2011

Manchester School District

School Capacity and Redistricting

Prepared By: Dr. Thomas J. Brennan, Jr. and
Mr. Keith R. Burke

2/9/2011

REDISTRICTING

The overall goal of the Redistricting Project is to contribute to the district's goal of providing all Manchester Schools students with the best physical learning environment possible by uniform and equitable utilization of facilities according to the needs of the educational program.

Redistricting is a massive undertaking that will affect employees, parents and students. Redistricting will affect all residents perhaps in very small ways and those residents who are our customers in very significant ways. Changing district boundary lines is accompanied by emotion and passion. This task is made more complex by accidents of geography, the locations of our schools, the street and neighborhood network that makes up the Manchester community and the geographic distribution of our students. Redistricting has a direct impact on school budgets, jobs and the education of every student. Redistricting is a daunting task.

Redistricting is the altering of school district boundary lines to achieve the desired end of efficient, effective and equitable utilization of schoolhouse space and resources.

The goal for the Redistricting Project is to adjust school district boundary lines in a way that follows the principles and practices of good school management and achieves enrollment targets established for each building in the best possible way. The objective is to, as much as possible, match enrollment at each existing school with capacity.

Project Mission Statement

To create a new school boundary plan that will, to the extent possible, further the district's goal of providing the best physical learning environment possible by uniform and equitable utilization of facilities according to the needs of the district's educational program.

Project Principles - Summary - Recommendations

Every Redistricting Project must be guided by principles or rules. These rules are used to guide the district boundary designers in their decision-making and to provide equity in the redistricting process. The redistricting options should be guided by the following principles. These principles are presented in no particular order.

- The overall goal of the Redistricting Project must be to provide all students with the best physical learning environment possible by uniform and equitable utilization of facilities according to the needs of the educational program

- An important objective should be class size equity across all buildings

- The plan should result in efficient and appropriate use of space at all buildings with appropriate use of specialty rooms for art, music, etc. and storage

- District boundaries should be logical and bordered by natural boundaries (i.e. major streets, highways, railroad tracks, bridges etc.)

- Natural walking paths to school should be preserved and used as a determinant for busing qualifications

- Wherever possible, students who live within sight of one school should not be transported to another school. Students should not walk or be transported by one school to reach his/her destination school

- Residence, not child care arrangements, determine which elementary school a student will attend

- Boundaries must consider projected student population growth with

the school boundary zone

- Boundaries must consider the placement of specialized educational programs (Pre-School, EDB, Autism, Deaf and Hard of Hearing, English Learners, etc.)

- To the extent possible, boundaries should maintain the concept of geographic zoning, keeping geographically contiguous neighborhoods within one school district. Neighborhoods and condo and apartment complexes should all go to the same school

- Boundaries should promote an efficient system of school bus transportation. School starting and ending times are important here

- To the extent possible, feeder elementary schools should not be split as they feed the middle schools. However, this may be required to equalize enrollment numbers and to maximize the use of available space in the middle schools.

- The redistricting plan should invite staff and community input, be widely published and accessible on the Internet and be professionally presented to the various school constituencies at scheduled meetings / forums

- The boundary plan should anticipate future growth to the extent possible and be "built to last"

- The redistricting plan must be perceived to be equitable on its face. The plan must be simple and easily understood. There should be no lotteries or special classes of students or parents who are granted special waivers from following the redistricting plan

- Once the plan is accepted, the plan should remain fixed until the next major Redistricting Project is undertaken. Once accepted, the boundaries should be changed only in the case of the most grievous error or omission of the boundary designers

- The redistricting outcome should strive to affect the fewest number of parents and students

- The redistricting outcome should be in the best of the student

- The redistricting outcome will account for Manifest Educational Hardship

- The redistricting outcome will comply with BOSC policies regarding the appeal of student placement

- The redistricting outcome will comply with federal, state and district policies regarding "school choice"

Determining School Capacity - Considerations

How many students can a building accommodate? This question often arises, and in the development of a facility plan, it can be one of the most debated issues. The answer to this question can impact the need for constructing new buildings as well as additions and can have a profound impact on revenue especially if projects are funded through state or other agencies.

