WEST JEFFERSON HILLS

WJHSD

West Jefferson Hills School District
Demographics and Enrollment Projections

DRAFT

JUNE 2017

BH

BUCHART HORN
ARCHITECTS

West Jefferson Hills School District
Demographics and Enrollment Projections

Prepared by

BUCHART HORN
ARCHITECTS

West Jefferson Hills
School District Board

President: Brian Fernandes

1st Vice President: Suzanne Downer

2nd Vice President: John Hosmer

Solicitor: Robert McTiernan
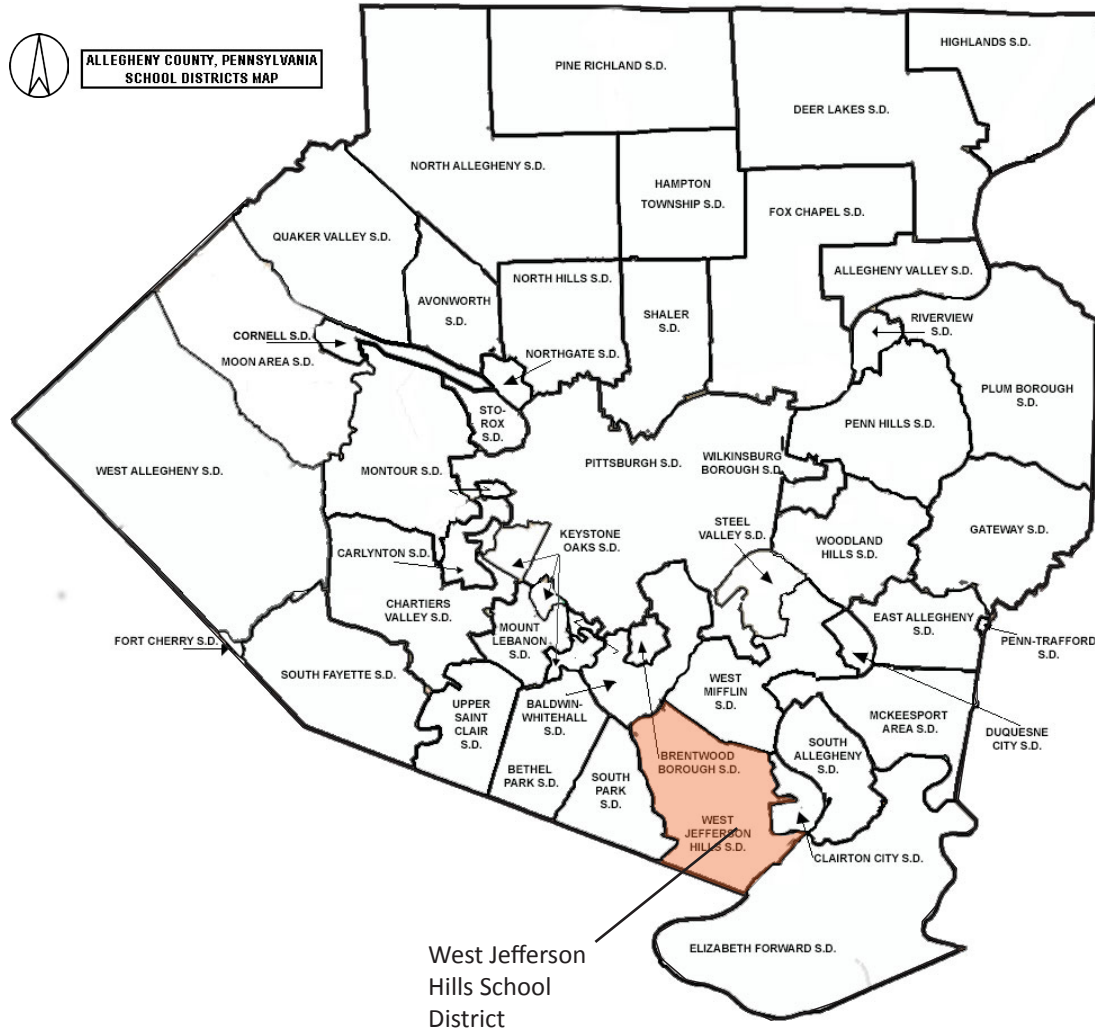
Jill Bertini

Carolyn Bourgeois

Lori Danen

David Dominick

Kerri Gonot

Anna Louise Lilley

Superintendent: Dr. Michael Ghilani

West Jefferson Hills School District

ALLEGHENY COUNTY, PENNSYLVANIA
SCHOOL DISTRICTS MAP

HIGHLANDS S.D.

PINE RICHLAND S.D.

DEER LAKES S.D.

NORTH ALLEGHENY S.D.

HAMPTON
TOWNSHIP S.D.

FOX CHAPEL S.D.

QUAKER VALLEY S.D.

ALLEGHENY VALLEY S.D.

NORTH HILLS S.D.

AVONWORTH
S.D.

SHALER
S.D.

RIVERVIEW
S.D.

CORNELL S.D.

NORTHGATE S.D.

MOON AREA S.D.

PLUM BOROUGH
S.D.

STO-
ROX
S.D.

PENN HILLS S.D.

WILKINSBURG
BOROUGH S.D.

PITTSBURGH S.D.

WEST ALLEGHENY S.D.

MONTOUR S.D.

STEEL
VALLEY S.D.

GATEWAY S.D.

KEYSTONE
OAKS S.D.

WOODLAND
HILLS S.D.

CARLYNTON S.D.

CHARTIERS
VALLEY S.D.

EAST ALLEGHENY
S.D.

MOUNT
LEBANON
S.D.

PENN-TRAFFORD
S.D.

FORT CHERRY S.D.

WEST
MIFFLIN
S.D.

SOUTH FAYETTE S.D.

MCKEESPORT
AREA S.D.

UPPER
SAINT
CLAIR
S.D.

BALDWIN-
WHITEHALL
S.D.

DUQUESNE
CITY S.D.

SOUTH
ALLEGHENY
S.D.

BETHEL
PARK S.D.

SOUTH
PARK
S.D.

BRENTWOOD
BOROUGH S.D.

WEST
JEFFERSON
HILLS S.D.

CLAIRTON CITY S.D.

West Jefferson
Hills School
District

ELIZABETH FORWARD S.D.

West Jefferson Hills Area School District

Figure 2: Map of West Jefferson Hills School District

Borough of
Pleasant Hills

Borough of
Jefferson Hills

West Elizabeth
Borough

BH BUCHART HORN
A R C H I T E C T S

Table of Contents

West Jefferson Hills School District

Introduction

Planning for the educational needs of their students is a challenge all school districts struggle with. Anticipating growth or decline in student enrollment is critical for the school district to properly serve their student population. The better informed a school district is regarding potential enrollment, the more effective the school district is regarding planning and decision making.

The West Jefferson Hills School District, like many districts in the Commonwealth, had experienced a population and housing lull in the early-mid 2000s. Increases in housing starts, sales, and population have rebounded over the last decade, showing moderate growth. As indicated in this report, they have remained stable, with slight increases in recent years. Districts, including the West Jefferson Hills School District, are forced to evaluate their current facilities and strategic planning criteria in greater detail, in order to most effectively serve their student population as well as their local communities and taxpayers.

