

**PEL's Response to the Sub-Committee "Question List" Dated April 30, 2015 and Follow-Up Questions Raised at the Committee Meeting of May 28, 2015**

**Pennsylvania Economy League (PEL) Question List**

*Enrollment, Capacity, and Education Sub-Committee*

*Last Revised: 4/30/2015*

As requested, PEL is responding to the *Pennsylvania Economy League (PEL) Question List* generated by the Methacton School District's Enrollment, Capacity, and Education Sub-Committee. Although some of the questions are very similar in nature or have overlapping elements, we have responded to each independently. As a result, there is considerable repetition in our answers to the questions raised.

Before offering our responses to each of the questions, we believe it would be helpful to provide several general comments about PEL and the methodology we used to project enrollments in Methacton.

The Pennsylvania Economy League is an independent, nonprofit group that undertakes research in government finance, management, and overall public policy. This research ranges from broad-based regional and statewide issues to local budgeting and financial and operational planning. We have been around since 1936 and have offices in Pittsburgh, Harrisburg, Wilkes-Barre, and Philadelphia. During the past 28 years or so current PEL staff members have performed more than 200 studies of school district demographics, housing and related activity, and enrollment patterns and generated projections of aggregate enrollments by grade covering the subsequent 10 years.

In keeping with PEL's overall mission, our role in Methacton was to provide facts and analyses to serve as an objective, independent, and valid base of information to aid the board, the committee it established, district administrators, and the public in making important policy decisions.

We believe we have done this by issuing our enrollment report back in January, summarizing it at a public presentation a few weeks later, and offering testimony at your public hearings in February. Further, we have provided greater depth of information by responding to a long list of questions put forth by one of your subcommittees and by discussing these responses at a combined meeting of all sub committees on May 28.

In addition, we have answered several follow-up questions that grew out of the May 28<sup>th</sup> session. In the course of doing so, we have supplemented the projections and the alternative higher birth/lower birth scenarios presented in our January report with projections resulting from three additional models--solely as points of reference. All this was designed to provide an even broader range of information to aid the district in addressing the important policy issues it faces.

The foundations for our methodology are the Methacton School District's recent enrollments, the recent relationships between your kindergarten entries and births in the district five years prior, all birth data available at the time the study was conducted, and recent grade-to-grade progression ratios for grades 1-12. The specific components of the methodology used to project your enrollments were also influenced by what we learned about recent and future housing growth in Methacton and various other factors capable of influencing your future enrollments.

The underlying assumption of the methodology used in this study is that future enrollments will reflect the experience of the recent past in terms of cohort survival rates and the grade progression ratios when combined with actual and estimated annual births and current enrollments. The methodology is simple and straightforward, and we make no apologies for that because it is the most commonly used process for projecting school enrollments, it is very understandable, and, most importantly, it works! Studies have shown that this approach has consistently produced lower error rates than other projection methods.

An Internet search for "school enrollment projections" will produce a lengthy list of studies focusing on national, statewide, countywide, and local public school enrollments generated by government agencies--including the National Center for Educational Statistics (which is the primary federal entity for collecting and analyzing data related to education in the U.S. and located within the U.S. Department of Education and the Institute of Education Sciences), plus various state departments of education (including Pennsylvania's), and individual districts that produce their own projections--as well as some private firms. Essentially, all utilize the cohort survival/grade progression methodology used in PEL's study for Methacton. It is the industry standard.

Our study reviewed a variety of indicators including:

- population trends, estimates, and projections and other demographic factors,
- housing growth,
- recently issued building permits for new housing units,

- the type and scope of residential subdivisions and new housing units that have been approved, proposed, or are known to be under serious discussion and expected to be built during the next 10 years,
- other factors that may have an effect on growth and development (for example, available land, zoning regulations, sewage capacity, water supply, other infrastructure issues, open space preservation efforts, etc.),
- population change, new housing construction, and public school enrollments,
- the average number of public school pupils generated by each housing unit,
- birth patterns,
- resident births, deaths, and population change,
- the relationship between the number of children in the public school system and births in the district in the 13 years corresponding to their ages,
- changes in public school enrollments by groups of grades,
- the number of incoming first graders each year compared with the size of the senior class in the prior year, and
- the public school system's market share compared with nonpublic education.

Most of the indicators analyzed as part of our study are not as directly connected to our model as annual births and recent enrollments. Instead, these indicators and much of the overall analysis are designed to develop an understanding of general demographic and related patterns in the district and factors that may have an influence on your enrollments and to serve as an important foundation to aid us in developing and refining the key components of our model for Methacton--cohort survival rates and grade progression ratios:

- The cohort survival rates are combined with actual and estimated birth figures to generate future kindergarten entries. The cohort survival rate is the relationship between kindergarten entries in a given school year and births in the district five years prior. The calculation of the cohort survival rate detects the net aggregate overall change in the number of children in the district during their pre-school years (resulting from movement into and out of the school district--including children adopted by Methacton residents), the impact of parents opting for nonpublic schools or other educational opportunities at the kindergarten level, and the impact of special classes and programs (if any).
- The grade progression ratios are used to move children from grade-to-grade in future years. These ratios reflect the relationship between enrollments in a given grade in a given school

year and enrollments in the next lower grade in the preceding year. The ratios detect the net aggregate overall change in the number of public school pupils by grade that results from the movement into and out of the school district (including children adopted by Methacton residents); transfers of pupils into and out of special classes and programs, private/parochial and other schools (for example, charter, cyber, and home schools), CTC programs, and other educational programs not directly operated by the district; changes in promotional and other internal district policies; dropouts; etc.

## Source: Questions from hearings and written submissions

### Theme: Factors

#### Economy

- Elderly couples who will be moving out of their homes to downsize, to be replaced by younger families with children are not reflected anywhere in their analysis.

**PEL RESPONSE: Not True.** While turnover of mature housing and its specific influence are not explicitly measured, the use of cohort survival rates and grade progression ratios capture the net aggregate effect of turnover on public school enrollments, by grade.

The study notes (on page 2-12) that the sale and resulting turnover of owner-occupied housing and the turnover of rental units can influence a district's enrollments and indicates that--based on discussions with local officials--modest turnover in mature housing is being experienced in parts of Methacton, and this is expected to continue. Some of the turnover is believed to result from the normal process of family relocation, and some is believed to involve elderly individuals moving from their homes and being replaced by younger families with children (or who are about to have them). As such, turnover is an ongoing process in Methacton and, therefore, it does not constitute a departure from recent experience.

To the extent that future turnover of mature housing will be compatible with recent experience, the impact of the turnover will influence the projections. The report notes (also on page 2-12) that if turnover from empty-nesters to younger families accelerates dramatically or if the historical mix is materially altered and higher numbers of empty-nesters are replaced by young families with children (or who are about to have them), changes in the demographic mix could occur, and this may have an impact on enrollments. The converse is also true.

- Does the PEL analysis take into account the recession?

PEL RESPONSE: **Yes.** The net effect of the recession (and numerous other factors) on Methacton’s enrollments is captured through the use of cohort survival rates and the grade progression experience, but there is no specific identification of the extent of any material differences in the enrollment patterns that can be attributed directly to the recession or any changes that may occur if and when there is a “full recovery” in our economy.

- Was new housing impact (excluding age-qualified housing) factored in the projections?

PEL RESPONSE: **Yes.** The net impact of new housing on your enrollments is captured through the use of cohort survival rates and the grade progression experience, but no specific upward or downward adjustment reflecting changes in the pattern of future housing growth was justified or made.

It should be noted that the number of permits issued in the district for new residential construction between 2010 and June of 2014 averaged about 57 units per year, and this was down from a yearly average of 228.5 housing units built during the decade of the 2000. The expected level of additional housing construction from 2014 through 2023 (as defined by your municipal officials--and exclusive of age-restricted and similar housing) is much lower, averaging about 35 per year). But, there is also the potential for more units to come online in the years ahead. Hence, new housing construction was deemed to be a relatively stable factor influencing the district’s enrollments and, therefore, the net impact of housing on future enrollments is not expected to be materially different than in recent years. (See Chapter 2.)

- Was net in/net out migration factored into the projections?

PEL RESPONSE: **Yes.** The calculation of the cohort survival rate detects the net aggregate overall change in the number of children in the district during their pre-school years (resulting from movement into and out of the school district--including children adopted by Methacton residents), the impact of parents opting for nonpublic schools or other educational opportunities at the kindergarten level, and the impact of special classes and programs (if any). Similarly, the grade progression ratios detect the net aggregate overall change in the number of public school pupils by grade that results from the movement into and out of the school district (including children adopted by Methacton residents); transfers of pupils into and out of special classes and programs, private/parochial and other schools (for example, charter, cyber, and home schools),

CTC programs, and other educational programs not directly operated by the district; changes in promotional and other internal district policies; dropouts; etc.

Again, the underlying assumption of the methodology is that future enrollments will reflect the experience of the recent past (in terms of cohort survival rates and the grade progression experience) combined with actual and estimated annual births and current enrollments--and influenced by other factors.

- Were housing projections for both townships used to make adjustments or temper data for enrollment projections?

**PEL RESPONSE: Temper or Refine, Yes; Specifically Adjust, No.** Meetings and conversations with representatives of the two townships and information provided by them allowed for the identification of the number of residential units expected to be built in the approved and proposed subdivisions, any that were known to be in the early planning stages or under serious discussion, and those expected to result from infill, minor subdivision activity, or miscellaneous housing construction through 2023. This information revealed that the number of new residential units expected to be built during this 10-year period (exclusive of age-restricted and similar housing) is lower on an average annual basis (about 35 units per year) than the average annual number of permits issued for new construction from 2010 through June of 2014 (about 57) and dramatically lower than the number of new units added during the decade of the 2000s (228.5 units per year, on average). The current and expected pace of new housing construction (which could accelerate somewhat if more units come online in the years ahead) was deemed to be a relatively stable factor influencing the district's enrollments, and, therefore, did not justify any specific upward or downward adjustment in the projection model. (See Chapter 2.)