It is not uncommon to review an evaluation of an existing building only to find that the capacity which had once been assigned to the building is much greater than what can be reasonably accommodated.

During the past thirty years, the programs in a public school system and the manner in which they are delivered have changed significantly. Repeated arguments are heard that "this school was able to accommodate 600 students thirty years ago and now you are saying it can only accommodate 400 students today. How can this be the case?" Persons making these statements often do not realize that class size has been reduced [let's say from 30 to 25], the music program was being held on the stage, there was no art room and the teacher used a cart, computers had not been invented and there were no

computer labs, the Kindergarten program went from half day to full day and severely handicapped special education students that were institutionalized are now attending public schools. Add to this the fact that many states are legislating a class size of 20 or under for the early elementary grades, schools are expanding pre-school services, and there are many more at-risk students programs.

Historically, school districts throughout North America have determined the capacity of school by counting the number of classrooms in a building and multiplying by an average class size. In facility planning terminology we have used the term, "design capacity", to describe this methodology. Even though at first glance this seems only to be common sense, this methodology does not take into account the programmatic implications of school facilities. In an elementary school there is a need for libraries/media centers, administrative areas, special education classrooms, and specialized spaces for specific program areas such as science, art and music. In a secondary school, in theory it may be possible to use every classroom every period of every day, but from a practical perspective it is not likely. In facility planning terminology, taking program issues into consideration, we use the term, "functional capacity".

Even though functional capacity is a more realistic analysis of what a building can accommodate, it is necessary to apply some common sense. There are examples in which classrooms have been taken over for other purposes such as teacher prep areas, storage, or offices which can result in a lower capacity figure.

Public schools use space in school buildings for special purposes such as community activities or district-wide special education programs when space is available in a building. The location of this type of program impacts the number of students the building can accommodate. For planning purposes, functional capacity assumes these special programs could be moved to another location. Therefore functional capacity is defined as the number of student the building can accommodate assuming a "traditional" educational program.

The formula used for determining capacity should reflect the programs of the public schools yet should be kept simple for planning purposes. The

method for determining functional capacity is different for elementary, middle and high schools.

Elementary Schools

There are a wide variety of elementary schools that range from K-1 to K-6, small schools with ten or fewer classrooms to schools with fifty or more classrooms. Manchester has 14 elementary schools with an instructional range of PK – 5.

The following criteria are suggested for consideration in determining functional building capacity at the elementary level.

Average Class Size

There is currently a wide range of class sizes throughout the country. Many districts have 30 or more students in elementary classrooms whereas other districts are striving for 20 or fewer. The most common average class size that is used for planning purposes is 25 students. In determining capacity, the class size that should be used should either be based on district policy or actual averages in the district.

School district class size policy is usually used to determine the number of teaching positions not capacity. For example, a school district may have a policy that when there are more than 30 students in a classroom another teacher will be added. Even though this policy may be interpreted to mean that the capacity of a classroom is 30 students the reality is the average class size of this district maybe nearer 25 students. In this case, average class size would be a better indicator of determining the number of students that should be used. On the other hand it could be argued that capacity is the maximum number of students that a building can accommodate, not the optimum.

Even though a class size of 25 is the most common number used by school districts throughout the United States many states and local districts are moving toward smaller class sizes for the early elementary [primary] grades.

Programs requiring varied space requirements:

Special Education:

Special Education instruction occurs at various levels of need, varying class sizes, and in various locations throughout a district. Instructional areas for high incident students [learning disabled, behaviorally and mildly mentally handicapped, etc.] are usually found a most elementary schools.

For planning purposes, functional capacity assumes that low incident students [severely profoundly handicapped] are not located in the building and are being housed at a different district facility.

For discussion purposes let's assume that a building can accommodate 400 students without housing the low incident or severely profoundly handicapped students. On the other hand a building may have four classrooms dedicated to serving this population. In this case the capacity may be reduced to 300 students.

We would suggest for buildings that house low incident or severely profoundly handicapped students that two capacity figures be established: one calculation including this population and one not including this population. [The reason being that if the building is not to be used for this purpose, it has the potential for housing more students.]

