MGT
OF AMERICA

TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS

Development of Comprehensive Facility Plan for Town of Andover and Andover Public Schools

FINAL REPORT

June 20, 2016

TOWN OF ANDOVER

DEVELOPMENT OF COMPREHENSIVE FACILITY PLAN FOR TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS

JUNE 20, 2016

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1.0 INTRODUCTION & METHODOLOGY

In January of 2016, the Town of Andover, Massachusetts and the Andover Public Schools contracted with MGT of America Consulting, LLC. (MGT) to develop a ten-year facility master plan to address the facility needs of the town and the schools through 2026. The goal of the Town/School Facility Master Plan is to establish a long-range *Facility Master Plan* based on input from the community, using best practice facility standards, that identifies and prioritizes the facility needs, and presents an effective and efficient implementation of projects over the ten-year planning period.

The project included the following tasks:

- Project initiation
- Development of facilities and site inventory system
- Programmatic review of both town and school facilities to establish facility standards
- Facility assessments
- Analysis of school and community demographics
- Analysis of school capacity and utilization
- Public involvement and community collaboration
- Standards for ranking building needs
- Budget estimates
- Prioritization and budgeting
- Preparation and presentation of final facilities master plan

This report consists of eight sections. Sections 1-6 describe the methodology or approach used and provide the data gathered to develop the facilities master plan. The final sections include the master plan options and recommendations. The sections are as follows:

Section 1 – Introduction & Methodology

Section 2 – Programmatic Review

Section 3 – Enrollment Projections

Section 4 – Capacity & Utilization

Section 5 – Facilities Assessment

Section 6 – Public Input

Section 7 – Prioritization and Budgeting

Section 8 – Master Plan Options and Recommendations

METHODOLOGY

To develop a long range facility master plan, MGT gathers and analyzes both *quantitative* and *qualitative* data. Most of the quantitative data comes from the town/district, with the exception of enrollment data, which also comes from the city, the county, and the U.S. Census Bureau (Census). Quantitative data allows us to compare numbers and uncover trends. Qualitative data is gathered from conversations with town/district officials familiar with governmental and educational programs and facilities, as well as city or county planners to explore population changes. In addition, community input is gathered through several methods. This qualitative data typically provides the "why" behind the numbers. Both forms of data are critical to the preparation of a comprehensive plan for the town and district that will meet the needs into the future.

PROJECT INITIATION

MGT staff reviewed the goals of the project with town/district staff during the project initiation meeting. Lines of communication were established and the work plan and project schedule were reviewed and finalized. In addition, a presentation about the project was made to a large group of stakeholders and staff of both the town and the school district.

PROGRAMMATIC REVIEW

MGT conducted extensive interviews with town and school district leaders and staff to develop an understanding of the governmental and educational programs being delivered from the town/school facilities. These discussions were used to establish facility standards by which the facilities could be evaluated for functionality and/or educational suitability.

ENROLLMENT PROJECTIONS

MGT prepared enrollment projections for the school district. Understanding current and future enrollment in a district is critical: funding, staffing, and facility decisions hinge on having accurate information about enrollment. MGT gathered demographic data from several sources and prepared the projections using four different projection models. To the extent possible, the projections reflect the current housing trends in the town which shows an in-migration of families to housing that is being freed up by seniors retiring to new senior housing.

CAPACITY AND UTILIZATION

It is important to understand that building capacity and utilization are dependent on the educational programs offered at a given school and that capacity and utilization can change with a modification in the planned programming. For example, the capacity of a school can be decreased by deciding to change a grade 3 classroom, currently housing 24 students, into a Title I support space that houses 3-8 students at various times.

MGT worked with district staff to understand the current program offerings and the current capacity and utilization numbers for each building. During the on-site review, MGT staff discussed program needs and plans with the administrative staff at each site.

Current and future utilization was calculated by dividing current and projected enrollments by the capacity of each facility. Utilization is expressed as a percentage with a preferred utilization being between 85 to 95 percent.

FACILITIES ASSESSMENT

Facility assessments were conducted at each town/school site using MGT's BASYS® Facility Assessment software. The assessments included:

- Building Condition which evaluates the physical condition of all building systems
- Functionality or Educational Suitability which evaluates the ability of the facility to support and enhance governmental or educational program delivery
- Grounds Condition which evaluates the physical condition of all site systems
- Technology Readiness which evaluates the level to which the building infrastructure supports information technology

Each assessment results in a score based on a 100-point scale. Scores are interpreted as shown on the following chart.

NUMERICAL SCORE	INTERPRETATION
90 – 100	New or like new, Excellent
80 – 89	Good
70 – 79	Fair
60 – 69	Poor
BELOW 60	Unsatisfactory

The scoring is structured to measure the level of deficiencies as related to the total value of the building. Consequently, scores can be used to calculate the budgets required to remediate the deficiencies identified in the assessments. The BASYS® software produces a detailed report for each facility assessment which includes each deficiency identified.

The results of the assessment were reviewed with town/school staff to ensure accuracy and completeness.

PUBLIC INPUT

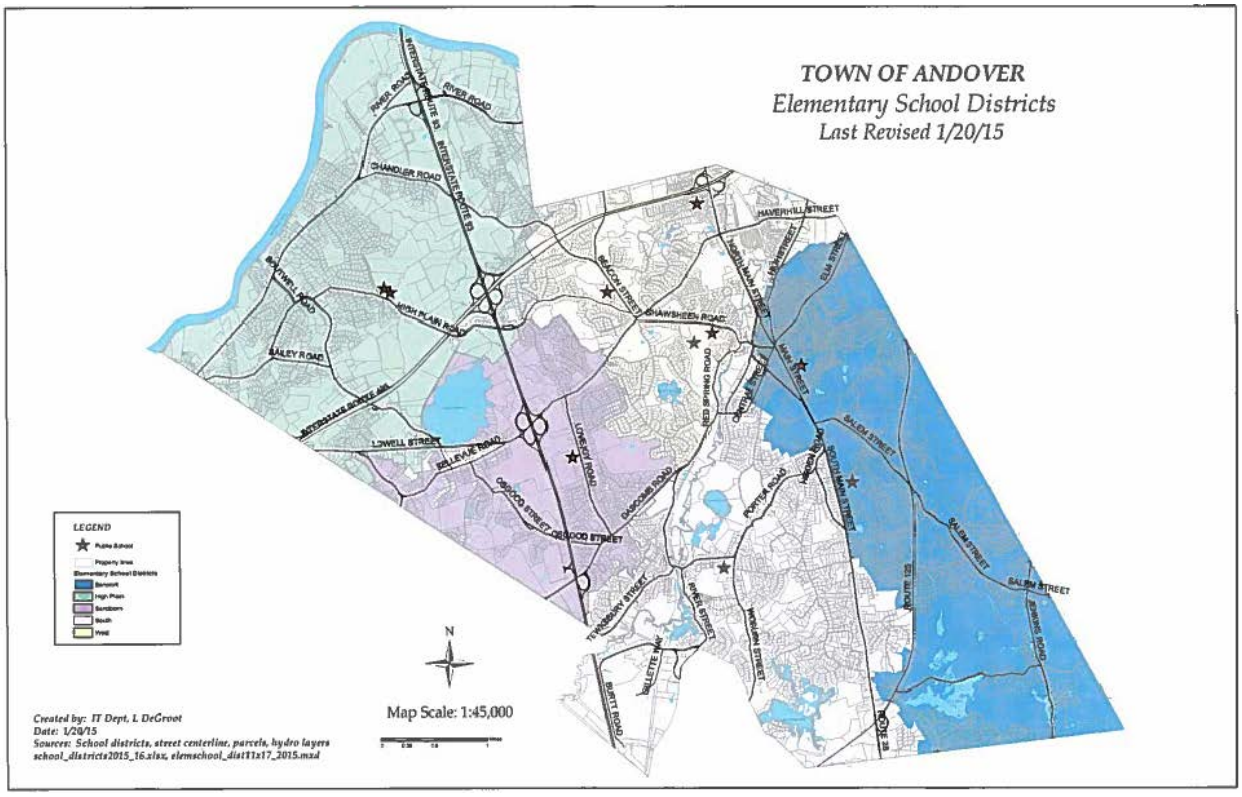
Public input and support are important key to developing a facility master plan that meets the priorities and needs of the community. MGT conducted two public input processes. A community charrette was held, in which community members were invited to attend a structured meeting. The meeting began with a presentation of the master planning process. That presentation was followed by an electronic survey of the audience. The survey included questions relevant to the facilities plan and responses to each question were immediately presented in the form of bar graphs. After the survey, the audience was broken up into small groups to discuss their views of each question.

In addition, a survey was conducted via the internet. This survey contained the same questions asked in the charrette and additional questions about specific schools, and was open to all community members. The results were tabulated and combined with the results from the charrette to guide the long range planning.

MASTER PLAN OPTIONS AND RECOMMENDATIONS

MGT developed multiple options for meeting the facility needs of the town/district. MGT has not selected a recommended option for the facility plan, instead leaving the selection to the Andover community after further review and discussion. In addition, supporting recommendations are presented to facilitate implementation of the master plan.

EXHIBIT 1-1
TOWN OF ANDOVER AND ADOVER SCHOOL DISTRICT



Source: Town of Andover, MA, 2016

2.0 PROGAMMATIC PRIORITIES

ASSESSING FUNCTIONALITY AND EDUCATIONAL SUITABILITY

A key element in developing a Facility Master Plan is to determine how well the existing facilities support and enhance the delivery of the programs housed in each facility. The measurement of this aspect is called "functionality" for the town buildings and "educational suitability" for the schools. By measuring the functionality or educational suitability against standards developed for the Town and School District, deficiencies and best practices can be identified and be used for establishing future facility needs.

MGT has developed a process to determine functionality and educational suitability of facilities which results in a numerical score based on a 100-point scale. This score, when combined with the other facility assessments - site and building condition and technology readiness - provides a measurement to compare facility needs and prioritize future facility improvement projects.

The functionality and educational suitability assessments examine the following elements for each facility. Each element is numerically weighted based on its contribution to the overall functionality or educational suitability of the entire building.

1. Site
    a. Vehicular and pedestrian traffic
    b. Parking
    c. Landscaping
    d. Activity and athletic facilities
2. Building
    a. Overall environment
    b. Specific space types, e.g. office, classroom, workshop, cafeteria
        i. Environment
        ii. Size
        iii. Location
        iv. Storage and fixed equipment
3. Safety and Security
    a. Fencing
    b. Signage and wayfinding
    c. Ease of supervision
    d. Controlled entrances

ESTABLISHING STANDARDS

Standards for functionality and educational suitability must be established prior to conducting the assessments. While MGT has assessed functionality and educational suitability for clients across the nation, the standards used to assess the Andover facilities, were informed by national best practices, but were developed to meet the specific priorities and needs for the Town of Andover and the Andover Public Schools.

To establish these standards, MGT conducted numerous interviews with the Town of Andover departmental administrators and the Andover Public Schools key curriculum coordinators and department administrators. These structured interviews were used to develop an understanding of the programs being housed in each facility, whether the facility was a town building or a school, and to establish standards for the elements listed above.

From these discussions, MGT developed an in depth understanding of the services being delivered from the town buildings and how well the existing facilities were functioning. Future needs were examined along with the capacity of the existing buildings to meet those needs. A framework was developed for assessing the functionality of the town buildings. This framework was general in nature so that it could be applied to the numerous functions served by the town buildings, including public safety, the library, administrative offices, and maintenance facilities.

In addition, MGT developed the **Educational Suitability and Technology Readiness Reference Guide** (see ***Appendix B***) to define the facility standards for the schools**.** These standards are based on the district's current educational specifications and design practices. This document was reviewed and approved by the district and used as the basis for the educational suitability assessments.

The suitability standards define four components for each type of instructional space:

- Learning environment – Does the space provide an appropriate physical configuration, HVAC, lighting, acoustical treatment, etc. to support student learning?
- Size – Does the space meet the defined size standard for square footage?
- Location – Does the space exist in the right location?
- Storage/Fixed Equipment – Does the space have what teachers and students need to be successful, including safety equipment, permanent cabinetry, and staff technology?

In addition to curricular areas, MGT discussed the district's current and planned technology structures in support of instruction. IT staff from the district reviewed standards and assisted in the development of the tool used to assess Technology Readiness, e.g., electrical service to support charging of devices, wireless access, video streaming capacity, telephone/PA, and the IT environment in IDF/MDF areas and computer labs, etc. The technology readiness assessment reviews how well the infrastructure in the schools supports technology. It does not include an evaluation of the IT software or equipment.

All MGT staff who conducted assessments were trained in the use of this document as the standard for assessing each school.

CONDUCTING THE ASSESSMENTS

The functionality framework and educational suitability guide were used to calibrate MGT's assessment software, BASYS (Building Assessment System). The BASYS tool has four assessments: Building Condition, Grounds Condition, Functionality/Educational Suitability, and Technology Readiness, each of which creates a score on a 100-point scale with 90-100 being "Excellent" and scores under 50 being "Unsatisfactory." This scoring system is easily understood by the public that is accustomed to educational grading systems on the 100-point scale. The framework and guide were used to ensure inter-rater reliability of the assessors who visited each town building and school and documented the functionality/suitability of each space.

Each evaluator met with the building administrator or school principal to review the program(s) at each site and then walk the building/school to observe the spaces available to support the planned programs. Site visits were scheduled by MGT through the town/district to ensure that knowledgeable staff were

available at each site during the visit. Assessment data were entered into the BASYS software as each evaluation was completed and uploaded to the MGT database. MGT conducted a quality control review to ensure the accuracy and completeness of all data and then submitted the database for a final review by the town and district.

3.0 DEMOGRAPHICS AND ENROLLMENT PROJECTIONS

This section presents the demographic analysis and enrollment projections for the master planning period. The demographic analysis and enrollment projections were developed by MGT for the ten-year planning period. Over the next ten years, enrollment is expected to increase modestly across the district. The specific impact of future student enrollment on school building capacities is outlined in **Section 4.0** on Capacity and Utilization.

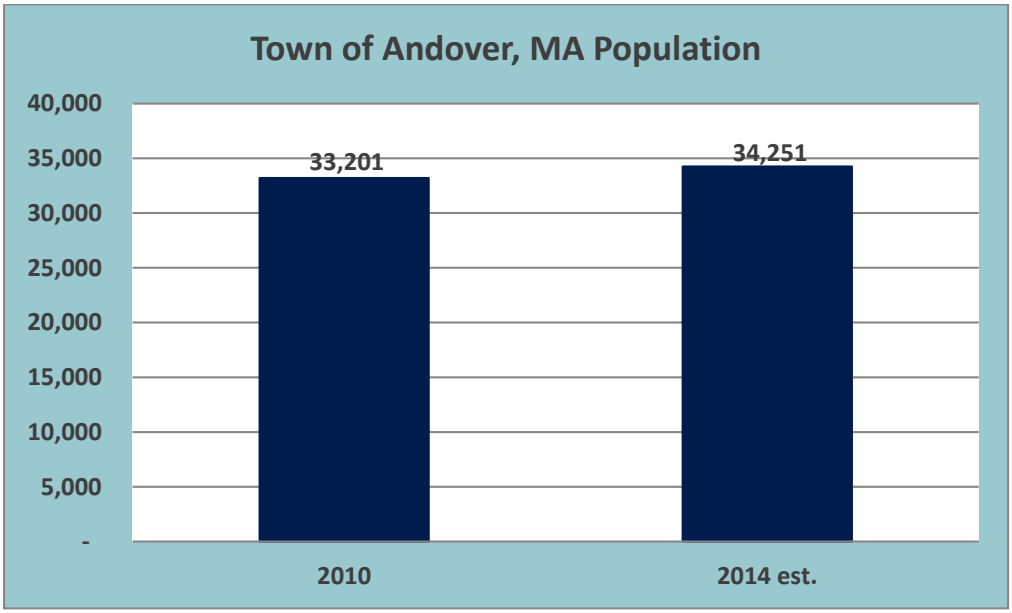
HISTORICAL DATA

An analysis of both quantitative and qualitative data forms the basis for the enrollment projections. Quantitative data comes from the district, the county, and the U.S. Census Bureau ("Census"). Quantitative data provides the basic understanding of trends "by the numbers." Qualitative data is gathered from conversations with district officials familiar with enrollment trends (and county planners), and provides the "why" behind the numbers. Both forms of data are critical to the preparation of enrollment projections for the district's ten-year Facility Master Plan.

TOWN OF ANDOVER POPULATION TRENDS

It is important to understand the context in which enrollment trends occur within the district. The Town of Andover, MA, had a population of 33,201 in 2010; Census data estimates that number has increased to 34,251 in 2014. **Exhibit 3-1** shows the increase in total population from 2010 to 2014.

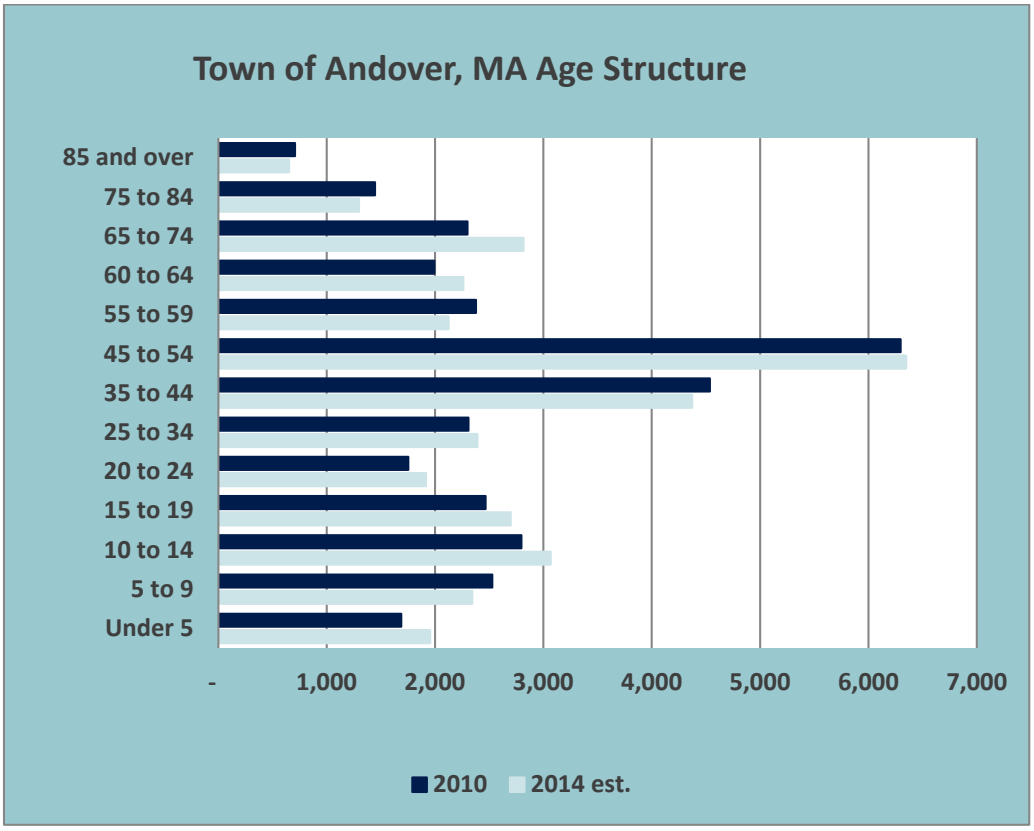
EXHIBIT 3-1
TOWN OF ANDOVER, MA
TOTAL POPULATION
2010 TO 2010



Source: U.S. Census Bureau.

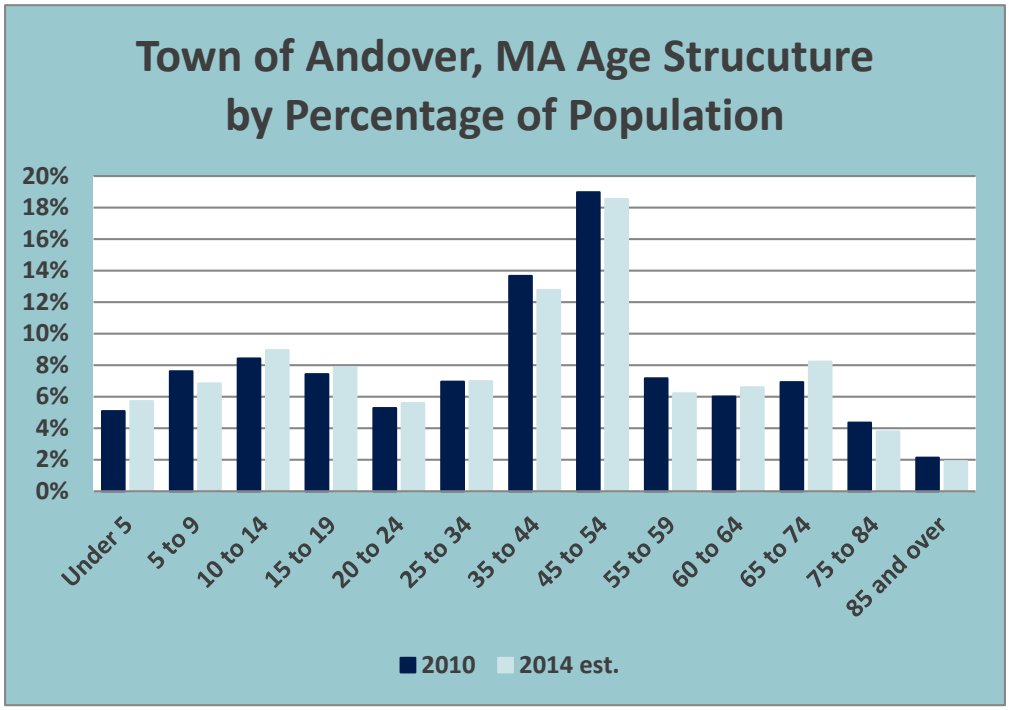
An examination of the age structure of the Town of Andover reveals that the largest segment of the population is between 35 and 54 years of age. **Exhibits 4-2** and **4-3** illustrate the population age structure of the Town of Andover in 2010 and in 2014 (estimate).

EXHIBIT 3-2
TOWN OF ANDOVER, MA
POPULATION AGE STRUCTURE
(TOTAL BY AGE GROUP)
2010 TO 2014



Source: U.S. Census Bureau.

EXHIBIT 3-3
TOWN OF ANDOVER, MA
POPULATION AGE STRUCTURE
(BY PERCENTAGE OF POPULATION)
2010 TO 2014

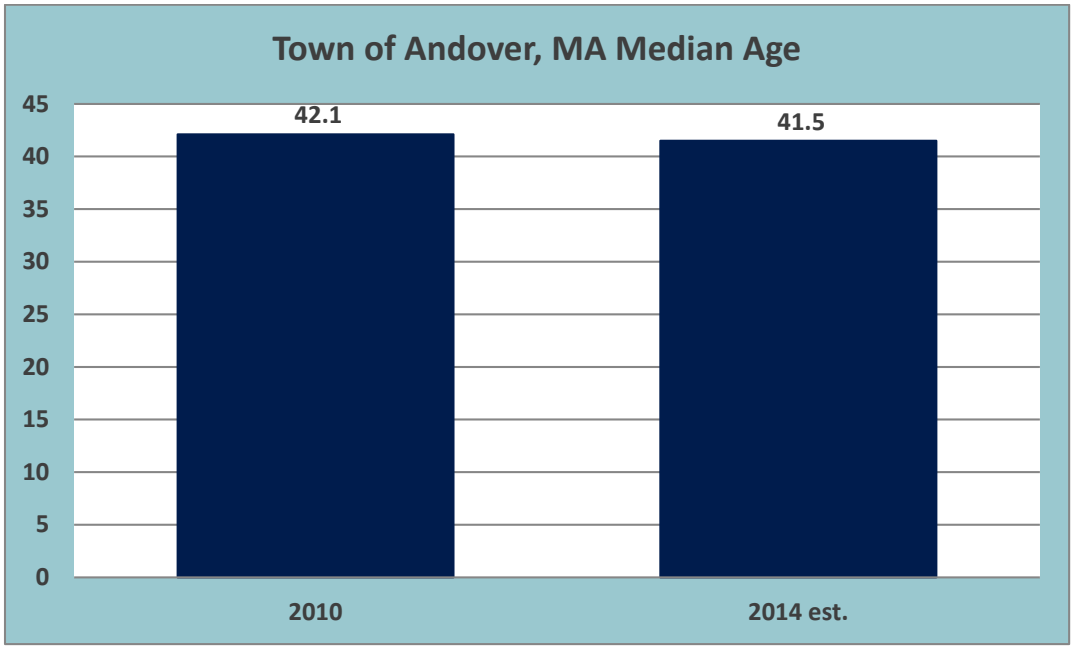


Source: U.S. Census Bureau.

