

**SUMMARY OF PEL'S KEY FINDINGS AND PROJECTIONS
BOYERTOWN AREA SCHOOL DISTRICT ENROLLMENT PROJECTION STUDY
2014-15**

Population and Housing

- Boyertown Area's population rose by 10,494 (29.4%) between 1990 and 2010 reaching 46,133, and it is estimated that it grew by another 1,468 (3.2%) between 2010 and 2013.
- The number of housing units in the district totaled 18,304 in 2010 and was up by 5,313 (40.9%) from 1990. Between the 2010 US Census and September 2014, however, only 775 new residential units were permitted for construction (a growth of just 4.2%).
- The current 10-year inventory of approved and proposed residential projects and other housing activity totals 4,041 units and includes 1,989 that remain to be permitted for construction in the approved subdivisions, 1,695 that have been proposed, 277 that are in the early planning stages, and 80 that are expected to result from infill and related activity.
- It must be noted that there is reason to believe that not all of the units in the pipeline will be constructed during the next 10 years—if at all. More than 3,240 (82.7%) of the units in the 2014 housing pipeline were also included in the inventory of projects at the time of PEL's 2011 study for the district and have not yet been constructed. Further, some of the projects added to the pipeline since 2011 face serious obstacles, including the lack of readily available sewage treatment services, zoning issues, questions of ownership, and bankruptcy. In view of all this, there are serious questions as to whether some of the projects remain viable at this time and whether some are part of the inventory in name only.
- As such, while the construction of more than 4,000 units during the next 10 years suggests a very noticeably faster pace of new housing construction than in any of the four preceding decades and a dramatically stronger pace than in the first four years and nine months of the current decade, and would result in the district's housing stock rising by 21.2%, based on the expectations of municipal officials, it is more realistic to expect that just one-half of the district's 10-year pipeline (about 2,000 units or 200 units per year), will come to fruition during this period. The result would be a 10.5% rise in the district's housing stock during the next 10 years compared with 29.8% in the 1970s, 18.7% in the 1980s, 18.5% in the 1990s, 17.7% in the immediate past decade, and 4.2% thus far in the current decade.
- Having said all this, it is important to point out that public school enrollments in Boyertown Area have not had a direct correlation with trends in population and housing units, and future enrollments will likely be more dependent on recent and future births, migration patterns, the age composition of the child population, and the role of nonpublic education than on overall population and housing patterns.

Births and Migration Patterns

- PEL's analysis of birth trends in the district reveals a steady growth (on average) from the mid-1970s through the mid-1990s, followed by a five-year period of modest decline (on average), and then a rise in the early years of the of the 2000s causing births to reach their highest level during the 44 years reviewed in 2006. Subsequently, births dropped, and in 2010 they hit their lowest level since 1997. They then rose in 2011 and 2012 and fell slightly in 2013 (preliminary figure). Six of the district's 10 highest birth figures during the period reviewed were recorded since 2003, but none of these high figures occurred in the current decade. The preliminary 2013 figure was down very noticeably from the high point in 2006.

- The ultimate impact of birth patterns (combined with migration patterns, new housing construction, the impact of nonpublic education, and dropouts) is that the number of public school pupils generated by each housing unit in the district fell in each decade between 1970-71 and 2010-11 and also in the current school year. Each housing unit in the district now produces fewer than one-half the number of pupils as in 1970-71.
- Net in-migration of total population in Boyertown Area is evident in each of the decades reviewed, and it was strongest in the 2000s, when it accounted for about one-third of the district's total in-migration during the four full decades reviewed. Thus far in the current decade, net in-migration appears to be on a pace similar to that of the preceding decade—but this is based on very limited experience.
- The relationship between cumulative births and Boyertown Area's enrollments during the past 10 years indicates that the number of children enrolled has been somewhat above the neutral migration figure, but the relationship has weakened during this period.
- Analysis of the movement of children through the public school system during the past several years reveals noticeable annual net in-migration in the elementary grades (largely on the strength of first grade), but there has been a pattern of decline in recent years. In the junior high school grades there has been much more modest net in-migration that has weakened to the point where it has become essentially neutral. At the senior high school, there is noticeable net out-migration that has been fairly stable. Overall, in-migration in grades 1-12 has experienced a steep decline (on average) in recent years.
- The relationship between the district's kindergarten entries and births five years prior (the cohort survival rate) was about 1 to 1, but the current figure is slightly lower than in 2010-11.
- Also, as a result of migration, birth patterns, and other factors, first grade classes were smaller than the senior classes they replaced in seven of the past 10 school years including the four most recent years.

Historical Enrollments

- Enrollments in Boyertown Area total 7,008 in 2014-15 and are 41 (0.6%) lower than in 2004-05; decreases in the pupil population were recorded in six of the past 10 years—including two of the past three. It is important to note that pupil counts are based on October 1 figures as provided by the district for each year and include just district children who physically occupy places in district classrooms; specifically, regular classroom pupils, those in district-operated special education classes, and those enrolled in the Berks County Career and Technical Center.
- Elementary enrollments in 2014-15 (3,761) are 78 or 2.1% above the 2004-05 level. The count increased in seven years during this period.
- The current pupil population in the district's junior high school grades (1,647) is down by a net of 91 or 5.2% from 2004-05. Decreases were recorded in five of the years during this period, there were three increases, and two years of no change.
- In the 2014-15 school year senior high school enrollments (1,600) are 28 pupils (1.7%) lower than in 2004-05. Annual increases were recorded in six of the years during this period.
- The number of resident children who are reported to be enrolled in schools and educational programs other than those operated directly by the district (specifically, those in home schools, charter and cyber schools—including those participating in the Boyertown Area School District Cyber Program since its inception in the 2012-13 school year, and just district residents enrolled in private/parochial schools who are transported by the district) decreased

from 924 in 2006-07 (the most distant year for which consistent and compatible figures were readily available) to 801 in 2014-15—or by 123 pupils or 13.3%. During this same period Boyertown Area’s enrollments were down by a net of just 39 or 0.6%. The relationship between Boyertown’s enrollments and the combined number of resident children reported to be in district and non-district schools and programs averaged 89.0% during the years reviewed and remained fairly stable.