- The primary purpose for tracking recent housing growth and identifying the pipeline of anticipated new residential units is to learn whether the pace of housing growth will represent a major departure from the recent past (by noticeably accelerating or decelerating), or whether growth is likely to remain fairly steady--it is not to directly translate new housing to additional public school children.

Review of permits issued for new residential construction clearly indicates that housing growth has slowed very noticeably in the current decade, and municipal officials expect that it will remain so--and this is borne out by the number of approved and proposed residential subdivisions

on the books, the number of units contained in these subdivisions, and the number of units expected to result from infill, minor subdivision activity, and miscellaneous housing construction, as well as by the absence of subdivisions known to be under serious discussion or in the early planning stages.

- Are PEL housing projections based on housing data heavily impacted by the recession?

PEL RESPONSE: **In Part, Yes; In Part, Perhaps No.** First, as clearly indicated elsewhere in these responses, PEL's enrollment projections are not directly driven by housing data.

As for the recession, the average annual numbers of housing units permitted for construction in the first 4½ years of this decade and the average annual number expected to be built in the years ahead are much lower than the average annual number of units added during the decade of the 2000s suggesting that the decline in the number of newly constructed and anticipated units has been at least in part "impacted by the recession". But, there are other factors that may be influencing the downturn in new housing. These include efforts to suppress residential development and preserve farmland and open space in sections of the district and limited public water supply and public sewage collection and treatment services in portions of the district. We did not speak with anyone who believed that the level of housing growth in the 2000s would be experienced at any time in the near future--even with full economic recovery.

- Were adjustments made to the data to account for increases in existing home sales, which still stand below (2004) pre-recession levels?

PEL RESPONSE: **No.** There was no justification for making any specific upward or downward adjustment in the projection model to reflect possible increases or decreases in the sale of existing homes.

To the extent that the future sale and turnover of existing housing will be compatible with the recent experience, the impact of the sale of existing housing will influence the projections. The report notes (on page 2-12) that if turnover from empty-nesters to younger families accelerates dramatically or if the historical mix is materially altered and higher numbers of empty-nesters are replaced by young families with children (or who are about to have them), changes in the demographic mix could occur, and this may have an impact on enrollments.

- Was any new housing unit data applied to calculate the PEL projections?

**PEL RESPONSE: Was Expected New Housing Considered? Yes; Were Any Special Adjustments Made, No.** As previously stated, meetings and conversations with representatives of the two townships and information provided by them allowed for the identification of the number of residential units expected to be built in the approved and proposed subdivisions, any that were known to in the early planning stages or under serious discussion, and those expected to result from infill, minor subdivision activity, or miscellaneous housing construction through 2023. This information revealed that the number of new residential units expected to be built during this 10-year period (exclusive of age-restricted and similar housing) is lower on an average annual basis (about 35 units per year) than the average annual number of permits issued for new construction issued during the first 4½ years of the current decade (about 57 units per year). The pace of new housing construction (which could accelerate somewhat if more units come online in the years ahead) was deemed to be a relatively stable factor influencing district enrollments, and, therefore, did not justify any specific upward or downward adjustment in the projection model. (See Chapter 2.)

The primary purpose for tracking recent housing growth and identifying the pipeline of anticipated new residential units is to learn whether the pace of housing growth will represent a major departure from the recent past (by noticeably accelerating or decelerating), or whether growth is likely to remain fairly steady. Review of permits issued for new residential construction clearly indicates that housing growth has slowed very noticeably in the current decade, and municipal officials expect that it will remain so--and this is borne out by the number of approved and proposed residential subdivisions on the books, the number of units contained in these subdivisions, and the number of units expected to result from infill, minor subdivision activity, and miscellaneous housing construction--as well as by the absence of subdivisions known to be under serious discussion or in the early planning stages.

- Was anticipated community or economic growth considered in making the projections?

**PEL RESPONSE: Yes.** To the extent that future community and economic growth mirrors the known housing pipeline and the expectations of your municipal officials, it was considered in making the projections. But, we did not make any specific adjustments based on speculation that the future pace of community or economic growth would result in a major difference from the recent past and/or from what municipal officials believe will occur in the years to come.



## Birth Rate

- Please explain how birth rates were used to inform the enrollment projections, in particular, explaining the impact of the great recession and slow economic recovery.

PEL RESPONSE: The cohort survival rate applied to the absolute number of births in a given year produces kindergarten entries five years later. Determination of kindergarten entries for the next four school years was based on births that occurred in the district during all or parts of five calendar years--2009 through 2013 (the most recent year for which figures were available at the time our analysis was undertaken). For this purpose we used the school year cycle--not the annual birth figures presented in Chapter 3. For projection years five through 10, we relied on estimates of future births, and this figure was the average of the two most recent years. (It should be noted that the use of these estimated figures only influences one grade in 2019-20, two grades in the following year, then three, etc., and, ultimately, just six grades in the final projected year.)

The cohort survival rate is the relationship between kindergarten entries and births in the district five years prior. The calculation of the cohort survival rate detects the net aggregate overall change in the number of children in the district during their pre-school years (resulting from movement into and out of the school district--including children adopted by Methacton residents), the impact of parents opting for nonpublic schools or other educational opportunities at the kindergarten level, and the impact of special classes and programs (if any).

Might an improving economy or other factors cause the annual number of births in the district to rise? Perhaps, but it must be strongly stated that births in the Methacton School District did not begin to decrease because of the recession--the drop began long before. While the recession may have played a role in the latter years of the decade of the 2000s and into the current decade, births in the district have been on the decline since 2001, and by 2007 they were already down by 59 or 15.5%. Between 2007 and 2013, births fell by another 35 or 10.9%. In all, births in the district decreased in 9 of the past 13 years (not just in the years since the recession began), and in 2013 they were 94 or about 25% lower than in 2000. Further, the average annual net decline in the district's births was actually stronger between 2000 and 2007 than it was in years subsequent to 2007--eight births per year compared with five births per year.

Birth patterns are a key reason your enrollments are down by almost 500 since 2007-08—and a key reason why we are projecting that your enrollments will decline by another 465 during the

next 10 years. Cohort survival rates were relatively stable (on average) but then rose in the past two years--*and these higher figures are factored into the model*). On the other hand, grade progression ratios have declined somewhat (on average). As noted, births are also down very noticeably in recent years, and children from several of the lowest birth years in more than a decade have not yet entered the school system.

Clearly, there is a very strong downward momentum. Even if it is assumed that there will be an upturn in annual births and net in-migration of school age and pre-school age children, it would likely take some time to reverse the momentum and overall pattern of decline and return your enrollments to their recent high point in 2007-08 (5,469).

- Would the use of a 5-year average birth rate smooth out the spikes and dips in the birth rate data?

PEL RESPONSE: **Perhaps**, and a 10-year or 20-year average might, as well. But, would the use of any of these figures be more representative of what is occurring in the district at this time and what is likely to occur in the years ahead?

The results of using a birth figure equal to the five-year average (which is higher than the two-year average we used)--and also using a figure lower than the most recent two-year average--to drive kindergarten entries starting in 2019-20 are outlined on pages 5-41 through 5-46 of the report. (Again, it should be noted that the use of these figures only influences one grade in 2019-20, two grades in the following year, then three, etc., and, ultimately, just six grades in the final projected year.)

Using the higher five-year average of birth figures to project kindergarten entries during the extended period results in a drop in total enrollment of 354 between the 2014-15 school year and 2024-25--as opposed to a decline of 465 based on using the two-year average of births. Yes, it would reduce the magnitude of the 10-year decline, but it would be far from transforming a decrease in your total enrollments to an increase.

Using the higher birth figure to project kindergarten entries starting in 2019-20 would result in a decrease in K-4 enrollment of 52 between now and 2024-25--as opposed to a drop of 143. Similarly, the effect of using the higher birth figure to project kindergarten entries starting in 2019-20 would result in a decline in upper elementary enrollments (grades 5-6) of 71 between now and 2024-25--as opposed to a decrease of 91.

It should also be pointed out that using the average cohort survival rate of the past five years (instead of just the past two years) in developing our model would have resulted in a projection of fewer kindergarten entries than the preferred projections in all future years and lower elementary and overall enrollments.

- Were adopted children included in the PEL analysis?

PEL RESPONSE: **Yes.** The net aggregate overall impact of children who were born in neighboring districts, other Pennsylvania districts, other states, and other countries—including those who may have come to the Methacton School District by way of adoption, combined with others who move into or out of the district is reflected in the cohort survival rates. These children are not identified “one by one” but, in fact, are accounted for in the aggregated figures that reflect the number of kindergarten entries compared with births in the district five years prior.

Similarly, the grade progression ratio compares the number of children in a given grade in a given school year with those in the next lower grade in the prior year, and it, too, captures--on a year-to-year basis and in the aggregate--the net change in the number of children as they move through each of the 12 grades. The change reflects those who relocate to or from the district (*again, including children who may have been adopted*); those who transfer into and out of private/parochial schools, home schools, cyber schools, charter schools, and/or special classes; those who repeat a grade; those who drop out in the high school grades; etc.

- Did PEL use only the most recent birth data for the two most recent school years to project all future birth data?

PEL RESPONSE: **No.** We used *all* available historical births for the district through 2013--the most recent year for which figures were available at the time our analysis was conducted. Determination of kindergarten entries for the next four school years was based on births that occurred in all or parts of 2009 through 2013. For projection years five through 10, we relied on estimates of future births, and this figure was the average of the two most recent years. (It should be noted that the use of these estimated figures influences only one grade in 2019-20, two grades in the following year, then three, etc., and, ultimately, just six grades in the final projected year.)

- It would appear that the greatest decrease in k-4 enrollment correlates to the first year for which no birth data is available. Average of the last two years is used to inform all future years.