Analysis of the age structure does not necessarily lead to any specific conclusions, but it does offer some interesting observations. Note that the *Under 5, 10 to 14, and 15 to 19* population segments show an increase from 2010 to 2014, while the population segement from *5 to 9* , shows a decline from 2010 to 2014, which indicates a decline in the school age population as a percentage of the whole population. There is a slight increase in the *25 to 34* segment but this increase is offset by a decline in the *35 to 44* segment. Typically these two age groups are considered the child bearing years, but in this case since there is an overall decrease we can anticipate a modest decline in child births. Also note that the segments *60 to 64 and 65 to 74* show an increase from 2010 to 2014. This indicates that these segments of the older population are growing.

Exhibit 3-4 shows the decrease in median age from 2010 to 2014.

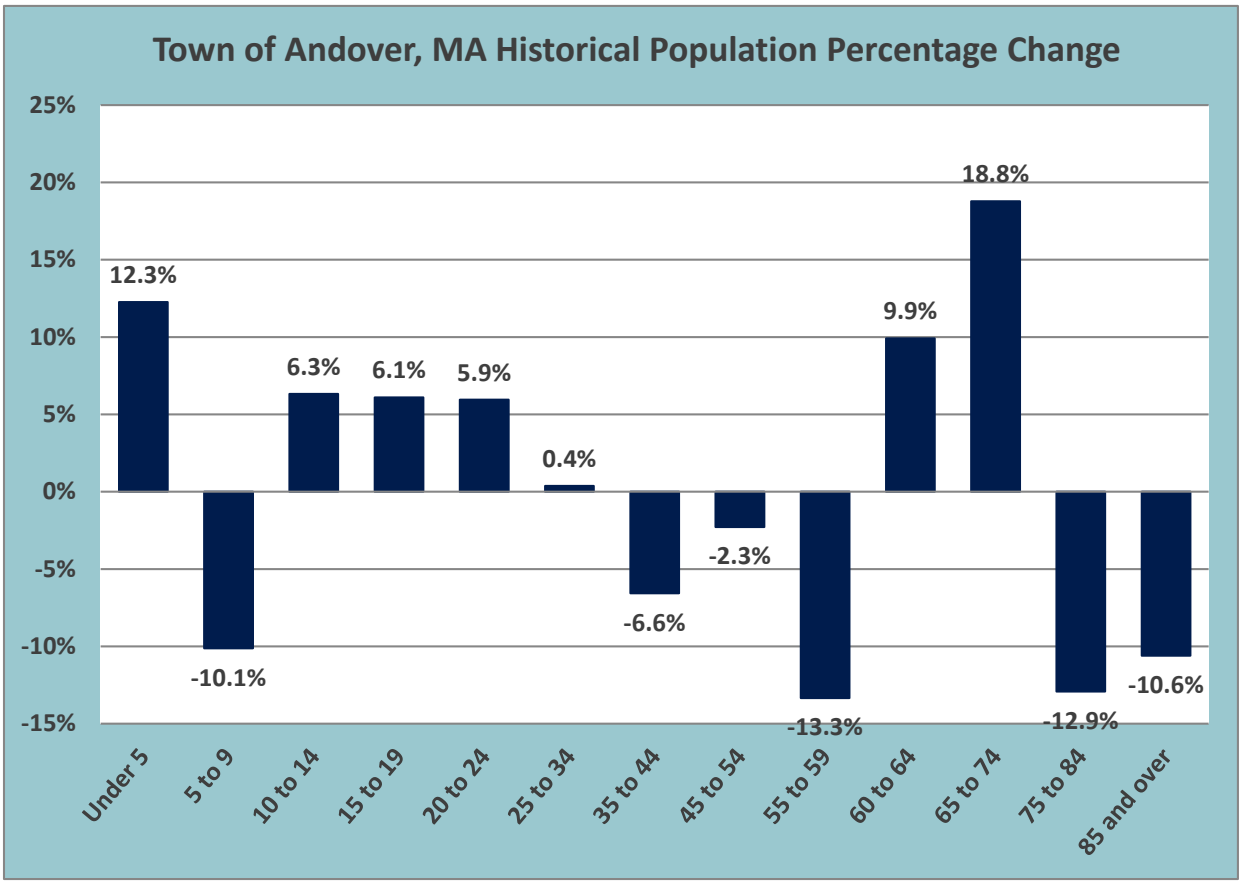
EXHIBIT 3-4
TOWN OF ANDOVER, MA
MEDIAN AGE OF POPULATION
2010 TO 2014



Source: U.S. Census Bureau.

The percent change as a percent of population at each age segment further reveals that the population in Andover is getting older. **Exhibit 3-5** shows the percent change in population for each age segment. The *Under 5* population increased approximately 12.3% from 2010 2014. The *5 to 9* segment decreased 10.1%, while the 10 to 14 and the 15 to 19 segments each increased about 6%. Over the same period, the 35 to 44 segment and the 45 to 54 segment, both considered child bearing ages, decreased. The 60 to 64 and the 65 to 74 segments increased significantly. This data indicates an ageing of the adult population in the Town.

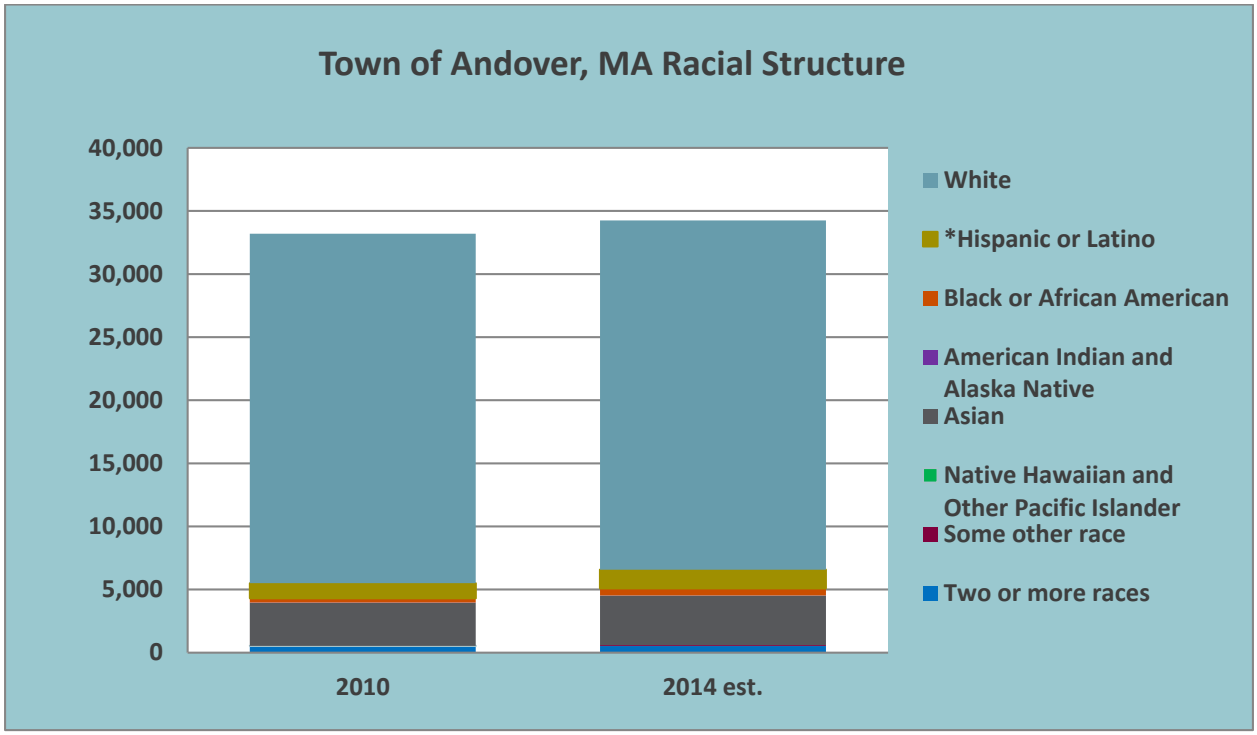
EXHIBIT 3-5
TOWN OF ANDOVER, MA
CHANGE IN PERCENT OF POPULATION
2010 TO 2014
(BY AGE SEGMENT)



Source: U.S. Census Bureau.

The racial structure in 2010 for the Town of Andover consisted of 83% white, 10% Asian and other races accounted for the remaining 7% of the population. The white population decreased from 27,698 in 2010 to 27,676 in 2014. The white population also decreased as a percentage of total population (-2.6%). The Asian population increased from 10% of the population in 2010 to 11% of the population in 2014. **Exhibit 3-6** illustrates the racial structure in Andover for 2010 and 2014.

EXHIBIT 3-6
TOWN OF ANDOVER, MA
RACIAL STRUCTURE
(TOTAL POPULATION BY RACE)
2010 TO 2014



*Hispanic or Latino (any race)
Source: U.S. Census Bureau.

The data presented thus far builds the context for the following discussion regarding future Andover Public Schools enrollment.

HISTORICAL ENROLLMENT

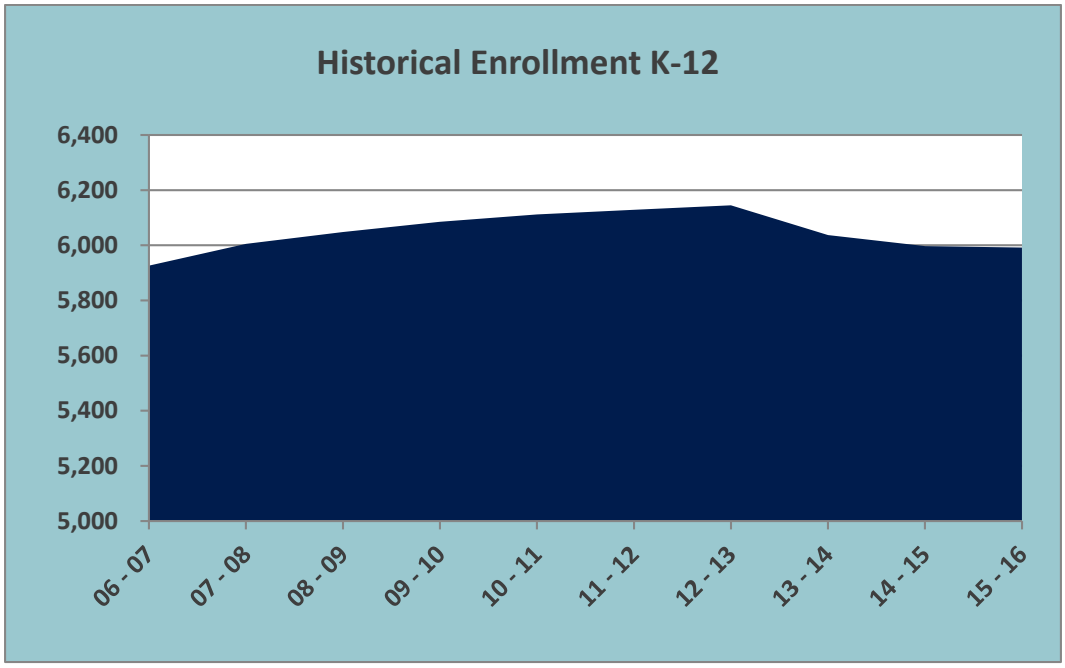
The core body of data used to develop an enrollment projection is historical enrollment. Total enrollment in Andover Public Schools stood at 5,926 students in 2006-07. Since then, enrollment has increased to 5,992 in 2015-16. **Exhibit 3- 7** details the enrollment history of K-12 students. **Exhibit 3-8** charts the history.

EXHIBIT 3-7
ANDOVER PUBLIC SCHOOLS
K-12 ENROLLMENT HISTORY*
2006-2015

Grade	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
K	403	418	448	397	435	391	370	355	375	380
1	423	453	447	464	426	467	441	410	387	406
2	488	455	456	474	478	453	503	452	444	428
3	469	502	467	486	497	512	469	515	479	461
4	474	485	507	469	493	507	528	477	519	497
5	466	487	493	515	472	507	512	528	489	526
6	499	476	491	497	520	471	514	509	530	477
7	469	519	494	492	507	523	479	522	508	532
8	490	476	526	492	482	514	537	478	522	503
9	452	454	450	490	460	448	466	488	420	471
10	410	446	443	441	470	450	433	444	477	413
11	456	402	436	442	440	462	440	430	432	469
12	427	432	390	426	432	424	453	429	415	429
K-5	2,723	2,800	2,818	2,805	2,801	2,837	2,823	2,737	2,693	2,698
6-8	1,458	1,471	1,511	1,481	1,509	1,508	1,530	1,509	1,560	1,512
9-12	1,745	1,734	1,719	1,799	1,802	1,784	1,792	1,791	1,744	1,782
Total	**5,926**	**6,005**	**6,048**	**6,085**	**6,112**	**6,129**	**6,145**	**6,037**	**5,997**	**5,992**

*Excludes PK and SP Students
Source: Andover Public Schools, 2015.

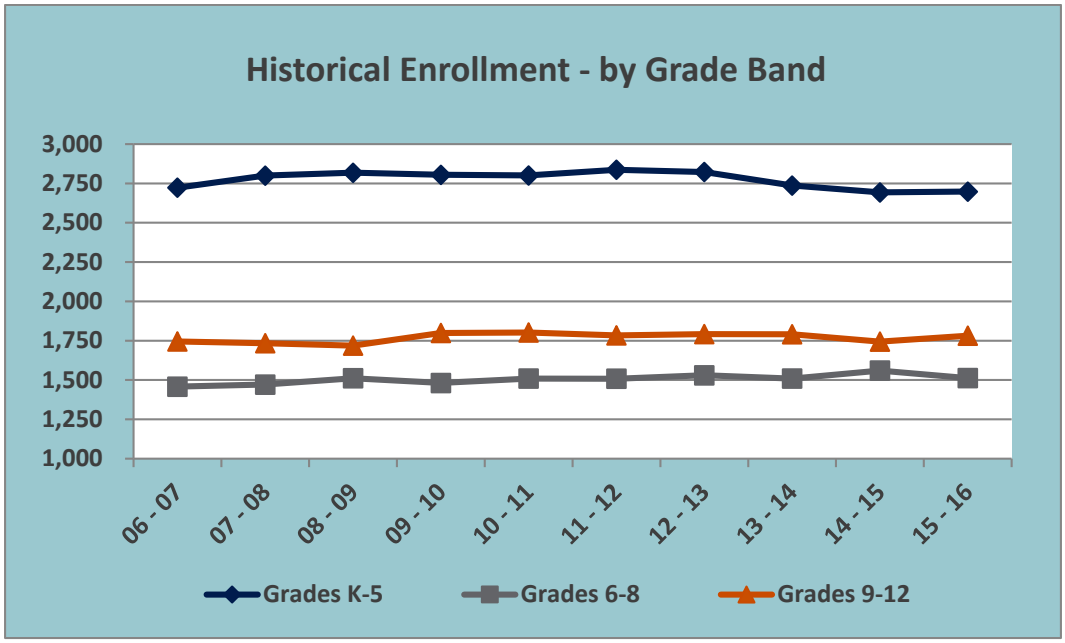
EXHIBIT 3-8
ANDOVER PUBLIC SCHOOLS
HISTORICAL ENROLLMENT
2006-2015



Source: MGT of America Consulting, LLC., 2016.

An examination of historical enrollment at the grade-band level reveals that the increase in overall enrollment over the last ten years has been led by an increase in enrollment at the 6-8 grade band, which increased 3.7% from 1,458 to 1,512 students. The K-5 grade band decreased in enrollment by 0.9% from 2,723 to 2,698, and the 9-12 grade band increased by 2.1% from 1,745 to 1,782 in enrollment. **Exhibit 3-9** illustrates the historical enrollment for each grade band.

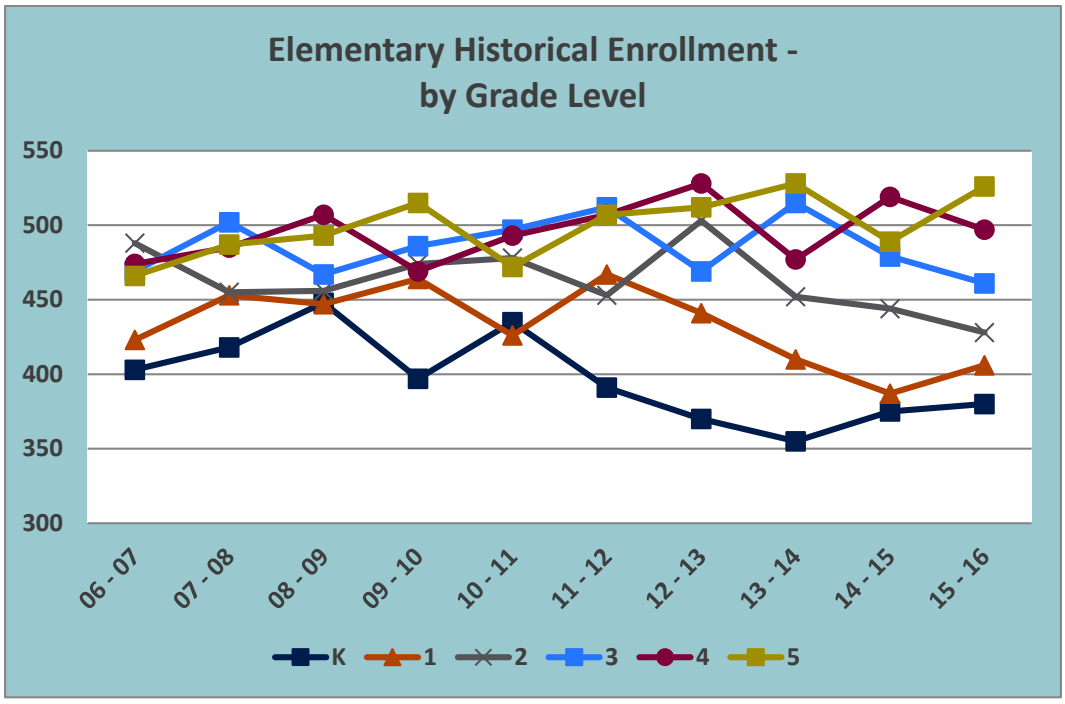
EXHIBIT 3-9
ANDOVER PUBLIC SCHOOLS
HISTORICAL ENROLLMENT
(BY GRADE BAND)



Source: MGT, 2016.

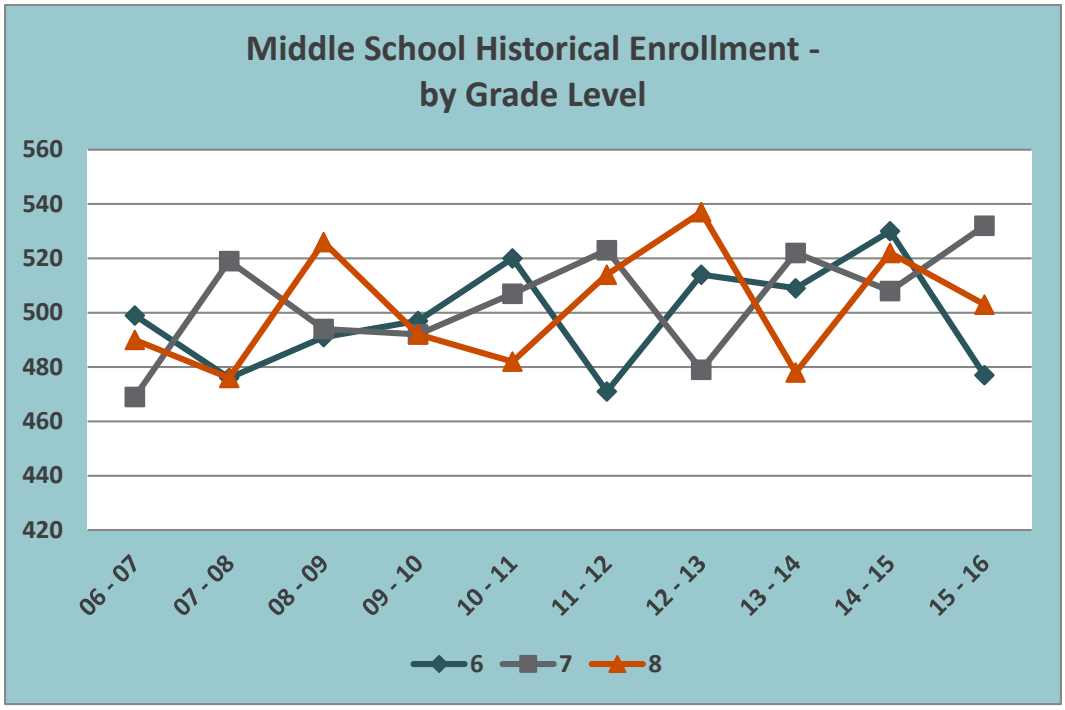
A closer look at historical enrollment at individual grade levels does not reveal any distinct trends at the elementary and middle school grade levels. At the high school grade-level enrollment data we do fluctuations in all grades on a yearly basis with the 9th and 11th grades increasing over the ten-year period and the 10th and 12th grades staying the same. The following **Exhibits 3-10**, **3-11**, and **3-12** illustrate the historical enrollment for each grade level.

EXHIBIT 3-10
ANDOVER PUBLIC SCHOOLS
HISTORICAL ELEMENTARY SCHOOL ENROLLMENT
(BY GRADE LEVEL)



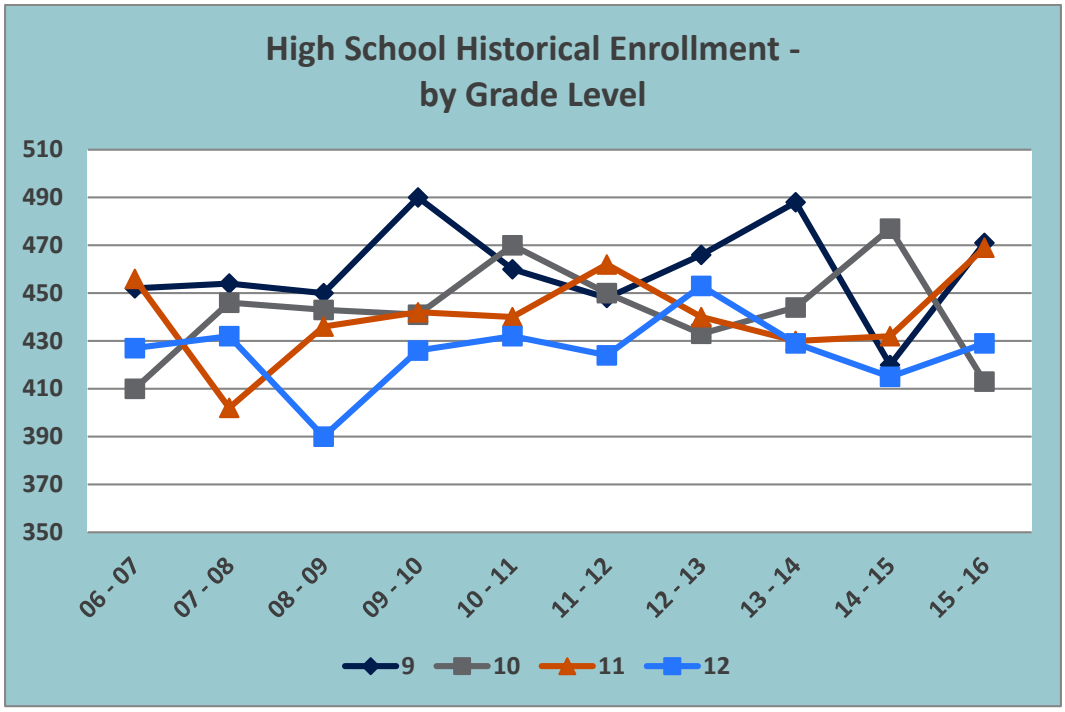
Source: MGT, 2016.

