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Enrollment Impact Specialists



**Annual Enrollment  
Projection Report**

**Strategic  
Decision  
Support  
for School  
Districts**

Student Enrollment Projections | Community Demographic Data | Consulting

# **ANALYSIS OF ENROLLMENT PROJECTIONS**

Fall 2014

Prepared for:  
**Tonawanda City School District**

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# **Tonawanda City School District**

## **Executive Summary**

### **Enrollment Projections - Fall 2014**

DecisionInsite is pleased to present this report of findings to the Board of Education and Executive Staff of Tonawanda City School District.

Both a Moderate and a Conservative projection have been generated for the district. Assuming district revenue is generated on a per pupil basis, the Conservative projections are more suitable for budget planning purposes; the Moderate projections more suitable for facilities planning purposes.

#### ***Kindergarten Enrollment***

In general, Kindergarten enrollment over the past three years has been somewhat erratic. The data also show that the difference between the graduating cohort and the incoming cohort has been decreasing.

Note that both studies project a slight increase at the Kindergarten level in the ten year future.

#### ***Cohort Patterns***

A typical student cohort ages from grade to grade relatively unchanged from the previous year. Historically, 4 cohorts show more than a 5% annual change.

#### ***District-wide Enrollment Projection***

Both projections forecast a significant decline across the 10 year period based upon the historical enrollment trends.

#### ***More Information***

A richer and more comprehensive review of these two studies is contained in the Final Report accompanying this Executive Summary. A wealth of more detailed information and analysis regarding these two studies is quickly and easily accessible online.

Respectfully Prepared and Submitted by:

**The DecisionInsite Team**

January 22, 2014

# Tonawanda City School District

## District Enrollment Projections

### Recent Changes in Enrollment

Familiarity with recent historical enrollment patterns and trends establishes the foundation for understanding projected enrollment.

Percentages in the table below compare the current year enrollment to that of three years ago.

4 Year History Change	
Kindergarten	102%
Gr K-5	90%
Gr 6-8	91%
Gr 9-12	75%
District	85%

Figure: 1

### Kindergarten Impact

Kindergarten enrollment is often the most significant driver of overall future district-wide enrollment. A trend at Kindergarten from year to year, or a trend in the difference between the district's graduating cohort in a given year and the Kindergarten cohort the subsequent year, will eventually be reflected in the total district enrollment count.

In general, Kindergarten enrollment over the past three years has been somewhat erratic. The data in the table below also show that the difference between the graduating cohort and the incoming cohort has been decreasing.

[More details: Reports > History > District-wide > History Years Enrollment]

Percent Change of Previous Year			
	2011	2012	2013
Kindergarten	120%	97%	88%
Grade 12 to K'tn	77%	84%	80%
Total K-12	96%	98%	91%

Figure: 2

### Live Birth Trends

Live birth trends have an impact in large geographies, and on long range projections. However, in smaller areas of study, such as a school district, population mobility is often a mitigating if not an overriding factor, thereby reducing the effectiveness of live births as a predictor of enrollment. Consequently, DecisionInsite has found recent Kindergarten enrollment trends by sub-geographies to be a better predictor of future Kindergarten enrollment.

### Cohort Impact

A typical student cohort ages from grade to grade relatively unchanged from the previous year. By contrast, the cohort matriculating from Kindergarten to Grade 1 is a common example of a cohort increase, typically attributable to students returning from a private school Kindergarten.

In the following table, cohort changes with more than a 2% variance from static are marked accordingly. Those with more than a 5% changed are marked as 'Significant'.

Average Cohort Change Past Three Years			
Cohort	Percent	+/-	Significant
K > 1	96%	----	
1 > 2	95%	----	
2 > 3	96%	----	
3 > 4	95%	----	SSSS
4 > 5	99%		
5 > 6	95%	----	SSSS
6 > 7	98%	----	
7 > 8	95%	----	SSSS
8 > 9	97%	----	
9 > 10	97%	----	
10 > 11	93%	----	SSSS
11 > 12	99%		

Figure: 4

## Incoming Out-of-District Transfer Impact

#DIV/0!

[More details: Reports > History > District-wide > Out of District]

## Key Variables in Projecting District Enrollment

Both a Moderate and a Conservative projection have been generated for the district. The Conservative projections are more suitable for budget planning purposes; the Moderate projections more suitable for facilities planning purposes.