Art and Music Spaces:

In nearly every elementary school in North America, art and music instruction is an important part of a well-rounded elementary curriculum. Therefore spaces for each of these programs should be included in an elementary school. In schools with fewer students, these programs may need to be combined into one space.

Computer Labs:

Even though the future solution is to have computers integrated into all instructional spaces, the current practice is to have designated computer labs in elementary schools.

Science Classrooms:

State proficiency testing has placed an increased emphasis on science curriculum at the elementary level. Currently science instruction is limited to what can be done in the regular classroom. Districts will need to decide whether to provide separate classrooms for science or to include it in the regular classroom.

Special Programs:

Most school districts provide special programs for at-risk students such as Title I, English Learners, and other programs. If these programs are to be provided, space needs to be allocated for these purposes.

Determining Elementary School Capacity

The elementary program is usually delivered based on students being assigned a home room or regular classroom and attending specials such as art and music in a specialized classroom. The number of special classrooms should be a reflection of the enrollment of the building.

For example: if a school has only one classroom for each grade it would only require a part-time art room. If there are three classrooms for each grade, a full time art classroom would be needed. Or, for example, a school with 200 students may only require one special education classroom whereas a school for 400 may require two or more classrooms for special education.

School districts often change the use of an individual classroom from year to year. One year the classroom may be a regular classroom. The next year it may be a special education classroom and the year after that a computer room. Since these changes do occur, the simplest procedure would be to count the total number of classrooms and subtract the number for special purposes and then multiply the remainder by 25 [or by desired class size determined by the district]. This may not be perfect, but by using this method the only information needed would be the total number of classrooms in a building.

Determining High School Capacity

High schools operate on a totally different basis than elementary schools. Students are not in self-contained environments occasionally traveling to another location for a special class. At the high school level, students typically change classes each period.

High schools are undergoing significant change in program delivery. Many schools are adopting block scheduling and/or various teaming approaches. The method for calculating capacity at the high school level needs to be flexible to deliver a traditional departmentalized program or the newer evolving methods of program delivery.

Average Class Size

There is currently a wide range of class sizes in a high school and from school to school. It is not uncommon to find some very small classes in advanced placement courses and upper level foreign languages. At the same time it is not uncommon to find 60 or more students in a band or choir class.

Several states have attempted to determine the capacity of a building by establishing a capacity for each type of room in a building. This may be an appropriate approach but often results in a much larger capacity than what is realistic. For example the band room may be rated as a capacity for 75 students. The fact of the matter is that the full band only meets one period per day and the rest of the day the room is being used for smaller sectional or specialized bands such as a jazz band. To say that the capacity of the band room is 75 assumes that the room is used every period of the day for that number of students. In reality, the band room may be used for 75 students one period per day and less than 20 students each of the remaining periods, or the room may only be used as a band room 3-4 periods per day.

Even though this seems like an over simplification, using an average class size of 25 students across the board has worked quiet well in determining capacity at the high school level.

Teaching Stations/Classrooms

Teaching stations are defined as areas in which students receive instruction in core curriculum courses as well as exploratory/elective curriculum areas. These areas should be adequately sized to meet the needs of the programs included in the space. Program areas include English, math, social studies, foreign language, science, art, music, family and consumer science, business, vocational/technology education, and physical education. In a high school the gym should be counted as one or more teaching stations. Even though it is not a regular classroom, it is a location in which students receive instruction on an hourly/daily bases. Likewise, a food lab, science lab, business computer lab, and vocational/technology lab are all counted as teaching stations.

Auditoriums and library/media centers are not counted as teaching stations since these spaces are not assigned for "regular" instruction.

Utilization Factor

It is very difficult to schedule every teaching station every period of the day. There may be a specialized space such as a vocational/technical lab for which there is insufficient enrollment to conduct classes each period. At times it is advisable for the classroom to be available to the teacher during a teachers prep period. At other times it is just not possible to maintain an average enrollment of 25 students and there needs to be some room to adjust.

It is recommended that the utilization factor of 85% be used at the high school level. This would represent approximate utilization of five out six periods in a six period day or six out of seven periods in a seven period day. This may indicate that some spaces are being used more than 85% of the time whereas others may be used less.