**PEL RESPONSE: The First Sentence Is True; The Second Sentence Is Not True.**

**Yes, school year 2019-20 is the transition year from reliance on actual births to reliance on estimated births to drive kindergarten entries,** and there will be a drop in kindergarten entries from 2018-19 to 2019-20. However, conversely, the 2019-20 kindergarten count is higher than the number of kindergarten pupils projected for 2017-18. In subsequent years, the number of kindergarten entries will remain constant (given the fixed number of births that serve as the source of these kindergarten entries) and will be lower than in 2018-19 but higher than in 2017-18.

**As for the second sentence...we did not use just the average number of births from the last two years “to inform all future years”; we used all available historical births for the district available at the time the projections were generated.** As previously stated, determination of kindergarten entries for the next four school years was based on births that occurred in all or parts of five calendar years (2009 through 2013). For projection years five through 10, we relied on estimates of future births, and the figure used was the average of births in the two most recent years. (It should be noted that the use of these estimated figures does not begin to influence enrollments until 2019-20 and effects only one grade in that year, two grades in the following year, then three, etc., and, ultimately, just six grades in the final projected year.)

Also as previously noted, alternative projections for years five through 10 using the five-year average of births (which is higher than the two-year average) and also using a figure lower than the most recent two-year average to drive kindergarten entries starting in 2019-20 are outlined on pages 5-41 through 5-46 of the report.

**Theme: Methodology**

- Grade progression technique – Are future projections based only on the grade level progression for the two most recent school years (2013-2013/2013-2014)?

**PEL RESPONSE: Yes.** The average of the actual grade progression ratios for the two most recent school years was used to construct our model and project enrollments in grades 1-12. It was our judgment that the average experience of the two most recent years was more representative of what will be occurring in the district in the years ahead than the average for the past three, four, or five years.

- Is the report based primarily on assumptions that the past two years accurately represent the next ten?

PEL RESPONSE: **Yes.** As previously stated, the underlying assumption of the cohort survival/grade progression method of projecting enrollments is that future enrollments will reflect the experience of the recent past (in terms of cohort survival rates and the grade progression experience) combined with actual and estimated annual births and current enrollments--and, as stated, influenced by other relevant factors.

And, also as previously stated, we believe that the average of cohort survival rates and the average of the grade progression ratios for the two most recent school years (combined with actual and estimated birth figures) are more representative of what will be occurring in the district in the years ahead than the averages of the past three, four, or five years.

- Were 320 family home sites (table 2-5) incorrectly excluded from the model?

PEL RESPONSE: **No.** The primary purpose for tracking recent housing growth and identifying the pipeline of anticipated new residential units was not to directly translate new housing units to additional public school children. Instead, it was to learn whether the pace of housing growth will represent a major departure from the recent past (by noticeably accelerating or decelerating), or whether growth is likely to remain fairly steady. So, because there was no intent to directly link future enrollments to housing in our methodology, 320 family home sites were not “incorrectly excluded from the model”.

Review of permits issued for new residential construction clearly indicates that housing growth has slowed very noticeably in the current decade, and municipal officials expect that it will remain so--and this is borne out by the number of approved and proposed residential subdivisions on the books, the number of units contained in these subdivisions, and the number of units expected to result from infill, minor subdivision activity, and miscellaneous housing construction, as well as by the absence of subdivisions known to be under serious discussion or in the early planning stages.

Housing patterns--like the various other indicators--and much of the overall analysis are designed to develop an understanding of general demographic and related patterns in the district and serve as an important foundation to help us in developing and refining the fundamental components of

our model. Further, no specific adjustment was made to the model to reflect the number of units in the pipeline because it was concluded that the number of non-age-restricted (and similar) units in the approved and proposed subdivisions combined with those that are expected to result from infill, minor subdivision activity, and miscellaneous housing construction--and allowing for more units to come online in future years--did not represent a major departure from the recent past.

It should also be noted that figures presented in Table 2-6 (on page 2-14 of our report) indicate that growth in housing and population in Methacton during the period 1970 through 2013 has not necessarily translated to net additional public school pupils.

Further, in our view it is not appropriate to simply take the total number of anticipated non-age-restricted residential units in Methacton's current pipeline and multiply it by the average number of public school pupils generated by each housing unit in the district (or by any standard multiplier or other factor, for that matter) in order to produce the net number of children to be added to the district's enrollment. There are many other influencing factors in play--primary among them, annual births. (Such an approach, however, may be justified when the anticipated number of new residential units represents a major increase from the recent experience--this is not the case in Methacton.)

It is recognized that while new housing might bring additional children into the public school system, concurrently, there are mature residential units transitioning to empty nests and joining with the approximately 2/3 of the district's households producing zero children under the age of 18. This can offset all or part of any gross gain from the new housing. Again, new units might well produce new public school children, *but what is happening in the district's other 13,000 units must also be taken into consideration.*

Since the year 2000, the number of housing units in the district has risen by about 2,500. The net effect of this new housing (and other factors) is that between 2000 and the 2014-15 school year there has been a drop in the average number of public school pupils generated by each unit from 0.449 to 0.375.

If one were to roll back the calendar to 2000, look forward to 2010, and take the 2,285 or so new residential units that were about to be built and apply the number of children produced by each housing unit at that time, the new residential units would have been expected to cause enrollments

to rise by more than 1,000; instead, the net increase between 2000 and 2010 was 477--influenced by the rise in the annual number of births in the district during the 1990s.

However, if one were to roll back the calendar just to 2010, look forward to the 2014-15 school year, and take the 256 new residential units that were about to be built (based on permits issued) and apply the number of children produced by each housing unit at that time, the new residential units would have been expected to cause enrollments to rise by about 104; instead, there was a net decrease in the district's enrollments of 315 between the 2010-11 and 2014-15 school years--influenced by the declining births during the decade of the 2000s.

*So, since 2000, about 2,500 new residential units were built in the district, and the net increase in enrollments was only 162.*

- Is PEL's data 100% accurate?

**PEL RESPONSE: Yes, To the Best of Our Knowledge.** With respect to the facts and figures that played a role in PEL's study (the district's recent enrollments, annual births in the district, historical population and housing figures, permits issued for new residential construction, approved and proposed housing developments and the number of units expected to be built in each, other housing-related activity, etc.), we have no reason to doubt the accuracy of the information provided to us.

The source of recent public and nonpublic enrollments was the Methacton School District. The public school figures are based on October 1 counts for each year. They include all regular classroom pupils as well as district children enrolled in the half-day or full-day program offered by the North Montco Technical Career Center (for pupils in the 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, and 12<sup>th</sup> grades), the vast majority of the district's special education pupils, and some of those who participate in the Brandywine Virtual Academy (operated by the Chester County Intermediate Unit).

The nonpublic enrollment figures listed in the report include children residing in Methacton who were reported to be enrolled in schools and educational programs other than those operated directly by the Methacton School District; specifically, those who are in home schools, cyber schools, and charter schools—except those who participate in the Brandywine Valley Virtual Academy, and only those enrolled in private/parochial schools who are transported by the district.

Excluded from both the public and nonpublic counts are any private/parochial pupils who are not transported by the district, the small number of district children in full-time Intermediate Unit programs conducted outside the district's classrooms, those participating in the Brandywine Valley Virtual Academy who are not in the district's October 1 counts, and resident children in institutions and other out-of-district placements, etc.

The source of all annual birth figures is the State Health Data Center, Pennsylvania Department of Health, Harrisburg, Pennsylvania. It should be noted that the department specifically disclaims responsibility for any analyses, interpretations, or conclusions.

The U.S. Bureau of the Census is the source of historical population and housing figures (as well as recent population estimates).

Information on recent permits issued for new residential units was provided by the Delaware Valley Regional Planning Commission and validated by the respective municipalities.

The municipalities were the source of the information on the number of approved residential subdivisions with lots available to be permitted for new housing construction, subdivisions that had been formally proposed, any residential development that was known to be under serious discussion or in the early planning stages, and the level of infill, minor subdivision activity, and miscellaneous housing construction that was expected, as well as other relevant information on factors in the two townships that might have a bearing on future residential development. Municipal officials were also provided with a draft of Chapter 2 of the report (Housing and Related Activity) to review for accuracy.

- How do we know if their declining enrollment projections are correct? Who knows? Who can predict the future?

**PEL RESPONSE: The brutally frank answer is no one knows with 100 percent certainty.** But, we can say that since 1986 PEL's Central PA Division has conducted more than 200 studies of demographics, housing and related activity, and enrollment trends in Pennsylvania school districts and, using the techniques employed in this analysis, generated projections of enrollments. And, we regularly evaluate the accuracy of our work by comparing these projections with what actually resulted.



The mechanism for doing this is known as the Mean Absolute Percentage Error (MAPE--which is also known as the Mean Absolute Percentage Deviation). The MAPE and its companion, the Mean Absolute Deviation (which is similar, but measures absolute values rather than percentage deviation), are the most widely used statistical measurements of accuracy for time series values and trend estimation. In fact, the National Center for Educational Statistics (the primary federal entity for collecting and analyzing data related to education in the U.S. which is located within the U.S. Department of Education and the Institute of Education Sciences), utilizes the MAPE to express its accuracy. And we do as well. (Use of the percentage deviation is preferable to the absolute deviation given that figures reflect school districts with enrollments ranging from about 1,000 to over 20,000, so there would be an issue of scale when dealing with absolute values; this is not the case with percentages.)

We have compared the projections we made in the past 28 years with the actual figures that resulted. Through the 2013-14 school year (and based on 900 data points) the Mean Absolute Percentage Error for the first five years of projections in the school districts we studied is just over +/-3% (essentially, about +/-1% the first year, +/-2% the second year, etc., and by the fifth year, the figure is about +/-5%. The literature indicates that accuracy of 5% after five years is acceptable. For years six through 10, our calculations are based on 725 data points and the difference between the projected and actual figures averages 7.7 percent.