As a matter of standard practice, DecisionInsite does not typically include in the Enrollment Projections specialized schools or programs such as Home and Hospital Programs, Community Day Schools or Independent Study Programs. Our work is focused on projecting grade level enrollment for typical schools that are reported to the state.

The major variables that distinguish the Conservative projection from the Moderate are described in the table below.

Key Variables Controlling the Projection Algorithm	
Kindergarten Enrollment Change	Applies the lesser or greater of 3-4 year history trend in each studyblock to the appropriate study.
Cohort Change	Applies the lesser or greater of 3-4 year history trend in each studyblock to the appropriate study.
K Enrollment Change Cap	Restricts the effect of anomalous spikes in Kindergarten history.
K Enrollment Change Floor	Restricts the effect of anomalous dips in Kindergarten history.
Incoming Out-of-District Transfers	For each grade level span, applies the lesser or greater of 1-2 year history to the lograde; ages through existing students.
Dwelling Units	Moderate study assumes developer's phasing calendar. Conservative study shifts the developer's calendar toward the out-years.
Student Generation Rates	Typical of recent history by product type.

Figure: 5



## Projected Enrollment Changes by Level

The tables below display the five year district-wide projections by grade level, and allow a comparison to enrollment in the current year.

### Conservative 5 Year District-wide Projection by Grade Level

Grade	2013	2014	2015	2016	2017	2018
K	134	136	134	132	132	131
1	136	127	128	126	125	125
2	141	128	119	121	119	121
3	105	134	122	113	115	116
4	135	99	127	114	107	107
5	132	134	98	126	114	106
6	136	125	130	93	118	108
7	133	132	122	126	91	117
8	138	125	124	114	119	84
9	134	132	123	120	111	112
10	127	130	128	119	116	108
11	128	117	119	118	110	109
12	138	125	114	116	115	108
<b>Subtotals:</b>	1717	1644	1588	1538	1492	1452
<b>Pct Chg:</b>	-9.3%	-4.3%	-3.4%	-3.1%	-3.0%	-2.7%

Figure: 6

### Moderate 5 Year District-wide Projection by Grade Level

Grade	2013	2014	2015	2016	2017	2018
K	134	146	148	149	149	148
1	136	129	140	142	143	143
2	141	130	123	134	136	138
3	105	137	126	119	130	133
4	135	101	132	121	114	126
5	132	134	100	131	120	114
6	136	127	131	97	126	116
7	133	133	124	128	95	124
8	138	126	126	118	121	91
9	134	134	125	123	116	118
10	127	130	130	122	120	114
11	128	118	122	121	114	113
12	138	126	117	120	120	113
<b>Subtotals:</b>	1717	1671	1644	1625	1604	1591
<b>Pct Chg:</b>	-9.3%	-2.7%	-1.6%	-1.2%	-1.3%	-0.8%

Figure: 7



As the following graph illustrates, both projections forecast a significant decline across the 10 year period based upon the historical enrollment trends .

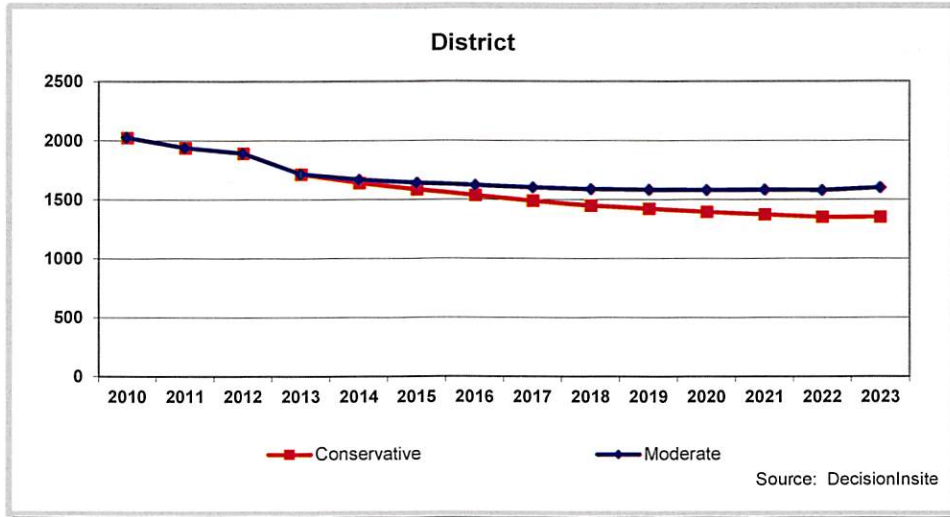


Figure: 8

The tables below compare the Conservative and Moderate enrollment projections by key grade level groupings.