The West Jefferson Hills School District commissioned Buchart Horn to develop a Demographic/Enrollment report in order to ascertain the current as well as future student population, housing trends, District facilities, and student enrollment. This report highlights population and housing characteristics of the West Jefferson Hills School District and focuses on:

- Population

- Birth Patterns

- Current Enrollment

- Housing

- Future Enrollment and Projections

- District Facility Profiles

Student enrollment projections use a Cohort Progression Model to account for potential change in population. Use of historical data, including live births, student retention, previous and current enrollment, and housing changes within the District and Counties can reflect predictable trends in student population and potential enrollment. As with any report based on projections and future data, it is important to re-evaluate the findings annually. Subtle changes in economic and political climate, migration patterns, birth trends, and local zoning/land use can significantly alter the future evaluations.

School District Characteristics

PART I

West Jefferson Hills School District

Population

The West Jefferson Hills School District is located in Allegheny County, approximately 12 miles south of the city of Pittsburgh. The School District community is comprised of West Elizabeth borough, the borough of Jefferson Hills, and the borough of Pleasant Hills, and spans approximately 20 square miles. The District has a population of approximately 20,000 residents, per the 2015 local census data, reflecting an average 2.8% increase from the 2010 census. This average growth rate in resident population was also moderate from the years 2000 and 2010 (4.2%). This minor to moderate population increase appears relatively inconsequential, however this continual population growth is in fact very unique when compared to the minor to moderate drop in resident populations in neighboring School Districts. Districts adjacent to the West Jefferson Hills School District, such as Clairton City School District and West Mifflin School District have experienced continual reduction in resident population.

Referring to Figure 3, the average population growth percentages in the West Jefferson Hills School District can appear misleading. The economic turn-down in 2008 had a severe impact on all local counties and boroughs. Such indicators as housing construction and sales, birth-rates, employment status, etc. realized decreases in percentages during this time period. The reduction in population in the West Elizabeth borough appears significant at -8.3%. However, upon close inspection, it merely includes a reduction of 47 residents. Likewise, the reduction of population in the borough of Pleasant Hills of 129 residents, or a reduction by 1.5%, is also minor during this turbulent economic time period. The most striking statistic in this table is the increase in population in the borough of Jefferson Hills. The population increased by approximately 1,000 residents, comprising a 10% increase during one of the most economically volatile periods of this decade. Similarly, the population growth percentages for the 2015 census can also appear misleading. West Elizabeth experienced a 9.1% increase in population, but in actuality, only leveled out to the previous 2000 census rate with an increase of 47 residents. Likewise, the borough of Pleasant Hills saw a minor increase in population, with 16 additional residents. However, the borough of Jefferson Hills experienced a significant increase in population of approximately 500 residents.

Population rates appear to be growing moderately in the West Jefferson School District. Minor fluctuations in population appear normal, with both the West Elizabeth borough and the borough of Pleasant Hills reflecting population that is remaining relatively level over the past 15 years. The borough of Jefferson hills, however, has experience significant growth in resident population over the past 15 years. An increase in approximately 1,500 residents indicates a strong community that is likely to trend in population growth in the near future.

Figure 3: Population of WJHSD Municipalities, 2000-2015

	2000	2010			2015		
	Total	Total	2000-2010 Change	2000-2010 Percent	Total	2010-2015 Change	2010-2015 Percent
West Elizabeth Borough	565	518	-47	-8.3%	565	47	9.1%
Borough of Jefferson Hills	9,666	10,629	963	10.0%	11,115	486	4.6%
Borough of Pleasant Hills	8,397	8,268	-129	-1.5%	8,284	16	0.2%
District Total	*18,628*	*19,415*	*787*	*4.2%*	*19,964*	*549*	*2.8%*

*Source: US Census Bureau*

Birth Patterns

Analyzing the number of births in a specific area is critical in determining future enrollments and capacities of existing facilities within a school district. Birth patterns and trends can provide a snapshot of the potential student population with a district. In and out migration of families can also be an important factor in determining potential student enrollment; however live birth trends are usually an indicator of future enrollment.

Reviewing the live birth data in the West Jefferson Hills School District from 2015 indicates predictable and moderately increasing birth numbers in the first half of the decade. There were moderate fluctuations in rates during the middle of the decade. Most notable is the increase in birth rates for the borough of Pleasant Hills and decrease in birth rates for the borough of Jefferson Hills in 2005. This statistic was reversed in the year 2008, with the borough of Jefferson Hills experiencing a steady increase in birth rates from 2005, while the borough of Pleasant Hills experienced an anticipated decline in birth rates, paralleling the economic down turn of this same time period. It appears that birth rates had decreased prior to the economic downturn. However the overall birth rate statistics appear to be increasing at a moderate rate throughout the West Jefferson Hills School District.

Live-birth data can provide predictable results in student enrollment projections. Analyzing this data per borough and municipality, and comparing it to actual student enrollment, can produce patterns and ratios that can then be used to generate anticipated future enrollment. As indicated in the Live Birth charts, it is apparent that West Elizabeth borough has remained relatively flat over the past 15 years. The fluctuations in live births are somewhat steady and minor variations in live births are probable in the near future. Live births in the borough of Pleasant Hills are somewhat erratic, with moderate statistical fluctuations over the past 15 years. Large upswings and down turns in live births appear to be the norm in this borough, however the average live birth rate is relatively stable when compared over the total 15 years. The borough of Jefferson Hills also experienced large fluctuations in birth rates during the early part of 2000, however this borough has experienced significant increases in birth rates since 2005. Likewise, the increases in birth rates from 2005 to 2015 are typically large, while the decreases in birth rates appear to be minor in nature. It would appear that birth rates in West Elizabeth borough will remain relatively flat in the near future. The borough of Pleasant Hills has experienced a significant drop in birth rates over the past few years, and this trend should be monitored. The unpredictable fluctuations in birth rates in this borough make it difficult to predict what the next few years will suggest. The borough of Jefferson Hills has experienced a steady increase in birth rates over the past decade, with only minor declines. The borough has also experienced a significant increase in

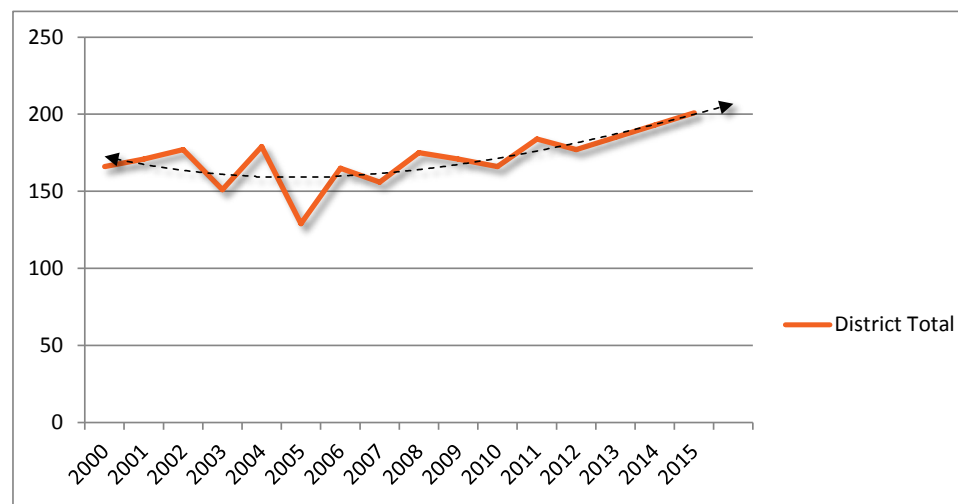births over the past few years. This trend should also be monitored closely, as this borough appears to be growing, with a predictable increase in births over the next few years.