Having said all this, it must still be recognized that our report indicates (on pages 5-48 and 5-49) that the projections generated for the Methacton School District are a product of certain assumptions. Specifically, it was assumed that the total number and type of new housing units in the district will be in keeping with expected levels of construction in the various subdivisions as well as additional housing that can reasonably be assumed to be built during the next 10 years. The methodology is also sensitive to the ongoing turnover of mature housing. Further, the methodology assumes that overall migration and related patterns will remain consistent with current expectations, that the role of schools and educational programs other than those operated directly by Methacton will be compatible with expected patterns, and the district will continue its current policies relative to its kindergarten, CTC, and special education programs and maintain its other key policies.

Further, uncertain events and “wild cards” that can influence and alter pupil counts are such that no projections, no matter how carefully constructed, can guarantee complete accuracy.

Unexpected changes in birth patterns; nonpublic school enrollments; migration patterns; internal policies (such as, retention and acceleration of pupils, age requirements for admission to school, half-day/full-day kindergarten programs, and who provides special education programs and to whom they are provided); statewide policies on “school choice,” vouchers, and other aspects of the educational program; the formation and/or termination of charter schools; economic climate; zoning and land use controls; infrastructure considerations; and interest rates, the housing market, and the state of the mortgage industry as they influence residential development activity and the turnover of mature housing, can all affect these projections. Also, policy changes by external parties, such as major employers, can have a significant and lasting impact on enrollment patterns as can a teachers’ strike or even the serious threat of a strike.

*Despite the words of caution and the skepticism expressed by some--and acknowledging that “no one can predict the future” with 100% certainty, based on PEL’s experience, the indicators we relied on, the techniques we used, and our track record, we are confident that the projections offered in this study are as reasonable and as realistic as possible in light of the available facts, and they should serve the district well in its short- and long-term planning.*

*It should be noted, however, that the report expresses concern about the uncharacteristically large rise in the district’s 2014-15 cohort survival rate and raises a question as to whether this level will be sustained. In keeping with this, PEL indicated that—if requested—it would revisit the projections in the fall of 2015 at no additional cost to the district in order to make any appropriate adjustments based on information available at that time. (See page 5-49.)*

## Theme: Uncategorized

- Enrollment has been growing since October. Slide 20 of the Feb. 23 presentation cites total k-4 enrollments of 1,733 as of October 1st. This shows that enrollments have grown since then by 22 students (see the number at the bottom right of page 3). That's significant when you consider that total k-4 enrollments have dropped by only 170 students from 2004 to 2014 (see slide 14 of the Feb. 23 presentation). So we've recouped 13% of the total losses over that 10-year period in the last 5 months. This growth contradicts PEL's projections of a decline in the very earliest period, when their forecast should be expected to be most reliable.

**PEL RESPONSE: There is no contradiction.**

Let’s look at the numbers you cite.

We believe the figure attributed to the February 23 presentation was provided by the district in December and it was based on building-by-building counts. As such, it is a “snapshot” from a different point in time and reflects a source other than the district’s October 1 counts used throughout the enrollment report. Further, this figure may not be fully compatible with the definition that controlled the figures used in the enrollment study in terms of which categories of pupils are reflected in the counts and which are not (see response to earlier question on the accuracy of the data used).

Any credible effort to project school enrollments requires consistent and compatible data, and a uniform point of reference from year to year is essential. The standard for Pennsylvania public schools is the report that all districts are required to submit to the Department of Education as of October 1 of each year. Hence, we consistently used those figures in the enrollment portion of our overall study.

It is important to recognize that month-to-month enrollment growth and decline within a school year normally occurs due to the movement of families into and out of the district, transfers into and out of special programs and nonpublic schools, and dropouts in the high school grades. For any valid conclusions to be drawn from intra-year data it would be necessary to look at all months in the course of the school year.

Recent information provided to us by the district (which we believe is compatible with the definition of the October 1 figure used throughout our enrollment report) reveals that pupil counts in grades K-4 on the first day of each month in the 2014-15 school year (starting on October 1) have risen in four months and declined in three, and the net effect as of May 1 was a gain of just five pupils. There was no net change during this period in kindergarten or first grade, second and fourth grades each rose by three pupils, and third grade lost one. It should also be noted that between October 1 and May 1 of the 2014-15 school year your total K-12 enrollments were down in five months and up in two--and the net change was a loss of 25 pupils.

Further, when relating enrollment changes in grades K-4 during the 2014-15 school year to PEL’s projections for these grades in the upcoming school year it must be recognized that the projected figures reflect a different mix of pupils. For example, next year your 2014-15 fourth grade class (the largest of any of the elementary classes this year) will move on to the upper elementary

grades and be replaced by a smaller third grade class from this year; second and third grade classes will be replaced by similarly sized classes from the 2014-15 school year; first grade will grow based on 2014-15's kindergarten (combined with the grade progression ratio); and the incoming kindergarten class will be smaller than in 2014-15's (based on the most recent cohort survival rates and a smaller birth pool driving next year's kindergarten entries). So, one cannot simply translate any enrollment changes in grades K-4 during the 2014-15 school year to the K-4 projection for 2015-16.

In the broader context of the methodology employed in generating projections of Methacton's enrollments, everyone should be aware that the effect of any net growth or loss in the pupil population subsequent to October 1 of any school year, if sustained, would be reflected in rising or falling grade progression ratios and captured when figures for the following October are analyzed and compared with the prior October.

If the district has experienced a genuine unanticipated net growth or loss in K-4 enrollments (or any other grade grouping) in the 2014-15 school year, the causes and implications will be explored by PEL when we revisit the projections in the fall of this year (see response to the next comment).

*But, please recognize that year-to-year and grade-to-grade gains in K-4 pupil counts are expected given the progression ratios at this level. The projected overall decline in pupils in these grades does not result from the movement through the grades; instead, it is driven by declining births, and this is what causes the smaller and smaller kindergarten classes. The number of children rises very noticeably from kindergarten to first grade and grows more modestly in grades 2 through 4. But, the net effect is declining enrollments at the K-4 level-- due to lower kindergarten figures.*

- PEL points out that there was an uncharacteristically large rise in 2013-2014 cohort survival rate, and questions whether or not a continuation of this increase if maintained would affect the projections. For this reason, PEL offered to revisit the data in September to consider this.

PEL RESPONSE: The large rise in the cohort survival rate was in 2014-15--not in 2013-14. Nonetheless, PEL believes revisiting this issue is the right thing to do--but the comment needs to be further clarified.

The higher cohort survival rate has already been built in to the projection model. The uncertainty we expressed relates to whether or not this higher level will be sustained--not so much whether continuation would affect the projections...it is already assumed that it will! The issue, then, is if the higher level is not sustained and future cohort survival rates fall more in line with the years prior to 2013-14, whether the projections as presented could be overstated, and therefore, need to be adjusted downward.

Our analysis detected an increase of 30 in the aggregate number of kindergarten enrollments this year in spite of almost no change in the size of the pool of births driving the kindergarten entries. This produced the noticeable spike in the cohort survival rate (and there was a more modest increase in 2013-14). It should also be noted that, conversely, the grade progression ratio from kindergarten to grade 1 declined in each of the past several years (although the ratios remained noticeably positive).

The rise in the relationship between kindergarten entries and births in the district five years prior could be the result of a growth in the pre-school age population between the birth year and entry into the school system in 2014-15. But, it could also result from more parents opting for the district's kindergarten program instead of bypassing it in favor of other kindergarten opportunities as has been a common practice in the district. If proportionately more children enroll in the district's kindergarten program, the result would be a higher relationship between kindergarten entries and births in the district five years prior--as was the case this year and last year. And, with fewer children bypassing the district's kindergarten program and, therefore, already in the school system, there would be an understandable decline in the relationship between first graders and kindergarten enrollments in the prior year. Consequently, the rise in kindergarten enrollments could be neutralized by a smaller future gain in grade 1 enrollments, and there may be no net impact on the higher grades.

Revisiting the projections in the fall of 2015 may help determine whether this situation is caused by additional pupils moving into the district and/or a higher proportion of those who are already living in the district opting for the district's kindergarten program as opposed to one of the alternatives...or perhaps by some other factor or combination of factors. The updated analysis, in turn, may help determine whether all this is an anomaly or "the new normal" for the district. The result of this effort could be adjustments in the projections, if appropriate--based on the additional information available at that time.

## Source: Questions from Sub-Committee Meeting on April 22, 2015

- There are discrepancies related to building level data. The PEL report does not address school-by-school projections. Why are your projections only related to the grade level and not to each school?

PEL RESPONSE: We are unclear as to the nature of the alleged “discrepancies related to building level data” noted above, unless this is a reference to the difference between the October 1 enrollments for grades K-4 and the sum of the building-by-building figures that were part of the February 23 presentation.

As for the projections being limited to aggregate figures by grade by year, this is in keeping with our normal approach to projecting public school enrollments, with the discussions we had with district officials late last summer, and the resulting scope of work outlined in our project proposal to the district.

As stated on page 5-47 of the enrollment study, accurate projections of public school enrollments for periods of five to 10 years or more are difficult, at best, because of so many unpredictable variables and the difficulty of generating accurate projections increases as the focus moves from a large base (such as a state) down to counties, to local school districts, and to individual buildings within districts. Generally, the larger the area involved, the greater the accuracy of the projections in terms of the amount of percentage deviation from the actual figures that resulted because differences in smaller areas within the larger area tend to balance each other out.

In districts where there are multiple elementary schools, projecting enrollments for these grades on a building-by-building and grade-by-grade basis employing the same techniques used to project district-wide enrollments by grade can be further complicated by numerous factors. For example, there are often issues regarding policies relating to whether or not children are required to enroll in the elementary schools in their attendance area (with or without exceptions) or whether or not there is an open (or modified open) enrollment policy. Similarly, questions as to whether or not attendance areas have been altered in recent years (and how often and to what extent), and the relationship between attendance areas and municipal boundaries must be considered. The failure of elementary attendance areas to conform to municipal boundaries precludes aligning birth data with kindergarten entries, which is essential in providing accurate projections on a building-by-building basis using the standard techniques because birth data made

available by the Pennsylvania Department of Health are organized by municipality and are not geo-coded or broken down in any fashion within each municipality.