Projected changes in enrollment at Kindergarten or lower grade level groupings will eventually impact total district enrollment.

**5 Year Enrollment Trends: Moderate and Conservative Compared**

Change by Level	Conservative	Moderate
<b>Kindergarten Only</b>	131	148
Change	98%	110%
<b>Gr K-5</b>	706	802
Change	90%	102%
<b>Gr 6-8</b>	309	331
Change	76%	81%
<b>Gr 9-12</b>	437	458
Change	83%	87%
<b>District</b>	1452	1591
Change	85%	93%

Figure: 9

Note that considered together; both studies project a slight increase at the Kindergarten level.

The table below compares the ten year projections. In the ten year future at Kindergarten, both studies, viewed together, project a relatively stable trend.

**10 Year Enrollment Trends: Moderate and Conservative Compared**

Change by Level	Conservative	Moderate
<b>Kindergarten Only</b>	124	144
Change	93%	107%
<b>Gr K-5</b>	692	810
Change	88%	103%
<b>Gr 6-8</b>	302	370
Change	74%	91%
<b>Gr 9-12</b>	360	421
Change	68%	80%
<b>District</b>	1354	1601
Change	79%	93%

Figure: 10

The graphs below compare the Conservative and Moderate enrollment projections by key grade level groupings.

**Elementary School Level**

The change projected by both studies over the ten year period represents a slight decline.

[More details: Reports > Projections > Individual Schools > Projections > All Elementary Schools]

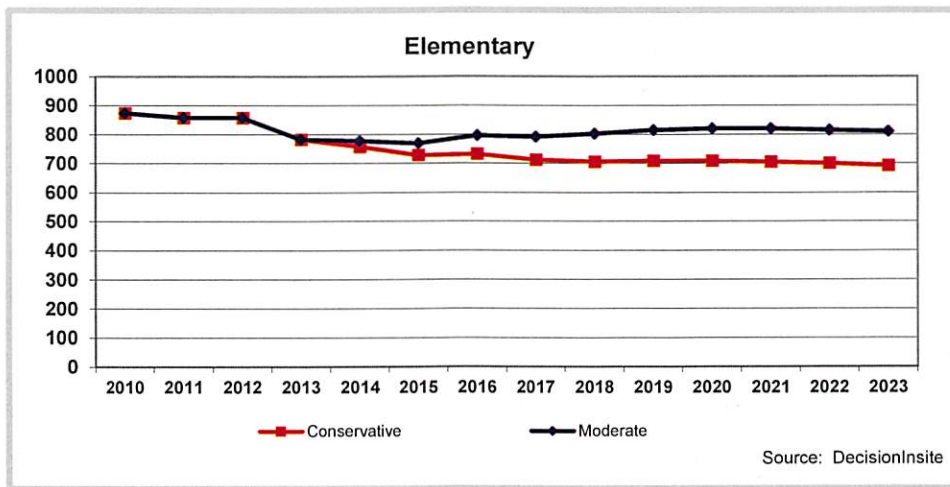


Figure: 11

### Middle School Level

Over the ten year period, projected middle school enrollment shows a significant decline.

[More details: Reports > Projections > Selected Schools > All Middle Schools]