EXHIBIT 3-11
ANDOVER PUBLIC SCHOOLS
HISTORICAL MIDDLE SCHOOL ENROLLMENT
(BY GRADE LEVEL)



Source: MGT, 2016.

EXHIBIT 3-12
ANDOVER PUBLIC SCHOOLS
HISTORICAL HIGH SCHOOL ENROLLMENT
(BY GRADE LEVEL)



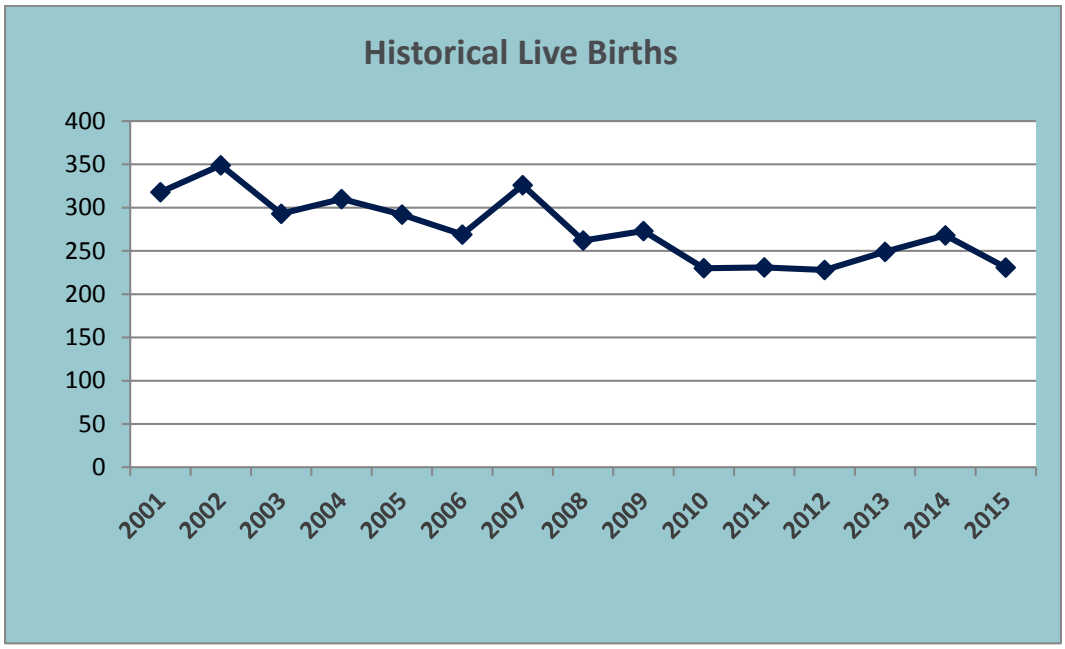
Source: MGT, 2016.

The trends observed in the historical enrollment data will form a key component of the enrollment projections prepared as a part of this master plan.

LIVE BIRTHS AND KINDERGARTEN ENROLLMENT

A second key component to analyzing potential future enrollment is to examine live-birth trends in the area and the live-births-to-kindergarten capture rate. A steady or increasing birth rate could lead to additional students in the district, leading to an increasing enrollment. In the community of Andover, resident live births have overall been decreasing. However, the number of live births in Andover has been fluctuating between a high of 349 in 2002 to low of 228 in 2012. **Exhibit 3-13** shows the trend of historical live births for this community.

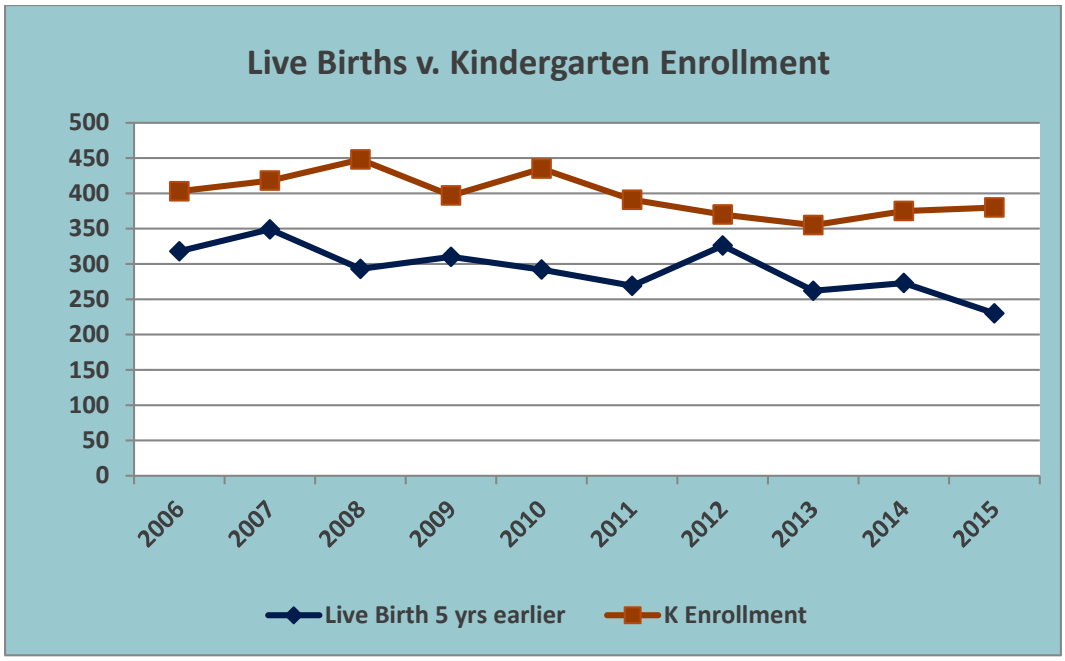
EXHIBIT 3-13
TOWN OF ANDOVER, MA
HISTORICAL LIVE BIRTHS
2001-2015



Source: Massachusetts Department of Health and Human Services, Birth Reports 2001 -2014; Birth Characteristics: Occurrence and Resident Births, Massachusetts Municipalities.

When examining the ratio of live-births-to-kindergarten enrollment, live-birth data is collected for the past 15 years and kindergarten enrollment for the past ten years. For example, a child born in 1990 would enroll in kindergarten at the age of five. Therefore, in this analysis, we are looking at how many children are enrolled in kindergarten as compared to the number of children born in the area five years prior to a particular school year. **Exhibit 3-14** compares the district's historical kindergarten enrollment to the live birth data.

EXHIBIT 3-14
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
HISTORICAL KINDERGARTEN ENROLLMENT AND HISTORICAL LIVE BIRTH DATA



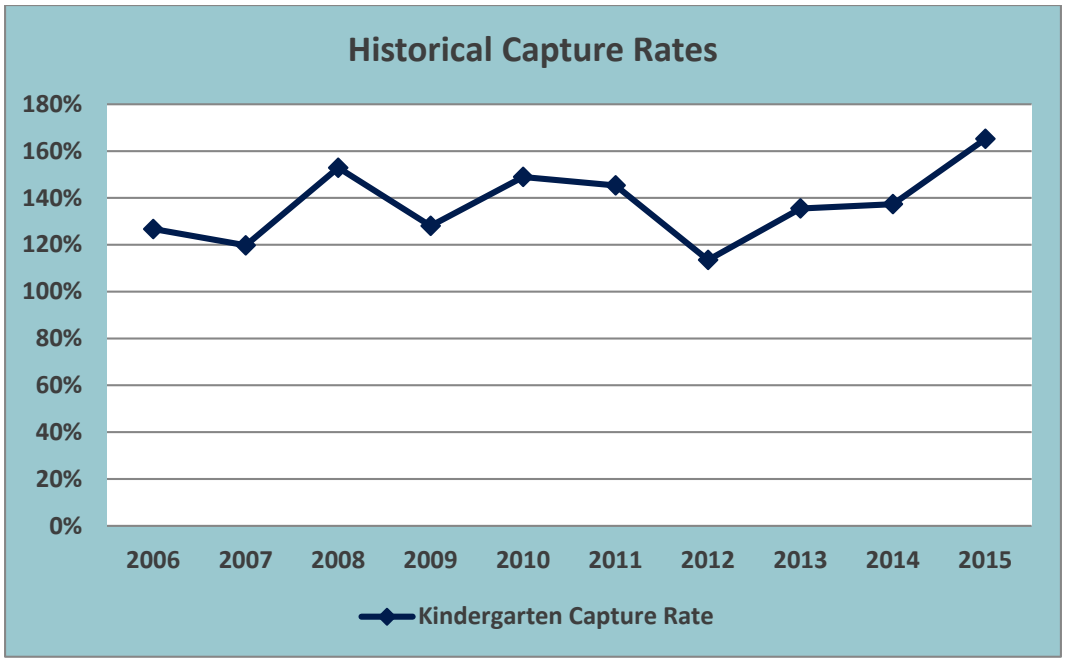
Source: MGT, 2016.

Two statistics are critical to understanding the relationship between live births and kindergarten enrollment in the district: the correlation coefficient and the capture rate.

The correlation coefficient calculates the relationship between two series of data. A correlation coefficient of 1 or -1 indicates a strong relationship; a correlation coefficient of 0 indicates a weak relationship. For APS, the correlation coefficient for kindergarten enrollment to live births is 0.361 which indicates a weak relationship and therefore the live birth rate may not be a good indicator of future kindergarten enrollment.

The capture rate measures the percentage of live births that resulted in kindergarten enrollment five years later. Over the last ten years, the district's capture rate has averaged 137% as **Exhibit 3-15** illustrates. This capture rate indicates that the district is attracting a significant number of students from the area outside of town. The population segments which typically are associated with the childbearing years are declining in the town. This trend combined with the increased capture rate over recent years indicates a significant in migration of families with school aged children.

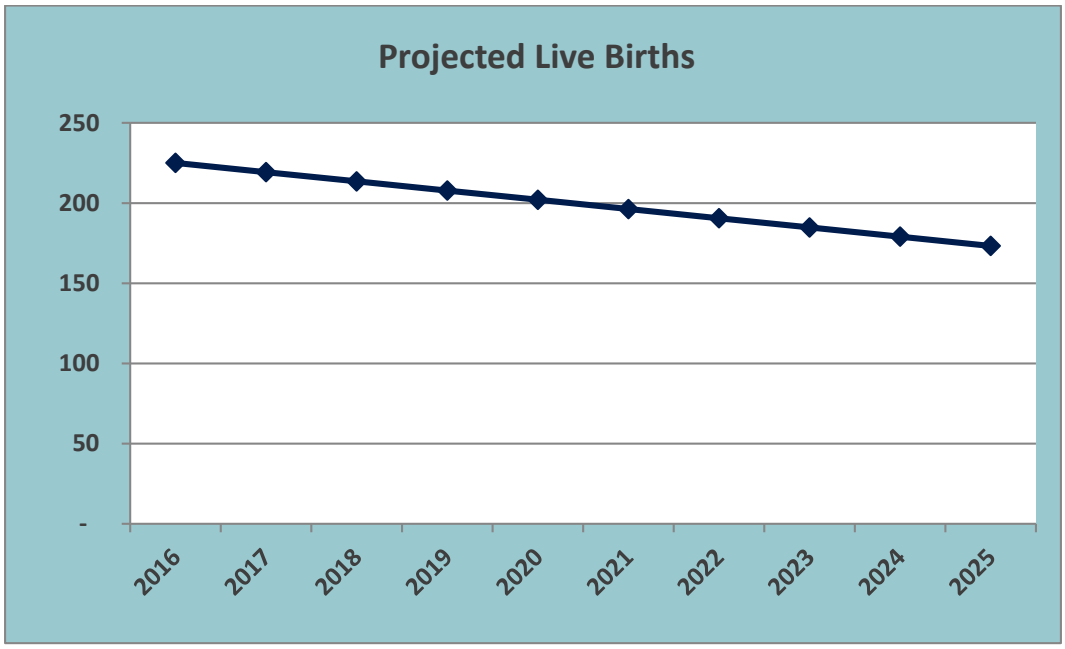
EXHIBIT 3-15
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
HISTORICAL CAPTURE RATES



Source: MGT, 2016.

Exhibit 3-16 illustrates the projected live births for the district. Live births are projected using a linear regression model based on ten years of historical live births in the Andover Community. Given the decline in live birth rates, increases in kindergarten enrollments will be due to the in-migration of families.

EXHIBIT 3-16
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
PROJECTED LIVE BIRTHS



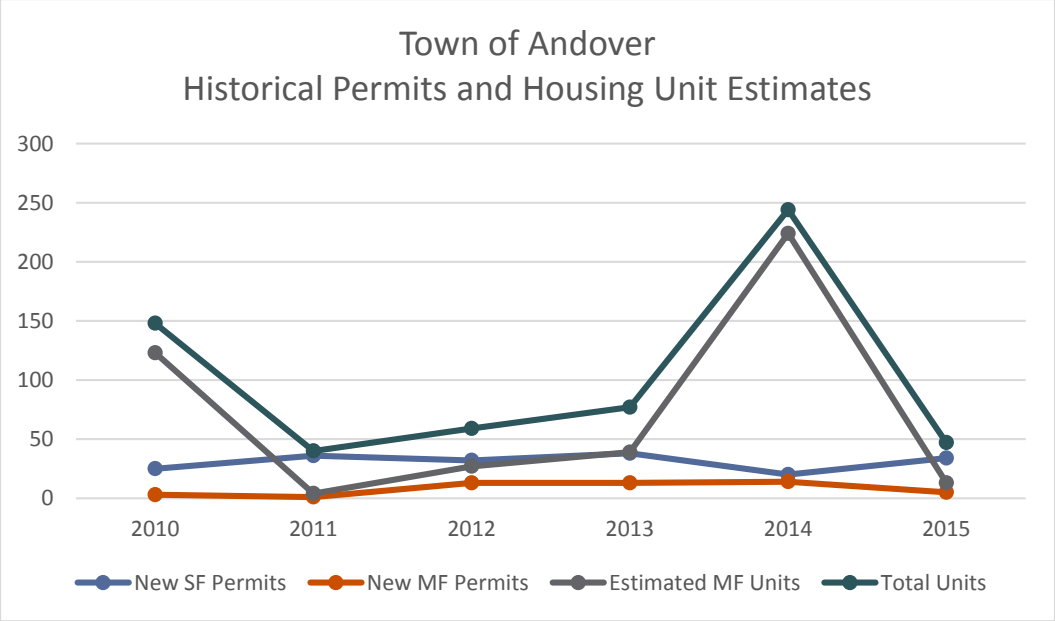
Source: MGT, 2016.

HOUSING UNITS

Another factor used to develop enrollment projections is an analysis of the trends in housing permits in the town. The U.S. Census Bureau recorded 11,590 housing units in the Town of Andover in the 2000 Census and 12,423 housing units in 2010. The census data provides a starting point for this analysis, but building permit data provides additional information upon which to base an assumed number of housing units following the 2000 and 2010 Census.

Since 2009, the number of housing permits issued each year in the Town of Andover has fluctuated greatly. In an effort to better understand these fluctuations MGT met with the Town of Andover planners to further analyze the housing permit information. **Exhibit 3-17** illustrates the number of housing permits issued each year since 2009 in the Town of Andover, which includes both single- and multi-family building permits. Housing units generated from multi-family permits were estimated by the town planner.

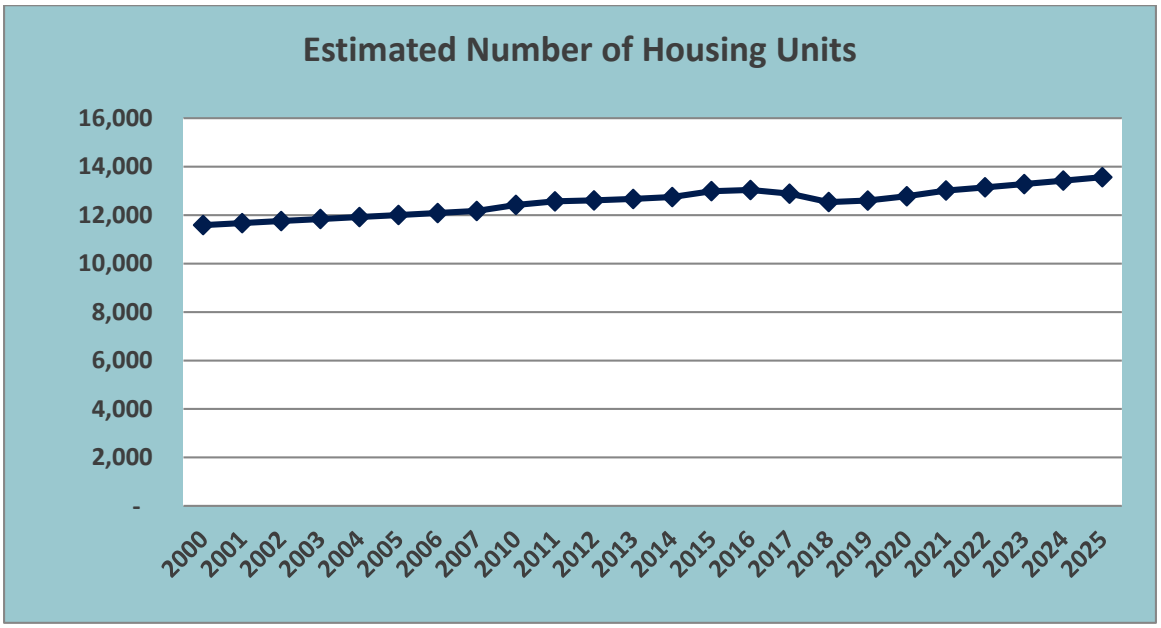
EXHIBIT 3-17
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
HISTORICAL RESIDENTIAL BUILDING PERMITS AND HOUSING UNIT ESTIMATES



Source: Town of Andover, Planning and Economic Development, 2015.

If we combine the historical and projected building permits, and assume that each permit will result in a built residential unit, we can estimate the number of future housing units in the district. The total estimated number of housing units is generated by using the number of housing units established by the 2010 Census and adding it to the number of historical and projected building permits as illustrated by **Exhibit 3-18** below.

EXHIBIT 3-18
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
ESTIMATED NUMBER OF HOUSING UNITS



Source: MGT, 2016

CONCLUSIONS AND OBSERVATIONS ABOUT HISTORICAL DATA

Based on the analysis of data presented in this section, we have concluded the following regarding the demographics of the Town of Andover:

1. Census Bureau population counts show an increase in the overall population but a decrease in population as it relates to the population segments which impact K-12 enrollment.

2. The general population and demographics of the APS area are changing and getting older, which could lead to fewer students in some areas of the district.

3. Housing units will continue to increase but the rate of increase is speculative and dependent on the economy and the growth policies of the county.

4. The ageing population, which often moves out of single family homes and into group homes, will free up some housing stock for families that are migrating into the district.

ENROLLMENT PROJECTION METHODOLOGY

Enrollment projections are an *estimate* of future activity based on the historical data and information provided. As demonstrated by the district calculations over the past ten years, there can be constant variations in growth. These numbers can be highly accurate, but it must be remembered that the numbers are still a projection or estimate. During the implementation of any of the recommendations provided, it is critical that the district reassess these numbers on a regular basis and adjust plans accordingly.

To identify trends and prepare for adequate space, teaching staff and materials and supplies, educational leaders use several methods of projecting enrollment. Among the most commonly used models are *Average Percentage Annual Increase, Cohort Survival, Linear Regression*, and *Student-per-Housing Unit* models. Because no one model captures all aspects of demographic trends, MGT generates a weighted average of these four "base" models to arrive at its enrollment projections.

A rule of thumb when forecasting enrollment is that the models should use as many years of historical data as there are years in the projection period. In other words, if the model is projecting enrollment for five years from now, then five years of historical data is used. If the model is projecting enrollment for ten years from now, then ten years of historical data is used. Each of the following "base" models draw data in this manner for their calculations.

AVERAGE PERCENTAGE ANNUAL INCREASE MODEL

This model calculates future school enrollment growth based on the historical average growth from year to year for each grade level. This simple model multiplies the historical average percentage increase (or decrease) by the prior year's enrollment to project future enrollment estimates. For example, if enrollment in the first grade decreased five percent from 2000 to 2001 and decreased seven percent from 2001 to 2002, then the average percentage change would be a six percent decrease, and six percent would be the factor used to project future enrollment in this model.

LINEAR REGRESSION MODEL

This model uses a statistical approach to estimating an unknown future value of a variable by performing calculations on known historical values. Once calculated, future values for different future dates can then be plotted to provide a "regression line" or "trend line". MGT has chosen a "straight-line" model to estimate future enrollment values, a model that finds the "best fit" based on the historical data.

COHORT SURVIVAL MODEL

This model calculates the growth or decline between grade levels over a period of ten years based on the ratio of students who attend each of the previous years, or the "survival rate". This ratio is then applied to the incoming class to calculate the trends in that class as it "moves" or graduates through the school system. For example, if history shows that between the first and second grades, the classes for the last ten years have grown by an average of 3.5%, then the size of incoming classes for the next ten years is calculated by multiplying them by 103.5%. If the history shows a declining trend, the multiplying factor would be 100% minus the declining trend number.

The determination of future kindergarten enrollment estimates is critical, especially for projections exceeding more than five years. There are two methods of projecting kindergarten enrollment. The first model is based on the correlation between historical resident birth rates (natality rates) and

historical kindergarten enrollment. The second model uses a linear regression line based on the historical kindergarten enrollment data.

STUDENTS-PER-HOUSEHOLD MODEL

This last model utilizes the estimated number of housing units as its base data. Using the housing unit data and historical enrollment data, MGT created a student generation factor for each projected grade level. By taking the total enrollment by grade level and dividing it by the current housing levels, a *student generation factor* (SGF) was calculated for each grade level. This factor indicates the number of students within each grade level that will be generated by each new housing unit.

WEIGTED AVERAGE

Once each of these four base models has been calculated, MGT generates a weighted average of each of the models. A weighted average allows the analysis to reflect all of the trends observed in the historical data and the over-arching themes from the qualitative information gathered in this process. The weighted average also works to maximize the strengths of each of the "base" models.

Two models, the Average Percentage Annual Increase Model and the Linear Regression Model, emphasize historical data. These models are quite effective predictors if there is no expectation of unusual community growth or decline and student population rates have minimal fluctuation.

The Cohort Survival Model also uses historical enrollment numbers, but takes into account student-mobility patterns and the effects of the natality rates in prior years. The Cohort Survival Model is perhaps the best-known predictive tool using this type of data. However, like the Annual Percentage Annual Increase Model and the Linear Regression Model, the Cohort Survival Model loses its predictive capabilities in communities that experience, or are expecting to experience, more rapid growth or rapid decline.

The Students-Per-Household Model allows the planner to take into account projections for housing developments and general growth in the county. This model looks forward and is based on the input from local planners. The planning information is important and the district should continue to monitor this information.

Exhibit 3-19 identifies the typical weights used in this analysis. Due to historical anomalies, projections for some schools used a variation on the weighting.

