	397	267	664	279	**943**
2015-16	39	77	82	66	78	82	72	75	63	66	73	75	61	72	424	276	700	281	**981**
2016-17	47	67	78	81	64	78	75	71	70	65	63	75	78	60	415	281	696	276	**972**
2017-18	73	77	77	77	75	65	80	80	73	69	66	65	78	79	444	302	746	288	**1,034**
Projected																			
2018-19	64	89	80	77	78	76	67	84	80	73	67	67	67	76	464	304	768	277	**1,045**
2019-20	79	82	94	79	78	79	78	70	84	80	71	68	68	65	491	312	803	272	**1,075**
2020-21	75	101	86	94	80	79	81	82	70	84	78	72	69	67	515	317	832	286	**1,118**
2021-22	72	96	106	86	95	81	81	85	82	70	82	79	73	68	536	318	854	302	**1,156**
2022-23	72	92	101	106	87	96	84	85	85	82	68	83	81	72	554	336	890	304	**1,194**
2023-24	72	92	97	100	107	88	99	88	85	85	80	69	85	79	556	357	913	313	**1,226**
2024-25	72	92	97	96	102	108	91	104	88	85	83	81	71	83	567	368	935	318	**1,253**
2025-26	72	92	97	96	98	103	111	95	104	88	83	84	83	69	558	398	956	319	**1,275**
2026-27	72	92	97	96	98	99	106	117	95	104	85	83	86	81	554	422	976	335	**1,311**
2027-28	72	92	97	96	98	99	102	111	117	95	101	86	86	84	554	425	979	357	**1,336**

Notes: Enrollment data contains all resident students EXCEPT homeschooled students and students attending privately paid schools, it does however contain any resident students attending a Charter School or non-district publicly funded school.

2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018

Data produced by Wandell Consulting

Appendix Table 3 - Hermon Attending Resident Enrollment - Average Grade-To-Grade Survival Ratios

2017-18 Best Fit Model

School Year	Grade											
	K-1		1-2		2-3		3-4		4-5		5-6	
	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-
10 Year Avg. (08-17)	1.053	5.3%	1.019	1.9%	1.013	1.3%	1.008	0.8%	1.031	3.1%	1.018	1.8%
1st 5-Year Avg. (08-12)	1.024	2.4%	1.037	3.7%	1.023	2.3%	1.009	0.9%	1.043	4.3%	1.007	0.7%
Last 5-Year Avg. (13-17)	1.083	8.3%	1.001	0.1%	1.002	0.2%	1.007	0.7%	1.020	2.0%	1.029	2.9%
Last 4-Year Avg. (14-17)	1.104	10.4%	1.005	0.5%	1.016	1.6%	1.013	1.3%	1.011	1.1%	1.048	4.8%
Last 3-Year Avg. (15-17)	1.117	11.7%	0.997	-0.3%	0.983	-1.7%	1.027	2.7%	1.000	0.0%	1.047	4.7%

School Year	Grade											
	6-7		7-8		8-9		9-10		10-11		11-12	
	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-	Ratio	% +/-
10 Year Avg. (08-17)	1.001	0.1%	0.989	-1.1%	1.026	2.6%	0.993	-0.7%	1.008	0.8%	0.978	-2.2%
1st 5-Year Avg. (08-12)	1.000	0.0%	0.978	-2.2%	1.080	8.0%	0.978	-2.2%	0.998	-0.2%	0.982	-1.8%
Last 5-Year Avg. (13-17)	1.003	0.3%	1.000	0.0%	0.971	-2.9%	1.009	0.9%	1.018	1.8%	0.974	-2.6%
Last 4-Year Avg. (14-17)	1.007	0.7%	1.017	1.7%	0.979	-2.1%	1.015	1.5%	1.034	3.4%	0.978	-2.2%
Last 3-Year Avg. (15-17)	1.004	0.4%	1.027	2.7%	0.977	-2.3%	1.003	0.3%	1.027	2.7%	0.981	-1.9%

2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018
Data produced by Wandell Consulting

Appendix Table 4 - Enrollment Trends & Projections - Hermon Resident Enrollment - 2017-18 Best Fit Model