Experience has shown that if the 85% factor is used for planning purposes, the high school has the ability to increase the utilization to 90% or higher in the event of short-term overcrowding issues. Experience will also show that once a building surpasses90% utilization, scheduling of spaces and students becomes increasingly difficult.

[Authors' note: if space is going to be used less than 50% of the time, consideration should be given to reusing the space for another purpose or determining some type of multi-use of the space to increase its utilization.]

High School Functional Capacity Formula:

In the past, capacity was determined by counting the number of teaching stations in a facility and multiplying by an average class size. In facility planning terminology this is called the "design" capacity of the building. However, this methodology does not take into account programmatic implications. By applying the utilization factor to the design capacity, the functional capacity can be obtained. An example is included below.

# of Teaching Stations	40
Average # of Students	X25
	1000

85% = 850 Capacity

This would be a very straight forward method of determining capacity, just count the total number of teaching stations, multiply by 25 students and multiply 85%.

Determining Middle School Capacity

The reason this was saved for last is that most middle schools are a hybrid between elementary schools and high schools. Actually middle schools are the evolving school of the future. More and more elementary schools and high schools are adopting the middle school program delivery of team teaching.

In the past middle schools were called junior high schools and were "mini" high schools. They operated on a 6 to 9 period schedule and students rotated between classes. Many schools which are called middle schools still operate in this fashion and have not changed the physical plant to design to accommodate the functionality of a middle school. In Manchester, were have three middle schools

operating in buildings functionally designed for a junior high school and one school designed to operate as a middle school..

The middle school philosophy places students in teams. The size of these team varies from school to school. A team may be two teachers and 50 students or teams may be as large as 6-8 teachers and 150-200 students. Regardless of the size of the team, the program typically consists of a core curriculum [English/language arts, math, science and social studies] and an exploratory curriculum of physical education, art, music, band, computers, technology, and foreign language.

Students usually attend the core curricular areas every day throughout the school year. There are a wide variety of schedules associated with the exploratory programs. Students may attend an exploratory program every day for 6-18 weeks and then move on to another exploratory program or they may attend exploratory programs on alternating days. There are as many different schedules as there are middle schools and you need to be a middle school student to figure it out.

Since there are two basic methods for delivering education at the middle or junior high school level, there are two different methods for determining capacity.

Middle School Capacity

Schools that operate as middle schools, a modification of the elementary method for determining capacity applies. Find the total number of "regular" classrooms and multiply by the desired average class size, typically 25.

A school may have 30 classrooms for core curricular programs. This school may also have seven exploratory classrooms [art, band, choral, computer, technology, life skills, and physical education] and three special education classrooms. The capacity of the building would be 30 time 25 students per class which equals 750 students.

If you were to study these figures closely you will note there is a lower utilization of this building.

Summary

Determining capacity is critical to the formation of a district facility plan. Capacity should be program driven. Even though the resultant capacity may be different than what you have used before, you are likely to find these numbers more accurately reflect the program that is being delivered today.

In this report, combinations of criteria have been used in order to determine school capacities. Measurements and capacity calculations from the NESDEC report of 2004, current classroom utilization and measurements provided by the school principals in January 2011, and the capacity and utilization criteria used by the New Hampshire State Department of Education. Form these sources an "Average Capacity" was calculated. We believe that this method results in the most reasonable capacities for the schools.

Enrollment data was gathered from the district's report to NHDOE on October 1, 2010.