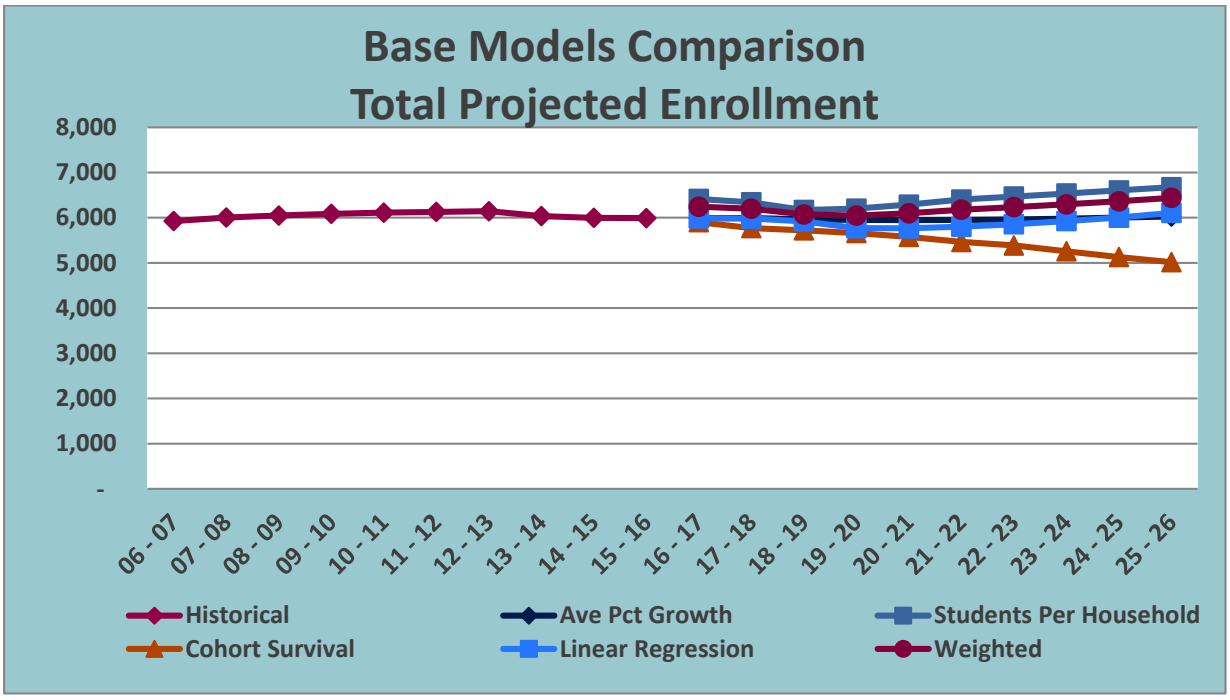
EXHIBIT 3-19
WEIGHTS USED TO GENERATE WEIGHTED AVERAGE OF "BASE" MODELS

WEIGHTING FACTORS	
MODEL	PROJECTION MODEL WEIGHT
Average Percentage Annual Increase	10%
Students-per-Household	60%
Cohort Survival	0%
Linear Regression	30%

Source: MGT of America, Inc., 2016.

Exhibit 3-20 illustrates the four enrollment projection models and the one combined weighted model.

EXHIBIT 3-20
K-12 BASE MODEL ENROLLMENT AND WEIGHTED MODEL PROJECTIONS COMPARISON



Source: MGT, 2016.

ENROLLMENT PROJECTIONS

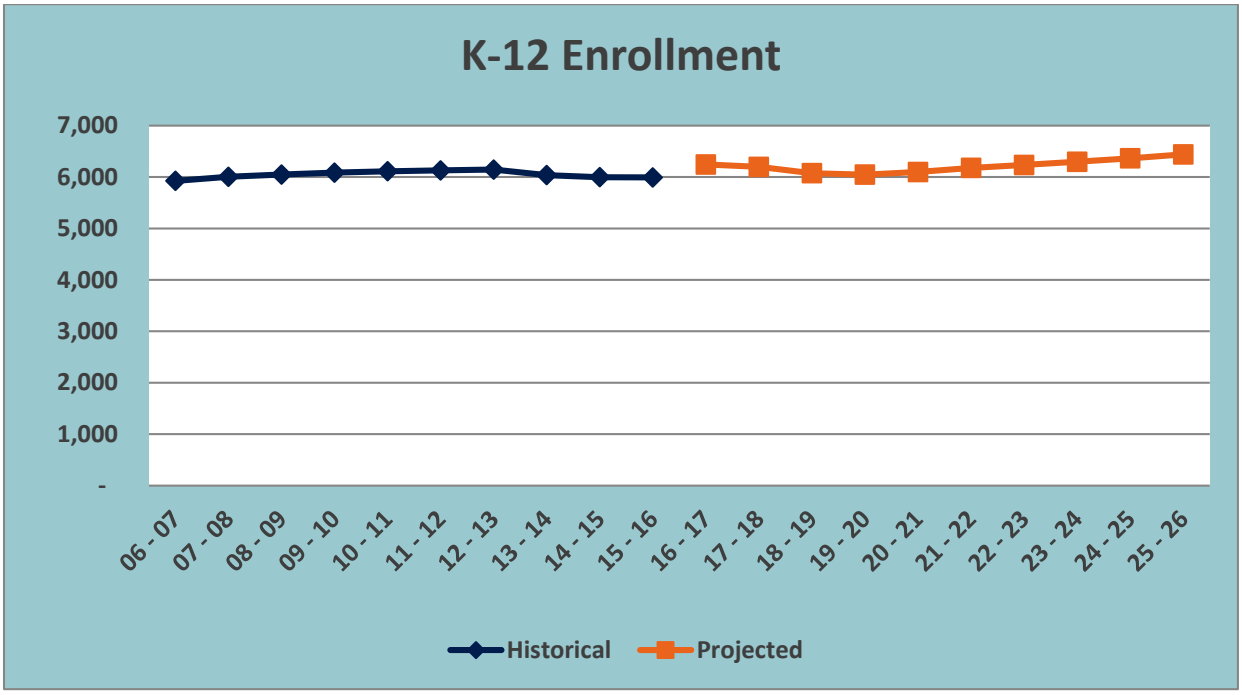
MGT staff has utilized the methodology described above to forecast enrollment for the district over the next ten years, which are shown in **Exhibit 3-20**. **Exhibit 3-21** on the following page illustrates the historical and projected enrollment for the entire district. The difference in total projected enrollment for the district (**Exhibit 3-20**) and the total of the individual schools (**Exhibit 3-25**) is due to the mathematics of the models and the historical enrollment of a particular school. For example, a school may show significant growth from year-to-year, which would result in a high average annual growth modeling factor and a high overall projection for that particular school. However, the abundance of growth at a particular school will be balanced by the other schools in the district-wide model, which leads to a lower average annual growth modeling factor and a less significant increase in future enrollment. The same is true for grade band projections as compared to the sum of the individual schools within a particular grade band. In the end, the district-wide and grade band totals provide good macro views of potential future trends. The individual school projections provide micro views of the potential future of a particular school, which makes the individual school projections appropriate for planning for that particular building's future.

EXHIBIT 3-20
ANDOVER PUBLIC SCHOOLS
PROJECTED ENROLLMENT

PROJECTED ENROLLMENT										
Grade	**16 - 17**	**17 - 18**	**18 - 19**	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**
K	429	428	431	425	417	404	409	401	406	413
1	436	439	415	399	390	405	403	408	412	423
2	466	457	446	428	446	451	456	466	473	472
3	489	478	455	477	473	482	490	501	501	510
4	504	495	511	494	501	513	526	524	530	537
5	519	526	492	496	503	521	517	522	528	537
6	501	480	491	498	521	518	524	531	539	541
7	540	544	526	542	534	539	546	551	549	561
8	500	493	509	489	496	513	518	515	525	530
9	493	504	453	457	470	474	469	478	484	490
10	441	417	438	452	454	452	461	466	471	482
11	478	488	475	468	460	467	471	476	488	485
12	448	449	431	421	432	438	444	457	457	459
K-5	2,843	2,823	2,750	2,719	2,732	2,775	2,801	2,823	2,851	2,893
6-8	1,541	1,516	1,526	1,529	1,550	1,570	1,589	1,596	1,613	1,631
9-12	1,859	1,858	1,797	1,798	1,816	1,832	1,845	1,878	1,900	1,916
K-12	6,244	6,198	6,074	6,046	6,097	6,177	6,234	6,297	6,364	6,440

Source: MGT, 2016.

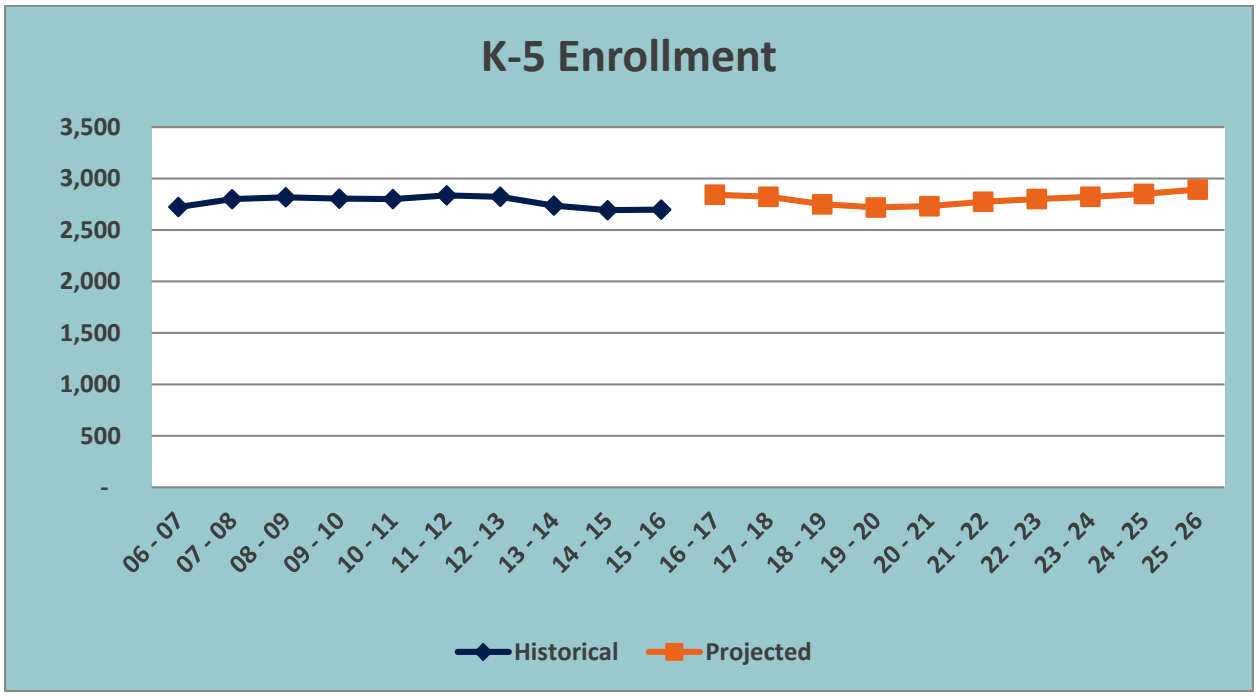
EXHIBIT 3-21
ANDOVER PUBLIC SCHOOLS
HISTORICAL AND PROJECTED ENROLLMENT – K-12



Source: MGT, 2016.

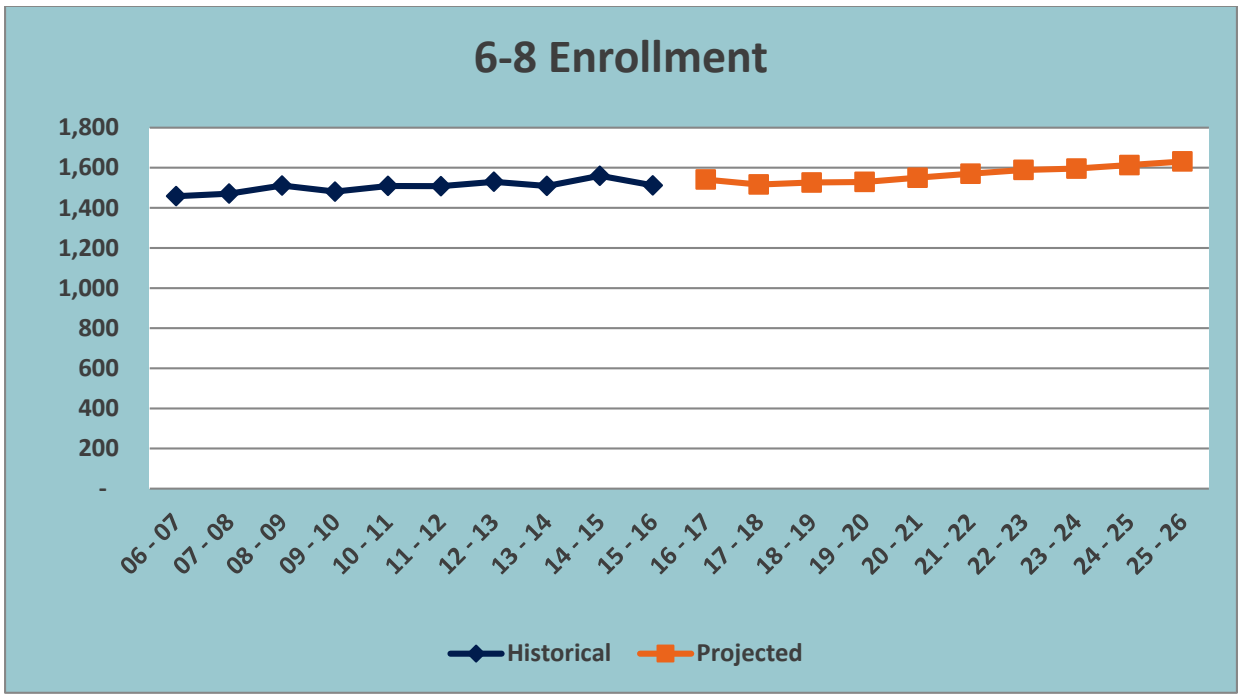
The District is strongly encouraged to continue revisiting these projections on an annual basis and update them to reflect current trends and data. The following **Exhibits 3-22** through **3-24** illustrate the historical and projected enrollment at each grade band.

EXHIBIT 3-22
ANDOVER PUBLIC SCHOOLS
HISTORICAL AND PROJECTED ENROLLMENT – K-5



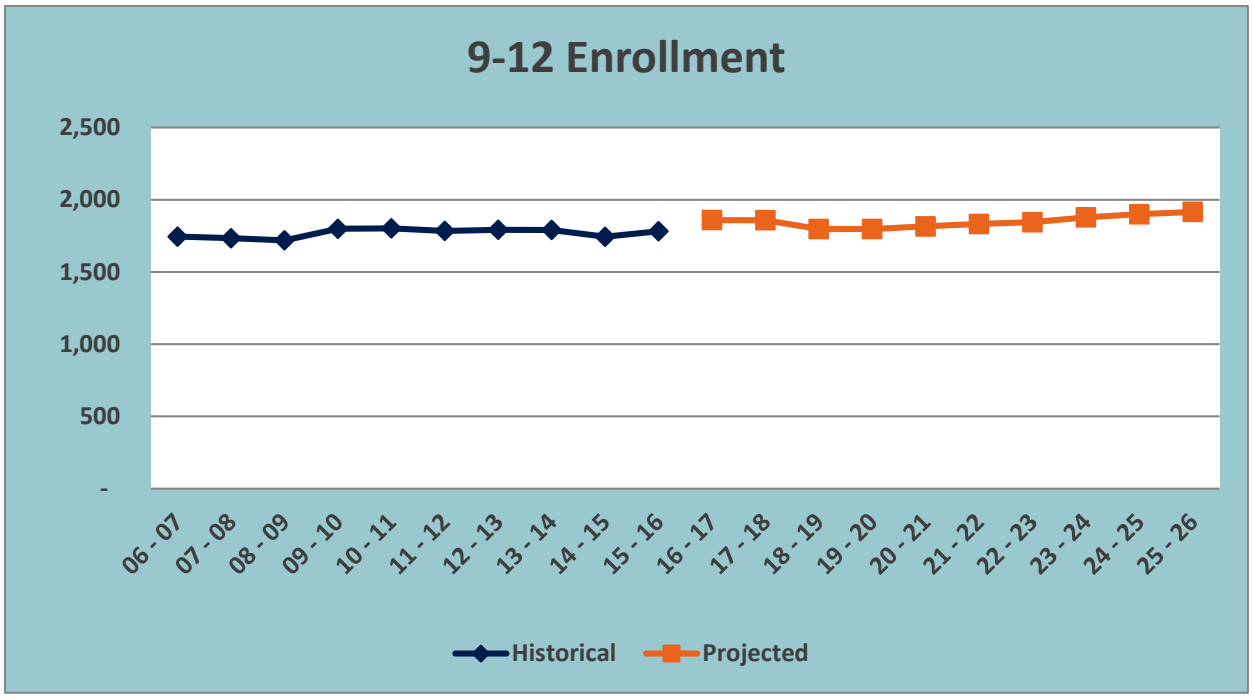
Source: MGT, 2016.

EXHIBIT 3-23
ANDOVER PUBLIC SCHOOLS
HISTORICAL AND PROJECTED ENROLLMENT – 6-8



Source: MGT, 2016.

EXHIBIT 3-24
ANDOVER PUBLIC SCHOOLS
HISTORICAL AND PROJECTED ENROLLMENT – 9-12



Source: MGT, 2016.

The methodologies discussed above were used to generate projections for each school. **Exhibit 3-25** provides the current (October 2015) enrollment and the 2025 projection by school.

EXHIBIT 3-25
ANDOVER PUBLIC SCHOOLS
PROJECTED ENROLLMENT BY SCHOOL

SCHOOL NAME	CURRENT (2015) K-12	PROJECTED (2025) K-12
Bancroft ES	612	624
High Plain ES	519	519
Sanborn ES	400	436
South ES	509	483
West ES	658	668
Shawsheen Preschool	68	90
Elementary School Average/Total	**2,766**	**2,820**
Doherty MS	557	615
West MS	535	593
Woodhill MS	420	440
Middle School Average/Total	**1,512**	**1,648**
Andover HS	1,782	1,916
District Average/Total	**6,060**	**6,384**

Source: MGT, 2016.

FINDINGS

As the foregoing **Exhibit 3-25** shows, enrollment across the district is expected to fluctuate slightly in the next few years, but shows a modest increase by the end of the ten-year planning period. While this projection somewhat contradicts birth and age data, it is a reasonable conclusion given the historical enrollments, the current and projected level of housing development, and the effect on housing availability due to the ageing population:

- Live births are projected to decrease which will counteract growth in housing.
- While there is poor correlation between the live birth rate and the kindergarten capture rate, the capture rate has historically been more than 100 percent indicating a significant level of in-migration of students to the district.
- The census data from 2010 to 2014 has shown an increase in elementary age children, excluding the students in the 5-9 age segment.
- There is a general consensus among stakeholders that the rates of building and migration into the town will increase as the economy improves.

In the next section on Capacity and Utilization, we will utilize these enrollment projections to measure the future utilization rates in Andover Public Schools and determine whether there will be excess space or a need for additional space.

4.0 CAPACITY AND UTILIZATION

This section examines and compares the capacity and utilization rates of Andover Public Schools' facilities over the ten years for the master plan.

The *functional capacity* of an educational facility is defined as the number of students the facility can accommodate. More specifically, a school's capacity is the number of students which can be accommodated given the specific educational programs, the class schedules, and the student-teacher ratios. The *utilization rate* of a facility is calculated by dividing the current or projected enrollment of the educational facility by the capacity. The utilization rate is used to determine if the facility has excess space or if it is lacking sufficient space for the given enrollment.

FUNCTIONAL CAPACITY

The *functional capacity* used by MGT is calculated using the *Instructional Space Model*. This model counts the number of the various types of instructional rooms and multiplies that number by the maximum students-per-room or the *loading* factor to identify the gross capacity for the school. The gross capacity is then multiplied by a scheduling factor, which takes into account the realities of how the space is used. Typically, not all classrooms are scheduled for every period at a middle school or high school. For example, high school students move from room to room and enroll in a variety of courses. As a result, some rooms will sit empty or will be less than fully occupied at any given time. Teacher preparation periods will also contribute to rooms not being used for instruction at a particular time. Therefore, MGT uses a 75% scheduling factor at high schools to reduce the gross capacity of the building to reflect the unused rooms. Middle schools are assigned an 75% scheduling factor. An elementary school has a much more static and consistent daily use so MGT uses a 95% scheduling factor for elementary schools.

Exhibit 4-1 on the following page lists the loading factors and scheduling factors used to calculate the functional capacities.

EXHIBIT 4-1
ANDOVER PUBLIC SCHOOLS
FUNCTIONAL CAPACITY LOADING FACTORS

INSTRUCTIONAL SPACE MODEL GUIDELINES	
Room Type	**Loading Factor (Students/Room)**
Pre-Kindergarten, ECE	15
Kindergarten (full day)	20
Kindergarten (half day)	20
General classroom grades 1-2	23
General classroom grades 3-5	25
General classroom grades 6-8	25
General classroom grades 9-12	25
Art/Music - ES	0
Art (Secondary)	25
Music - Vocal and Instru - MS	0
Music - Vocal/Instru - HS	40
Music - Band/Orchestra (Secondary)	40
Science (Secondary)	24
CTEA - Lab - MS	0
CTEA - Lab - HS	18
PE - ES	0
PE - MS	0
PE - HS	35
Computer Lab ES	0
Computer Lab (Secondary)	24
Health	0
ESOL	0
Spec. Ed. - Self-contained	8
Spec. Ed. - Resource	0
Portable	0
Utilization Factor	
Elementary Schools	95%
Middle Schools	75%
High Schools	75%

Exhibit 4-2 shows how the model is used to calculate the capacity of a theoretical school.

EXHIBIT 4-2
ANDOVER PUBLIC SCHOOLS
EXAMPLE OF CAPACITY CALCULATION

ROOM TYPE	NUMBER OF CLASSROOMS X	STUDENTS/CLASS ROOM	=CAPACITY
General classroom grades 9-12	63	25	1,575
Science (Secondary)	5	24	120
Computer Lab (Secondary)	2	24	48
Art (Secondary)	5	25	125
Music - Vocal/Instru - HS	4	40	160
CTEA - Lab - HS	1	18	18
PE - HS	1	35	35
Spec. Ed. - Self-contained	2	8	16
Spec. Ed. - Resource	5	0	0
Portable Room Count	1	0	0
		Gross Capacity (w/o scheduling factor) =	2,097
		x High School scheduling factor of	75%
		High School Capacity =	**1,573**

Exhibit 4-3 lists the capacities for the Andover schools as calculated using the Instructional Space Model. As the exhibit shows, the elementary schools have a total, district-wide capacity of 2,854 with an average per school capacity of 476. The middle schools have a total capacity of 1,807 with an average-per-school capacity of 602. Andover High School has a capacity of 1,517.

EXHIBIT 4-3
ANDOVER PUBLIC SCHOOLS
FUNCTIONAL CAPACITIES

SCHOOLS	CAPACITY
Elementary Schools	
Bancroft ES	641
High Plain ES	503
Sanborn ES	402
South ES	536
West ES	637
Shawsheen Pre School	136
ELEMENTARY TOTAL	**2,854**
Middle Schools	
Doherty MS	599
West MS	596
Woodhill MS	612
MIDDLE SCHOOL TOTAL	**1,807**
High School	
Andover High School	1,517
HIGH SCHOOL TOTAL	**1,517**
DISTRICT TOTAL	**6,178**

Source: MGT of America Consulting, LLC., 2016.

UTILIZATION RATES

The effective management of school facilities requires a school's capacity and enrollment to be aligned. When capacity exceeds enrollment (underutilization), operational costs are higher than necessary and facilities may need to be repurposed or the facilities may need to be removed from inventory. When enrollment exceeds capacity (overutilization), the school may be overcrowded and may require capital expenditures or redistricting (adjustment to attendance boundaries) to alleviate the crowding.

Exhibit 4-4 shows the corresponding utilization rates calculated using the *functional capacities* and the current and projected enrollment at each school.

EXHIBIT 4-4
ANDOVER PUBLIC SCHOOLS
CURRENT AND PROJECTED UTILIZATION RATES

UTILIZATION	DESCRIPTION
> 110	Inadequate
95 - 110	Approaching Inadequate
85 – 94.99	Adequate
75 - 84.99	Approaching Inefficient
< 74.99	Inefficient

SCHOOLS	2015-16 PK-12 ENROLLMENT	2025 MGT PK-12 PROJECTED ENROLLMENT	PK-12 CAPACITY	2015 CURRENT UTILIZATION	2025 PROJECTED UTILIZATION
Elementary Schools					
Bancroft ES	612	624	641	95%	97%
High Plain ES	519	519	503	103%	103%
Sanborn ES	400	436	402	100%	109%
South ES	509	483	536	95%	90%
West ES	658	668	637	103%	105%
Shawsheen Pre School	68	90	136	50%	66%
ELEMENTARY TOTAL/AVE.	**2,766**	**2,820**	**2,854**	**97%**	**99%**
Middle Schools					
Doherty MS	557	615	599	93%	103%
West MS	535	593	596	90%	100%
Woodhill MS	420	440	612	69%	72%
MIDDLE SCHOOL TOTAL/AVE.	**1,512**	**1,648**	**1,807**	**84%**	**91%**

EXHIBIT 4-4 (CONTINUED)
ANDOVER PUBLIC SCHOOLS
CURRENT AND PROJECTED UTILIZATION RATES

SCHOOLS	2015-16 PK-12 ENROLLMENT	2025 MGT PK-12 PROJECTED ENROLLMENT	PK-12 CAPACITY	2015 CURRENT UTILIZATION	2025 PROJECTED UTILIZATION
High School					
Andover HS	1,782	1,968	1,517	117%	130%
HIGH SCHOOL TOTAL/AVE.	**1,782**	**1,968**	**1,517**	**117%**	**130%**
DISTRICT TOTAL/AVE.	**6,060**	**6,436**	**6,178**	**98%**	**104%**

Source: MGT, 2016.