Figure 4: Live Births per Municipalities in WJHSD
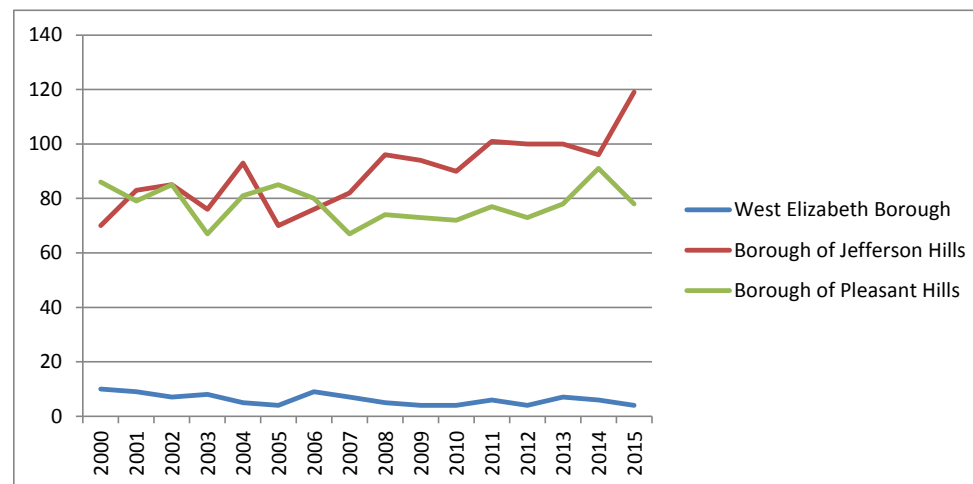
Source: Pennsylvania Department of Health

Figure 5: Number of Live Births in WJHSD

Source: Pennsylvania Department of Health

BUCHART HORN ARCHITECTS

School District Characteristics

School-Age Children

Reviewing age data and population statistics, the impact of the recent economic down turn appears to have had a minor effect on District population. Children within the 0-4 age group decreased by only 1.2% between the years 2000 and 2010. The decrease in this age group was only experienced in the Pleasant Hills and West Elizabeth boroughs as well. The borough of Jefferson Hills experienced a 10% increase in this age demographic. This information agrees with the data found in the previous live birth statistics, and should be considered as this demographic reaches school age.

School age children, specifically elementary and middle school children (ages 5-14) appear to have experienced fluctuations in numbers. Referring to Figure X, the population of elementary students (ages 5-9) decreased in population in all three boroughs over the past 15 years. This reduction in this age group is a predictable result from the drop in live births in the early part of the decade. Comparatively, when referring to Figure X, the population of middle school students (ages 10-14) experienced a minor reduction in 2010. The District experienced a moderate increase in 2015, specifically in the borough of Jefferson Hills, once again paralleling the increase in live births experienced in that borough after 2005. Similar fluctuations in high school children (ages

15-19) can be found in Figure X, with minor decreases in 2010, and moderate growth in 2015. As with the previous middle school population, the borough of Jefferson Hills experienced growth over the past 15 years in the high school population as well.

Analyzing this data indicates that student population correlates to live birth rates at an anticipated level. The West Elizabeth borough appears to be relatively stable and predictable. The borough of Pleasant Hills has experienced fluctuations in student population over the past 15 years. This is normal with the similar fluctuations in live births experienced in this borough, with minor reductions in overall student population. The borough of Jefferson Hills has experienced marginal fluctuations as well, with a drop in student population in the elementary school demographic. This drop in population will be experienced over the next few years as this student population passed through the middle and high school demographic. This borough did, however, experience an increase in kindergarten population over the past 15 years. This, in conjunction with the increase in live births in 2015, appears to indicate a trend of increasing student population in this borough, and should be monitored.

School Age Children (Cont.)

Figure 6: Population of Children 2000-2015: Ages 0-4

Ages 0-4	2000	2010			2015		
	Total	Total	2000-2010 Change	2000-2010 Percent	Total	2010-2015 Change	2010-2015 Percent
West Elizabeth Borough	34	22	-12	-35.3%	27	5	18.5%
Borough of Jefferson Hills	480	529	49	10.2%	562	33	5.9%
Borough of Pleasant Hills	437	389	-48	-11.0%	411	22	5.4%
District Total	*951*	*940*	*-11*	*-1.2%*	*1,000*	*60*	*6.4%*

Figure 7: Population of Children 2000-2015: Ages 5-9

Ages 5-9	2000	2010			2015		
	Total	Total	2000-2010 Change	2000-2010 Percent	Total	2010-2015 Change	2010-2015 Percent
West Elizabeth Borough	42	39	-3	-7.1%	43	4	9.3%
Borough of Jefferson Hills	640	606	-34	-5.3%	510	-96	-18.8%
Borough of Pleasant Hills	497	442	-55	-11.1%	344	-98	-28.5%
District Total	*1,179*	*1,087*	*-92*	*-7.8%*	*897*	*-190*	*-17.5%*

Figure 8: Population of Children 2000-2015: Ages 10-14

Ages 10-14	2000	2010			2015		
	Total	Total	2000-2010 Change	2000-2010 Percent	Total	2010-2015 Change	2010-2015 Percent
West Elizabeth Borough	32	38	6	18.8%	48	10	20.8%
Borough of Jefferson Hills	766	658	-108	-14.1%	859	201	23.4%
Borough of Pleasant Hills	577	475	-102	-17.7%	454	-21	-4.6%
District Total	*1,375*	*1,171*	*-204*	*-14.8%*	*1,361*	*190*	*16.2%*

Figure 9: Population of Children 2000-2015: Ages 15-19

Ages 15-19	2000	2010			2010		
	Total	Total	2000-2010 Change	2000-2010 Percent	Total	2010-2015 Change	2010-2015 Percent
West Elizabeth Borough	31	33	2	6.5%	33	0	0.0%
Borough of Jefferson Hills	614	645	31	5.0%	710	65	9.2%
Borough of Pleasant Hills	502	453	-49	-9.8%	484	31	6.4%
District Total	*1,147*	*1,131*	*-16*	*-1.4%*	*1,227*	*96*	*8.5%*

Source: US Census Bureau

BUCHART HORN ARCHITECTS

West Jefferson Hills School District

School District Enrollment

Population growth can often be a leading factor in determining student enrollment and student population growth. This is apparent when analyzing population and enrollment data from 2007 to 2017, as student population fluctuations paralleled the general population trends. Referring to Figure 10 below, it is apparent that the District enrollment did in fact fluctuate at a similar trend to population statistics previously discussed. Student populations also experienced minor fluctuations as grade levels advanced onto their next levels from school year to school year. Interesting to note is that the overall K-12 student population remained relatively the same from the 2007-2008 school year, to the decade later, even with the general decline and fluctuations in enrollment as indicated on Figure 11.