Capacities of Manchester Schools- Table 1*

Year	SCHid	Level	School	Total Enroll 2010/11	NESDEC Capacity COC	NESDEC Capacity Adjusted POC	Capcity Based on Current Data w/o Utilization Adjustment	Capcity Based on Current Data WITH Utilization Adjustment	Ave Capacity	+/- Capacity
20010-11	21545	K-5	Bakersville School	368	336	270	340	323	317	-51
20010-11	21600	K-5	Beech Street School	607	711	511	677	643	636	29
20010-11	21530	K-5	Gossler Park School	390	474	405	568	540	497	107
20010-11	21610	K-5	Green Acres School	561	603	510	631	599	586	25
20010-11	21625	K-5	Hallsville School	331	359	313	336	319	332	1
20010-11	21560	K-5	Highland-Goffs Falls School	514	648	579	574	545	587	73
20010-11	21590	K-5	Jewett School	394	408	362	521	495	446	52
20010-11	21565	K-5	McDonough School	551	632	540	615	584	593	42
20010-11	26435	K-5	Northwest Elementary School	678	678	563	478	454	543	-135
20010-11	21540	K-5	Parker-Varney School	525	609	540	479	455	521	-4
20010-11	21605	K-5	Smyth Road School	424	408	408	530	504	462	38
20010-11	21635	K-5	Webster School	454	523	477	425	404	457	3
20010-11	21515	K-5	Weston School	609	597	471	497	472	509	-100
20010-11	21640	K-5	Wilson School	395	437	322	409	389	389	-6
										74
20010-11	27595	6-8	Henry J. McLaughlin Middle School	824	NC	NC	1,604	1,444	1,524	700
20010-11	21520	6-8	Hillside Middle School	912	NC	NC	1,192	1,073	1,132	220
20010-11	21525	6-8	Middle School At Parkside	713	NC	NC	1,000	900	950	237
20010-11	21575	6-8	Southside Middle School	861	NC	NC	858	772	815	-46
										1,111
20010-11	21510	9-12	Manchester Central High School	2,232	NC	NC	3,169	2,694	2,931	699
20010-11	21505	9-12	Manchester Memorial High School	2,030	NC	NC	2,583	2,196	2,389	359
20010-11	21555	9-12	Manchester West High School	1,357	NC	NC	1,736	1,476	1,606	249
										1,307
			Consolodated Capacities	Total Enroll 2010/11	NESDEC Capacity COC	NESDEC Capacity Adjusted POC	Capcity Based on Current Data w/o Utilization Adjustment	Capcity Based on Current Data WITH Utilization Adjustment	Ave Capacity	+/- Capacity
			Elem	6,801	7,423	6,271	7,080	6,726	6,875	74
			Middle School	3,310	NC	NC	4,654	4,189	4,421	1,111
			High School	5,619	NC	NC	7,488	6,365	6,926	1,307

The shaded highlighted cells indicate schools that are over capacity. For example; Bakersville School is show to be over capacity by 51 students. *Capacities calculated on best available information as of January 2011

Table 2 shows the schools that are over capacity and under capacity and which Manchester school districts that have excess capacity are located adjacent to the Manchester school districts that have excess capacity.

For example, Bakersville is OVER capacity by 51 students Beech Street School District is adjacent to Bakersville and can accommodate 29 additional students, Highland-Goffs Falls could accommodate 73, and Jewett 52 additional students.

Capacities and Possible Placements

Table 2

				School(s) with Excess Capacity That Occupy Adjacet Districts													
School	Total Enroll 2010/11	Ave Capacity	+/- Capacity	Bakersville School	Beech Street School	Gossler Park School	Green Acres School	Hallsville School	Highland-Goffs Falls School	Jewett School	McDonough School	Northwest Elementary School	Parker-Varney School	Smyth Road School	Webster School	Weston School	Wilson School
Bakersville School	368	317	-51		29				73	52							
Beech Street School	607	636	29														
Gossler Park School	390	497	107														
Green Acres School	561	586	25														
Hallsville School	331	332	1														
Highland-Goffs Falls School	514	587	73														
Jewett School	394	446	52														
McDonough School	551	593	42														
Northwest Elementary School	678	543	-135		29	107									3		
Parker-Varney School	525	521	-4		29	107											
Smyth Road School	424	462	38														
Webster School	454	457	3														
Weston School	609	509	-100				25	1			42			38			
Wilson School	395	389	-6		29			1		52	42						
			74														
				Henry J. McLaughlin Middle School	Hillside Middle School	Middle School At Parkside	Southside Middle School										
Henry J. McLaughlin Middle School	824	1,524	700														
Hillside Middle School	912	1,132	220														
Middle School At Parkside	713	950	237														
Southside Middle School	861	815	-46	700	220												
			1,111														
Manchester Central High School	2,232	2,931	699														
Manchester Memorial High School	2,030	2,389	359														
Manchester West High School	1,357	1,606	249														
			1,307														
Consolodated Capacities	Total Enroll 2010/11	Ave Capacity	+/- Capacity														
Elem	6,801	6,875	74														
Middle School	3,310	4,421	1,111														
High School	5,619	6,926	1,307														

Note: Enrollments are based on the current reported (Oct 1, 2010) enrollments and capacities are calculated as based upon available classroom size and count data.