CAPACITY AND UTILIZATION CONCLUSIONS

ELEMENTARY SCHOOLS

The functional capacity for the elementary schools varies from a low of 136 to a high of 641. The district's elementary schools are "approaching inadequate" on a district-wide basis of 97% utilization. The projected district-wide utilization for 2025-26 will grow to 99%, with only one school in the "adequate" category.

The district should examine the specific situation for the schools that are projected to have "inadequate" or "approaching inadequate" utilization rates to determine if action is required, and whether the approach will require capital improvements or redistricting. Specific recommendations will be presented in **Section 8.0** of the Master Plan.

MIDDLE SCHOOLS

The functional capacity the middle schools varies from a low of 596 to a high of 612. The district's middle schools are presently being under-utilized with an average utilization rate of 84%. The middle school utilization is projected to increase to "adequate" utilization rate of 91% by 2025-26.

HIGH SCHOOLS

The functional capacity for Andover High School is 1,517. It is currently "inadequate" with a utilization rate of 117%. The pressure for space at this facility is predicted to increase to 130% by 2025-26.

5.0 FACILITY ASSESSMENTS

This section presents the results of the facility assessments that were conducted by MGT and staff from the Town of Andover and the Andover Public Schools. The assessments were conducted using BASYS®, MGT's facility assessment software program. There are four types of assessments, including:

- Building condition
- Educational suitability or functionality
- Grounds condition
- Technology readiness

BUILDING CONDITION ASSESSMENT

The BASYS® building condition score measures the amount of deferred maintenance in the building's major systems. The weighted condition score of a facility is the average condition score (weighted by building square footage) of all the buildings at a site. The scores are interpreted as follows:

90+	**New or Like New:** The building and/or a majority of its systems are in good condition, less than three years old, and only require preventive maintenance.
80-89	**Good:** The building and/or a majority of its systems are in good condition and only require routine maintenance.
70-79	**Fair:** The building and/or some of its systems are in fair condition and require minor to moderate repair.
60-69	**Poor:** The building and/or a significant number of its systems are in poor condition and require major repair, renovation, or replacement.
BELOW 60	**Unsatisfactory:** The building and/or a majority of its systems should be replaced.

The condition assessment rates each system in a building as "new", "good", "fair", "poor", or "unsatisfactory" based on a detailed description of each rating for the particular system. The possible score for each system is based on that system's contribution to the overall cost of building construction. Therefore, the condition score is a measure of that portion of the value of the building which is in good condition. The capital needs score (100 minus the condition score) is a measure of the capital needs or deferred maintenance. This score, when presented as a percent, is also referred to as the facility condition index or FCI. For example, a building which has a condition score of 80, has a capital needs score of 20 (100 – 80 = 20). A capital needs score of 20 indicates that 20 percent of the value of the building can be reinvested in the building in order to attain a score of 100 and put the building in a "like

new" condition. The condition score and resulting calculations do not include the costs of additions, site improvements, improvements for educational suitability, or technology readiness improvements.

Exhibit 5-1 presents the range of the weighted average condition scores (weighted by GSF) by type of facility. As the exhibit shows, there is a range of condition scores, from 42 to 98, with the average condition scores in the "Fair" to "Poor" range.

EXHIBIT 5-1
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
WEIGHTED AVERAGE BUILDING CONDITION SCORE RANGES

SITE TYPE	BUILDING CONDITION SCORE RANGE		AVERAGE CONDITION SCORE
	LOW	HIGH	
Elementary Schools	62.72	98.46	79.56
Middle Schools	67.59	83.82	76.99
High Schools	76.04	76.04	76.04
Fire/Public Safety	41.75	89.23	68.83
Administrative/Sr. Center	72.44	87.02	79.02
Maintenance Facilities	47.34	72.83	64.13

Source: MGT of America, Inc., 2016.

Exhibit 5-2 presents the weighted average condition score for each facility that was assessed. As the exhibit shows, condition scores range from "Like New" to "Unsatisfactory" which indicates that the facilities vary significantly in the amount of deferred maintenance identified.

EXHIBIT 5-2
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
CONDITION SCORES – BY SITE

SITE NAME	GSF	WEIGHTED AVERAGE CONDITION SCORE
Elementary Schools		
Bancroft ES	105,000	98.46
High Plain ES	70,400	83.82
Sanborn ES	51,560	79.34
South ES	65,800	83.57
West ES	94,000	69.42
Shawsheen Pre School	38,500	62.72
ELEMENTARY SCHOOL TOTAL/AVERAGE	**425,260**	**79.56**

EXHIBIT 5-2 (CONTINUED)
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
CONDITION SCORES – BY SITE

SITE NAME	GSF	WEIGHTED AVERAGE CONDITION SCORE
Middle Schools		
Doherty MS	125,000	67.59
West MS	106,000	79.57
Woodhill MS	105,600	83.82
MIDDLE SCHOOL TOTAL/AVERAGE	**336,600**	**76.99**
High Schools		
Andover HS	343,520	76.04
DISTRICT TOTAL/AVERAGE	**1,105,380**	**78.44**
Fire/Public Safety Facilities		
Ballardvale Fire station	4,760	41.75
Public Safety	52,010	89.23
West Fire station	4,530	75.52
FIRE/PUBLIC SAFETY TOTAL/AVERAGE	**61,300**	**68.83**
Administrative/Senior Center Facilities		
Center at Punchard	13,000	72.44
Memorial Hall Library	55,130	87.02
Old Town Hall	19,570	82.20
School Administration	20,420	76.72
Town Offices	43,540	78.94
Water Treatment Plant	70,116	76.80
ADMIN./SR. CENTER TOTAL/ AVERAGE	**221,776**	**79.02**
Maintenance Facilities		
Red Spring Road Maintenance Bldg.	8,230	72.83
Spring Grove Cemetery	5,865	72.21
Town Yard	18,647	47.34
MAINTENANCE FACILITIES TOTAL/AVERAGE	**32,742**	**64.13**
TOWN FACILITY TOTAL/AVERAGE	**315,818**	**72.75**

Source: MGT of America, Inc., 2016.

FUNCTIONALITY AND EDUCATIONAL SUITABILITY ASSESSMENT

The functionality or educational suitability assessment evaluates how well the facility supports the governmental/educational program that it houses. Each site receives one suitability score which applies to all the buildings at the facility. The functionality/educational suitability of each facility was assessed with BASYS® using the following categories:

ENVIRONMENT	The overall environment of the facility with respect to creating a safe and positive working/learning environment.
CIRCULATION	Pedestrian/vehicular circulation and the appropriateness of site facilities and signage.
SUPPORT SPACE	The existence of facilities and spaces to support the educational/governmental program being offered. These include offices, general classrooms, special learning spaces (e.g. music rooms, libraries, science labs), and support spaces (e.g. administrative offices, counseling offices, reception areas, kitchens, health clinics).
SIZE	The adequacy of the size of the program spaces.
LOCATION	The appropriateness of adjacencies (e.g., physical education space separated from quiet spaces).
STORAGE & FIXED EQUIPMENT	The appropriateness of utilities, fixed equipment, storage, and room surfaces (e.g. flooring, ceiling materials, and wall coverings).

Suitability scores are interpreted as follows:

90+	**Excellent:** The facility is designed to provide for and support the governmental/educational program offered. It may have a minor suitability/functionality issues but overall it meets the needs of the educational/governmental program.
80-89	**Good:** The facility is designed to provide for and support a majority of the educational/governmental program offered. It may have minor suitability/functionality issues but generally meets the needs of the educational/governmental program.
70-79	**Fair:** The facility has some problems meeting the needs of the educational/governmental program and will require remodeling/renovation.
60-69	**Poor:** The facility has numerous problems meeting the needs of the educational/governmental program and needs significant remodeling, additions, or replacement.
BELOW 60	**Unsatisfactory:** The facility is unsuitable in support of the educational/governmental program.

Exhibit 5-3 presents the range and average of suitability/functionality scores by facility type. The suitability/functionality scores range from 28 to 98. The average scores generally fall within the "Fair" to "Poor" range with the exception of the maintenance facilities which average Unsatisfactory:

EXHIBIT 5-3
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
SUITABILITY SCORE RANGES

SITE TYPE	SUITABILITY SCORE RANGE		AVERAGE SUITABILITY SCORE
	LOW	HIGH	
Elementary Schools	57.89	98.17	76.71
Middle Schools	63.91	86.71	74.15
High Schools	77.03	77.03	77.03
Fire/Public Safety	34.76	82.20	63.97
Administrative/Sr. Center	57.74	82.94	73.69
Maintenance Facilities	27.81	72.34	57.22

Source: MGT of America, Inc., 2016.

Exhibit 5-4 presents the educational suitability/functionality score for each facility. As the scores indicate, a few facilities have significant suitability/functionality deficiencies.

EXHIBIT 5-4
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
SUITABILITY SCORES – BY SITE

SITE NAME	SUITABILITY SCORES
Elementary Schools	
Bancroft ES	98.17
High Plain ES	92.89
Sanborn ES	70.54
South ES	78.28
West ES	62.48
Shawsheen Pre School	57.89
ELEMENTARY SCHOOL AVERAGE	**76.71**
Middle Schools	
Doherty MS	63.91
West MS	71.83
Woodhill MS	86.71
MIDDLE SCHOOL AVERAGE	**74.15**

EXHIBIT 5-4 (CONTINUED)
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
SUITABILITY SCORES – BY SITE

SITE NAME	SUITABILITY SCORES
High Schools	
Andover HS	77.03
DISTRICT AVERAGE	**75.97**
Fire/Public Safety Facilities	
Ballardvale Fire station	34.76
Public Safety	82.20
West Fire station	74.96
FIRE/PUBLIC SAFETY AVERAGE	**63.97**
Administrative/Senior Center Facilities	
Center at Punchard	57.74
Memorial Hall Library	82.94
Old Town Hall	79.78
School Administration	72.88
Town Offices	69.73
Water Treatment Plant	79.07
ADMINISTRATIVE/SR. CENTER AVERAGE	**73.69**
Maintenance Facilities	
Red Spring Road Maintenance Bldg.	71.50
Spring Grove Cemetery	72.34
Town Yard	27.81
MAINTENANCE FACILITY AVERAGE	**57.22**
TOWN FACILITY AVERAGE	**67.14**

Source: MGT of America, Inc., 2016.

GROUNDS CONDITION ASSESSMENT

The grounds condition assessment score is a measure of the amount of capital needs or deferred maintenance at the site, which includes the driveways and walkways, the parking lots, the playfields, the utilities, and fencing, etc. The scores are interpreted as follows:

90+	**New or Like New:** The site and/or a majority of its systems are in good condition, less than three years old, and only require preventive maintenance.
80-89	**Good:** The site and/or a majority of its systems are in good condition and only require routine maintenance.
70-79	**Fair:** The site and/or some of its systems are in fair condition and require minor to moderate repair.
60-69	**Poor:** The site and/or a significant number of its systems are in poor condition and will require major repair or renovation.
BELOW 60	**Unsatisfactory:** The site and/or a majority of its systems should be renovated.

Exhibit 5-5 presents the range of grounds assessment scores and the average grounds assessment scores by facility type. The grounds assessment scores ranged from 43 to 100. The averages varied significantly, depending on the site type.

EXHIBIT 5-5
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
GROUNDS ASSESSMENT SCORE RANGES

SITE TYPE	GROUNDS ASSESSMENT SCORE RANGE		AVERAGE GROUNDS SCORE
	LOW	HIGH	
Elementary Schools	52.48	100.00	69.73
Middle Schools	77.83	100.00	90.65
High Schools	42.49	42.49	42.49
Fire/Public Safety	49.73	90.00	63.17
Administrative/Sr. Center	60.45	90.00	71.34
Maintenance Facilities	46.98	78.77	60.72

Source: MGT of America, Inc., 2016.

Exhibit 5-6 presents the grounds assessment score by each facility site. Each site receives a single grounds assessment score.

EXHIBIT 5-6
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
GROUNDS SCORES – BY SITE

SITE NAME	GROUNDS SCORES
Elementary Schools	
Bancroft ES	100.00
High Plain ES	80.81
Sanborn ES	55.30
South ES	64.59
West ES	65.18
Shawsheen Pre School	52.48
ELEMENTARY SCHOOL AVERAGE	**69.73**
Middle Schools	
Doherty MS	100.00
West MS	94.13
Woodhill MS	77.83
MIDDLE SCHOOL AVERAGE	**90.65**
High Schools	
Andover HS	42.49
DISTRICT TOTAL	**73.28**
Fire/Public Safety Facilities	
Ballardvale Fire station	49.73
Public Safety	90.00
West Fire station	49.77
FIRE/PUBLIC SAFETY AVERAGE	**63.17**
Administrative/Senior Center Facilities	
Center at Punchard	60.45
Memorial Hall Library	75.22
Old Town Hall	90.00
School Administration	60.45
Town Offices	60.45
Water Treatment Plant	81.45
ADMINISTRATIVE/SR. CENTER AVERAGE	**71.34**

EXHIBIT 5-6 (CONTINUED)
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
GROUNDS SCORES – BY SITE

SITE NAME	GROUNDS SCORES
Maintenance Facilities	
Red Spring Road Maintenance Bldg.	78.77
Spring Grove Cemetery	56.42
Town Yard	46.98
MAINTENANCE FACILITY AVERAGE	**60.72**
TOWN FACILITY AVERAGE	**66.64**

Source: MGT of America, Inc., 2016.

TECHNOLOGY READINESS

The BASYS® technology readiness score measures the capability of the existing infrastructure to support information technology and associated equipment. The score can be interpreted as follows:

90+	**Excellent:** The facility has excellent infrastructure to support information technology.
80-89	**Good:** The facility has the infrastructure to support information technology.
70-79	**Fair:** The facility is lacking in some infrastructure to support information technology.
60-69	**Poor:** The facility is lacking significant infrastructure to support information technology.
BELOW 60	**Unsatisfactory:** The facility has little or no infrastructure to support information technology.

Exhibit 5-7 presents the range of technology scores and the average technology scores by facility type. Technology readiness scores vary from 53 to 100, with the averages in the "Excellent" to "Fair" range.

EXHIBIT 5-7
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
TECHNOLOGY SCORE RANGES

SITE TYPE	TECHNOLOGY READINESS SCORE RANGE		AVERAGE TECHNOLOGY SCORE
	Low	High	
Elementary Schools	65.90	100.00	81.39
Middle Schools	59.20	90.00	76.13
High Schools	86.70	86.70	86.70
Fire/Public Safety	60.00	100.00	86.67
Administrative/Sr. Center	97.50	100.00	99.58
Maintenance Facilities	53.30	100.00	84.43

Source: MGT of America, Inc., 2016.

Exhibit 5-8 presents the technology readiness score for each facility.

EXHIBIT 5-8
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
TECHNOLOGY SCORES – BY SITE

SITE NAME	TECHNOLOGY SCORES
Elementary Schools	
Bancroft ES	100.00
High Plain ES	79.95
Sanborn ES	75.00
South ES	92.50
West ES	75.00
Shawsheen Pre School	65.90
ELEMENTARY SCHOOL AVERAGE	**81.39**
Middle Schools	
Doherty MS	59.20
West MS	79.20
Woodhill MS	90.00
MIDDLE SCHOOL AVERAGE	**76.13**
High Schools	
Andover HS	86.70
DISTRICT TOTAL	**80.35**
Fire/Public Safety Facilities	
Ballardvale Fire station	60.00
Public Safety	100.00
West Fire station	100.00
FIRE/PUBLIC SAFETY AVERAGE	**86.67**
Administrative/Senior Center Facilities	
Center at Punchard	100.00
Memorial Hall Library	100.00
Old Town Hall	100.00
School Administration	97.50
Town Offices	100.00
Water Treatment Plant	100.00
ADMINISTRATIVE/SR. CENTER AVERAGE	**99.58**

EXHIBIT 5-8 (CONTINUED)
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
TECHNOLOGY SCORES – BY SITE

SITE NAME	TECHNOLOGY SCORES
Maintenance Facilities	
Red Spring Road Maintenance Bldg.	100.00
Spring Grove Cemetery	100.00
Town Yard	53.30
MAINTENANCE FACILITY AVERAGE	**84.43**
TOWN FACILITY AVERAGE	**92.57**

Source: MGT of America, Inc., 2016.

COMBINED SCORES

The building condition, educational suitability/functionality, grounds condition, and technology readiness scores are combined into one score for each facility to assist in the task of prioritizing projects. Since the building condition score is a measure of the maintenance needs (e.g. leaky roofs, etc.) and the suitability/functionality score is a measure of how well the building design and configuration supports the educational program or building function, it is possible to have a high score for one assessment and a low score for another assessment. It is the combined score that attempts to give a comprehensive picture of the conditions that exist at each facility and how each facility compares relative to the other facilities in the town or district.

To create the combined score, the four scores are weighted, based on which deficiencies the town and district wants to emphasize and the relative impact on capital costs. For the Town of Andover and Andover Public Schools, the building condition score was weighted 50 percent, the suitability score was weighted 30 percent, the grounds condition score was weighted 10 percent, and the technology readiness score was weighted 10 percent. **Exhibit 5-9** presents the range of the combined scores and the average combined scores by facility type. The combined scores vary from 42 to 99, with the averages generally in the "Fair" to "Poor" range.

Exhibit 5-10 presents all the scores for each facility and the resulting combined score using this weighting formula.

EXHIBIT 5-9
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
COMBINED SCORE RANGES

SITE TYPE	COMBINED SCORES RANGE		AVERAGE COMBINED SCORES
	Min	Max	
Elementary Schools	60.57	98.68	77.90
Middle Schools	68.89	84.71	77.42
High Schools	74.05	74.05	74.05
Fire/Public Safety	42.28	88.27	68.59
Administrative/Sr. Center	69.59	85.92	78.71
Maintenance Facilities	42.04	75.75	63.75

Source: MGT of America, Inc., 2016.

EXHIBIT 5-10
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
COMBINED SCORES – BY SITE

SCORES	DESCRIPTION
> 90	Excellent/Like New
80 - 89.99	Good
70 - 79.99	Fair
60 - 69.99	Poor
< 59.99	Unsatisfactory

EXHIBIT 5-10 (CONTINUED)
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
COMBINED SCORES – BY SITE

SITE NAME	WEIGHTED BUILDING CONDITION SCORE	SUITABILITY SCORE	TECH READINESS SCORE	GROUNDS CONDITION SCORE	COMBINED SCORE 50/30/10/10
Elementary Schools					
Bancroft ES	98.46	98.17	100.00	100.00	98.68
High Plain ES	83.82	92.89	79.95	80.81	85.86
Sanborn ES	79.34	70.54	75.00	55.30	73.86
South ES	83.57	78.28	92.50	64.59	80.98
West ES	69.42	62.48	75.00	65.18	67.47
Shawsheen Pre School	62.72	57.89	65.90	52.48	60.57
ELEMENTARY SCHOOL AVERAGE	**79.56**	**76.71**	**81.39**	**69.73**	**77.90**
Middle Schools					
Doherty MS	67.59	63.91	59.20	100.00	68.89
West MS	79.57	71.83	79.20	94.13	78.66
Woodhill MS	83.82	86.71	90.00	77.83	84.71
MIDDLE SCHOOL AVERAGE	**76.99**	**74.15**	**76.13**	**90.65**	**77.42**
High Schools					
Andover HS	76.04	77.03	86.70	42.49	74.05
DISTRICT AVERAGE	**78.44**	**75.97**	**80.35**	**73.28**	**77.37**
Fire/Public Safety Facilities					
Ballardvale Fire station	41.75	34.76	60.00	49.73	42.28
Public Safety	89.23	82.20	100.00	90.00	88.27
West Fire station	75.52	74.96	100.00	49.77	75.22
FIRE/PUBLIC SAFETY AVERAGE	**68.83**	**63.97**	**86.67**	**63.17**	**68.59**
Administrative/Senior Center Facilities					
Center at Punchard	72.44	57.74	100.00	60.45	69.59
Memorial Hall Library	87.02	82.94	100.00	75.22	85.92
Old Town Hall	82.20	79.78	100.00	90.00	84.03
School Administration	76.72	72.88	97.50	60.45	76.02
Town Offices	78.94	69.73	100.00	60.45	76.43
Water Treatment Plant	76.80	79.07	100.00	81.45	80.27
ADMINISTRATIVE/SR. CENTER AVERAGE	**79.02**	**73.69**	**99.58**	**71.34**	**78.71**

EXHIBIT 5-10 (CONTINUED)
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
COMBINED SCORES – BY SITE

SITE NAME	WEIGHTED BUILDING CONDITION SCORE	SUITABILITY SCORE	TECH READINESS SCORE	GROUNDS CONDITION SCORE	COMBINED SCORE 50/30/10/10
Maintenance Facilities					
Red Spring Road Maintenance Bldg.	72.83	71.50	100.00	78.77	75.75
Spring Grove Cemetery	72.21	72.34	100.00	56.42	73.45
Town Yard	47.34	27.81	53.30	46.98	42.04
MAINTENANCE FACILITY AVERAGE	**64.13**	**57.22**	**84.43**	**60.72**	**63.75**
TOWN FACILITY AVERAGE	**72.75**	**67.14**	**92.57**	**66.64**	**72.44**

Source: MGT of America, Inc., 2016.

FINDINGS

Building Condition - In general, the building condition scores were in the "Fair" to "Good" range. Two town buildings, the Town Yard and the Ballardvale Fire Station score in the "Unsatisfactory" range. Three schools, West Elementary, Shawsheen Preschool, and Doherty Middle School scored in the "Poor" range.

Educational Suitability – Most of the schools scored in the "Fair" to "Excellent" range for suitability with the exception of West Elementary, Shawsheen Preschool, and Doherty Middle School. Most of the town buildings scored in the "Fair" to "Good" range, with the exception of the Town Offices, the Ballardvale Fire Station, the Center at Punchard, and the Town Yard.

Grounds Condition – Numerous facilities scored below 70 in the grounds assessment, indicating a significant amount of deferred maintenance.

Technology Readiness – The scores for Technology Readiness were generally high with the exception of four facilities, Doherty Middle School, Shawsheen Preschool, Ballardvale Fire Station, and the Town Yard.

Combined Score – The combined scores indicate that five facilities should be prioritized since they scored low, West Elementary, Shawsheen Preschool, Doherty Middle School, Ballardvale Fire Station, and the Town Yard.

The facility assessments provide the data to prioritize projects based on the overall facility needs of the district. This data combined with the capacity and utilization analysis, the educational/governmental goals and programs, and capital improvement budgets, will be used to develop master plan options in **Section 8.0**.

6.0 PUBLIC INPUT

An important component of a viable master plan is data gathered from various community sources to ensure that critical perspectives have been heard and considered in the development of the final plan.

To ensure broad-based input, MGT conducted an open community forum with an online survey aligned to the discussions at the community meetings, and invited internal and external input from identified individuals. The internal input included interviews with the town manager, the superintendent of schools, and senior town and school staff, as well as the curriculum staff, including focus groups with various staff**.** The goal of each of these sessions was to identify overall strengths and challenges for the town and the school district and explore any specific issues unique to that person's role or function. The discussions with town planning staff were intended to provide information about planned developments across the town that could affect the schools – both number of students and location of students. Information from the internal and external interviews were used to shape the open community engagement activities.