Kindergarten enrollment appears to be relatively stable until the 2013-2014 school year, which experienced a moderate increase. The kindergarten population remained at this relatively higher level from that point on. A notable observation is that birth rates remained relatively stable in the years of 2011 through 2013, indicating that the kindergarten population should also remain relatively stable through 2018. However, the borough of Jefferson Hills did experience a moderate increase in live birth rates in the years of 2014 and

2015. This would suggest that the West Jefferson Hills School District may experience another increase in Kindergarten population in the near future. As indicated in Figure 11, student population has seen a significant upturn since the 2014-2015 school year, with a relative plateau in 2016. If live birth rates continue to climb over the next few years, this trend should be monitored to ascertain what impact it has on overall Kindergarten population and capacity at the District's facilities.
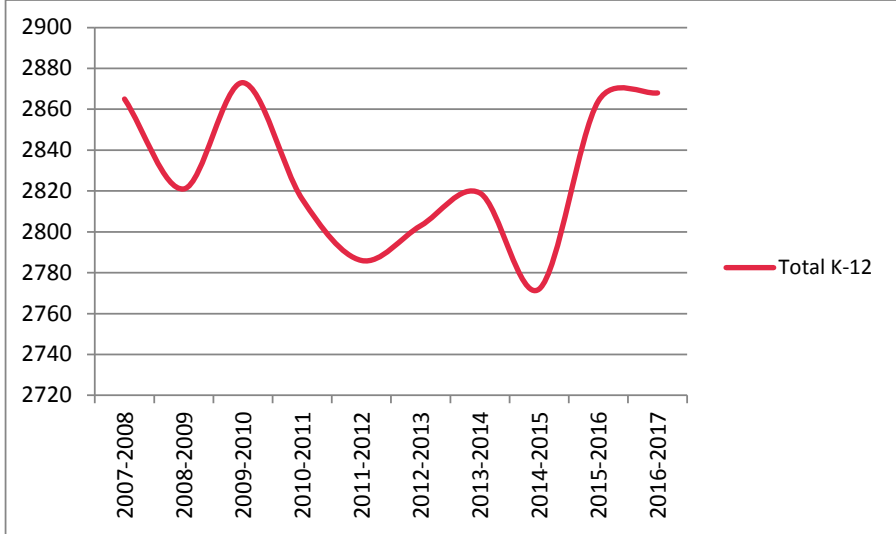
Figure 10: District Enrollment by Grade 2007-2017

School Year	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
2007-2008	199	204	184	213	212	186	220	209	218	240	248	255	277	2,865
2008-2009	187	210	179	196	215	219	195	226	223	236	237	250	248	2,821
2009-2010	190	207	216	223	202	225	230	193	229	237	238	232	251	2,873
2010-2011	182	203	198	217	219	206	225	230	194	239	228	239	236	2,816
2011-2012	186	186	204	203	218	223	205	225	238	204	235	223	236	2,786
2012-2013	181	206	198	214	211	228	230	205	233	241	207	231	218	2,803
2013-2014	218	188	198	207	203	231	227	235	202	232	242	206	230	2,819
2014-2015	172	228	211	203	206	182	218	232	234	214	228	241	203	2,772
2015-2016	225	186	231	197	224	186	229	227	229	237	217	234	242	2,864
2016-2017	214	234	190	236	202	231	209	231	232	226	233	209	221	2,868

Source: West Jefferson Hills School District and Pennsylvania Department of Education

School District Enrollment (Cont.)

Figure 11: WJHSD Kindergarten Enrollment 2007-2017

Source: West Jefferson Hills School District

Figure 12: District Enrollment by Grade 2007-2017

School Year	Total K-12	Student Change from Previous Year	Percentage Change from Previous Year
2007-2008	2865		
2008-2009	2821	-44	-1.5%
2009-2010	2873	52	1.8%
2010-2011	2816	-57	-2.0%
2011-2012	2786	-30	-1.1%
2012-2013	2803	17	0.6%
2013-2014	2819	16	0.6%
2014-2015	2772	-47	-1.7%
2015-2016	2864	92	3.3%
2016-2017	2868	4	0.1%

Source: West Jefferson Hills School District and Pennsylvania Department of Education

Figure 13: District Enrollment by Grouping 2007-2017

Grade K-5	% Change	Grade 6-8	% Change	Grade 9-12	% Change
1198		647		1020	
1206	1%	644	0%	971	-5%
1263	5%	652	1%	958	-1%
1225	-3%	649	0%	942	-2%
1220	0%	668	3%	898	-5%
1238	1%	668	0%	897	0%
1245	1%	664	-1%	910	1%
1202	-3%	684	3%	886	-3%
1249	4%	685	0%	930	5%
1307	5%	672	-2%	889	-4%

Source: West Jefferson Hills School District and Pennsylvania Department of Education

BUCHART HORN
ARCHITECTS

Housing Activity

PART 2

Housing Impacts on Enrollment

The average number of school age-children housed in residential units varies, depending on the type of residential unit. Research conducted by individual counties in Pennsylvania reviewed data indicating the average number of children multiple housing types. These reports are based upon Census data and reflect the average number of children in both new and existing single-family detached, single-family attached and multi-family housing types.

The results of these studies clearly show newly constructed single-family detached homes are almost 20 times more likely to contain school-age children as compared to multi-family housing and twice that of existing single-family detached homes. These reports also indicate that the percentage of children under the age of 5 is relatively the same for all three types of housing; yet the percentage of school-age children drastically increases in single-family detached housing, both new and existing.

Figure 14: Average Number of School-Age Children per Housing Unit - West Elizabeth Borough

	2010			2015		
	Total Housing Units	Percent with Children Under 18	Housing Units with Children Under 18	Total Housing Units	Percent with Children Under 18	Housing Units with Children Under 18
West Elizabeth Borough	231	42.9%	99	220	32.7%	72

Source: US Census Bureau

Figure 15: Average Number of School-Age Children per Housing Unit - Jefferson Hills Borough

	2010			2015		
	Total Housing Units	Percent with Children Under 18	Housing Units with Children Under 18	Total Housing Units	Percent with Children Under 18	Housing Units with Children Under 18
Jefferson Hills Borough	4263	30.6%	1304	4397	30.2%	1328

Source: US Census Bureau

Figure 16: Average Number of School-Age Children per Housing Unit - Pleasant Hills Borough