The absence of birth data on a sub-municipal basis requires that the techniques used to project the district's aggregate enrollments by grade be modified in order to estimate enrollments for each of the grade levels at the elementary schools. The modifications involve utilizing birth figures for the district as a whole (rather than on a building-by-building basis) and their historical relationship to kindergarten entries in each of the district's elementary schools.

Given these issues, methodological limitations, and other difficulties that can be encountered in dealing with enrollments by grade at individual buildings and data involving relatively small geographic areas, the reliability of the resulting figures is not what we are accustomed to. In view of this, we resist requests to produce such figures, and on the rare occasions when we have agreed to generate building-by-building figures we refer to them as *estimates* (rather than *projections*) because they are less likely to be as precise as the aggregate projections for the district and, thus, must be used with greater caution.

- The issue of kindergarten at Audubon: We need to understand where the anomaly of the 105 students is coming from. The projection does not correlate to previous years. Do we know if these children are from apartments or from single family homes? Was transiency in our primary grades, and its potential impact on higher grade levels considered in projections?

PEL RESPONSE: Because our review of historical enrollments and the resulting projections involved just aggregate figures by grade and by year, we did not focus on individual buildings and have no specific information on the situation at Audubon; therefore, we cannot comment.

Having said that--as described above--it is conceivable that our concern about this year's overall rise in the relationship between kindergarten entries and births in the district five years prior is influenced by an "anomaly at Audubon" that, in turn, may be the result of additional pupils coming into the district and/or a higher proportion of those who are living in the district opting for the district's kindergarten program as opposed to one of the alternatives--or by some other factor or combination of factors.

As for the question of whether the “new” children are from apartments or single-family homes... if, in fact, there are “new” children perhaps the district’s transportation data could be utilized to shed light on this.

As for whether or not transiency in the primary grades and its potential impact on the higher grades was considered by PEL, this, like many other factors, is implicit in the cohort survival rates and year-to-year grade progression experience.

- To substantiate the quality of PEL’s methodologies and data, can we look at previous studies conducted and match the projections to the actuals? PEL claims high accuracy percentage rates, but they need to explain more deeply how they have arrived at those rates.

**PEL RESPONSE: Yes...we do this on a regular basis.**

Our evaluation of the accuracy of the projections generated in our more than 200 studies of demographics, housing and related activity, and enrollment trends in Pennsylvania school districts using the techniques employed in this analysis is based on the Mean Absolute Percentage Error (MAPE--also known as the Mean Absolute Percentage Deviation or MAPD). The calculation of the MAPE involves taking the difference between the actual enrollment figure for a given year in a given district and the figure PEL projected for that district in that year and dividing it by the actual figure, and then converting it to a percentage. The resulting figures for each year in all districts studied are then summed--*without regard to signs*--and divided by the number of data points. The reason the signs are disregarded is that in a data set such as this where the differences may be higher or lower than the actual figures the failure to do so would result in the lower differences canceling out those that are higher. This would result in a misleadingly low error calculation. Eliminating the signs avoids this potential problem.

Again, the product of calculating the Mean Absolute Percentage Error for all the projections we made during the past 28 years for which there are actual figures to compare is that through the 2013-14 school year (and based on 900 data points) the MAPE for the first five years of projections in the school districts studied just over +/-3%--essentially, it is about +/-1% the first year, +/-2% the second year, etc., and by the fifth year, the figure is about +/-5%. The literature indicates that accuracy of 5% after five years is acceptable. For years six through 10, our calculations are based on 725 data points and the difference between the projected and actual figures averages 7.7 percent.



- Please provide a list of districts that PEL completed studies for in the year 2007. Our intent is to select three districts whereby we will compare PEL’s enrollment projections to the actuals.

PEL RESPONSE: There are three districts in southeastern Pennsylvania where we developed projections starting with the year 2007-08. They are Council Rock, Upper Merion, and Tredyffrin-Easttown. In Council Rock, the difference between the PEL projection and the actual enrollments were (in the first five years, respectively) -0.3%, -0.8%, -1.7%, -2.8%, and -3.9%. In Upper Merion the corresponding figures were -0.4%, -1.6%, -2.3%, -5.6%, and -2.5%. In Tredyffrin-Easttown the figures were -0.3% -0.4%, +1.2%, +1.9%, and +3.7%. All year five accuracy figures are well within the 5% benchmark; however, one year four figure is slightly above the guideline. (A negative figure indicates that the actual figure was below the PEL projection; a positive figure indicates that the actual figure was higher than the PEL projection.) The other districts where PEL developed projections starting with the 2007-08 school year are Lebanon, Gettysburg Area, Conewago Valley, Donegal, Central Dauphin, York Suburban, Palmyra Area, and Blue Mountain.

- In addition to getting comfortable in historical trends, is there anything we know of happening in the next ten years, which could disrupt those trends?

PEL RESPONSE: **No.** No specific information with respect to factors that could disrupt historical trends was made known to us by your municipal or school officials. However, having said that, the report cautions (on pages 5-47 through 5-49) that because the projections are based on certain assumptions and there are numerous uncertain events that can influence and alter pupil projections, 100% accuracy cannot be guaranteed no matter how carefully the projection model is constructed. As such, various influencing factors must be monitored and analyzed every year by district officials. In that way changes in current and projected patterns can be quickly identified and, if necessary, appropriate adjustments can be made.

- Historical trends in population and housing units did not have a direct correlation with enrollment. Why then, in this study, is PEL using these inputs for projections? (Reference page 15 of PEL Report)

PEL RESPONSE: PEL did not use these inputs to directly derive the projections. Information on population and housing patterns as they relate to public school enrollments as well as a variety of other indicators are provided in order to allow for a better understanding of the factors that can be perceived as having an influence on your enrollments, to aid us in developing the specific

components of the model for Methacton, and to reinforce why the model for the enrollment projections relies on recent cohort survival rates (combined with actual and estimated future births) and the district's recent grade progression experience--and not directly on population or housing growth.

- Relative to the inputs used for future projections, what weight does each input have toward the overall projection?

PEL RESPONSE: **Each of the Two Key Factors is Fully and Equally Weighted.** The cohort survival rate that is factored into the model and the district's actual or estimated birth figure for a given year are the sole mathematical factors for determining kindergarten entries five years later. Similarly, the grade progression ratios for each grade (1 through 12) applied to a given grade in a given year is the sole mathematical factor in determining the enrollment in the next higher grade in the following year.

- Would you provide us with a scenario in which you utilize pre-recessionary data in calculating your progression ratios and cohort survival rates?

PEL RESPONSE: **No.** Pre-recessionary data--at a minimum--is almost 10 years old and not relevant to the realities of today.

Source: [Additional Questions/Comments from Sub-Committee Members Submitted April 24, 2015](#)

#### John Andrews

- Reference attachment:
  - asandner.jandrews - Additional Questions Regarding PEL Enrollment Projections.pdf

PEL RESPONSE: Because PEL's initial emphasis focused on the specifically enumerated questions and comments from the subcommittee and the main emphasis of the follow-up effort was on the question of why our model is based on 2-year averages of cohort survival rates, grade progression ratios, and recent births to drive kindergarten entries starting in 2019-20, the relevant additional questions and comments from Mr. Andrews and Mr. Sandner have not been addressed.

Christopher Beck

- In reference to Graph 5-6, can you provide a confidence interval instead of a single point entry?
- For example:

---  
| +5%  
4,920  
-5%
2015-2016

PEL RESPONSE: **No.** Our analysis does not involve survey results, sampling, polling, trials, or experiments involving data that are randomly selected. We are projecting based on real data, and we have actual results for the entire population. In view of this, the best way to evaluate the projections and measure confidence, accuracy, or expected error is to compare the prior projections with what actually resulted.

The mechanism for doing this is known as the Mean Absolute Percentage Error (MAPE--also known as the Mean Absolute Percentage Deviation). The MAPE and its companion the Mean Absolute Deviation (which is similar, but measures absolute values rather than percentage deviation), are the most widely used statistical measurements of accuracy for time series values and trend estimation. Just as an Internet search will identify the cohort survival/grade progression approach as the best methodology for projecting enrollments, a similar search will identify the MAPE as the proper way to measure the accuracy of the resulting projections.

The National Center for Educational Statistics (the primary federal entity for collecting and analyzing data related to education in the U.S. which is located within the U.S. Department of Education and the Institute of Education Sciences), utilizes the MAPE to express its accuracy. And we do as well.

Since 1986 PEL's Central PA Division has conducted more than 200 studies of demographics, housing and related activity, and enrollment trends in Pennsylvania school districts and, using the techniques employed in this analysis, generated projections of enrollments. We have compared the projections we made during the past 28 years with the actual figures that resulted. Through the 2013-14 school year (and based on 900 data points) the Mean Absolute Percentage Error for the first five years of projections in the various school districts we studied is just over +/-3%

(essentially, about +/-1% the first year, +/-2% the second year, etc., and by the fifth year, the figure is about +/-5%). The literature indicates that accuracy of 5% after five years is acceptable. For years six through 10, our calculations are based on 725 data points and the difference between the projected and actual figures averages 7.7 percent.

### Jeff Dowds

I just finished reading the PEL report. Being a "novice" in this area, I was impressed overall by the thoroughness of the report. All factors seem to suggest declining enrollment except one, i.e., the anomaly of the increase in Audubon kindergarten enrollments this past year. This seems to be an area worth exploring in depth to determine if it is a trend that runs counter to the substantial case the study has built against future declines in MSD enrollments.