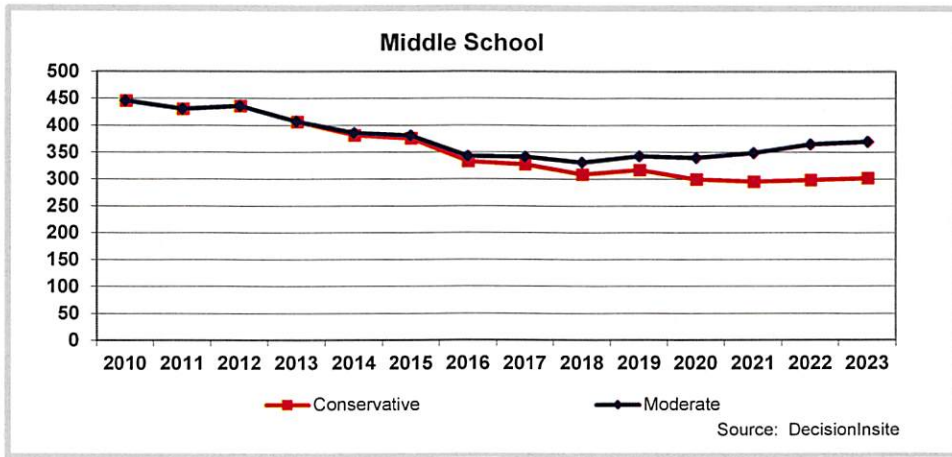


Figure: 12

### High School Level

At the high school level, a significant decline is projected in the ten year future.

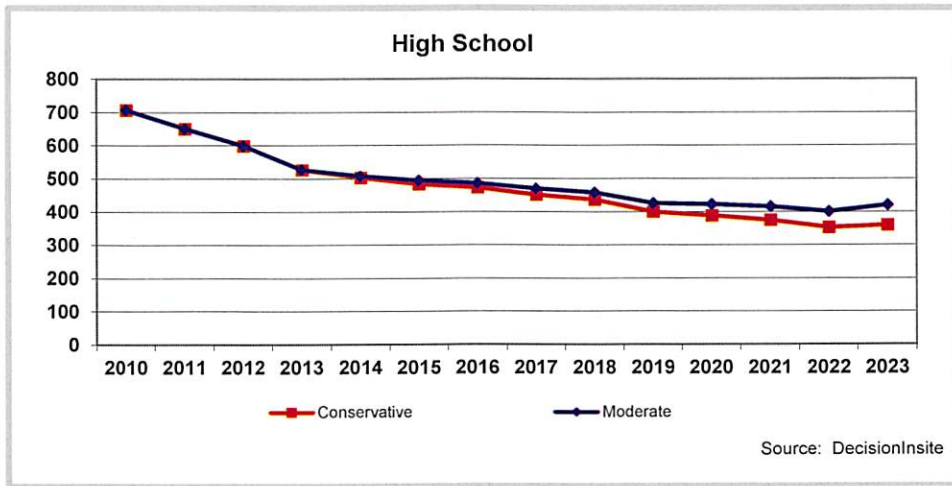


Figure: 13

## Summary of District Projections by Year

The complete district-wide projection table for each study is available online. Click on the Client Login tab at: <http://www.decisioninsite.com>. Each district-wide projection has its corresponding set of individual School Projections.

The tables below present a more detailed annual view of projected changes by grade level clusters for both the Moderate and Conservative Projections.

The “Pct Previous Year” row represents the percent of the previous year’s enrollment in each grade cluster that is projected in the subsequent year.

The “Five Year Change” row represents the percent change projected over the enrollment five years prior.

### Conservative Projection

Change by Level	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Kindergarten Only	134	136	134	132	132	131	130	128	127	126	124
Pct Previous Year	88%	101%	99%	99%	100%	99%	99%	98%	99%	99%	98%
Five Year Change						98%					95%
Gr K-5	783	758	728	732	712	706	708	708	705	700	692
Pct Previous Year	91%	97%	96%	101%	97%	99%	100%	100%	100%	99%	99%
Five Year Change						90%					98%
Gr 6-8	407	382	376	333	328	309	317	300	296	299	302
Pct Previous Year	93%	94%	98%	89%	98%	94%	103%	95%	99%	101%	101%
Five Year Change						76%					98%
Gr 9-12	527	504	484	473	452	437	400	389	375	353	360
Pct Previous Year	88%	96%	96%	98%	96%	97%	92%	97%	96%	94%	102%
Five Year Change						83%					82%
District	1717	1644	1588	1538	1492	1452	1425	1397	1376	1352	1354
Pct Previous Year	91%	96%	97%	97%	97%	97%	98%	98%	98%	98%	100%
Five Year Change						85%					93%

NOTE: Gray column most recent history year.