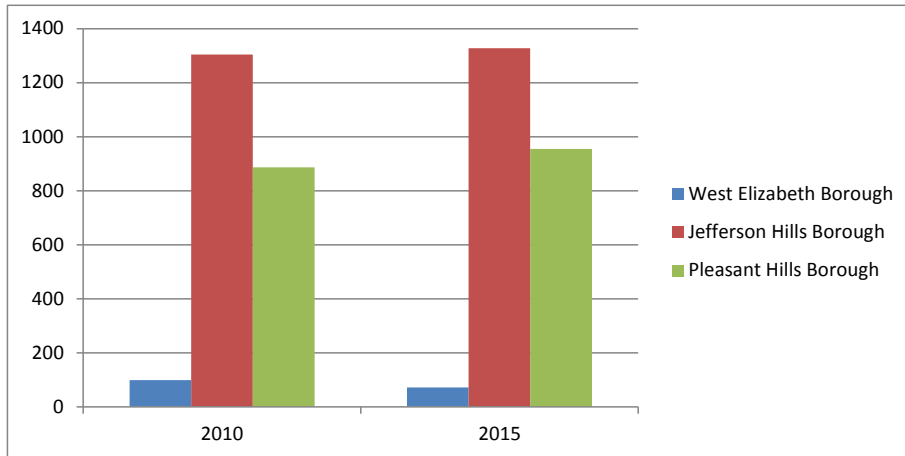|	2010			2015		
	Total Housing Units	Percent with Children Under 18	Housing Units with Children Under 18	Total Housing Units	Percent with Children Under 18	Housing Units with Children Under 18
West Elizabeth Borough	231	42.9%	99	220	32.7%	72

Source: US Census Bureau

Housing Units Built

Residential housing construction, similar to the status nationwide, has remained mild to moderate throughout the District over the past 10 years. Levels of construction were relatively flat during the housing crash and economic down turn, at roughly 10% of growth during that 10 year period. Referencing Figure 19, it appears that the borough of Jefferson Hills has experienced the bulk of the new home construction during that time period, making up 94% of the new construction between the 3 boroughs. Another notable indicator is that the 33 new homes constructed in the borough of Pleasant Hills were all single family detached homes.

Figure 17: Housing Stock, 2010-2015

Source: US Census Bureau

Figure 18: Housing Stock & School Age Children

Approx. Housing Units with School Age Children: 2,355
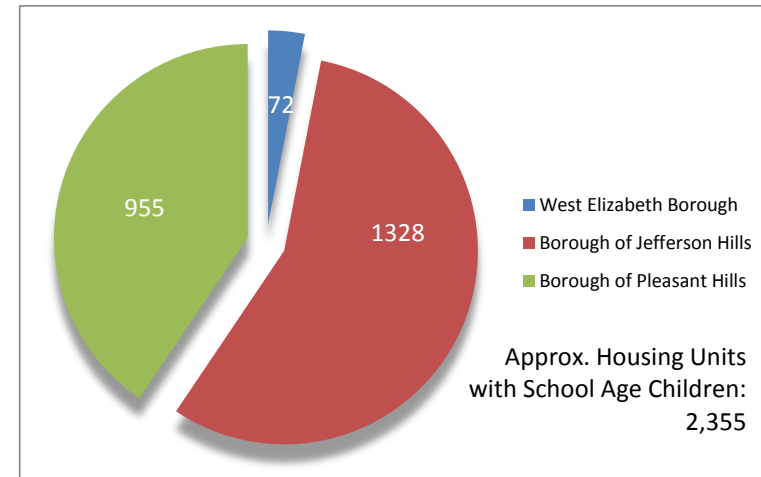
Source: US Census Bureau

Figure 19: Housing Stock Summary

	2010			2015			Change	Percent Change 2010-2015
	Total	Owner Occupied	Rental Unit	Total	Owner Occupied	Rental Unit		
West Elizabeth Borough	231	169	62	220	146	74	-11	-4.8%
Borough of Jefferson Hills	4263	3613	650	4397	3625	772	134	3.1%
Borough of Pleasant Hills	3396	2625	771	3474	2693	781	78	2.3%
District Total	**7890**	6407	1483	**8091**	6464	1627	**201**	**2.5%**

Source: US Census Bureau

Figure 20: Housing Units Built Since 2007

Municipality	2007-2017
	New Housing Units
West Elizabeth Borough	1
Borough of Jefferson Hills	670
Borough of Pleasant Hills	33
District Total	**704**

Source: West Elizabeth Borough, Borough of Jefferson Hills, Borough of Pleasant Hills

BUCHART HORN
ARCHITECTS

Housing Activity

Impacts of Housing on Enrollment

Housing Units Built

Housing Units Proposed

Housing Units Proposed

Referencing Figure 20, it appears the total new housing construction is also slated towards the borough of Jefferson Hills. The proposed new housing in the borough of Jefferson Hills for the year 2017 also exceeds the amount of new housing experienced by that borough over the previous 10 year span. Single family detached housing also makes up over 80% of this proposed new housing. As stated earlier in the report,

the potential for school-age children varies greatly between single-family and multi-family housing units and should be considered accordingly when evaluating potential enrollment growth. As the economic climate continues to improve and the housing market strengthens, new proposals submitted in 2018 should be closely monitored by the District as well.

Figure 21: Housing Developments & New Houses Planned - Jefferson Hills

Development	Total Units	SFD	SFA	MF
Jefferson Estates	32	0	8	24
Jefferson Woodlands	149	113	36	0
Scenery Hill	21	21	0	0
Mill School	82	0	82	0
Hunters Field	334	334	0	0
Patriot Pointe	164	106	58	0
Hickory Grove	8	8	0	0
DiMarco	11	11	0	0
Chamberlin Ridge	115	115	0	0
Blue Horseshoe Trading	4	4	0	0
Andrew Acres	29	29	0	0
Castor Farms	37	37	0	0
Richard	12	12	0	0
South Ridge	11	11	0	0
Stone Villa Estates	24	24	0	0
Washington Square	78	78	0	0
Betler	6	6	0	0
	1,117	909	184	24