PEL RESPONSE: Because PEL's review of historical enrollments and the resulting projections involve just aggregate figures by grade and by year, and we did not focus on individual buildings, we have no specific information on the "anomaly" at Audubon and, therefore, cannot comment specifically on this matter. We nonetheless agree that revisiting the aggregate projections in the fall of 2015 is justified, and, as previously noted, we will do so.

Our analysis detected an increase of 30 in the aggregate number of kindergarten enrollments this year in spite of almost no change in the size of the pool of births driving the kindergarten entries, and this may be influenced by the situation at Audubon. This produced the noticeable spike in the districtwide cohort survival rate (and there was a more modest increase in 2013-14). It should also be noted that, conversely, the aggregate grade progression ratios from kindergarten to grade 1 declined in each of the past several years (although they remained noticeably positive).

The rise in the relationship between kindergarten entries and births in the district five years prior could be the result of a genuine growth in the pre-school age population between the birth year and entry into the school system in 2014-15. But, it could also result from more parents opting for the district's kindergarten program instead of bypassing it in favor of other kindergarten opportunities as has been a common practice in the district. If proportionately more children enroll in the district's kindergarten program, the result would be a higher relationship between kindergarten entries and births in the district five years prior--as was the case this year and last year. And, with fewer children bypassing the district's kindergarten program and, therefore, already in the school system, there would be an understandable decline in the relationship between first graders and kindergarten enrollments in the prior year. Consequently, the rise in

kindergarten enrollments could be neutralized by a smaller future gain in grade 1 enrollments and there may be no net impact on the higher grades.

Revisiting the projections in the fall of 2015 may help determine whether this situation is caused by additional pupils moving into the district or a higher proportion of those who are already living in the district opting for the district's kindergarten program as opposed to one of the alternatives...or perhaps by other factors or combination of factors. The updated analysis, in turn, may help determine whether all this is an anomaly or "the new normal" for the district. The result of this effort could be adjustments in the projections, if appropriate--based on the additional information available at that time.

**Robert Fleming**

- No additional questions/comments provided

PEL RESPONSE: NA

**Joyce Mangann**

- No additional questions/comments provided

PEL RESPONSE: NA

**Andrew Sandner**

- Reference attachment:
  - asandner jandrews - Additional Questions Regarding PEL Enrollment Projections.pdf

PEL RESPONSE: Because PEL's initial emphasis focused on the specifically enumerated questions and comments from the subcommittee and the main emphasis of the follow-up effort was on the question of why our model is based on 2-year averages of cohort survival rates, grade progression ratios, and recent births to drive kindergarten entries starting in 2019-20, the relevant additional questions and comments from Mr. Sandner and Mr. Andrews have not been addressed.

**Jenyi Yu**

- Please have PEL consider to take a look at the marketing reports of the Providence Town Centermall. When the Providence Town Center ( <http://providencetowncenter.com/>) starts to build the mall around 2010, they released the Lower Providence household average income and average resident's age. Their marketing reports said that average household income was around \$90,000 per year and the average age is between 35 and 38 in the Lower Providence area across Pfizer and Dow industry park. If our school district doesn't have enough population and economy, the mall management wouldn't invest so much money to build the shopping center over 100 stores outdoors including one movie theatre and

Wegmans.

More input data--If PEL only counts on Economy and Birth Rate these two index are not good enough. PEL should also take a look on the business development in our school district area and how many population these companies can bring to our school district. If there is still lots of top companies in our neighborhood and hiring people, it will bring more population here and pay more tax. Also PEL should predict the input data next 10 years not only short run, especially the US population survey has been done a couple of years ago and that should be one index of evaluating our birth rate. The resident's age is very important because the younger couple has more productive for the birth rate than aging couple.

School performance quality-- Usually not only one simple reason can cause the lost population of students. It couldn't be only the birth rate. If the school only is willing to develop the sport and not encourage to develop other programs such as history, engineering, music, science fair. The only reason is lacking these programs' teachers. The school should hire more teachers to develop different talent students especially for the stem science. According to my observation in the field study among MD, NJ and our school district, my friend living in the Germantown, MD (the West-North suburban of DC), their school policy doesn't ask the parents' occupation and the purpose is sure to treat all students equally not by parents' social-economic position. So there when the students have great academic performance, in the middle school level, the school already asks the student to take the AP class like history. I am very sure that a excellent business developing area like Germantown, MD and Cherry Hill, NJ and also they have more funding to develop different programs for those talent students.

PEL RESPONSE: We have no basis for any specific comments beyond our responses to the various questions we have already addressed.



**Despite the words of caution and the skepticism expressed by some--and acknowledging that no one can predict the future with 100% certainty, based on PEL's experience, the indicators we relied on, the techniques we used, and our track record, we are confident that the projections offered in this study are as reasonable and as realistic as possible in light of the available facts, and they should serve the district well in its short- and long-term planning.**

**Listed below are responses to several questions raised by the committee in the course of PEL's presentation on May 28, 2015.**

**Question:**

Why did PEL use the average cohort survival rates and grade progression ratios of just the two most recent years in the projection model and why was the average number of births in the just two most recent years used as the estimated number of births that will drive kindergarten entries starting in 2019-20--instead of the average of the past three, four, or five years? A related question involves why we held the estimated birth figure that will be used to determine kindergarten entries starting in 2019-20 at a fixed level.

**Response:**

We would like to restate and expand on the description of the process that resulted in the determination of the various components of the model we used to develop our preferred projections of Methacton's enrollments as well as the alternative projections we provided in the report. We will also present additional projections to demonstrate the range in the pupil counts that would result from using models other than the one that we believe is the most suitable for Methacton based on the analysis we conducted, the factors that are known (given available information) to be influencing enrollments in the district at this time and expected to influence enrollments in the years ahead, and our 28 years of experience involving more than 200 projects of this type involving Pennsylvania school districts. All this is offered in keeping with our mission of providing a range of facts and analyses to serve as an objective, independent, and valid base of information to aid the board, the committee it has established, district administrators, and the public in making important policy decisions.

**Use of the two-year average of school year births**

Let's start with why we used the average number of births in just the two most recent years as the estimated birth figure to drive kindergarten entries starting in 2019-20.

First, the overall pattern of calendar year births in the district began its downward pattern in 2001. By 2007, annual births were down by 59 or 15.5%; between 2007 and 2013 (the most recent year for which figures were available at the time our study was conducted) births fell by another 35 or 10.9%. In all, births in the district decreased in 9 of the past 13 years and in 2013 were 94 or about 25% lower than in 2000--and children from several of the lowest birth years in more than a decade have not yet entered the school system.

Births (on a school year basis--September through August) that will drive future kindergarten entries in the next four years will be those that occurred in all or parts of the past five calendar years (2009 through 2013). For projection years 5 and beyond, births that will drive kindergarten entries must be estimated. Given the strong downward pattern in calendar and school year births, and, based on our experience, it was determined that using an average birth figure for just the past two years to estimate the birth figure that will drive kindergarten entries in 2019-20 was appropriate.

This conclusion is further supported by the preliminary birth figures for September through December of 2013 (the first four months of the 2013-14 school year birth figure that will drive kindergarten entries in

2019-20--once calendar year 2014 births become available). This figure totals 99 and is noticeably lower than births in the final four months of 2012 (121). While recognizing that the school year birth figure for the 2013-14 school year will also be influenced by the eight months for which counts are not yet available, figures for the portion of the year that is available at this point clearly suggest a continuing decline in annual births. Thus, the use of the two-year average is further reinforced.

It should be restated that estimated birth figures only influence the 10-year projections in one grade (kindergarten) in 2019-20, two grades in the following year, then three, etc., and, ultimately, just six grades in the final projected year.

Acknowledging that there is uncertainty relative to the future number of births that will occur in the district in the years ahead and drive kindergarten entries starting in 2019-20 and noting that changes in future birth figures could have an impact on enrollments, our report outlined alternative sets of projections resulting from birth figures that are higher and lower than figures used in our preferred projection model--but still in keeping with recent experience. These alternative sets of projections are presented on pages 5-41 through 5-46 of the report. The birth figures reflected in these alternative projections are equal to the five-year average of births (308--the highest of the averages of the recent years, which is also the same as the figure for the most recent school year figure and somewhat higher than the two-year average) and also 275 births--a figure lower than the most recent two-year average.

The use of the higher five-year average of births as the estimated figure to drive kindergarten entries starting in 2019-20 (while retaining the use of two year averages for cohort survival rates and grade progression ratios) results in a drop in total K-12 enrollment of 354 between the 2014-15 school year and 2024-25--as opposed to a decline of 465 based on using the two-year average of births. Yes, it would reduce the magnitude of the 10-year decline (all in the second five projected years and all in grades K-6 during the 10-year horizon of this study), but it would be far from transforming the projected K-12 decrease in your enrollments to an increase. So, overall, after falling from 5,338 in 2004-05 to 4,974 in 2014-15 (or by 364 or 6.8%), your total enrollments would be down by 718 or 13.5% during the 20-year period based on the higher estimated birth calculation (compared with 829 or 15.5% using the preferred projections). (See Table 1.)

Using the higher birth figure to project kindergarten entries starting in 2019-20 would result in a decrease in your K-4 enrollment of 52 between now and 2024-25--as opposed to a drop of 143 based on our preferred projections. There would be a rise of 22 pupils or 1.3% between 2019-20 and 2024-25 compared with a decline of 54 pupils or 3.3% during this period based on the preferred projection. Based on the higher estimated birth calculation, after falling from 1,903 in 2004-05 to 1,733 in 2014-15 (or by 170 or 8.9%), K-4 pupil counts would be down by 222 or 11.7% during the 20-year period (compared with 313 or 16.4% using the preferred projections). (See Table 2.)

As for the related question as to why we held the estimated birth figure that will drive kindergarten entries starting in 2019-20 at a fixed level in our projection model, we will readily admit that this is a conservative approach that protects against projections unjustifiably driven by particularly high or low estimated birth figures. In an attempt to compensate for this, we provided the higher and lower average birth scenarios described on pages 5-41 through 5-46 of our report and summarized above.