October 1st Enrollment

School Year	Resident Students Attending District Schools					Resident Students at NON-District Schools					Total All Hermon Students				
	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12
Historical															
2007-08	355	275	630	275	**905**	2	0	2	2	**4**	357	275	632	277	**909**
2008-09	356	274	630	278	**908**	2	0	2	2	**4**	358	274	632	280	**912**
2009-10	354	257	611	275	**886**	2	1	3	0	**3**	356	258	614	275	**889**
2010-11	348	278	626	290	**916**	2	1	3	2	**5**	350	279	629	292	**921**
2011-12	357	285	642	289	**931**	2	1	3	2	**5**	359	286	645	291	**936**
2012-13	372	289	661	275	**936**	0	1	1	4	**5**	372	290	662	279	**941**
2013-14	377	271	648	257	**905**	1	4	5	6	**11**	378	275	653	263	**916**
2014-15	397	264	661	272	**933**	0	3	3	7	**10**	397	267	664	279	**943**
2015-16	423	270	693	276	**969**	1	6	7	5	**12**	424	276	700	281	**981**
2016-17	412	279	691	271	**962**	3	2	5	5	**10**	415	281	696	276	**972**
2017-18	437	296	733	282	**1,015**	7	6	13	6	**19**	444	302	746	288	**1,034**
Projected															
2018-19	459	299	758	271	**1,029**	5	5	10	6	**16**	464	304	768	277	**1,045**
2019-20	485	307	792	266	**1,058**	6	5	11	6	**17**	491	312	803	272	**1,075**
2020-21	509	312	821	280	**1,101**	6	5	11	6	**17**	515	317	832	286	**1,118**
2021-22	530	313	843	296	**1,139**	6	5	11	6	**17**	536	318	854	302	**1,156**
2022-23	548	331	879	298	**1,177**	6	5	11	6	**17**	554	336	890	304	**1,194**
2023-24	550	352	902	306	**1,208**	6	5	11	7	**18**	556	357	913	313	**1,226**
2024-25	560	363	923	311	**1,234**	7	5	12	7	**19**	567	368	935	318	**1,253**
2025-26	552	392	944	312	**1,256**	6	6	12	7	**19**	558	398	956	319	**1,275**
2026-27	548	416	964	328	**1,292**	6	6	12	7	**19**	554	422	976	335	**1,311**
2027-28	548	419	967	350	**1,317**	6	6	12	7	**19**	554	425	979	357	**1,336**

Notes: Enrollment data contains all resident students EXCEPT homeschooled students and students attending privately paid schools, it does however contain any resident students attending a Charter School or non-district publicly funded school.

2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018
Data produced by Wandell Consulting

Appendix Table 5 - All Hermon Resident Students - 2017-18 Best Fit Model
Enrollment Projection Ranges (+/-5% and +/-10%) - October 1st Enrollment

School Year	Grades PreK-4			Grades 5-8			Grades 9-12			Total All Grades PreK-12		
	-10%	Proj.	+10%	-10%	Proj.	+10%	-5%	Proj.	+5%	-Range	Proj.	+Range
2017-18*		**444**			**302**			**288**			**1,034**	
2018-19	418	**464**	510	274	**304**	334	263	**277**	291	955	**1,045**	1,135
2019-20	442	**491**	540	281	**312**	343	258	**272**	286	981	**1,075**	1,169
2020-21	464	**515**	567	285	**317**	349	272	**286**	300	1,021	**1,118**	1,216
2021-22	482	**536**	590	286	**318**	350	287	**302**	317	1,055	**1,156**	1,257
2022-23	499	**554**	609	302	**336**	370	289	**304**	319	1,090	**1,194**	1,298
2023-24	500	**556**	612	321	**357**	393	297	**313**	329	1,118	**1,226**	1,334
2024-25	510	**567**	624	331	**368**	405	302	**318**	334	1,143	**1,253**	1,363
2025-26	502	**558**	614	358	**398**	438	303	**319**	335	1,163	**1,275**	1,387
2026-27	499	**554**	609	380	**422**	464	318	**335**	352	1,197	**1,311**	1,425
2027-28	499	**554**	609	383	**425**	468	339	**357**	375	1,221	**1,336**	1,452