The community engagement activities included two types of community engagement activities in support of the town's goal to create a long-range facility master plan—public charrettes and an online survey. The activities were focused initially on gathering **input** – what was working well, what needed attention or focus during the study and for the long-range plan – and then gathering **feedback –** what had we heard, what data had been gathered and what did the community think about that information. Both types of activities included face-to-face meetings as well as online survey opportunities.

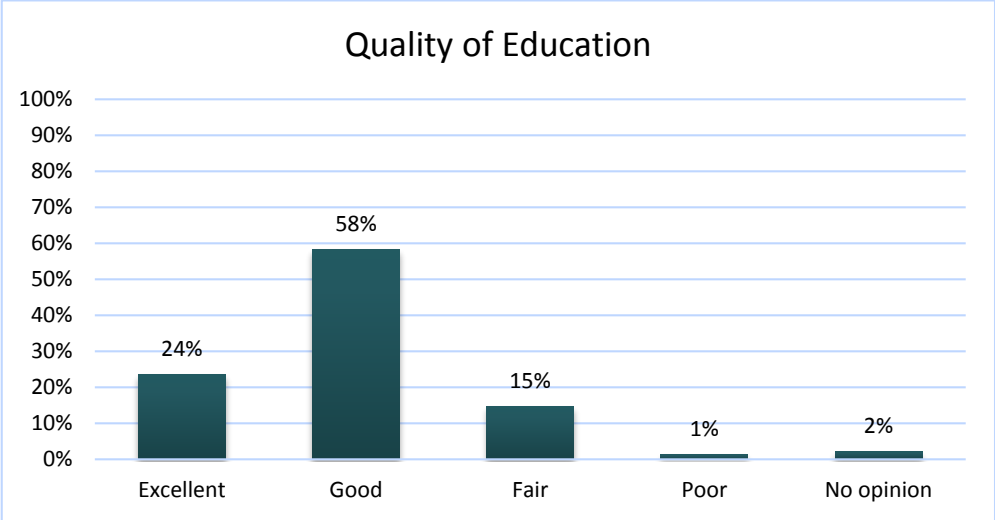
COMMUNITY INPUT ACTIVITIES

In order to gather community input regarding the long-range facility plans for the district, MGT conducted a community charrette open to the public and provided an online survey that included the same set of questions used during the large group session and several additional questions specifically about individual schools (if applicable) and town facilities. The community charrette was held on February 24, 2016 in the Cormier Youth Center.

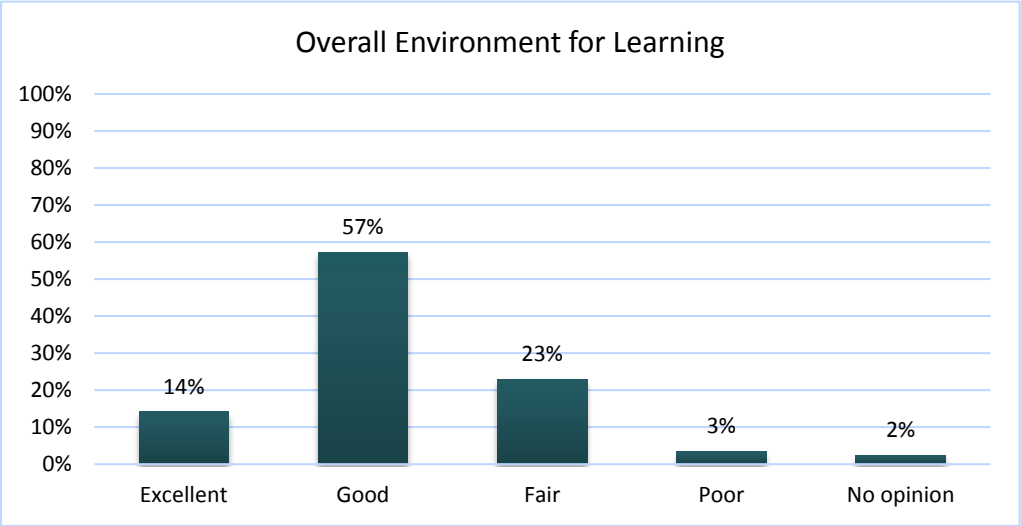
FINDINGS

For the public input portion of the plan, 1,265 individuals participated in charrettes or took the online survey. For the purpose of this report, we have combined the data gathered from the community input sessions and the online survey, since nearly the same data were gathered through each venue. The first portion of this section displays the responses to questions regarding Andover schools, and the second section provides responses to questions about facilities, programs and services in the Town of Andover. The combined charrette and survey responses are included in ***Appendix A***.

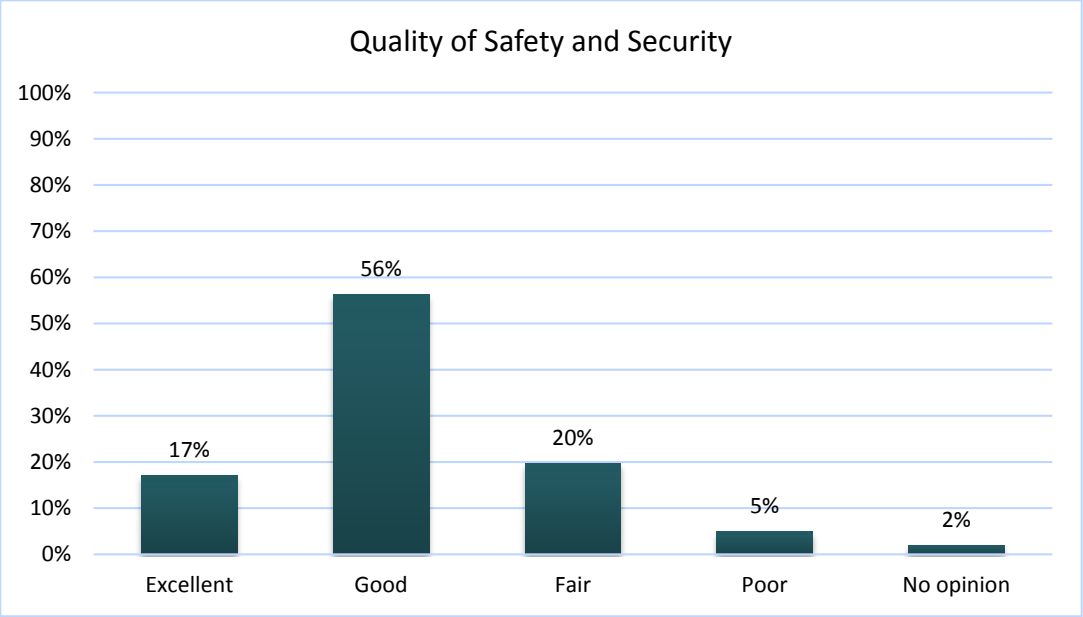
- Eighty-two percent (82%) of respondents feel the quality of education is *Excellent* or *Good*. Respondents that this is very important since residence attach value to living in Andover, and the quality of the schools is a key value-added for living in this community.



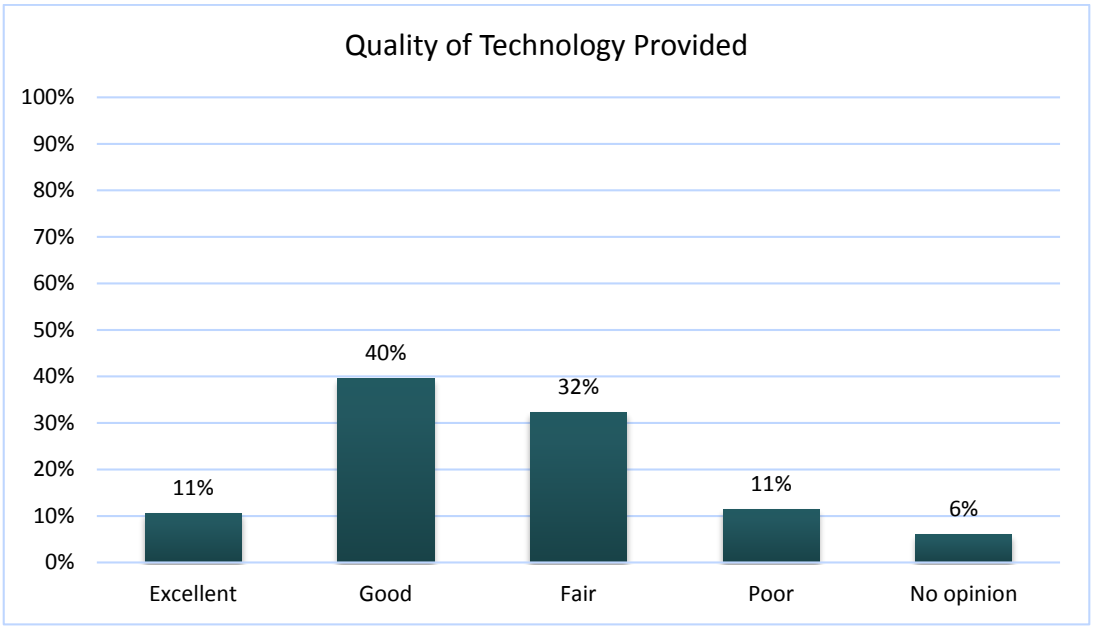
- Similarly, 71% of respondents feel the environment for learning is *Excellent* or *Good*. Twenty-six percent (26%) of respondents rated the area as *Fair* or *Poor*, with many respondents expressed concerns over the "health" of Andover school buildings, citing issues such as air quality, lack of natural lighting, cleanliness and HVAC systems.



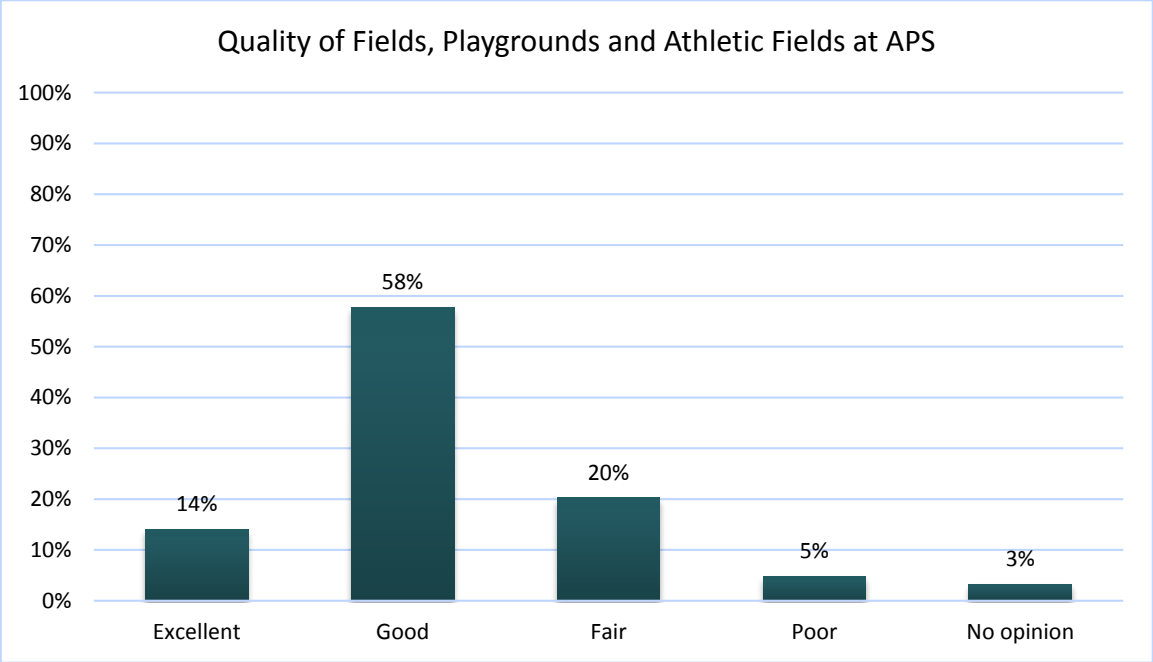
- Seventy-three percent (73%) of respondents rated the quality of safety and security in Andover schools as *Excellent* or *Good*, and only 25% rated conditions as *Fair* or *Poor*. The quality of this aspect was seen as inconsistent across the school district, with some participants expressing the desire to have police present in every school, not just the high school.



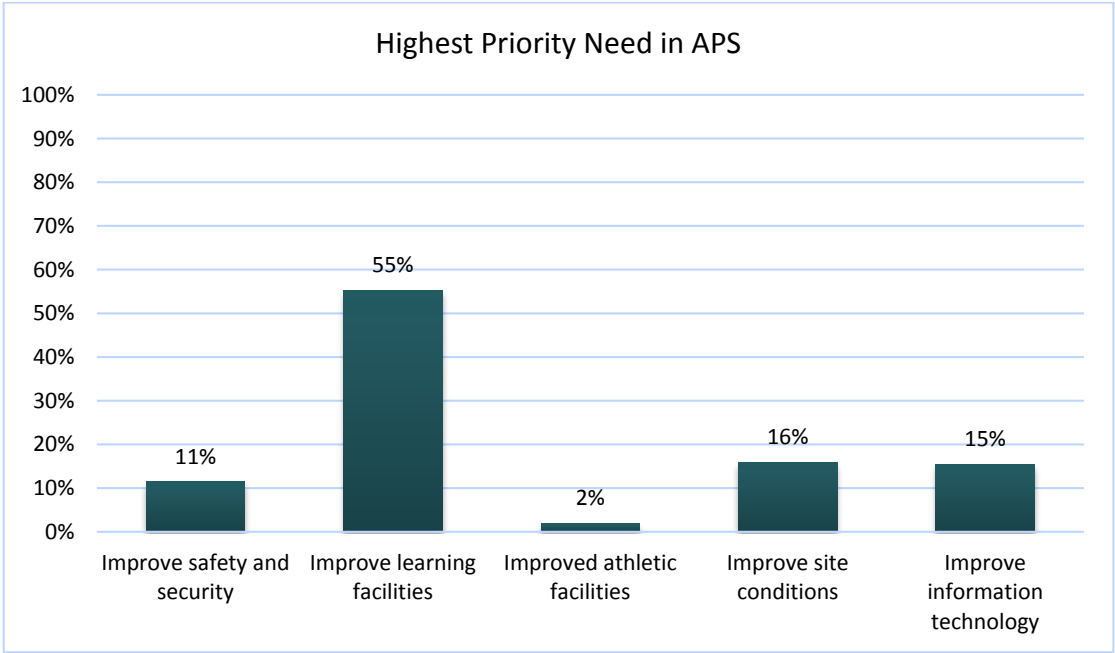
- Fifty-one percent (51%) of charrette respondents rated the quality of technology available to students and Andover schools staff as *Excellent* or *Good*, and 43% rate them as *Fair* or *Poor*. Respondents did not provide additional details on what they perceived as being "good" or "bad" about student and staff technology, but there was a consistency of opinion that the district needs to do a better job of using technology to communicate with parents and the community.



- Seventy-two percent (72%) of respondents rated the quality of fields, playgrounds and athletic fields as *Excellent* or *Good*, and 25% as *Fair* or *Poor*. Several respondents expressed the desire that this area not be separated between the schools and the Town of Andover and that they should be assessed collectively.

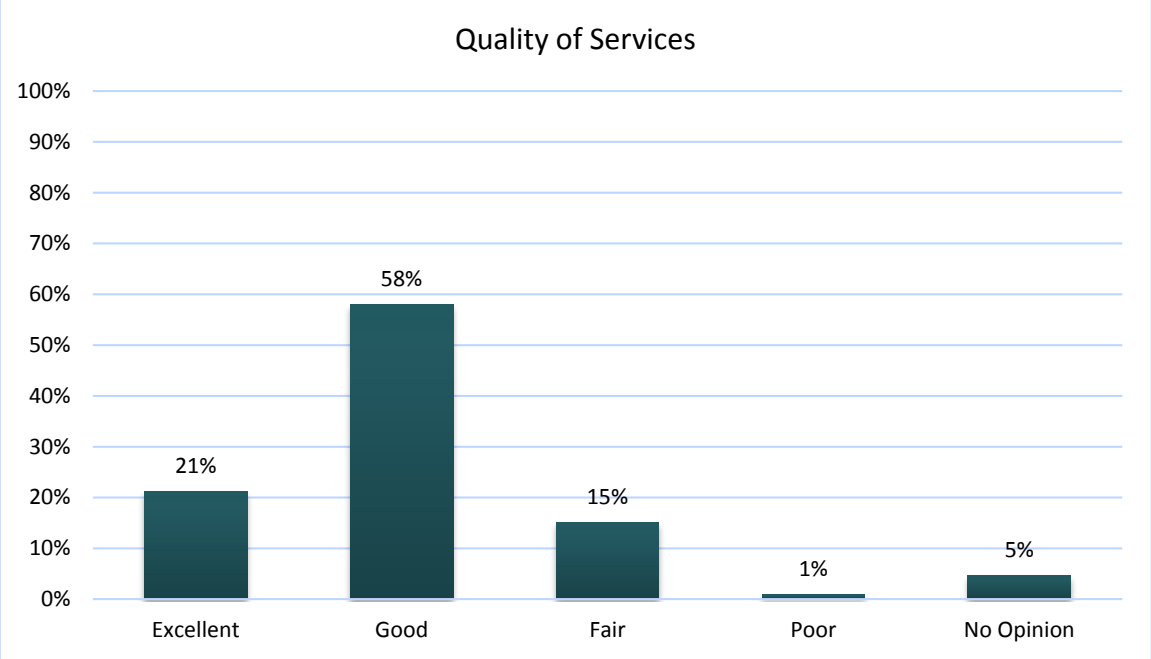


- Seventy-one percent (71%) of respondents identified *Improve learning facilities* (55%), and *Improve site conditions* (16%) as the highest priorities in the district. The remaining 29% identified improvements in technology, safety and security, and athletic facilities as priorities.

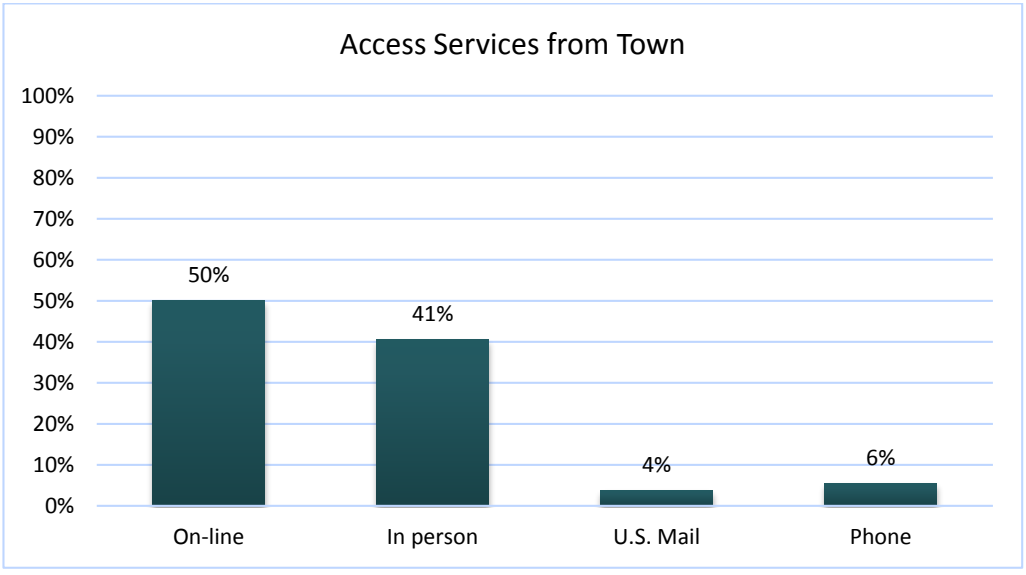


The next series of tables display the charrette responses to questions concerning perceptions of the condition of facilities and program services in the Town of Andover.

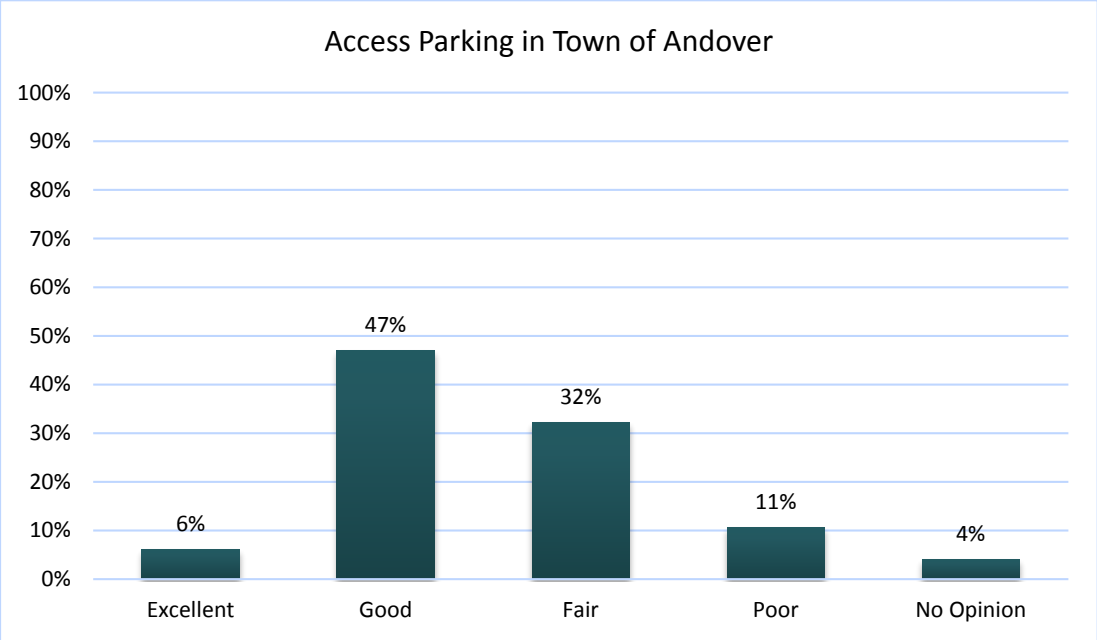
- When asked to rate the overall quality of services provided by the Town of Andover, 79% of charrette and survey participants responded *Excellent* or *Good.* Sixteen percent (16%) of respondents rated the quality of services as *Fair* or *Poor*. The library was repeatedly cited for excellence, followed by positive ratings for public safety (police/fire). Road maintenance was one area cited multiple times as a concern.



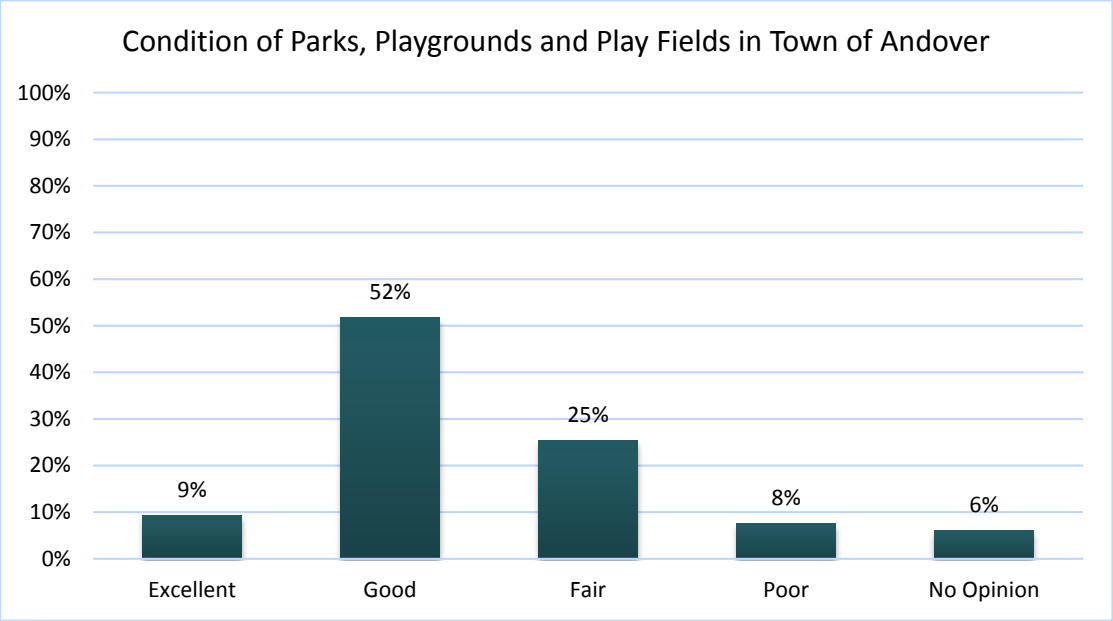
- When asked to rate the way they most frequently access services from the Town of Andover, 91% of charrette participants responded *Online* (50%) or *In Person* (41%) The remaining 10% accessed services either by mail or phone. Respondents felt that accessing services online would increase if the technology infrastructure was improved.