Figure: 14



### Moderate Projection

Change by Level	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Kindergarten Only	134	146	148	149	149	148	147	146	146	145	144
Pct Previous Year	88%	109%	101%	101%	100%	99%	99%	99%	100%	99%	99%
Five Year Change						110%					97%
Gr K-5	783	777	769	796	792	802	815	820	820	815	810
Pct Previous Year	91%	99%	99%	104%	99%	101%	102%	101%	100%	99%	99%
Five Year Change						102%					101%
Gr 6-8	407	386	381	343	342	331	343	340	349	365	370
Pct Previous Year	93%	95%	99%	90%	100%	97%	104%	99%	103%	105%	101%
Five Year Change						81%					112%
Gr 9-12	527	508	494	486	470	458	426	423	416	401	421
Pct Previous Year	88%	96%	97%	98%	97%	97%	93%	99%	98%	96%	105%
Five Year Change						87%					92%
District	1717	1671	1644	1625	1604	1591	1584	1583	1585	1581	1601
Pct Previous Year	91%	97%	98%	99%	99%	99%	100%	100%	100%	100%	101%
Five Year Change						93%					101%

NOTE: Gray column most recent history year.

Figure: 15

### Grade Level Profile Comparison

Another view of grade level enrollment can be seen in the chart below. The current grade level enrollment profile is compared with the projected grade level profile in the five and ten year future.

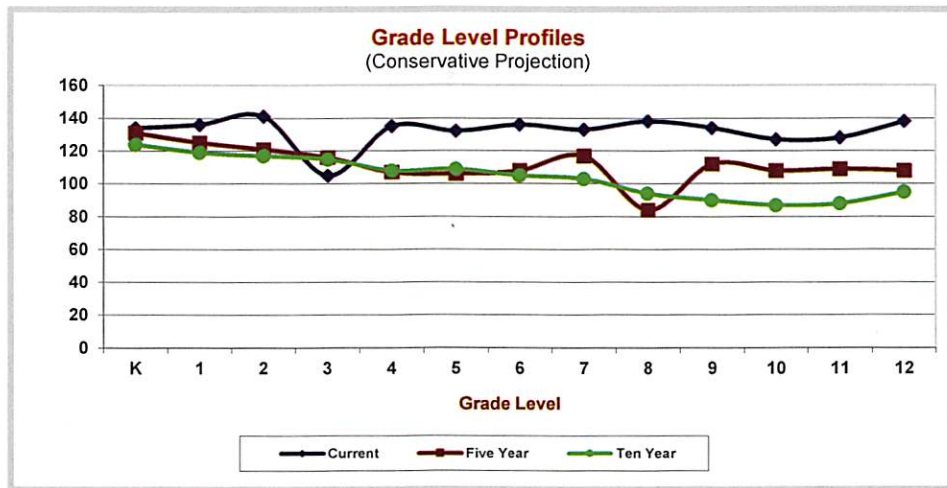


Figure: 16

## **Projecting School Enrollment**

School projections are primarily a function of the proportion of district students who enroll at a given school, modified by intra-district transfers within a given school level that may occur subsequent to initial enrollment, and augmented by inter-district transfer students.

### **School Draw Impact**

A draw rate is the percentage of students who enroll at a particular grade level in a given school from a specified geographic area. Open enrollment among district schools is projected using this concept. Except for changes in school boundaries or other changes in policy, historical draw rates from a given geographic area to a specific school (including out-of-district students) are assumed in the projections.

### **Intra-district Transfers**

Transfers within the district are incorporated into the projections in order to anticipate the movement of students from one district school to another within the same level, e.g., transfer from a neighborhood school to a special school. Recent historical transfer patterns are typically assumed in the projections.

[More details: [Enrollment History > All Schools > Open Enrollment](#)]

### **Inter-district Transfers**

Transfers into the district by out-of-district students, sometimes referred to as 'permit students', are an integral part of the district and school projections. Recent historical transfer patterns are typically assumed in the projections.

[More details: [Reports > Projections > All Schools > Projections](#)]

### **Individual School Projection Tables**

The complete set of individual school projection tables for each study is available online.

[More details: [Reports > Projections > All Schools > Projections](#)]

## **MySchoolLocator**

MySchoolLocator is a web-based service accessible to DecisionInsite clients. This service allows Internet users to enter a residential address, and find out which district schools are assigned to serve them. Access is by the District's web site.

The URL for integration into your district's website can be found by selecting the appropriate Locator study. Once open, select Locator from the District Admin menu. Locator will open, and the link can be copied from the browser.

Specialized district users have access to customize the messages seen by those accessing the MySchoolLocator.

NOTE: All projections are based on assumptions, and when read or shared are best prefaced with the phrase, "Based on these assumptions....", or "Based on these historical trends...." Particularly for projections more than 5 years out, "Enrollment Trend" is a far more accurate descriptor.