Enrollment Projection Ranges (+/-3%) - October 1st Enrollment

School Year	Grades PreK-4			Grades 5-8			Grades 9-12			Total All Grades PreK-12		
	-3%	Proj.	+3%	-3%	Proj.	+3%	-3%	Proj.	+3%	-3%	Proj.	3%
2017-18*		**444**			**302**			**288**			**1,034**	
2018-19	450	**464**	478	295	**304**	313	269	**277**	285	1,014	**1,045**	1,076
2019-20	476	**491**	506	303	**312**	321	264	**272**	280	1,043	**1,075**	1,107
2020-21	500	**515**	530	307	**317**	327	277	**286**	295	1,084	**1,118**	1,152
2021-22	520	**536**	552	308	**318**	328	293	**302**	311	1,121	**1,156**	1,191
2022-23	537	**554**	571	326	**336**	346	295	**304**	313	1,158	**1,194**	1,230
2023-24	539	**556**	573	346	**357**	368	304	**313**	322	1,189	**1,226**	1,263
2024-25	550	**567**	584	357	**368**	379	308	**318**	328	1,215	**1,253**	1,291
2025-26	541	**558**	575	386	**398**	410	309	**319**	329	1,236	**1,275**	1,314
2026-27	537	**554**	571	409	**422**	435	325	**335**	345	1,271	**1,311**	1,351
2027-28	537	**554**	571	412	**425**	438	346	**357**	368	1,295	**1,336**	1,377

Notes: Enrollment data contains all resident students EXCEPT homeschooled students and students attending privately paid schools it does however contain any resident students attending a Charter School or non-district publicly funded school.

2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018

Data produced by Wandell Consulting

Appendix Table 6 - Enrollment Trends & Projections - Hermon Attending Enrollment (Resident & Non-Resident) - 2017-18 Best Fit Model

October 1st Enrollment

School Year	Resident Students Attending District Schools					NON Resident Students Attending District Schools					Total All Attending Students				
	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12	Total PreK-4	Total 5-8	Total PreK-8	Total 9-12	Total PreK-12
Historical															
2007-08	355	275	630	275	**905**	2	3	5	280	**285**	357	278	635	555	**1,190**
2008-09	356	274	630	278	**908**	0	4	4	271	**275**	356	278	634	549	**1,183**
2009-10	354	257	611	275	**886**	1	5	6	268	**274**	355	262	617	543	**1,160**
2010-11	348	278	626	290	**916**	1	4	5	259	**264**	349	282	631	549	**1,180**
2011-12	357	285	642	289	**931**	4	6	10	264	**274**	361	291	652	553	**1,205**
2012-13	372	289	661	275	**936**	0	3	3	244	**247**	372	292	664	519	**1,183**
2013-14	377	271	648	257	**905**	2	1	3	230	**233**	379	272	651	487	**1,138**
2014-15	397	264	661	272	**933**	5	6	11	237	**248**	402	270	672	509	**1,181**
2015-16	423	270	693	276	**969**	5	3	8	232	**240**	428	273	701	508	**1,209**
2016-17	412	279	691	271	**962**	3	4	7	239	**246**	415	283	698	510	**1,208**
2017-18	437	296	733	282	**1,015**	1	5	6	240	**246**	438	301	739	522	**1,261**
Projected															
2018-19	459	299	758	271	**1,029**	3	4	7	235	**242**	462	303	765	506	**1,271**
2019-20	485	307	792	266	**1,058**	3	6	9	250	**259**	488	313	801	516	**1,317**
2020-21	509	312	821	280	**1,101**	4	5	9	245	**254**	513	317	830	525	**1,355**
2021-22	530	313	843	296	**1,139**	4	1	5	247	**252**	534	314	848	543	**1,391**
2022-23	548	331	879	298	**1,177**	2	3	5	243	**248**	550	334	884	541	**1,425**
2023-24	550	352	902	306	**1,208**	2	3	5	252	**257**	552	355	907	558	**1,465**
2024-25	560	363	923	311	**1,234**	3	3	6	252	**258**	563	366	929	563	**1,492**
2025-26	552	392	944	312	**1,256**	3	3	6	240	**246**	555	395	950	552	**1,502**
2026-27	548	416	964	328	**1,292**	2	3	5	247	**252**	550	419	969	575	**1,544**
2027-28	548	419	967	350	**1,317**	2	3	5	250	**255**	550	422	972	600	**1,572**

Notes: Enrollment data contains all resident students and non-resident students attending district schools.