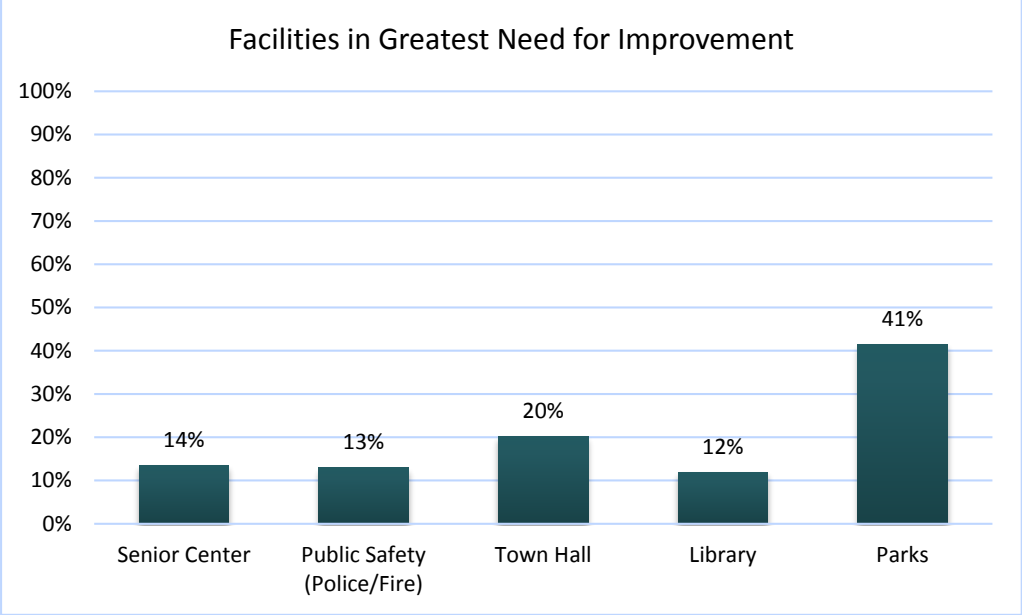
- While 53% of respondents rated access to parking at town facilities as *Excellent* or *Good,* and 43% saw this area as *Fair* or *Poor,* comments overwhelmingly cited shortcomings with parking, with most comments expressing that parking needs to be more abundant, and at no cost. Several respondents cited lack of adequate parking as a deterrent to accessing town services.



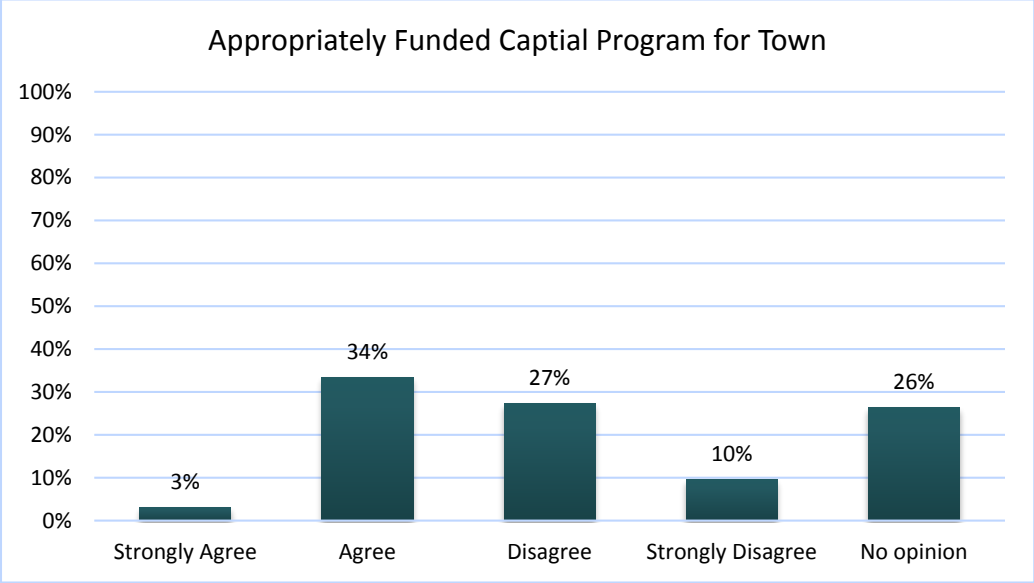
- Sixty-one percent (61%) of respondents rating the condition of Andover parks, playgrounds, and play fields as *Excellent* or *Good*, and 33% rated them as *Fair* or *Poor*. Respondents felt that improvement and expansion of these facilities would greatly enhance the sense of community in the town.



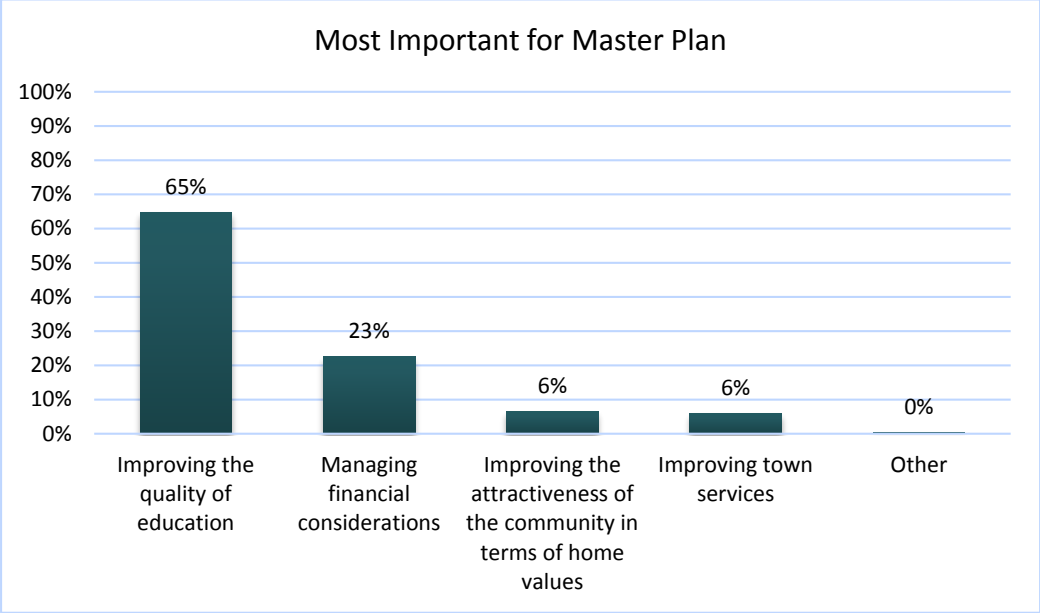
- There were a range of opinions regarding which Andover services or programs were in the greatest need of improvement; however, parks was the area most frequently cited at 41%, with the Town Hall a distant second at 20%. The remaining responses were evenly split among the senior center (14%), public safety (14%) and the library (12%). Online and charrette comments also reflected strong support for improving the Town Hall, schools, parks and the fire station. These areas were all seen as important reflections on the overall quality of the town, and thus important to adequately maintain.



- When asked if they felt the Town of Andover adequately funds its capital programs to meet the needs of the community, opinions were evenly split, with 37% of participants responded *Strongly Agree* or *Agree*, and 37% responding *Disagree* or *Strongly Disagree*. It should be noted that over a quarter of respondents had no opinion. This was also reflected in the comments from the online survey and charrette, with some expressing that they felt too much money was being spent on certain projects, and others feeling that funding was insufficient, specifically in terms of the schools and services for seniors. The overall comments reflected the perception that the town does not have a strategic and transparent funding plan.



- Eighty-eight percent (88%) of respondents identified improving the quality of education (65%) and managing financial considerations (23%) as two of the most important elements in a comprehensive master plan for the Town of Andover. This was also reflected in the comments with many respondents stating that the quality of the schools and the quality of life in the town were deeply connected, and thus spending in this area should reflect that connection. As with the previous question on appropriate levels of funding, there were a myriad of opinions on what should be the focus of a master plan, with repeated concerns cited around proper management of funds, and ensuring that taxpayers are getting proper services for the money they are paying.



CONCLUSIONS

In order to gather community input and feedback, MGT used a variety of tools throughout the process of development of this Facility Master Plan. The goal for community engagement was to ensure that all interested members of the community had multiple opportunities for both input and feedback.

- **Input** processes asked the community - what is important, what needs attention, what is working well, and what needs to be different?
- **Feedback** processes asked the community – given these preliminary data, what should be the priorities, how should issues be weighted, what is **most** important to do?

Andover Public Schools and the Town of Andover has an involved and interested populace. They attended the community session and used the online tools so that they could provide input and feedback at a time convenient for them.

From these data, it is clear that the Andover community wants the town and the district to focus their efforts on the following issues as part of the town's comprehensive facilities master plan:

- Fixing identified school and town building deficiencies.
- Providing adequate security for all Andover schools

- Maximizing the use of school and town facilities, e.g., repurposing Shawsheen as the school district central office.
- Improving the quality and expanding town common areas such as parks, playgrounds, and playing fields to build a greater sense of community.
- Improving the quality of services for senior citizens.
- Increasing accessibility to parking for town facilities.
- Increase the use of technology to improve communication between the community and the town and schools.

7.0 PRIORITIZATION AND PROJECT BUDGETING

This section presents the process utilized for prioritizing the identified needs or projects and the process for developing project budgets.

PRIORITIZATION

The process of prioritization involved the development of a needs summary based on the data obtained, development of optional scenarios for meeting the needs, budget estimates and assigned "cut points" for determining priority levels.

The first step in determining priorities is to develop a "combined score" based on the facility assessment scores provided earlier in this report. Based on town/school staff discussions with MGT, the following weighting was assigned to each of the individual scores in order to calculate the combined score:

- Facility Condition scores were weighted at 50%
- Suitability and Functionality scores were weighted at 30%
- Grounds Condition and Technology Readiness scores were weighted at 10%

Exhibits 7-1 provides the facility score matrix with the combined score included based on the weighting above.

EXHIBIT 7-1
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
COMBINED SCORES – BY SITE

SITE NAME	WEIGHTED BUILDING CONDITION SCORE	SUITABILITY SCORE	TECH READINESS SCORE	GROUNDS CONDITION SCORE	COMBINED SCORE 50/30/10/10
Elementary Schools					
Bancroft ES	98.46	98.17	100.00	100.00	98.68
High Plain ES	83.82	92.89	79.95	80.81	85.86
Sanborn ES	79.34	70.54	75.00	55.30	73.86
South ES	83.57	78.28	92.50	64.59	80.98
West ES	69.42	62.48	75.00	65.18	67.47
Shawsheen Pre School	62.72	57.89	65.90	52.48	60.57
ELEMENTARY SCHOOL AVERAGE	**79.56**	**76.71**	**81.39**	**69.73**	**77.90**

EXHIBIT 7-1 (CONTINUED)
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
COMBINED SCORES – BY SITE

SITE NAME	WEIGHTED BUILDING CONDITION SCORE	SUITABILITY SCORE	TECH READINESS SCORE	GROUNDS CONDITION SCORE	COMBINED SCORE 50/30/10/10
Middle Schools					
Doherty MS	67.59	63.91	59.20	100.00	68.89
West MS	79.57	71.83	79.20	94.13	78.66
Woodhill MS	83.82	86.71	90.00	77.83	84.71
MIDDLE SCHOOL AVERAGE	**76.99**	**74.15**	**76.13**	**90.65**	**77.42**
High Schools					
Andover HS	76.04	77.03	86.70	42.49	74.05
DISTRICT AVERAGE	**78.44**	**75.97**	**80.35**	**73.28**	**77.37**
Fire/Public Safety Facilities					
Ballardvale Fire station	41.75	34.76	60.00	49.73	42.28
Public Safety	89.23	82.20	100.00	90.00	88.27
West Fire station	75.52	74.96	100.00	49.77	75.22
FIRE/PUBLIC SAFETY AVERAGE	**68.83**	**63.97**	**86.67**	**63.17**	**68.59**
Administrative/Senior Center Facilities					
Center at Punchard	72.44	57.74	100.00	60.45	69.59
Memorial Hall Library	87.02	82.94	100.00	75.22	85.92
Old Town Hall	82.20	79.78	100.00	90.00	84.03
School Administration	76.72	72.88	97.50	60.45	76.02
Town Offices	78.94	69.73	100.00	60.45	76.43
Water Treatment Plant	76.80	79.07	100.00	81.45	80.27
ADMINISTRATIVE/SR. CENTER AVERAGE	**79.02**	**73.69**	**99.58**	**71.34**	**78.71**
Maintenance Facilities					
Red Spring Road Maintenance Bldg.	72.83	71.50	100.00	78.77	75.75
Spring Grove Cemetery	72.21	72.34	100.00	56.42	73.45
Town Yard	47.34	27.81	53.30	46.98	42.04
MAINTENANCE FACILITY AVERAGE	**64.13**	**57.22**	**84.43**	**60.72**	**63.75**
TOWN FACILITY AVERAGE	**72.75**	**67.14**	**92.57**	**66.64**	**72.44**

Source: MGT of America Consulting, LLC., 2016.

The next step in developing priorities is to determine appropriate "cut points". Based on discussions with town and school district staff, the following cut points in **Exhibit 7-2** were determined for the master plan projects.

EXHIBIT 7-2
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
COMBINED SCORE AND UTILIZATION PRIORITIZATION CUT POINTS

PRIORITY	COMBINED SCORE	UTILIZATION
1- Highest Priority	**<70.00**	**> 110**
2 - Significant Priority	70 - 79.99	101 - 110
3 - Routine Priority	>80	<100

Based on the priority cut points shown above, **Exhibit 7-3** presents the prioritized projects color coded by priority.

EXHIBIT 7-3
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
COMBINED SCORE AND UTILIZATION PRIORITIZATION

ID	SITE NAME	COMBINED SCORE (50/30/10/10)	2025 PROJECTED UTILIZATION
T-12	Town Yard	42.04	N/A
T-1	Ballardvale Fire station	42.28	N/A
0005	Shawsheen Pre School	60.57	66%
0305	West ES	67.47	105%
0310	Doherty MS	68.89	103%
T-2	Center at Punchard	69.59	N/A
T-8	Spring Grove Cemetery	73.45	N/A
0020	Sanborn ES	73.86	109%
0505	Andover HS	74.05	126%
T-11	West Fire station	75.22	N/A
T-6	Red Spring Road Maintenance Bldg.	75.75	N/A
T-7	School Administration	76.02	N/A
T-9	Town Offices	76.43	N/A
0350	West MS	78.66	100%
T-10	Water Treatment Plant	80.27	N/A
0025	South ES	80.98	90%
T-4	Old Town Hall	84.03	N/A

EXHIBIT 7-3 (CONTINUED)
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
COMBINED SCORE AND UTILIZATION PRIORITIZATION

ID	SITE NAME	COMBINED SCORE (50/30/10/10)	2025 PROJECTED UTILIZATION
0004	Woodhill MS	84.71	72%
0010	High Plain ES	85.86	103%
T-3	Memorial Hall Library	85.92	N/A
T-5	Public Safety	88.27	N/A
0003	Bancroft ES	98.68	97%

Source: MGT, 2016.

BUDGETING

Budgets for the projects identified in the master plan have been developed by MGT and the Town of Andover and Andover Public Schools staff using the current construction cost data. The budgets were developed using recent construction costs appropriate for each project type, and then adding factors for soft costs, furnishings, and contingencies. The budgets are developed for today's costs and then inflated annually for the appropriate number of years depending on when the project is scheduled in the master plan. While inflation rates can vary, an annual rate of 4% was used throughout the master plan time period.

The following chart in **Exhibit 7-4** shows the construction per square foot costs used and the factors applied to create project budgets.

EXHIBIT 7-4
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
BUDGET FORMULA PER BUILDING TYPE

BUDGET ESTIMATE FORMULA - ALL SCHOOLS								
Project Type	**Formula**	**Cost per GSF for new const.**	**FF&E @ 10%**	**Contingency @ 5%**	**A&E, permit, testing, etc. @10%**	**Replacement Cost per GSF**	**Renovation factor @ 10%**	**Renovation Cost per GSF**
Building Condition Deficiencies ES	Bldg. construction cost based on average replacement cost	$385.00	$38.50	$21.18	$44.47	$489.14	$48.91	$538.06
Educational Suitability Deficiencies	35% of Building Cost	$134.75	$13.48	$7.41	$15.56	N/A	$17.12	$188.32
Technology Readiness Deficiencies	30% of Electrical system costs	$7.45	N/A	$0.37	$0.78	N/A	$0.86	$9.46
Grounds Condition Deficiencies	Site development cost per building square foot as established by MGT historical data (15% Bldg Cost)	$57.75	N/A	$2.89	$6.06	$66.70	$6.67	$73.37
Building Condition Deficiencies MS	Bldg. construction cost based on average replacement cost	$372.00	$37.20	$20.46	$42.97	$472.63	$47.26	$519.89
Educational Suitability Deficiencies	35% of Building Cost	$130.20	$13.02	$7.16	$15.04	N/A	$16.54	$181.96
Technology Readiness Deficiencies	30% of Electrical system costs	$7.20	N/A	$0.36	$0.76	N/A	$0.83	$9.15
Grounds Condition Deficiencies	Site development cost per building square foot as established by MGT historical data (15% Bldg Cost)	$55.80	N/A	$2.79	$5.86	$64.45	$6.44	$70.89

EXHIBIT 7-4 (CONTINUED)
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
BUDGET FORMULA PER BUILDING TYPE

BUDGET ESTIMATE FORMULA - ALL SCHOOLS								
Project Type	**Formula**	**Cost per GSF for new const.**	**FF&E @ 10%**	**Contingency @ 5%**	**A&E, permit, testing, etc. @10%**	**Replacement Cost per GSF**	**Renovation factor @ 10%**	**Renovation Cost per GSF**
Building Condition Deficiencies HS	Bldg. construction cost based on average replacement cost	$433.00	$43.30	$23.82	$50.01	$550.13	$55.01	$605.14
Educational Suitability Deficiencies	35% of Building Cost	$151.55	$15.16	$8.34	$17.50	N/A	$19.25	$211.80
Technology Readiness Deficiencies	30% of Electrical system costs	$8.38	N/A	$0.42	$0.88	N/A	$0.97	$10.64
Grounds Condition Deficiencies	Site development cost per building square foot as established by MGT historical data (15% Bldg Cost)	$64.95	N/A	$3.25	$6.82	$75.02	$7.50	$82.52
Building Condition Deficiencies Fire Station	Bldg. construction cost based on average replacement cost	$498.00	$49.80	$27.39	$57.52	$632.71	$63.27	$695.98
Educational Suitability Deficiencies	35% of Building Cost	$174.30	$17.43	$9.59	$20.13	N/A	$22.14	$243.59
Technology Readiness Deficiencies	30% of Electrical system costs	$9.64	N/A	$0.48	$1.01	N/A	$1.11	$12.24
Grounds Condition Deficiencies	Site development cost per building square foot as established by MGT historical data (15% Bldg Cost)	$74.70	N/A	$3.74	$7.84	$86.28	$8.63	$94.91

EXHIBIT 7-4 (CONTINUED)
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
BUDGET FORMULA PER BUILDING TYPE

BUDGET ESTIMATE FORMULA - ALL SCHOOLS								
Project Type	**Formula**	**Cost per GSF for new const.**	**FF&E @ 10%**	**Contingency @ 5%**	**A&E, permit, testing, etc. @10%**	**Replacement Cost per GSF**	**Renovation factor @ 10%**	**Renovation Cost per GSF**
Building Condition Deficiencies Office	Bldg. construction cost based on average replacement cost	$205.00	$20.50	$11.28	$23.68	$260.45	$26.05	$286.50
Educational Suitability Deficiencies	35% of Building Cost	$71.75	$7.18	$3.95	$8.29	N/A	$9.12	$100.27
Technology Readiness Deficiencies	30% of Electrical system costs	$3.97	N/A	$0.20	$0.42	N/A	$0.46	$5.04
Grounds Condition Deficiencies	Site development cost per building square foot as established by MGT historical data (15% Bldg Cost)	$30.75	N/A	$1.54	$3.23	$35.52	$3.55	$39.07
Building Condition Deficiencies Senior Center	Bldg. construction cost based on average replacement cost	$290.00	$29.00	$15.95	$33.50	$368.45	$36.84	$405.29
Educational Suitability Deficiencies	35% of Building Cost	$101.50	$10.15	$5.58	$11.72	N/A	$12.90	$141.85
Technology Readiness Deficiencies	30% of Electrical system costs	$5.61	N/A	$0.28	$0.59	N/A	$0.65	$7.13
Grounds Condition Deficiencies	Site development cost per building square foot as established by MGT historical data (15% Bldg Cost)	$43.50	N/A	$2.18	$4.57	$50.24	$5.02	$55.27

EXHIBIT 7-4 (CONTINUED)
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
BUDGET FORMULA PER BUILDING TYPE

BUDGET ESTIMATE FORMULA - ALL SCHOOLS								
Project Type	**Formula**	**Cost per GSF for new const.**	**FF&E @ 10%**	**Contingency @ 5%**	**A&E, permit, testing, etc. @10%**	**Replacement Cost per GSF**	**Renovation factor @ 10%**	**Renovation Cost per GSF**
Building Condition Deficiencies Maintenance	Bldg. construction cost based on average replacement cost	$205.00	$20.50	$11.28	$23.68	$260.45	$26.05	$286.50
Educational Suitability Deficiencies	35% of Building Cost	$71.75	$7.18	$3.95	$8.29	N/A	$9.12	$100.27
Technology Readiness Deficiencies	30% of Electrical system costs	$3.97	N/A	$0.20	$0.42	N/A	$0.46	$5.04
Grounds Condition Deficiencies	Site development cost per building square foot as established by MGT historical data (15% Bldg Cost)	$30.75	N/A	$1.54	$3.23	$35.52	$3.55	$39.07

Source: MGT, 2016.

Using the cost factors presented in the above exhibits, budgets were developed for each project.

RENOVATION PROJECTS

The facility assessments rate each system in a building as “new”, “good”, “fair”, “poor”, or “unsatisfactory” based on a detailed description of each rating for the particular system. The possible score for each system is based on that system’s contribution to the overall cost of building construction. Therefore, the condition score is a measure of that portion of the value of the building which is in good condition. The capital needs score (100 minus the condition score) is a measure of the capital needs or deferred maintenance. This score, when presented as a percent, is also referred to as the facility condition index or FCI. For example, a building which has a condition score of 80, has a capital needs score of 20 (100 – 80 = 20). A capital needs score of 20 indicates that 20 percent of the value of the building can be reinvested in the building in order to attain a score of 100 and put the building in a “like new” condition.

Renovation budgets, based on the four facility assessments were calculated using the Renovation Project Cost per GSF and assuming a final score of 90 for the building condition, suitability or functionality, and site condition. A final score of 100 was used for technology readiness.

NEW CONSTRUCTION

Budgets for new construction were determined by projecting the size of the new building or total GSF and using the New Construction Cost per GSF.

The project budgets do not include costs for acquiring land.

8.0 OPTIONS AND RECOMMENDATIONS

This section presents the master plan options and recommendations based on the data presented in previous chapters of this master plan report. The master plan options present alternative ways to address the facility needs over the term of the master plan. Each option has pros and cons and is intended to provide a structure for further discussion by the Andover community to determine the best option based on priorities, fiscal resources and logistics. Each option is presented in a chart showing the individual projects, a time line, and a ten-year budget.

Recommendations to support the implementation of the master plan are presented following the options.

MASTER PLAN OPTIONS

OPTION I

The projects for Option I are presented in the following **Exhibits 8-1** through **8-3**, which identify the facility, the project description and the issue(s) being addressed, when the project would be scheduled, and the budget. The pros and cons of this option are listed after, as **Exhibit 8-4**.