Figure 22: Housing Developments & New Houses Planned - Pleasant Hills

	Total Units	SFD	SFA	MF
Proposed Housing	9	0	9	0

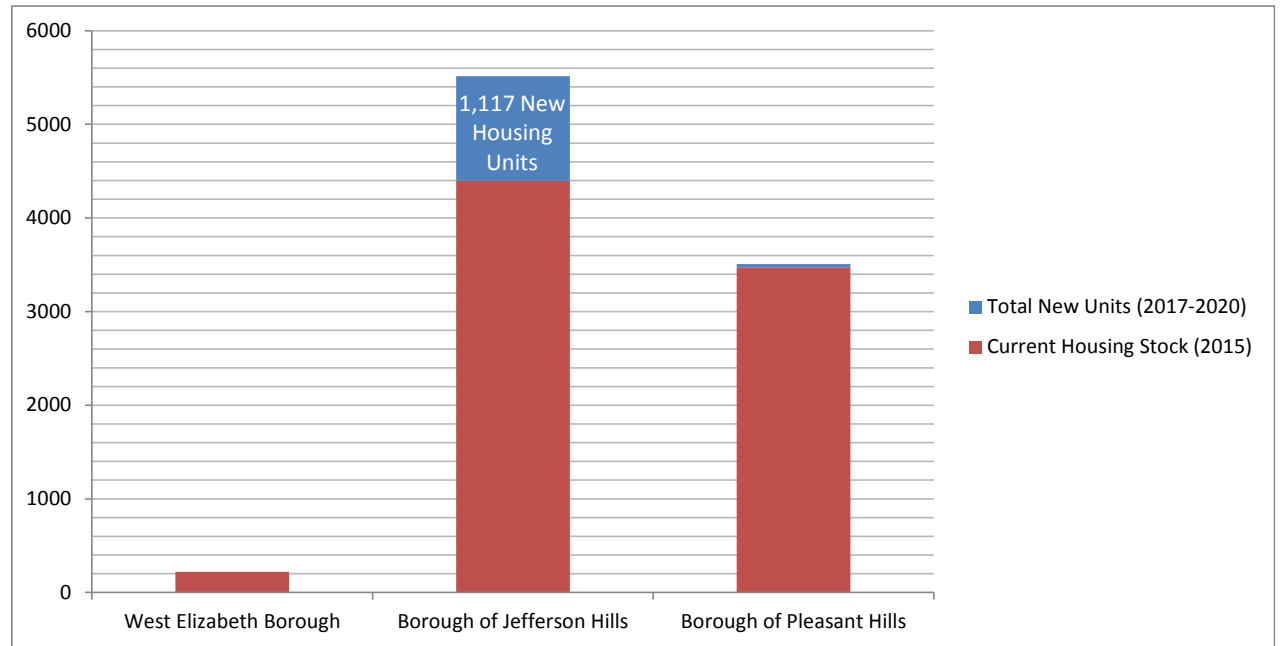*Source: Jefferson Hills Borough, Pleasant Hills Borough*

Housing Activity

Impacts of Housing on Enrollment

Housing Units Built

Housing Units Proposed

Figure 23: Past and New Housing Units in WJHSD 2015-2020

Source: US Census Bureau, Jefferson Hills Borough, Pleasant Hills Borough

Figure 24: Past and New Housing Units in WJHSD 2015-2020

	Total Housing Projected 2020	Housing Increase	School Age Population Projected Increase
West Elizabeth Borough	220	0%	0.0%
Borough of Jefferson Hills	6631	51%	15.3%
Borough of Pleasant Hills	3540	2%	0.5%

Source: West Elizabeth Borough, Borough of Jefferson Hills, Borough of Pleasant Hills

BUCHART HORN
ARCHITECTS

District Enrollment Projections

PART 3

Cohort Progression Model

There are different methods that can be used to calculate and estimate student enrollment and generate enrollment projections. This report uses the Cohort Progression Model, which can also be referred to as Cohort Survival Method. This method is generally used by the State of Pennsylvania, and has often times been used by school districts as well. Projections generated by this method area usually very conservative, but they should still be used in conjunction with other variables and data contained in this report. Rapid changes in variables such as population growth or migration require this method to be monitored and adjusted accordingly

The Cohort Progression Model allows for integration of many trends and variables. This data includes most notably live births and birth rates, but also such data as housing construction and sales, population migration, and population demographics.

The model is rather straightforward in its methodology, by simply tracking each class-level of students in any given year and measuring the student change/stability in that specific class from one year to the next. The method then applies an average of change over a specific time period, calculated as a percentage factor, to be used in determining the likelihood of that student population in a given grade level to proceed to the next grade in future years. A fifteen-year average was used for the West Jefferson Hills School District, which analyzed data from 2000 through the current school year of 2015. By evaluating data from this fifteen year time period, recent trends from the post-economic slowdown are evaluated, as well as data from the

beginning of the decade, prior to the recession, when housing and population growth were more stable.

Figure 26 indicates progression rates for each grade transition over the past ten years, with an overall average calculated to show the anticipated trend, which is applied for each projected year. When reviewing the chart, any progression rate that is great than 1.0 indicates a specific class size increase from one year to the next, as it progresses through the grade levels. If a progression rate is less than 1.0, this would indicate that a specific class size decreased from one year to the next as it progresses through the grade levels.

When reviewing the entire chart, most of the elementary and middle school levels indicate a minor growth in class size, with the exception of first grade classes entering second grade. Secondary levels indicate similar growth the elementary and middle school levels, with minor to moderate growth. Currently the largest period of growth occurs between kindergarten and first grade, where class size increased at a rate of 1.060 on average. The balance of growth through the remaining grade levels remains fairly consistent, and close to 1.0, reflecting a stable and generally predictable growth pattern. To note is the recent Birth-K ratios found in the 2015-2016 and 2016-2017 school years. These ratios are well above the norm at approximately 1.3. The data previously discussed with live births indicates that this growth and ratio should remain consistent at this level over the next few years, with the strong possibility of higher growth in school year 2019-2020, in response to the spike in birth rates since 2014.

Figure 26: Grade Progression Rates in WJHSD 2007-2017

School Year	Birth - K	K-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12
2007-2008	1.164	1.025	0.902	1.158	0.995	0.877	1.183	0.950	1.043	1.101	1.033	1.028	1.086
2008-2009	1.056	1.123	0.852	1.095	1.097	1.019	0.890	1.159	0.987	1.058	1.004	1.055	0.992
2009-2010	1.258	1.089	1.043	1.032	0.906	1.114	1.022	0.839	1.187	1.035	1.004	0.975	1.082
2010-2011	1.017	1.115	0.975	1.096	1.009	0.941	1.092	1.022	0.843	1.232	0.954	1.048	0.987
2011-2012	1.442	1.000	1.097	0.995	1.074	1.023	0.919	1.098	1.058	0.857	1.152	0.949	1.058
2012-2013	1.097	1.138	0.961	1.081	0.986	1.081	1.009	0.891	1.137	1.034	0.859	1.116	0.944
2013-2014	1.397	0.862	1.053	1.045	0.981	1.138	0.983	1.035	0.860	1.149	1.043	0.851	1.117
2014-2015	0.983	1.326	0.925	0.962	1.015	0.883	1.198	1.064	1.009	0.915	1.065	1.057	0.842
2015-2016	1.316	0.827	1.242	0.853	1.137	0.830	1.231	0.991	1.009	1.035	0.916	1.078	1.034
2016-2017	1.289	1.093	0.812	1.242	0.856	1.144	0.905	1.105	1.004	0.974	1.031	0.897	1.057
10 Year Avg.	1.202	1.060	0.986	1.056	1.006	1.005	1.043	1.016	1.014	1.039	1.006	1.005	1.020

Source: Pennsylvania Department of Health / West Jefferson Hills School District

Birth to Kindergarten Ratio

Future enrollment projections in this model rely on trends and averages of students as they progress from one grade to the next. Calculating the Kindergarten rate is difficult, due to this class not having a previous grade level to compare. Therefore, to establish a baseline for determining Kindergarten enrollment, live-birth data from the District must be analyzed and incorporated into the model to generate the ratios of births to Kindergarten. Live-birth data from six years prior to entering the Kindergarten class is used.