2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018

Data produced by Wandell Consulting

Appendix Table 7 - Hermon Attending Enrollment (Resident & Non-Resident) - 2017-18 Best Fit Model
Enrollment Projection Ranges (+/-5% and +/-10%) - October 1st Enrollment

School Year	Grades PreK-4			Grades 5-8			Grades 9-12			Total All Grades PreK-12		
	-10%	Proj.	+10%	-10%	Proj.	+10%	-5%	Proj.	+5%	-Range	Proj.	+Range
2017-18*		**438**			**301**			**522**			**1,261**	
2018-19	416	**462**	508	273	**303**	333	481	**506**	531	1,170	**1,271**	1,372
2019-20	439	**488**	537	282	**313**	344	490	**516**	542	1,211	**1,317**	1,423
2020-21	462	**513**	564	285	**317**	349	499	**525**	551	1,246	**1,355**	1,464
2021-22	481	**534**	587	283	**314**	345	516	**543**	570	1,280	**1,391**	1,502
2022-23	495	**550**	605	301	**334**	367	514	**541**	568	1,310	**1,425**	1,540
2023-24	497	**552**	607	320	**355**	391	530	**558**	586	1,347	**1,465**	1,584
2024-25	507	**563**	619	329	**366**	403	535	**563**	591	1,371	**1,492**	1,613
2025-26	500	**555**	611	356	**395**	435	524	**552**	580	1,380	**1,502**	1,626
2026-27	495	**550**	605	377	**419**	461	546	**575**	604	1,418	**1,544**	1,670
2027-28	495	**550**	605	380	**422**	464	570	**600**	630	1,445	**1,572**	1,699

Enrollment Projection Ranges (+/-3%) - October 1st Enrollment

School Year	Grades PreK-4			Grades 5-8			Grades 9-12			Total All Grades PreK-12		
	-3%	Proj.	+3%	-3%	Proj.	+3%	-3%	Proj.	+3%	-3%	Proj.	3%
2017-18*		**438**			**301**			**522**			**1,261**	
2018-19	448	**462**	476	294	**303**	312	491	**506**	521	1,233	**1,271**	1,309
2019-20	473	**488**	503	304	**313**	322	501	**516**	531	1,278	**1,317**	1,356
2020-21	498	**513**	528	307	**317**	327	509	**525**	541	1,314	**1,355**	1,396
2021-22	518	**534**	550	305	**314**	323	527	**543**	559	1,350	**1,391**	1,432
2022-23	534	**550**	567	324	**334**	344	525	**541**	557	1,383	**1,425**	1,468
2023-24	535	**552**	569	344	**355**	366	541	**558**	575	1,420	**1,465**	1,510
2024-25	546	**563**	580	355	**366**	377	546	**563**	580	1,447	**1,492**	1,537
2025-26	538	**555**	572	383	**395**	407	535	**552**	569	1,456	**1,502**	1,548
2026-27	534	**550**	567	406	**419**	432	558	**575**	592	1,498	**1,544**	1,591
2027-28	534	**550**	567	409	**422**	435	582	**600**	618	1,525	**1,572**	1,620

Notes: Enrollment data contains all resident students and non-resident students attending district schools.
2017-18 Best Fit Model Enrollment Projections for Hermon, Completed April 2018
Data produced by Wandell Consulting

APPENDIX B

INFORMATION ON ENROLLMENT DATA & METHODOLOGIES USED FOR PROJECTION STUDIES

Enrollment Data and Methodologies Used for Projection Studies

Enrollment Data Used for the Projection Study:

- The enrollment data used for these projections is based on the October 1st resident enrollment count by school year. Historical enrollment data is obtained directly from the Maine Department of Education. If a study is completed in October to December of a school year the data may need to be obtained directly from the school district. Sometimes data supplied by the school district is different from what MDOE will show because of reporting differences, inconsistencies or errors adjusted over time. Although it does not happen often, it is important to understand it can happen and is often the source of differences in enrollment count between studies.