## Impact of the Projections on School Capacity

Facility challenges, if any, may manifest differently in the Moderate or Conservative projections. Because school capacity data has not yet been entered into the system, all schools are shown as exceeding capacity.

[More details: Reports > Projections > All Schools > Over Capacity]

The table below lists up to five schools that are projected to experience the most change in enrollment in the 5 year future based on the Conservative projection.

[More details: Reports > Projections > All Schools > Ten Percent Change]

School	Five Year Percent Change	Ten Year Percent Change
Tonawanda MS	-24%	-26%
Fletcher (4-5)	-20%	-19%
Tonawanda HS	-17%	-32%
Mullen (K-3)	-9%	-12%

Figure: 17

## Impact of SDC Students on Capacity

Relative to the impact of SDC students on school capacity, note that SDC students are integrated with the grade level student counts.

## Analyzing/Studying/Reviewing the Enrollment Projections

The projections of district and school enrollment are based on a complex mix of historical data, the projection of recent trends, and specific assumptions regarding the future. At DecisionInsite, we strongly encourage our clients to actively engage with the data with the aim of better understanding, further refining, and using the results to inform decisions about to be made. We believe increased effectiveness for both the district and DecisionInsite comes with increased and welcome dialogue.

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Graphs or tables may be copied from the PDF version of this document using the Snapshot Tool inside PDF Reader. Please do not hesitate to contact DecisionInsite regarding any questions or suggestions that may arise regarding these studies.

Respectfully Prepared and Submitted by:

**The DecisionInsite Team**

January 22, 2014

# Appendix

## Assumptions and Methodology

Three major factors drive district-wide student enrollment projections. These include:

1. recent kindergarten enrollment trends, modified by live birth data, if applicable,
2. changes in the grade level cohorts of students served as they age through, and
3. changes in the number of residential units within the district

District-wide projections are disaggregated to school projections based on the historical patterns of:

1. the rates at which each school draws enrollment from various sections of the district, and
2. the pattern of transfers within the district at a given level from one school to another.

## District Projections

### *Studyblocks*

For demographic analysis and enrollment projections, the district is divided into studyblocks. A studyblock is a custom unit of geography created by DecisionInsite for the purpose of generating reliable projections. They are based either upon Census Bureau blockgroups or census tracts or some combination thereof. A studyblock serves as the basis for the analysis of students served by the district and by schools. The objective is to do analysis with a small enough geographic unit to sense small area changes but large enough to allow for reliable projection. Studyblocks typically encompass 500–1000 students.

### *Kindergarten Enrollment*

The projected Kindergarten enrollment is a key variable in projecting K–12 enrollment. The base Kindergarten projection is determined by the trend of Kindergartners served in each studyblock in the previous 3 or 4 years. Depending on the circumstances, a growth trend in Kindergarten enrollment may be capped. Steep straight-line trends are mathematically moderated to avoid unrealistic results.

### *School Capacities*

School capacities provided by the district are compared to projected enrollments. Districts are invited to calculate school capacities in a manner that best serves the enrollment projection environment, and enter them into the DI System.

A Special Day Class (SDC) student at the elementary level is calculated by default as requiring 1 seat. This value, at district option, may be changed to 3, on the assumption that a class of 10 SDC students will occupy a typical classroom.

### *Students in the Projections*

Enrollment projections are limited to typical K–12 students. SDC students are projected as a stable percentage of the typical population unless all SDC students are mainstreamed. Excluded from the projections are students enrolled in Pre-Kindergarten, Adult High School, Home School, Adult Ed, Independent Study programs and other special schools.

### *Attendance Boundaries*

Attendance boundaries are assumed to remain constant, unless otherwise noted by the district.

### *Closed Schools*

Opportunities for open enrollment (intra-district) are assumed to remain unchanged, unless otherwise noted by the district.



### ***Inter-district Enrollment***

Students enrolled from other school districts are treated in aggregate in separate studyblocks. Students in Kindergarten, grades 1-3, and the initial grade at each level, are projected only to the extent they exist in recent years. Students enrolled in other grade level cohorts are aged through to the highest grade at each level. These defaults may be modified at district request.

### ***Cohort Percent Change***

Cohort percentage changes are calculated in order to assure sensitivity to perennial changes in students served by the district as they age from one grade level to the next. If every cohort were stable as it ages, the cohort percent change, from one grade to the next in each studyblock, would be calculated as 100%. For each studyblock, a cohort weighted average percent change over a defined number of years is calculated based on the change in the enrollment served as it ages from the previous grade level.