EXHIBIT 8-1
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION I – SCHOOL OPTIONS

MASTER PLAN YEAR(S)	FACILITY	ISSUE	OPTION 1	PROJECT TOTAL*
1	Town Yard	Building condition, functionality, site condition, technology readiness and location	Relocate town yard facilities to new, more functional buildings out of the down town area.	$ 17,680,000
2-3	Ballardvale Fire Station	Building condition, functionality, site condition, technology readiness and location	Replace Ballardvale Fire Station with new 3-bay facility. Replacement in existing location may require additional property acquisition. Replacement at South ES would not require property acquisition.	$ 10,473,665
2-3	Andover High School	122% Utilization	Classroom addition for 500 students adjacent to Collins Center and expand cafeteria per DRA study. West MS to remain at current location.	$ 24,423,371

EXHIBIT 8-1 (CONTINUED)
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION I – SCHOOL OPTIONS

MASTER PLAN YEAR(S)	FACILITY	ISSUE	OPTION I	PROJECT TOTAL*
3-4	West Elementary School	Building condition and suitability	Build new facility with capacity of 700 on same site with adjacent new Shawsheen Preschool.	$ 41,148,946
3-4	Shawsheen Preschool	Building condition and suitability	Build new ten classroom preschool facility adjacent to West ES.	$ 12,242,797
5	Repurpose Shawsheen	Empty facility	Repurpose Shawsheen building as offices or document storage.	$ 11,149,407
4	Doherty Middle School	Building condition and suitability	Erect temporary facility for MS on adjacent play field.	$ 22,859,900
4-5			Renovate while occupying temporary facilities on adjacent play field.	
5-6	Center at Punchard	Building condition and functionality	Renovation of existing center. Examine possibilities to expand facilities in existing building.	$ 2,166,996
5-6	Sanborn Elementary School	Building condition and suitability and 102% utilization	Renovate and increase capacity to 500.	$ 24,300,984
6-7	West Middle School	Building/site condition and suitability	Renovate and improve site configuration.	$ 8,677,189
8	Spring Grove Cemetery Bldgs.	Building condition and functionality	Renovate existing facility	$ 656,503
8	West Fire Station	Building condition and functionality	Renovate existing facility	$ 1,088,970
8	Red Spring Road Maint.	Building condition and functionality	Renovate existing facility	$ 812,109
9-10	School Administration	Building condition and functionality	Renovate existing facility	$ 1,998,975
9-10	Town Offices	Building condition and functionality	Renovate existing facility	$ 4,048,869
			Total Option I	**$ 183,728,681**

***Project Total reflects MSBA reimbursement (30% estimate) for school projects. Inflationary factor applied after MSBA reimbursement.**

Source: MGT of America Consulting, LLC., 2016.

EXHIBIT 8-2
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION I - TIMELINE

Source: MGT, 2016.

EXHIBIT 8-3
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION I - BUDGET

PROJECT	BUDGET	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	PROJECT TOTAL*
Relocate Town Yard	$17,000,000	$17,000,000										$17,680,000
Replace Ballardvale Fire Station	$9,347,000		$934,700	$8,412,300								$10,473,665
Addition to Andover HS	$31,258,000		$6,251,600	$25,006,400								$24,423,371
Replace West ES	$50,443,000			$5,044,300	$45,398,700							$41,148,946
Relocate Shawsheen Preschool	$15,008,000			$1,500,800	$13,507,200							$12,242,797
Repurpose Shawsheen Bldg.	$9,164,000					$9,164,000						$11,149,407
Renovate Doherty MS	$27,155,000				$8,146,500	$19,008,500						$22,859,900
Renovate Center at Punchard	$1,732,600					$519,780	$1,212,820					$2,166,996
Renovate/Addition to Sanborn ES	$27,649,000					$5,529,800	$22,119,200					$24,300,984
Renovate West MS	$9,456,300						$945,630	$8,510,670				$8,677,189
Renovate Spring Grove Cemetery	$479,700								$479,700			$656,503
Renovate West Fire Station	$795,700								$795,700			$1,088,970
Renovate Red Spring Road Maint.	$593,400								$593,400			$812,109
Renovate School Administration	$1,366,200									$409,860	$956,340	$1,998,975
Renovate Town Offices	$2,767,200									$830,160	$1,937,040	$4,048,869
Total	$204,215,100	$17,000,000	$7,186,300	$39,963,800	$67,052,400	$34,222,080	$24,277,650	$8,510,670	$1,868,800	$1,240,020	$2,893,380	$183,728,681
Project Cost with MSBA Reimbursement		**$17,000,000**	**$5,310,820**	**$30,498,350**	**$46,936,680**	**$26,860,590**	**$17,358,201**	**$5,957,469**	**$1,868,800**	**$1,240,020**	**$2,893,380**	**$155,924,310**
Total with 4% inflation per year		$17,680,000	$5,744,183	$34,306,496	$54,909,277	$32,680,015	$21,963,662	$7,839,623	$2,557,582	$1,764,935	$4,282,909	$183,728,681

***Project Total reflects MSBA reimbursement (30% estimate) for school projects. Inflationary factor applied after MSBA reimbursement.**

Source: MGT, 2016.

EXHIBIT 8-4
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION I - PROS AND CONS

OPTION I - PROS AND CONS
Pros
Lowest projected master plan budget
Addresses Priority 1 and 2 facility needs
Addresses over utilization at high school and elementary schools
Cons
Does not provide ability to address site and program limitations at high school
Requires temporary facilities for renovation of Doherty MS
Does not address specific location for relocation of preschool

Source: MGT, 2016.

OPTION II

The projects for Option II are presented in the following **Exhibits 8-5** through **8-7**, which identify the facility, the project description and the issue(s) being addressed, when the project would be scheduled, and the budget. The pros and cons of this option are listed after, as **Exhibit 8-8**.

EXHIBIT 8-5
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION II – SCHOOL OPTIONS

MASTER PLAN YEAR(S)	FACILITY	ISSUE	OPTION II	PROJECT TOTAL*
1	Town Yard	Building condition, functionality, site condition, technology readiness and location	Relocate town yard facilities to new, more functional buildings out of the down town area.	$ 17,680,000
2-3	Ballardvale Fire Station	Building condition, functionality, site condition, technology readiness and location	Replace Ballardvale Fire Station with new 3-bay facility. Replacement in existing location may require additional property acquisition. Replacement at South ES would not require property acquisition.	$ 10,473,665
2-3	Andover High School	122% Utilization and early childhood education program addition	Classroom addition for 500 students adjacent to Collins Center and cafeteria expansion per DRA study. Modernization of Andover HS with early childhood facility to accommodate Shawsheen Preschool.	$ 75,145,347
3-4	Shawsheen Preschool	Building condition and suitability	Move preschool to HS (gym?) as part of high school modernization.	$ 12,242,797
4-5	West Elementary School	Building condition and suitability	Build new facility with capacity of 700 with adjacent new West MS sharing core facilities.	$ 42,794,904
4-5	West Middle School	Building/site condition and suitability	Build new facility with capacity of 600 adjacent to West ES sharing core facilities.	$ 49,209,601
5-6	Doherty Middle School	Building condition and suitability	Renovate while temporarily occupying West MS.	$ 23,959,310
5-6	Center at Punchard	Building condition and functionality	Renovation of existing center. Examine possibilities to expand facilities in existing building.	$ 2,166,996
7	Repurpose Shawsheen	Empty facility	Repurpose Shawsheen building as offices or document storage.	$ 12,059,199
7-8	Sanborn Elementary School	Building condition and suitability and 102% utilization	Renovate and increase capacity to 500.	$ 27,335,302
8	Spring Grove Cemetery Bldgs.	Building condition and functionality	Renovate existing facility.	$ 656,503
8	West Fire Station	Building condition and functionality	Renovate existing facility.	$ 1,088,970

EXHIBIT 8-5 (CONTINUED)
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION II – SCHOOL OPTIONS

MASTER PLAN YEAR(S)	FACILITY	ISSUE	OPTION II	PROJECT TOTAL*
8	Red Spring Road Maint.	Building condition and functionality	Renovate existing facility.	$ 812,109
9-10	School Administration	Building condition and functionality	Renovate existing facility.	$ 1,998,975
9-10	Town Offices	Building condition and functionality	Renovate existing facility.	$ 4,048,869
			Total Option II	**$ 281,672,547**

***Project Total reflects MSBA reimbursement (30% estimate) for school projects. Inflationary factor applied after MSBA reimbursement.**

Source: MGT, 2016.

EXHIBIT 8-6
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION II - TIMELINE

Source: MGT, 2016.

EXHIBIT 8-7
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION II - BUDGET

PROJECT	BUDGET	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	PROJECT TOTAL*
Relocate Town Yard	$17,000,000	$17,000,000										$17,680,000
Replace Ballardvale Fire Station	$9,347,000		$934,700	$8,412,300								$10,473,665
Renovation and Addition to Andover HS	$96,174,000		$19,234,800	$76,939,200								$75,145,347
Relocate Shawsheen Preschool	$15,008,000			$1,500,800	$13,507,200							$12,242,797
Replace West ES	$50,443,000				$5,044,300	$45,398,700						$42,794,904
Replace West MS	$58,004,100				$5,800,410	$52,203,690						$49,209,601
Renovate Doherty MS	$27,155,000					$2,715,500	$24,439,500					$23,959,310
Renovate Center at Punchard	$1,732,600					$519,780	$1,212,820					$2,166,996
Repurpose Shawsheen Bldg.	$9,164,000							$9,164,000				$12,059,199
Renovate/Addition to Sanborn ES	$27,649,000								$5,529,800	$22,119,200		$27,335,302
Renovate Spring Grove Cemetery	$479,700								$479,700			$656,503
Renovate West Fire Station	$795,700								$795,700			$1,088,970
Renovate Red Spring Road Maint.	$593,400								$593,400			$812,109
Renovate School Administration	$1,366,200									$409,860	$956,340	$1,998,975
Renovate Town Offices	$2,767,200									$830,160	$1,937,040	$4,048,869
Total	$317,678,900	$17,000,000	$20,169,500	$86,852,300	$24,351,910	$100,837,670	$25,652,320	$9,164,000	$7,398,600	$23,359,220	$2,893,380	$281,672,547
Project Cost with MSBA Reimbursement		**$17,000,000**	**$14,399,060**	**$63,320,300**	**$17,046,337**	**$70,742,303**	**$18,320,470**	**$9,164,000**	**$5,739,660**	**$16,723,460**	**$2,893,380**	**$235,348,970**
Total with 4% inflation per year		$17,680,000	$15,574,023	$71,226,726	$19,941,803	$86,068,828	$23,181,239	$12,059,199	$7,855,121	$23,802,698	$4,282,909	$281,672,547

*Project Total reflects MSBA reimbursement (30% estimate) for school projects. Inflationary factor applied after MSBA reimbursement.
Source: MGT, 2016.

EXHIBIT 8-8
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION II - PROS AND CONS

OPTION II - PROS AND CONS
Pros
Addresses Priority 1 and 2 facility needs
Addresses over utilization at high school and elementary schools
Provides opportunity to locate preschool program at high school for early childhood education program
Combines West ES and West MS on one site to increase operational efficiencies and educational program opportunities
Utilizes existing West MS as flex space for Doherty renovation
Cons
Projected master plan budget greater than Option I
Does not provide opportunity for improving high school site and expansion of high school facilities for improved program offerings

Source: MGT, 2016.

OPTION IIII

The projects for Option III are presented in the following **Exhibits 8-9** through **8-11**, which identify the facility, the project description and the issue(s) being addressed, when the project would be scheduled, and the budget. The pros and cons of this option are listed after, as **Exhibit 8-12**.

EXHIBIT 8-9
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION III – SCHOOL OPTIONS

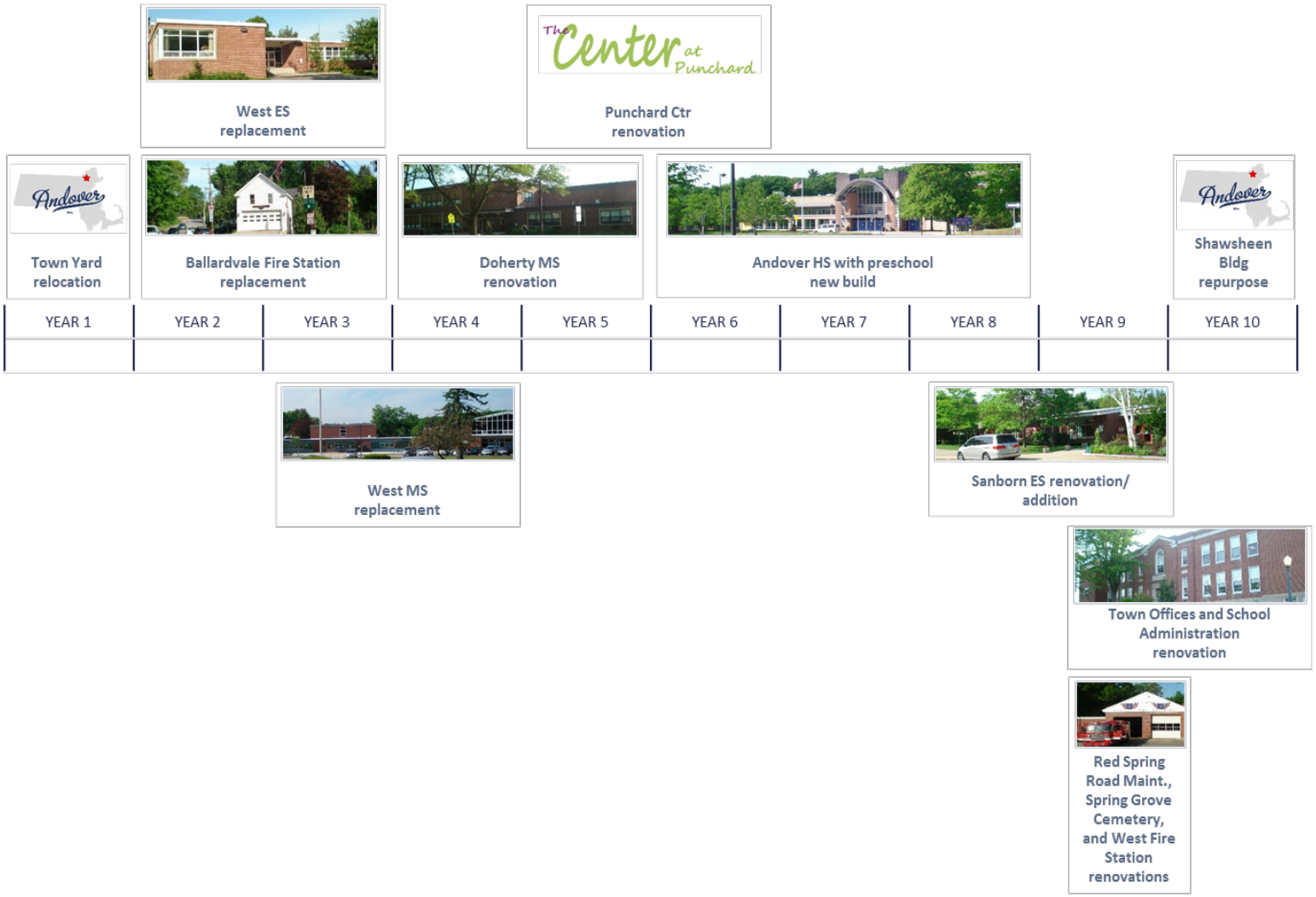
MASTER PLAN YEAR(S)	FACILITY	ISSUE	OPTION III	PROJECT TOTAL*
1	Town Yard	Building condition, functionality, site condition, technology readiness and location	Relocate town yard facilities to new, more functional buildings out of the down town area.	$ 17,680,000
2-3	Ballardvale Fire Station	Building condition, functionality, site condition, technology readiness and location	Replace Ballardvale Fire Station with new 3-bay facility. Replacement in existing location may require additional property acquisition. Replacement at South ES would not require property acquisition.	$ 10,473,665
2-3	West Elementary School	Building condition and suitability	Rebuild with capacity of 700.	$ 39,566,295
3-4	West Middle School	Building/site condition and suitability	Rebuild with capacity of 600 adjacent to Sanborn ES.	$ 47,316,924
4-5	Doherty Middle School	Building condition and suitability	Renovate while temporarily occupying West MS.	$ 22,859,900
5-6	Center at Punchard	Building condition and functionality	Renovation of existing center. Examine possibilities to expand facilities in existing building.	$ 2,166,996
6-8	Andover High School	122% utilization, building condition and suitability, modernization for 21st century educational programs, addition of early childhood education program, reconfiguration of site.	Build new facility on existing site of West MS and reconfigure site to provide better circulation and site facilities.	$ 208,981,101
8-9	Sanborn Elementary School	Building condition and suitability and 102% utilization	Renovate existing facility with addition for 100 students.	$ 27,335,302
10	Repurpose Shawsheen	Empty Facility	Repurpose Shawsheen building as offices or document storage.	$ 13,564,959

EXHIBIT 8-9 (CONTINUED)
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION III – SCHOOL OPTIONS

MASTER PLAN YEAR(S)	FACILITY	ISSUE	OPTION III	PROJECT TOTAL*
9	Spring Grove Cemetery Bldgs.	Building condition and functionality	Renovate existing facility.	$ 682,763
9	West Fire Station	Building condition and functionality	Renovate existing facility.	$ 1,132,529
9	Red Spring Road Maint.	Building condition and functionality	Renovate existing facility.	$ 844,593
9-10	School Administration	Building condition and functionality	Renovate existing facility.	$ 1,998,975
9-10	Town Offices	Building condition and functionality	Renovate existing facility.	$ 4,048,869
			Total Option III	**$ 398,652,871**

***Project Total reflects MSBA reimbursement (30% estimate) for school projects. Inflationary factor applied after MSBA reimbursement.**
Source: MGT, 2016.

EXHIBIT 8-10
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION III - TIMELINE



Source: MGT, 2016.

EXHIBIT 8-11
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION III - BUDGET

PROJECT	BUDGET	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	PROJECT TOTAL*
Relocate Town Yard	$17,000,000	$17,000,000										$17,680,000
Replace Ballardvale Fire Station	$9,347,000		$934,700	$8,412,300								$10,473,665
Replace West ES	$50,443,000		$5,044,300	$45,398,700								$39,566,295
Replace West MS	$58,004,100			$5,800,410	$52,203,690							$47,316,924
Renovate Doherty MS	$27,155,000				$8,146,500	$19,008,500						$22,859,900
Renovate Center at Punchard	$1,732,600					$519,780	$1,212,820					$2,166,996
Build new Andover HS w/ preschool	$225,000,000						$45,000,000	$90,000,000	$90,000,000			$208,981,101
Renovate/Addition to Sanborn ES	$27,649,000								$5,529,800	$22,119,200		$27,335,302
Repurpose Shawsheen Bldg.	$9,164,000										$9,164,000	$13,564,959
Renovate Spring Grove Cemetery	$479,700									$479,700		$682,763
Renovate West Fire Station	$795,700									$795,700		$1,132,529
Renovate Red Spring Road Maint.	$593,400									$593,400		$844,593
Renovate School Administration	$1,366,200									$409,860	$956,340	$1,998,975
Renovate School Administration	$1,366,200									$409,860	$956,340	$4,048,869
Renovate Town Offices	$2,767,200									$830,160	$1,937,040	$398,652,871
Total	$431,496,900	$17,000,000	$5,979,000	$59,611,410	$60,350,190	$19,528,280	$46,212,820	$90,000,000	$95,529,800	$25,228,020	$12,057,380	**$315,021,570**
Project Cost with MSBA Reimbursement		**$17,000,000**	**$4,465,710**	**$44,251,677**	**$42,245,133**	**$13,825,730**	**$32,712,820**	**$63,000,000**	**$66,870,860**	**$18,592,260**	**$12,057,380**	$398,652,871
Total with 4% inflation per year		$17,680,000	$4,830,112	$49,777,118	$49,420,830	$16,821,115	$41,392,153	$82,903,702	$91,517,389	$26,462,583	$17,847,868	$17,680,000

***Project Total reflects MSBA reimbursement (30% estimate) for school projects. Inflationary factor applied after MSBA reimbursement.**

Source: MGT, 2016.

EXHIBIT 8-12
TOWN OF ANDOVER AND ANDOVER PUBLIC SCHOOLS
OPTION III - PROS AND CONS

OPTION III - PROS AND CONS
Pros
Addresses Priority 1 and 2 facility needs
Addresses over utilization at high school and elementary schools
Provides opportunity to locate preschool program at high school for early childhood education program
Combines West ES and West MS on one site to increase operational efficiencies and educational program opportunities
Utilizes existing West MS as flex space for Doherty renovation
Provides opportunity to build new high school to meet 21st century educational programs and improve site configuration
Cons
Highest projected master plan budget
High school improvements don't occur until year 6

Source: MGT, 2016.

SUPPORTING RECOMMENDATIONS

The following recommendations are intended to provide guidance with the implementation of the ten-year master plan.

RECOMMENDATION 1:

REGULARLY REVIEW ATTENDANCE BOUNDARIES

A key component of the ten-year facilities master plan is the efficient use of existing facilities. One important element in accomplishing this objective is the need to review attendance boundaries on a regular basis. Care needs to be taken in order to balance the need to utilize facilities more efficiently with the need of students and families for stability. Policies can and should be developed to address both concerns. As the master plan is implemented schools with appropriate capacity will become available in locations where students are likely to reside making this process much simpler.

RECOMMENDATION 2:

CONTINUE TO UPDATE LONG-TERM ENROLLMENT PROJECTIONS ON A REGULAR BASIS

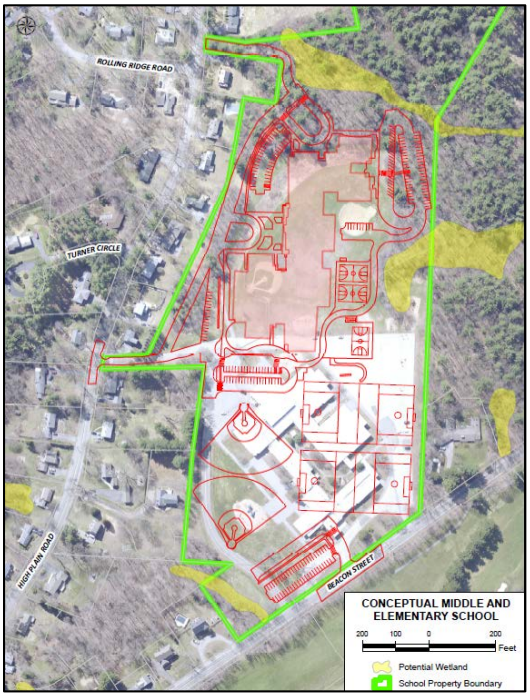
Long-term enrollment projections should continue to be updated as the master plan is implemented. In addition to the current level of growth that is occurring in the Town of Andover, improvements to facility conditions, new facilities, and program changes will likely lead to increased demographic changes. A sound projection basis has been provided in this report. The updates should be relatively simple and, therefore, require much less effort than was undertaken for this study. MGT recommends continuing to update the data no less than once every three years.

RECOMMENDATION 3:

CONDUCT SITE STUDIES FOR SEVERAL SITES

Site studies should be conducted for several of the projects identified in the master plan before finalizing the scope of these projects. A site study can determine the best location and configuration for the project. Projects that should have site studies conducted include:

- Ballardvale Fire Station – A site study will help determine if the existing location can accommodate a new facility or if the South Elementary School site is better.
- Andover High School – A site study will help determine the advantages of either a major renovation or the construction of a new facility.
- West Elementary School and Sanborn Elementary School – A site study could determine if one elementary school is the preferred site for either the Shawsheen Preschool or West Middle School.
- Shawsheen Preschool – A site study could help determine the best use for this facility once it is vacated.



RECOMMENDATION 4:

COMMUNICATE THE PLAN

Funding of the long-term master plan will likely require approval of additional funding sources by town voters. As with all capital construction initiatives, it will be critical to develop a communications plan to inform the public of the need, the plan for addressing the need, and the advantages brought to the community.