The ratios of births to Kindergarten must be evaluated and may at times be misleading. In migration of pre-Kindergarten students may affect the ratio, as these students are not within the live-birth pool but account for student enrollment. Likewise, out migration of pre-Kindergarten students will affect the ratio by reducing the enrollment while remaining in the live- birth pool. The birth-to-Kindergarten ratio is, however, very beneficial due to the inclusion of actual data into the first seven years of the model, accounting for real changes in birth rates and trends.

Projection Periods

The enrollment projection model is divided into two main periods. The first period focuses on the school years from 2016 to 2022 and uses actual live birth data from six years prior. The second period focuses on the school years from 2022 to 2027 and uses estimated births. There is a higher degree of accuracy anticipated in the first period as compared to the second period, with the use of actual live-birth data and the assumption that current trends and growth will continue.

As live-birth data becomes more available in the coming years, the estimated figures reflected in the 2022 to 2027 time period can be updated to reflect current trends. The projected enrollment data can be revised to accurately reflect these current birth rates, which in turn will provide the District with a more accurate representation of what the potential student enrollment will be in the near future.

BUCHART HORN ARCHITECTS

West Jefferson Hills School District

Estimated Births

When projecting new Kindergarten classes after 2021, an estimated live-birth figure is required. This is calculated by taking the most recent birth rates and developing an average birth rate, which is applied to the secondary projections. Several options were developed to evaluate projected enrollments by using varying years of live births:

Option 1 uses the average birth rate from the most recent three years of live birth data: 2013 through 2015. These three years reflect the lowest birth rate average of the decade.

Option 2 uses the average birth rate from most recent five years of live birth data; 2011 through 2015. While birth rates were still much lower than earlier in the decade, they represent a wider selection of birth data to evaluate the projected enrollments.

Option 3 used the average birth rates from the beginning of the decade: 2000 through 2015. Birth rates were lower in the beginning of the decade, with gradual rate increases prior to the economic downturn. This option may reflect student enrollment if the economy has a large-scale rebound and growth/live births increase accordingly.

Projected Enrollments

Each of the three options are reflected in Figures 27, 28, 29. The Projected Enrollment charts reflect grade-by-grade projections over the next 10 years, spanning from 2017 to 2025. Each grade level in a specific year is determined by applying the average grade progression rate from Figure 26 to one grade earlier than the year prior. This method uses real Cohort findings and averages from current student enrollment to project anticipated enrollment into the future.

It should be noted the total projected enrollment for the first five years are identical in all three options. This is due to use of actual live-birth data for generating the projections for these first five years. The second five years, however, reflect a significantly different projection outcome in each option. This is a result of using the average live-birth rates from shorter or longer time frames, where birth trends can vary significantly from one year to the next.

Projected Enrollments (Cont.)

Figure 27: Projected Enrollment Option 1

School Year	Births 6 Years Prior	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
2016-2017	166	214	234	190	236	202	231	209	231	232	226	233	209	221	2,868
2017-2018	184	221	227	231	201	237	203	241	212	234	241	227	234	213	2,923
2018-2019	177	213	234	224	244	202	238	212	245	215	243	243	229	239	2,980
2019-2020	185	222	225	231	236	245	203	249	215	248	224	245	244	233	3,020
2020-2021	193	232	236	222	244	238	246	211	253	218	258	225	246	249	3,078
2021-2022	201	242	246	232	235	246	239	257	215	256	226	259	226	251	3,130
2022-2023	193	232	256	243	245	236	247	249	261	218	266	228	261	231	3,172
2023-2024	193	232	246	253	256	247	237	257	253	264	226	268	229	266	3,234
2024-2025	193	232	246	243	267	258	248	248	261	256	275	228	269	234	3,263
2025-2026	193	232	246	243	256	268	259	259	251	265	266	276	229	275	3,325
2026-2027	193	232	246	243	256	258	270	270	263	255	275	268	278	233	3,346
2027-2028	193	232	246	243	256	258	259	281	274	266	265	277	269	284	3,409

Figure 28: Projected Enrollment Option 2

School Year	Births 6 Years Prior	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
2017-2018	184	221	234	231	244	246	247	257	261	265	275	277	278	284	3,321
2018-2019	177	213	225	231	244	246	247	257	261	265	275	277	278	284	3,304
2019-2020	185	222	236	222	244	246	247	257	261	265	275	277	278	284	3,315
2020-2021	193	232	236	232	235	246	247	257	261	265	275	277	278	284	3,325
2021-2022	201	242	246	232	245	236	247	257	261	265	275	277	278	284	3,347
2022-2023	188	226	256	243	245	247	237	257	261	265	275	277	278	284	3,352
2023-2024	188	226	240	253	256	247	248	248	261	265	275	277	278	284	3,357
2024-2025	188	226	240	236	267	258	248	259	251	265	275	277	278	284	3,364
2025-2026	188	226	240	236	249	268	259	259	263	255	275	277	278	284	3,369
2026-2027	188	226	240	236	249	251	270	270	263	266	265	277	278	284	3,375

Figure 29: Projected Enrollment Option 3

School Year	Births 6 Years Prior	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
2017-2018	184	221	234	231	244	246	247	257	261	265	275	277	278	284	3,321
2018-2019	177	213	225	231	244	246	247	257	261	265	275	277	278	284	3,304
2019-2020	185	222	236	222	244	246	247	257	261	265	275	277	278	284	3,315
2020-2021	193	232	236	232	235	246	247	257	261	265	275	277	278	284	3,325
2021-2022	201	242	246	232	245	236	247	257	261	265	275	277	278	284	3,347
2022-2023	173	208	256	243	245	247	237	257	261	265	275	277	278	284	3,334
2023-2024	173	208	220	253	256	247	248	248	261	265	275	277	278	284	3,320
2024-2025	173	208	220	217	267	258	248	259	251	265	275	277	278	284	3,307
2025-2026	173	208	220	217	229	268	259	259	263	255	275	277	278	284	3,293
2026-2027	173	208	220	217	229	231	270	270	263	266	265	277	278	284	3,278

Projection Enrollment Summaries

The following figures reflect enrollment projections, which are summarized for comparison. Three options were developed to reflect variations in live-birth potential and their effect on projected enrollment. It should be noted the three options pertain only to the elementary school projections, due to the middle and high school levels being unaffected by any live births occurring over the next five years, within the 10 year time frame.

Option 1 is the most conservative, reflecting average birth rates from the most recent years. This option should be considered the baseline for comparison, as it reflects more accurately what the District is currently experiencing in growth and population.

Option 2, however, should be evaluated closely, as it evaluates recent birth rates that may reflect the slow improvement of the economy and housing market. Option 2 reflects projections very close to that of Option 1 and, therefore, warrants consideration.

Option 3 reflects birth rates from the entire decade, including those prior to the economic downturn. Projections listed in this option are possible but only if the economy and housing market experience a remarkable turnaround.