### Use of the two-year average of cohort survival rates

The cohort survival rate is the relationship between kindergarten entries in a given school year and births in the district five years prior. It is combined with actual and estimated birth figures to generate future kindergarten entries. The calculation of the cohort survival rate detects the net aggregate overall change in the number of children in the district during their pre-school years (resulting from movement into and out of the school district), the impact of parents opting for non-public schools or other educational opportunities at the kindergarten level, and the impact of special classes and programs (if any).

We used the average of the district's cohort survival rates during the two most recent years in our projection model (as opposed to using the average of the past three, four, or five years—which will be further addressed later in this overall response) because our review of the district's recent experience revealed very stable ratios in the 2010-11 and 2011-12 school years that were followed by a modest decline in 2012-13, a noticeable upturn in 2013-14 (that exceeded the decline in the prior year and elevated the cohort survival rate to a level above that of 2011-12 and 2010-11), and then a dramatic rise in 2014-15. In exploring the 2014-15 experience, our analysis detected that there was an increase of 30 in the aggregate number of kindergarten pupils this year in spite of almost no change in the size of the pool of births driving the kindergarten entries. This, in turn, produced the noticeable spike in the cohort survival rate.

The rise in the relationship between kindergarten entries and births in the district five years prior could be the result of a growth in the pre-school age population between the birth year and entry into the school system in 2014-15. But, it could also result from more parents opting for the district's kindergarten program instead of bypassing it in favor of other kindergarten opportunities (this has been a common practice in the district). If proportionately more children enroll in the district's kindergarten program, the result would be a higher relationship between kindergarten entries and births in the district five years prior—as was the case this year and, less so, last year. And, with fewer children bypassing the district's kindergarten program and, therefore, already in the school system, there would be an understandable decline in the relationship between first graders and kindergarten enrollments in the prior year (it should be noted that the cohort survival rate between kindergarten and first grade has declined in each of the past several years). Consequently, the rise in kindergarten enrollments could be neutralized by a smaller future gain in grade 1 enrollments, and there may be no net impact on the higher grades.

So, unlike the clear decline in annual births in recent years, the pattern in cohort survival rates differed noticeably and, in fact, produced some mixed signals and uncertainty. In the face of this overall pattern, and, specifically, what transpired in the two most recent years, it was our judgment that the best course of action based on what is known (and unknown) at this time was to use the average for these two years to reflect the future relationship between kindergarten entries and births in the district 5 years prior.

Nonetheless, we expressed concern as to whether or not this higher level will be sustained, and, in so doing, indicated that we would revisit the projections in the fall of 2015 at no additional cost to the district in order to make any appropriate adjustments based on information available at that time.

It should again be pointed out that using the average *cohort survival rate* of the past three, four, or five

years in developing our model--instead of just the past two years--in conjunction with the two-year average of births and the two-year average of grade progression ratios, would have resulted in a projection of fewer kindergarten entries in all future years, and lower elementary and overall enrollments.

Revisiting the projections in the fall of 2015 may help determine whether this situation is caused by additional pupils moving into the district and/or a higher proportion of those who are already living in the district opting for the district's kindergarten program as opposed to one of the alternatives, or perhaps by some other factor or combination of factors. The updated analysis, in turn, may help determine whether all this is an anomaly or "the new normal" for the district. The result of this effort could be adjustments in the projections, if appropriate--based on the additional information available at that time.

#### Use of the average of two-year average of grade progression ratios

Grade progression ratios reflect the relationship between enrollments in a given grade in a given school year and enrollments in the next lower grade in the preceding year. These ratios are used to move children from grade-to-grade in future years. The grade progression ratios detect the net aggregate overall change in the number of public school pupils by grade that results from the movement into and out of the school district; transfers of pupils into and out of special classes and programs, private/parochial and other schools (for example, charter, cyber, and home schools), CTC programs, and other educational programs not directly operated by the district; dropouts; etc.

The recent overall pattern of grade progression ratios and the pattern by grade grouping are more similar to the births than to the cohort survival rates, exhibiting a noticeable overall decline from 2010-11 through the 2014-15 school year--although there was an upturn in 2012-13 and a very slight rise in 2013-14. These increases were followed by very a noticeable drop in 2014-15 to the lowest level of the five years reviewed. Grades K-4 and 7-8 are also at their lowest level of the five most recent years, while the current ratio in grades 5-6 is just very slightly above its lowest point of the past five years. In grades 9-12 the current ratio is up from its lowest point, but it is still below the level of 2010-11. Review of these patterns led to the conclusion that the use of the average of the two most recent years was most appropriate.

#### Alternative projection scenarios

In an effort to provide an even broader range of information to aid the board, the committee, district administrators, and the public in making the important policy decisions facing them, we have supplemented our preferred projections and the alternative higher birth/lower birth scenarios presented in our report with projections resulting from three additional models in order to demonstrate the range in figures that would result from using models other than the one that we believe is the most suitable for Methacton.

The model for our preferred projections reflects the average of the cohort survival rates and grade progression ratios for the two most recent years (as well as the average number of births in the two most recent years to drive kindergarten entries starting in 2019-20); the three additional models are based on the averages of these factors for the past three years, the past four years, and the past five years, respectively.

The results of running these additional models are as outlined in the Tables 1 through 5 that follow. The boldface columns on these tables reflects the preferred projections contained in PEL's study dated January 2015 and the second column on each table (also contained in the PEL's study) reflects modification of the preferred projections to reflect an estimate of births to drive kindergarten entries beginning in 2019-20 based on the five-year average--the highest of any of the averages calculated); both of these have been previously described. The remaining columns represent, respectively, the three year averages, four year averages, and five-year averages.

The K-12 projections resulting from the use of these additional models all produce marked declines. The projected drops in total enrollments between 2014-15 and 2024-25 range from 484 or 9.7% (using the three year averages of births, cohort survival rates, and grade progression ratios) down to 354 or 7.1% (using the two-year averages of cohort survival rates and grade progression ratios and the average number of births over the past five years--the highest of any of the recent averages). The result of using the four year averages of births, cohort survival rates, and grade progression ratios is very similar to that of the three year averages (a decline of 481 or 9.7%), and the use of the five-year averages produces a decline of 365 or 7.3% (very similar to the model that uses the two-year averages of cohort survival rates and grade progression ratios and the average number of births over the past five years--the highest of any of the recent averages). The preferred projection is a decline of 465 or 9.3% and reflects a lower drop than two of the other four scenarios and a higher decrease than the other two.

During the first five projected years, two of the alternative K-12 scenarios result in larger decreases in grades K-12 than the preferred projection (-296 and -313 versus -264) and the other two generate smaller declines than the preferred projections (-249 and -241 versus -264). In the second five projected years, each of the four alternative scenarios produce lower rates of overall decline in these grades than the preferred projections (ranging from -105 to -188 compared with -201 for the preferred projection).

The projected declines in grades K-4 between 2014-15 and 2024-25 resulting from the preferred and alternative approaches range from 143 or 8.3% (using the preferred projections) down to 52 or 3.0% (using the two-year averages of cohort survival rates and grade progression ratios and the average number of births over the past five years--the highest of any of the recent averages).

During the first five projected years, two of the four alternative scenarios (those using the three and four year averages) result in larger decreases in grades K-4 than the preferred projections (-121 and -104, respectively, versus -89 for the preferred projection). The five-year average produces a decline of 86 (just three fewer pupils than the preferred projection), and the two-year average using the highest recent average birth figure, results in a decline of 74--15 fewer pupils than the preferred projection.

In the second five projected years, three of the scenarios produce modest gains (ranging from one pupil to 23 pupils--versus a decline of 54 under the preferred model); the other scenario produces a decline of four pupils during the second five projected years. None of the increases is sufficient to reverse the overall downward pattern of K-4 enrollments during the next 10 years, although, as stated, the net declines during this period using all four alternatives are lower than the preferred projection.

Although not described in this narrative, Tables 3, 4, and 5 outline the pattern of enrollments in grades 5-6, 7-8, and 9-12 using each of the scenarios.

PEL believes that preferred projections and alternative scenarios outlined in our report as well as our responses to the questions raised by the committee with regard to the process that led to these projections as well as those that result from the additional models outlined here should prove to be helpful to the board, the committee established by the board, district administrators, and the public in addressing the policy issues facing the district. All approaches presented point to lower total enrollments and pupil counts in grades K-4 in 2024-25 than in the 2014-15 school year, and the same is also true for all other grade groupings. It will be up to the district’s leadership to determine what bearing (if any) the variations in these projected declines has on the decision-making process--keeping in mind that these scenarios were provided solely as points of reference. Our preferred projections reflect our best judgment as to the future pattern of enrollments in the district based on what is known at this time.