- It is also important to understand the resident enrollment and attending enrollment figures will not necessary correlate with EPS funding counts of students. Specifics on what is included in the different types of enrollment counts, please visit the MDOE data center: http://www.maine.gov/education/datalist.htm

Types of Enrollment Data:

1. **Total Resident Enrollment:** the count of all students living in the district's town(s) regardless of where they attend school. Excluded from this data are students attending privately paid for private schools and home schooled students. It does include students at publicly paid for schools such as Charter Schools, or other school districts within Maine.

2. **Attending Resident Enrollment:** the count of resident students attending a district's school(s).

3. **Enrollment of Resident Students Attending Out of District Schools:** the count of resident students attending other district schools either as tuition students, choice tuition students, superintendent agreements, or other such similar situations.

4. **Non-Resident Attending Enrollment:** is the count of students from other districts attending the resident district's schools.

5. **Private School Enrollment:** is the count of students attending private schools. Enrollment of students attending private schools is often excluded from the study because private schools do not always submit their enrollment counts, or MDOE did not always include the data in the resident enrollment count. For example, the enrollment for one year will show 10 students attending private school X, the following year there are zero students attending private school X, then in the next school year private school X suddenly has an enrollment of 15 students. These variations in enrollment count only serve to distort the migration trends used to the make the projections.

However, private school student enrollment will remain if the district in question pays for students to attend the private school. An example of this is Saco students attending Thornton Academy. In these cases the private school enrollment count is consistently reported and there are no issues with consistency of historical data.

6. **Home Schooled Students:** is the count of students educated at home. Historical enrollment data of home schooled students is inconsistent. Some districts do a good job of tracking home schooled students by grade, others only have grade group data, some have the information for several schools years while others may only have information readily available on the most recent couple of school years. MDOE also has historical home schooled enrollment, but the counts are not as readily available. Therefore, home schooled enrollment is generally not projected unless a district can provide consistent data.

PAST Projections verse CURRENT Projections: When comparing past enrollment studies to future studies, it is important to understand the differences in enrollment data. With the older enrollment studies a detailed breakdown of enrollment was often not readily available. In other cases the data supplied by a district for the past study was adjusted by the district and/or MDOE following the completion of the projections. When comparing past studies to current studies, be sure to compare data that shows the same type of enrollment count. In some districts there is very little difference between resident attending enrollment and total resident enrollment, while in other districts there is a significant difference in the enrollment count.

Methodology Notes:

- **Resident Births:**

  When making projections, the calendar year birth figures are not used to determine the number of resident births in a year. To project future entering first grade class sizes the "birth year" is based on when a student is eligible to enroll, or from October 15th of one year to October 14th of the next. Because the data supplied by the office of Data, Research, and Vital Statistics, Division of Public Health Systems, Maine Centers for Disease Control and Prevention at the Maine Department of Health and Human Services for October is based on October 1st to the 31st, the October births are split in half so that one half is put into one year and the other half is put into the following year's birth figures. This allows the cohort survival model to more accurately project entering first grade class sizes.

  Birth data from calendar year 2017 is preliminary and provisional, but historically this data has been very accurate.

- **<u>First Grade Class Sizes</u>:**

  The size of the first grade class is influenced by two factors: the number of births to residents of a community during the year that is six years prior to the enrollment year; and, net migration of preschool aged children (number of preschool aged children moving into the community minus the number of preschool aged children moving out of the community) during the first grade enrollment year and the year that was six years prior. The level of preschool migration can be measured by the ratio of enrollment for the entering first grade class to the number of births to residents in the year that was six years prior.

- **Net Migration Ratios:**

  In making grade-to-grade projections, the historical average grade-to-grade survival ratios over the last three to ten years are analyzed. The average that displays the "strongest" statistical relationship to existing class sizes are used to project future enrollment.

  When net migration ratios are discussed throughout the study, a ratio higher than 1.000 indicates a net in-migration of children occurred, and a ratio less than 1.000 indicates a net out-migration of children occurred.