Average cohort percentages above 100% might, for example, reflect students returning from private schools. Cohort percentages below 100% might reflect drop-outs.

Growth studyblocks are those showing unusually high increases in elementary grade enrollment and/or cohort percent change in recent years—due, typically, to new housing development. Once growth studyblocks are identified, their default cohort percent change rate is set to 100% so as not to over-project new residential growth. By default, growth is not predicted to continue unless new occupied dwelling units are projected.

### ***Dwelling Unit Impact***

The predicted impact of new dwelling units on school enrollment is based on three factors: 1) new dwelling units, 2) the student generation rate for each unit type, and 3) the grade level distribution of newly generated students.

#### **1. Dwelling Units**

New dwelling units are categorized into 3 housing types: Single Family Detached, Single Family Attached, and Multifamily. Developers and builders are contacted for information relative to their plans for occupancy of new dwelling units.

#### **2. Student Generation**

Student generation rates are determined for each product type for each level: elementary, middle school and high school. Student generation rates are based on similar products types where such exist; otherwise, a default generation rate is used.

#### **3. Grade Level Distribution**

For each level, students generated by new dwelling units are distributed across grade levels. These percentages are based on historical patterns where they exist; otherwise, default percentages are used.

### **School Projections**

Projecting enrollment at the school level is based on the concept of a school draw rate, i.e., the percent of students from a given studyblock who enroll in a given school at its lowest grade. Draw rates reflect the impact of open enrollment within a district. For example, if one-half the sixth-graders from a given studyblock enroll in a particular 6–8 middle school, that school has a draw rate of 50% from that studyblock.

The draw rate for the most recent year is applied by default to the projected district enrollment for that grade from a given studyblock. The draw rate ages with the cohort. In this way, if the underlying cohort changes, the number of students enrolled at the school will change accordingly.

Draw rates can be adjusted if necessary. Manipulation of draw rates is used, for example, to project the impact of changes in attendance boundaries, or the impact of closing a school to open enrollment.

### ***Intra-district Transfers***

Grade-level transfers within or across schools are included in the projections to accommodate fluctuations like retention, transfer to continuation school, or any other special programs a district may offer that result in students changing schools at other than the typical grade configuration shifts. Transfers are calculated by applying the percent of a grade level population at one school that is transferred in the following year to another school, or continued at the same grade level at a given school in the following year.

## **Caveats on Projections and Methodology**

### ***On Projections***

Enrollment projections are based upon two critical factors: the student and school data from the school district and the mathematical formulas that are applied to those data. Projections fundamentally look at recent history as reflected in the student data and assume that past patterns and trends will continue into the future. The calculations assume that the historical data provided is at one year intervals based on enrollment at the beginning of each school year.

DecisionInsite takes great care in preparing a district's projections. A range of unpredicted anomalies, however, can cause reality to vary from the historical patterns. These include, but are not limited to, rapid changes in the economy, mortgage interest rates, the housing market, the job market, residential development plans, rental rates, etc. Anomalous changes that occur between the last set of student data and the first projection are not reflected in the projections unless the district works with DecisionInsite to amend the projections.

In the projections, calculations are mathematically precise. Each result is rounded to a whole number for ease of reading. This rounding sometimes results in the displayed whole numbers in a column not adding exactly to the displayed total of the column. This phenomenon, which is a result of rounding and not of any inaccuracy in the calculations, occurs both in the enrollment projections and in the community demographics.

### ***On Student Data***

DecisionInsite obtains historical student data files from the district. To the extent that the student data files are internally inconsistent from year to year, or the count of students in the files does not reflect the count of actual enrollees, errors are introduced to the projection calculations. For optimum results, the student data files must also consistently capture the same categories of students annually.

The calculations assume that the historical data provided is at one year intervals based on enrollment at the beginning of each school year. It is important that the student files obtained from the district are close to a common date each year, typically near the beginning of the school year. The snapshot of historical data near the beginning of the school year is best suited to our goal of projecting enrollment for the beginning of subsequent school years. To the extent the historical student data provided is not at one year intervals, or is not at a common date near the beginning of the school year, projections may reflect monthly fluctuations in enrollment that will diminish the accuracy of the projections.



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