**TABLES**

<b>Table 1—Grades K-12</b>					
<b>Preferred and Alternative Projections and Those Resulting From the Use of Other Models</b>					
<u>Years/Change</u>	<u>2-yr Averages</u>	<u>2-yr Averages</u>	<u>3-yr Averages</u>	<u>4-yr Averages</u>	<u>5-yr Averages</u>
	<b>(292 births)</b>	(w/ 308 births)	(302 births)	(303 births)	(308 births)
2014-15	<b>4,974</b>	4,974	4,974	4,974	4,974
2019-20	<b>4,710</b>	4,725	4,678	4,661	4,733
Change #	<b>-264</b>	-249	-296	-313	-241
Change %	<b>-5.3%</b>	-5.0%	-6.0%	-6.3%	-4.8%
2019-20	<b>4,710</b>	4,725	4,678	4,661	4,733
2024-25	<b>4,509</b>	4,620	4,490	4,493	4,609
Change #	<b>-201</b>	-105	-188	-168	-124
Change %	<b>-4.3%</b>	-2.2%	-4.0%	-3.6%	-2.6%
2014-15	<b>4,974</b>	4,974	4,974	4,974	4,974
2024-25	<b>4,509</b>	4,620	4,490	4,493	4,609
Change #	<b>-465</b>	-354	-484	-481	-365
Change %	<b>-9.3%</b>	-7.1%	-9.7%	-9.7%	-7.3%

<b>Table 2—Grades K-4</b>					
<b>Preferred and Alternative Projections and Those Resulting From the Use of Other Models</b>					
<u>Years/Change</u>	<u>2-yr Averages</u>	<u>2-yr Averages</u>	<u>3-yr Averages</u>	<u>4-yr Averages</u>	<u>5-yr Averages</u>
	<b>(292 births)</b>	(w/ 308 births)	(302 births)	(303 births)	(308 births)
2014-15	<b>1,733</b>	1,733	1,733	1,733	1,733
2019-20	<b>1,644</b>	1,659	1,612	1,629	1,647
Change #	<b>-89</b>	-74	-121	-104	-86
Change %	<b>-5.1%</b>	-4.3%	-7.0%	-6.0%	-5.0%
2019-20	<b>1,644</b>	1659	1,612	1,629	1,647
2024-25	<b>1,590</b>	1,681	1,608	1,630	1,670
Change #	<b>-54</b>	+22	-4	+1	+23
Change %	<b>-3.3%</b>	+1.3%	-0.2%	+0.1%	+1.4%
2014-15	<b>1,733</b>	1,733	1,733	1,733	1,733
2024-25	<b>1,590</b>	1,681	1,608	1,630	1,670
Change #	<b>-143</b>	-52	-125	-103	-63
Change %	<b>- 8.3%</b>	-3.0%	-7.2%	-5.9%	-3.6%

<b>Table 3—Grades 5-6</b>					
<b>Preferred and Alternative Projections and Those Resulting From the Use of Other Models</b>					
<u>Years/Change</u>	<u>2-yr Averages</u>	<u>2-yr Averages</u>	<u>3-yr Averages</u>	<u>4-yr Averages</u>	<u>5-yr Averages</u>
	<b>(292 births)</b>	(w/ 308 births)	(302 births)	(303 births)	(308 births)
2014-15	<b>802</b>	802	802	802	802
2019-20	<b>770</b>	770	767	764	763
Change #	<b>-32</b>	-32	-35	-38	-39
Change %	<b>-4.0%</b>	-4.0%	-4.4%	-4.7%	-4.9%
2019-20	<b>770</b>	770	767	764	763
2024-25	<b>711</b>	731	698	704	719
Change #	<b>-59</b>	-39	-69	-60	-44
Change %	<b>-7.7%</b>	-5.1%	-9.0%	-7.9%	-5.8%
2014-15	<b>802</b>	802	802	802	802
2024-25	<b>711</b>	731	698	704	719
Change #	<b>-91</b>	-71	-104	-98	-83
Change %	<b>-11.3%</b>	-8.9%	-13.0%	-12.2%	-10.3%

<b>Table 4—Grades 7-8</b>					
<b>Preferred and Alternative Projections and Those Resulting From the Use of Other Models</b>					
<u>Years/Change</u>	<u>2-yr Averages</u>	<u>2-yr Averages</u>	<u>3-yr Averages</u>	<u>4-yr Averages</u>	<u>5-yr Averages</u>
	(292 births)	(w/ 308 births)	(302 births)	(303 births)	(308 births)
2014-15	777	777	777	777	777
2019-20	731	731	728	722	740
Change #	-46	-46	-49	-55	-37
Change %	-5.9%	-5.9%	-6.3%	-7.1%	-4.8%
2019-20	731	731	728	722	740
2024-25	703	703	689	684	700
Change #	-28	-28	-39	-38	-40
Change %	-3.8%	-3.8%	-5.4%	-5.3%	-5.4%
2014-15	777	777	777	777	777
2024-25	703	703	689	684	700
Change #	-74	-74	-88	-93	-77
Change %	-9.5%	-9.5%	-11.3%	-12.0%	-9.9%

<b>Table 5—Grades 9-12</b>					
<b>Preferred and Alternative Projections and Those Resulting From the Use of Other Models</b>					
<u>Years/Change</u>	<u>2-yr Averages</u>	<u>2-yr Averages</u>	<u>3-yr Averages</u>	<u>4-yr Averages</u>	<u>5-yr Averages</u>
	(292 births)	(w/ 308 births)	(302 births)	(303 births)	(308 births)
2014-15	1,662	1,662	1,662	1,662	1,662
2019-20	1,565	1,565	1,571	1,546	1,583
Change #	-97	-97	-91	-116	-79
Change %	-5.8%	-5.8%	-5.5%	-7.0%	-4.8%
2019-20	1,565	1,565	1,571	1,546	1,583
2024-25	1,505	1,505	1,495	1,475	1,520
Change #	-60	-60	-76	-71	-63
Change %	-3.8%	-3.8%	-4.8%	-4.6%	-4.0%
2014-15	1,662	1,662	1,662	1,662	1,662
2024-25	1,505	1,505	1,495	1,475	1,520
Change #	-157	-157	-167	-187	-142
Change %	-9.4%	-9.4%	-10.0%	-11.3%	-8.5%

**Question:** Committee members indicated that they were comfortable with PEL's description of the accuracy of its projections in years 1 through 5 that was provided in the course of the May 28 presentation, but asked for more information on the accuracy in years 6 through 10. At a minimum, they requested accuracy figures for the three southeastern Pennsylvania school districts that were cited in the presentation--Council Rock, Tredyffrin-Easttown, and Upper Merion, where we issued projections starting with the 2007-08 school year.

**Response:** To recap, in our presentation of May 28 we indicated that since 1986, on more than 200 occasions PEL's Central PA Division has examined demographics, housing and related activity, and enrollment trends in central and eastern Pennsylvania school districts and, using the techniques employed in this analysis, generated projections of enrollments covering a 10-year period, and we regularly compare the projections we have made with the actual figures that resulted. Projections undertaken more than ten years ago have ten years on which to judge accuracy; some projections allow only 8 or 9 years' experience to be viewed; some six, five, and so forth; and for others there has been only one year of actual figures on which to make judgments regarding PEL's accuracy.

The mechanism for assessing the accuracy of our projections is known as the Mean Absolute Percentage Error (MAPE). The MAPE and its companion, the Mean Absolute Deviation, are the most widely used statistical measurements of accuracy for time series values and trend estimation.

The result of these calculations through the 2013-14 school year (and based on 900 data points) is a MAPE for the first five years of projections of just over +/-3% (essentially, about +/-1% the first year, +/-2% the second year, etc., and by the fifth year, the figure is about +/-5%). *The literature indicates that accuracy of 5% after five years is acceptable.*

As for three districts in southeastern Pennsylvania where we developed projections starting with the year 2007-08, in Council Rock the difference between the PEL projection and the actual enrollments were (in the first five years, respectively) -0.3%, -0.8%, -1.7%, -2.8%, and -3.9%. In Upper Merion the corresponding figures were -0.4%, -1.6%, -2.3%, -5.6%, and -2.5%. In Tredyffrin-Easttown the figures were -0.3% -0.4%, +1.2%, +1.9%, and +3.7%. All year five accuracy figures are well within the 5% benchmark; however, one year four figure is slightly above the guideline. (A negative figure indicates that the actual figure was below the PEL projection; a positive figure indicates that the actual figure was higher than the PEL projection.)

For years six through 10, our calculations are based on 725 data points and the difference between the projected and actual figures averages 7.7 percent. The specific year-by-year figures are as follows: year 6 = +/-6.3 percent; year 7 = +/-7.0 percent; year 8 = +/-8.0 percent; year 9 = +/-8.8 percent; and year 10 = +/-8.9 percent. It is noteworthy that the accuracy of about one-third of the 123 projects for which there are 10 years of actual figures to compare with the PEL projections still remain within the acceptable *five-year* accuracy range (+/-5%) *after all 10 years.*

As for Council Rock, Tredyffrin-Easttown, and Upper Merion, given that the first projected year in each case was 2007-08, only figures for years 6 and 7 are readily available through the Pennsylvania Department of Education,. In Council Rock, the difference between the PEL projection and the actual

enrollments were (in years six and seven, respectively) -4.9% and -5.5%. In Upper Merion the corresponding figures were -3.5% and -4.7%. In Tredyffrin-Easttown the figures were +4.4% and +4.8%. All but one of these figures are within the five-year benchmark after seven years. (Again, a negative figure indicates that the actual figure was below the PEL projection; a positive figure indicates that the actual figure was higher than the PEL projection.)

**Question:** A member of the committee stated that he received information from the two townships that form the district indicating that the number of certificates of occupancy issued during the first 4½ years of the current decade was lower than the number of permits reportedly issued for new housing construction. Specifically, he indicated that certificates of occupancy averaged about 11 per year compared with construction permits for new residential units that averaged about 57 per year. He then noted that PEL's report indicated that the number of new housing units in the district's 10-year pipeline averaged about 35 per year (exclusive of age-restricted and similar units) and that when these anticipated units are combined with a modest number of additional units that are likely to come online in the years ahead, the future number of new units would be similar to those in the early years of the current decade. As such, PEL believed that the anticipated number of new residential units would not reflect a major change from the recent past several years and did not justify any upward or downward adjustment in the projection model. The committee member then suggested that a rise in new units from an average of 11 per year (based on occupancy permits) to an expected level in excess of 35 per year represented a substantial proportionate change and, in his view, did, indeed, reflect a major difference and warranted an upward adjustment in the projection model.

**Response:** The time available since the May 23 presentation to the committee did not afford an opportunity for PEL staff to discuss the reported discrepancy between residential occupancy permits and construction permits for new residential units with municipal officials and to fully explore this matter, and we will attempt to do so in conjunction with our re-visitation of the projections in the fall.

**Question:** A member of the committee requested that PEL provide grade-by grade information on nonpublic enrollments in the district.

**Answer:** PEL passed this request along to district administrators and suggests that the committee pursue this with appropriate district officials.