Enrollment Projections— Primary Projection Period (First Five Years)

- Given the various assumptions and conditions on which the analysis is based, PEL projects that the slowed pattern of net overall gain in enrollments experienced in Boyertown Area in the recent past and the outright decline in the pupil count in two of the three most recent years will become sustained annual losses in pupils during the next five years, and the district’s enrollments will fall to 6,717 in 2019-20—down by 291 or 4.2% from 2014-15.
- Projections of elementary enrollments suggest that the number of pupils will total 3,421 in 2019-20—a drop of 340 or 9.0% from 2014-15. The pattern of enrollment decline in these grades is influenced mainly by school year births, which have fallen by 103 since 2005-06. As a result, the average number of births that will drive kindergarten entries during the next five years is 439—down markedly from the average that drove entries during the past five years (492), which, in turn, was up from an average of 464 in the several preceding years. While recent cohort survival rates have been essentially neutral and stable, the progression ratios at the elementary level—and especially in grade 1— have been strongly positive (but clearly on the decline—on average) and the positive ratios help mitigate the effect of the neutral cohort survival rates.
- Junior high school enrollments are projected to rise to 1,700 in 2019-20, when they will be 53 (3.2%) higher than in 2014-15. The rise in the pupil count in these grades during three of the first four projected years is consistent with the pattern of growth in the elementary grades during the recent past and is influenced by two very large classes moving from the elementary level into the three junior high school grades. The decrease in the final year of this period reflects the arrival in these grades of the first of the smaller classes resulting from the downturn in births that began in the 2006-07 school year. The overall progression ratios in the junior high school are essentially neutral and weakening.
- Projections for the senior high school grades indicate that enrollments will decrease very slightly to 1,596 in 2019-20 (down by a net of just four pupils or 0.3%). The projected slowing in the average net decrease in the grades 10-12 during the next several years (compared with the past several years) is skewed by the large decline in 2017-18 that is caused by smaller classes from the lower grades moving into the senior high school. Enrollments in these grades are also influenced by the noticeably negative (but fairly stable) progression ratios.

Enrollment Projections—Extended Projection Period (Second Five Years)

- If births hold steady at the average level of the two most recent years for which data are available (450), total enrollments the second five projected years will continue to decline but at a slightly reduced rate. The count will fall from 6,717 in 2019-20 to 6,448 in 2024-25 and be down by 269 pupils or 4.0% during this period. The figure projected for 2024-25 will be 560 pupils or 8.0% lower than the actual figure for the current school year given the loss of 291 pupils expected to occur in the first five projected years.

- Enrollments at the elementary level are will total 3,398 in 2024-25 and reflect a loss of 23 pupils (0.7%) from 2019-20. The 2024-25 figure will be 363 pupils (9.7%) lower than in 2014-15 in view of the drop of 340 projected for the period 2014-15 through 2019-20. The slowed rate of overall decrease in the elementary enrollments during this period is mainly a function of the fixed number of births on which the projection model is based combined with the neutral relationship between kindergarten entries and births in the district five years prior and the strongly positive elementary grade progression ratios.
- Junior high school enrollments will total 1,472 in 2024-25 and be down by 228 or 13.4% from 2019-20. The pupil count in these grades in 2024-25 will be 175 or 10.6% lower than in the current school year due to the increase of 53 projected for the period 2014-15 through 2019-20. The reversal from a modest average annual growth in grades 7-9 during the first five projected years to a much more noticeable decline during the extended projection period is caused primarily by the smaller actual and projected elementary classes moving through these grades and the neutral grade progression ratios.
- Senior high school enrollments will be 1,578 in 2024-25—18 pupils or 1.1% lower than in 2019-20. Enrollments in these grades in 2024-25 will be 22 or 1.4% lower than the 2014-15 level given the decrease of four pupils expected during the first five projected years. The slight rise in the rate of decrease during the second five projected years from that of the first five projected years is consistent with the pattern of enrollments in the junior high school and lower grades in the preceding years and the negative grade progression experience at the senior high school and reflects the arrival in these grades of the smaller classes resulting from the lower annual births that began to be recorded in the 2006-07 school year.

Perspective on Accuracy

- Based on actual enrollment figures through the 2010-11 school year, the Mean Absolute Percentage Error (MAPE) in all central and eastern Pennsylvania districts studied by PEL for the first five years is 3.06 percent (based on 812 data points); for all years for which there are actual figures to compare with PEL projections (which in many districts includes all 10 years), the MAPE is 4.72 percent (based on 1,389 data points). The literature suggests that projections within 5.0 percent (+/-) *after five years* are “acceptable.”
- A more focused and, perhaps, better point of reference is PEL’s enrollment projection study for Boyertown Area completed during the 1987-88 school year; this study allows for all 10 years of actual enrollment figures to be compared with the projections. The average of the annual differences between PEL’s projections and the actual figures for the first five years was just 2.0 percent. The average difference between the PEL projections and the actual enrollment figures for the final five projected years was up to 4.1 percent, but still well within the five-year zone of acceptability—*after 10 years*.
- Still another gauge involves projections generated by PEL for Boyertown Area in the 2010-11 school year. This example allows for just four years of actual figures to be compared with the projections. The average of the annual differences between these PEL projections and the actual figures was 1.4 percent for these years.