Figure 30: Total District Enrollment Projections 2017-2027

School Year	Option 1		Option 2		Option 3	
	Total Students	Annual Change	Total Students	Annual Change	Total Students	Annual Change
2017-2018	3,321		3,325		3,325	
2018-2019	3,304	-17	3,347	21	3,347	21
2019-2020	3,315	11	3,352	6	3,334	-12
2020-2021	3,325	10	3,315	-37	3,315	-19
2021-2022	3,347	21	3,325	10	3,325	10
2022-2023	3,358	12	3,347	21	3,347	21
2023-2024	3,382	24	3,352	6	3,334	-12
2024-2025	3,394	12	3,357	5	3,320	-14
2025-2026	3,407	12	3,364	6	3,307	-13
2026-2027	3,420	13	3,369	5	3,293	-15
Total Change 2017-2027	**99**		**44**		**-33**	

Projection Enrollment Summaries (Cont.)

Figure 31: Elementary School (K-5) Enrollment Projections

School Year	Option 1		Option 2		Option 3	
	Total Students	Annual Change	Total Students	Annual Change	Total Students	Annual Change
2017-2018	1,423		1,180		1,180	
2018-2019	1,406	-17	1,202	21	1,202	21
2019-2020	1,417	11	1,217	15	1,199	-3
2020-2021	1,427	10	1,170	-47	1,170	-29
2021-2022	1,423	-4	1,180	10	1,180	10
2022-2023	1,406	-17	1,202	21	1,202	21
2023-2024	1,417	11	1,217	15	1,199	-3
2024-2025	1,427	10	1,221	4	1,184	-15
2025-2026	1,448	21	1,226	5	1,170	-14
2026-2027	1,460	12	1,219	-7	1,143	-27
Total Change 2017-2027	**37**		**39**		**-37**	

Figure 32: Middle School (6-8) Enrollment Projections

Figure 33: High School (9-12) Enrollment Projections

18 BUCHART HORN ARCHITECTS

Indicators of Projection Change

Several factors can contribute to deviations in the Cohort Projection Model. Fluctuations in the economic climate, housing market, local economy and legislation, changes in industry and labor force, etc., can alter the factors used in generating the projections. This section of the report outlines items used in the projection analysis and discusses how deviations in these factors could indicate a need to reconsider and re-evaluate the current enrollment projections. The two major factors effecting current and projected enrollment in the West Jefferson Hills School District are Housing and Birth Rates.

Birth Patterns

Live births and birth trends are directly integrated into the cohort model and are used in generating the three options for projected enrollment. Variations in birth rates and trends do impact the Cohort Model, but the resulting change would not be apparent until six years afterwards once the children enter the educational system. Option 1, which is the baseline option for projected enrollment, was based upon an average of 193 annual births within the District. Option 2, which analyzed birth data from the most recent 5 years, averaged 180 annual births. Option 3, which analyzed birth data from the year 2000 to 2015, averaged 173 annual births.

It is interesting to note that the average annual birth rates are significantly higher in the most recent three years, as compared to the beginning of the decade. The birth rates were relatively flat from 2008 to 2013, from an assumed reaction to the economic down turn during that time period. These rates increased in 2013, with continual growth in the Jefferson Hills borough. The annual birth rate data should be tracked and monitored over the next few years, to evaluate this current trend. Fluctuations in birth rates should be anticipated, but prolonged variations or consistent annual increases in birth rates should be assessed and analyzed as to the impact of the projected enrollments.

Housing Construction

Variations in housing typically have the most immediate effect on expected student enrollments. Since the year 2007, approximately 33 new residential homes were constructed in the borough of Pleasant Hills and approximately 670 new homes have been constructed in the borough of Jefferson Hills. Housing construction appears to be moderate in the boroughs of Jefferson Hills and Pleasant Hills over the past decade. It is interesting to note, however, that approximately 1,100 new housing developments are planned for the 2017 year in the borough of Jefferson hills; 80% of which are single family housing units. This nearly doubles the housing construction experienced in that borough over the past 10 years. If this trend continues throughout this decade, it could have a significant impact on student enrollment over the next 10 years.

Figure 36:

Figure 37:

Figure 38: Housing Types, Existing & Forecasted

BUCHART HORN
ARCHITECTS

School Profiles

West Jefferson Hills School District

Introduction

The Cohort Progression Model evaluates the entire District cohesively and focuses on live-birth data and trends throughout the entire community. Focusing on an individual facility with the model is not as accurate due to the relatively small student population count and localized live-birth data. However, there are important factors within a community that can directly affect the specific school enrollment, and these items should be monitored. Local municipal live-birth data can suggest potential enrollment trends, by forecasting probable increases or decreases within the community for housing, industry, family migration, etc. Local housing sales and construction within a community can also suggest trends in population and economic stability.

The following profiles for the school facilities within the West Jefferson Hills School District depict current enrollment, historical housing and live-birth trends, and a forecasted enrollment trend for each facility. These profiles can differ widely, depending on their local township or borough. Each community is unique and depicts its own character and potential for live birth trends, housing, population, migration, etc. The community impact on the school facilities in a certain region is very specific and can affect one facility much differently than another in a neighboring community. Therefore, the school facilities profiles in this section are combined per geographical location to reflect the impact of the community on the individual facilities.

Gill Hall Elementary School

Housing

Birth Patterns

Forecast

2010	2011	2012	2013	2014	2015	2016

Figure 40: Gill Hall ES Enrollment by Grade 2007-2017

Source: West Jefferson Hills School District

PDE Capacity: ###

Figure 41: Housing Activity

Source: US Census Bureau

Figure 42: Births

Source: Pennsylvania Department of Health

BUCHART HORN ARCHITECTS

Jefferson Elementary School

Housing

Birth Patterns

Figure 44: Jefferson ES Enrollment by Grade 2007-2017

Forecast

Source: West Jefferson Hills School District

PDE Capacity: ###

Figure 45: Housing Activity

Figure 46: Births

Source: US Census Bureau

*Source: Pennsylvania
Department of Health*

BUCHART HORN
ARCHITECTS

McClellan Elementary School

Housing

2010   2011   2012   2013   2014   2015   2016

Figure 48: McClellan ES Enrollment by Grade 2007-2017

Birth Patterns

Source: West Jefferson Hills School District

PDE Capacity: ###

Forecast

Figure 49: Housing Activity

Figure 50: Births

Source: US Census Bureau

Source: Pennsylvania Department of Health

BUCHART HORN
ARCHITECTS

Figure 51: Pleasant Hills MS Enrollment

Pleasant Hills Middle School

Housing

| 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |

Figure 52: Pleasant Hills MS Enrollment by Grade 2007-2017

Birth Patterns

Source: West Jefferson Hills School District

PDE Capacity: ###

Forecast

Figure 53: Housing Activity

Figure 54: Births

Source: US Census Bureau

Source: Pennsylvania Department of Health

25

Thomas Jefferson High School

Housing

2010   2011   2012   2013   2014   2015   2016

Figure 56: TJHS Enrollment by Grade 2007-2017

Birth Patterns

Source: West Jefferson Hills School District

PDE Capacity: ###

Forecast

Figure 57: Housing Activity

Figure 58: Births

Source: US Census Bureau

Source: Pennsylvania Department of Health

BUCHART HORN ARCHITECTS

Conclusion

Conclusion

Conclusion (Cont.)

BUCHART HORN
ARCHITECTS

Russell E. Horn Building
445 West Philadelphia Street
York, PA 17401-3383
(717) 852-1400
(717) 852-1401 FAX
www.bh-ba.com