Table 3 takes a slightly different view of the data. It shows the number of students in each OVER CAPACITY school that live CLOSER to schools with excess capacity than to their home school.

Placement Possibilities Based on Schools Closer to Home than Currently Assigned School

Table 3

Number of Students by Grade - Closer to Schools with Excess Capacity			
Home School	Grade	Total Students	
BAKERSVILLE ELEMENTARY SCHOOL	1	4	** See Detail Below*
	2	4	
	3	4	
	4	2	
	5	3	
	KF	3	
BAKERSVILLE ELEMENTARY SCHOOL Total		*20*	
HENRY WILSON SCHOOL & COMMUNITY CENTER	1	14	
	2	16	
	3	11	
	4	13	
	5	14	
	KF	13	
HENRY WILSON SCHOOL & COMMUNITY CENTER Total		*81*	
NORTHWEST ELEMENTARY SCHOOL	1	11	
	2	12	
	3	11	
	4	14	
	5	14	
	KF	15	
NORTHWEST ELEMENTARY SCHOOL Total		*77*	
WESTON ELEMENTARY SCHOOL	1	74	
	2	60	
	3	56	
	4	60	
	5	102	
	KF	56	
WESTON ELEMENTARY SCHOOL Total		*408*	

Table 4 is a detail extract of the first line of Table 3. In the Grade 1, Bakersville School, there are four students that live closer (from their home address) to other schools (driving distance) than to Bakersville. For example the first student, lives 1.27 miles from Bakersville, 1.2 miles from Beech Street, .55 miles from Hallsville and .63 miles from Jewett.

Detail Extract of Fist Line of Table 3

Table 4

*DETAIL OF LINE			Driving Distance (miles) to Schools with Excess Capacity - From Home Address Green Shaded cells indicate distances that are closer to home address than home school								
SASID	Grade	Home School Distance	Beech Street	Gossler Park	Green Acres	Hallsville	Highland-Goffs Falls	Jewett	McDonough	Smyth Road	Webster
1342434587	1	1.27	1.20	2.84	1.68	0.55	3.31	0.63	1.64	2.20	3.86
1342105329	1	1.55	1.98	3.36	1.19	0.75	2.69	0.41	1.82	2.77	4.60
1338506734	1	4.43	5.10	6.64	4.59	5.24	2.24	4.59	8.79	9.67	8.90
1325237128	1	0.79	0.70	2.22	2.28	1.01	2.83	1.22	1.86	2.42	3.26

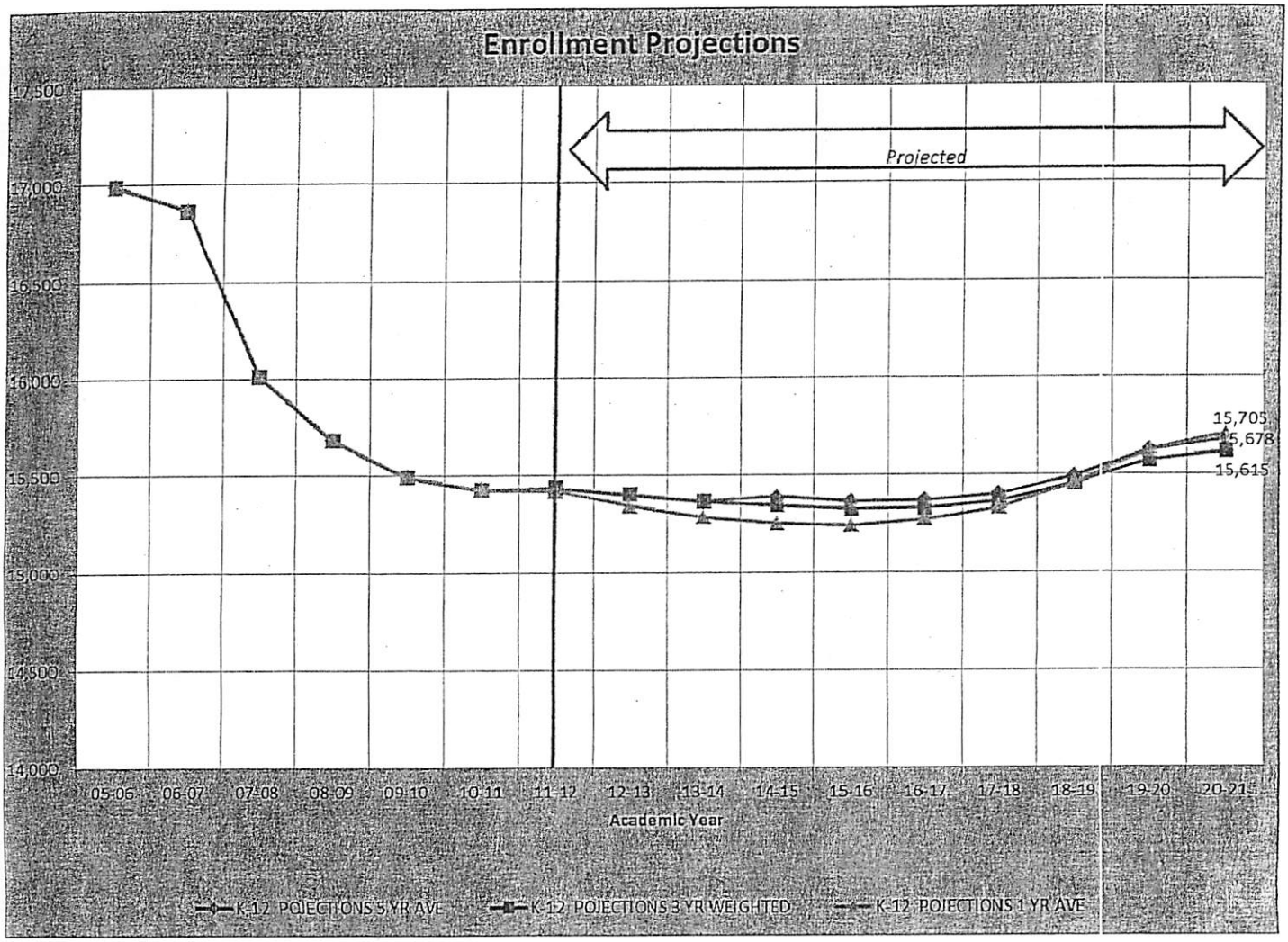
In the Case of the middle schools, only one school is over capacity, Southside Middle School (see Table 1). Table 5 shows that there are a number of possibilities for placement of Southside Middle School students in schools that are closer to their home address than Southside.

South Side Middle School Placement Possibilities Based on Schools Closer to Home than Currently Assigned School

Table 5

SOUTHSIDE MIDDLE SCHOOL		
Closest School	Grade	Total
Hillside	6	7
	7	7
	8	14
Hillside Total		***28***
McLaughlin	6	29
	7	35
	8	30
McLaughlin Total		***94***
Parkside	6	9
	7	18
	8	10
Parkside Total		***37***

In Table 5 it may be seen that 28 Students currently attending Southside are actually closer to Hillside from their home address. Following down the table, 94 Southside students are closer to McLaughlin and 37 are closer to Parkside



ENROLLMENT PROJECTIONS - Model Comparisons

Manchester School District

2011 - 2012 to 2020 - 2021

Model	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21
5 Year Average	15,436	15,397	15,367	15,391	15,367	15,372	15,403	15,493	15,625	15,678
3 Year Weighted	15,436	15,403	15,366	15,349	15,327	15,333	15,365	15,457	15,573	15,615
1 Year Cohort	15,419	15,345	15,288	15,253	15,243	15,275	15,334	15,460	15,625	15,705