



## Newton Schools

# Long-Range Facilities Master Plan

Newton, MA

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Update

# VOLUME I

**HMFH** Architects, Inc.

130 Bishop Allen Drive  
Cambridge, MA 02139  
617 492 2200  
[www.hmfh.com](http://www.hmfh.com)



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# 1 Executive Summary

The goal of this study is to provide the City of Newton and the Newton Public Schools with an update to the 2007 Long-Range Facilities Master Plan. This report includes updates to the needs assessment, space standards and long-range utilization plans for 21 school buildings. Working with the Newton Schools Facilities Sub-Committee, HMFH Architects, Inc. began this update in August 2011.

## Process

The 21 facilities re-assessed include 15 elementary schools, 4 middle schools, the Education Center and Carr School. Through the use of School Department and Public Buildings maintenance records, tours of each facility, and review of current enrollment projections, each building was re-assessed in three categories:

- Facility condition
- Educational space
- Enrollment growth

In determining the current condition of each property the following components were re-assessed:

- Building exterior
- Building interior finishes
- Building systems (mechanical, electrical, plumbing, fire protection)- per NPS and NPB records
- Accessibility
- Code requirements
- Site conditions
- Building and site limitations

The educational space assessment identifies space deficiencies based on use, size (square feet), and overcrowding with respect to the established Newton standards.

The review of NPS' Enrollment Analysis Report and subsequent updates dated November 2011 provided the most current data for this school year (2011/12) and the five-year projections (2016/17) to be incorporated into the updated master plan.

## Assessment

Of the 21 buildings assessed, five were originally built over 80 years ago and another 12 were constructed more than 50 years ago. The newest, original building is 40 years old. Additions and various levels of renovations have occurred on most buildings over the years. Burr, Horace Mann, Mason-Rice, and Zervas have not had additions. Unlike during the initial master plan, this update has included the modular "temporary" classroom additions in the assessment.

The four middle schools range in age from the original 1936 Oak Hill building to additions as recently as 1997. In 2010, Oak Hill received a 4-classroom modular addition and a permanent addition of 6 classrooms is currently in the planning stages for Day Middle School.

Based on the detailed physical assessment, a numerical rating of 1, 2, 3 or 4 was assigned to each property, with 1 indicating the lowest level of need in that category and 4 the highest level of need.

### Facility Condition Assessment

Six buildings are assessed at the highest level of facility condition need: Angier, Cabot, Countryside, Ward, Zervas, and Carr; this ranking has not changed since the initial assessment. These buildings are all greater than 50 years, Cabot and Ward are greater than 80 years old, and Angier is now greater than 90 years old. The buildings assessed with the lowest facility condition need are Bowen, Memorial-Spaulding, Williams, and Oak Hill. These buildings all have had additions and partial renovations within the past 15 years. Eight schools have, or are about to receive, modular additions for a total of 25 modular spaces in the system.

The other eleven facilities need various levels of renovation work. All buildings require upgrades to the mechanical, electrical and plumbing systems. Eight of the 21 buildings assessed require at least some level of upgrades to meet accessibility codes.

In general, the middle schools' physical needs are lower than those of the elementary schools.

### **Educational Space Assessment**

Angier, Cabot, Peirce, Ward, and Zervas all rank highest in level of need for educational space, reflecting undersized classrooms, the low net square feet of space per pupil, and minimal size or the absence of shared spaces (library, gym, and cafeteria). Despite modular classroom additions at Peirce and Zervas they still rank among the highest in educational space needs. Many of the educational space deficiencies are due to the age of the buildings; educational requirements have changed dramatically over the past 50 years, requiring the following spaces in a typical school building:

- Special needs programs
- Separate music and art classrooms
- Cafeteria
- Full-time kindergarten spaces
- After school program space

Bowen, Burr, Memorial-Spaulling and Williams, three of which have recent additions, have the lowest level of educational space needs. In general, regardless of incorporating modular classroom additions, those schools found at the highest and lowest levels of need have not varied since the 2007 assessment.

### **Enrollment Assessment**

The elementary enrollment was predicted to grow by nearly 1,000 students by the 2011/12 school year, an increase of 18%; the projection methodology then was revised and this projected increase did not occur. Instead Newton Public Schools has experienced an increase of 7% or 369 elementary students and 8% or 193 middle school students over the past 4 years. And despite the actual increase being lower than previously predicted, many school buildings were overcrowded in 2006/07 and continue to experience overcrowding.

Looking ahead five years, via the most current enrollment data and projections, 11 elementary schools are expected to have double-digit growth; seven of which are on the north side of the city and feed to Newton North, four are on the south side and feed to Newton South; three of these are physically located in the middle of the city. Burr has the highest projected increase of 64 students by school year 2016/17.

Three of the four middle schools are expected to have enrollment increases in the next five years for a total of 156 more students in the middle school buildings. When coupling where Newton enrollments were in 2006/07 when we initially developed the master plan with where they are expected to be in 2016/17, there is projected to be (with more than half the projection having come to fruition) a 10% or 544-student increase at the elementary level and 14% or 349-student increase at the middle level. With this experienced and projected increase in enrollments the existing overcrowding conditions will continue to worsen.

Current building capacity was assessed by using a standard general classroom space factor of 40 square feet per pupil. Capacity was calculated with and without including the modular classrooms. Capacity as defined here, does not reflect other educational deficiencies for special education, etc. By this calculation, 10 of the 15 elementary schools are already or will be overcrowded; Angier will have the highest level of overcrowding with 95 more students than the classrooms ideally should have to accommodate. Looking forward five years, as projected, Bigelow Middle School will continue to feel the impact of student growth with a projected increase of 54 students, placing enrollments at 87 students higher than the building was intended for. Brown Middle is expected to have the highest increase (96 students) in five years, but the school is currently under capacity and should be able to manage this increase.

### **Updated System-wide Option**

With the combination of population growth and facilities needs, Newton faces both a challenge and an opportunity to create a visionary educational plan for the decades ahead. The previously approved system-wide

option has been updated to reflect the current building assessments, enrollment projections, and educational needs. The option provides a phased, long-range plan to address the facility conditions, educational space needs and the projected enrollment growth; the plan incorporates the following planning assumptions identified by the committee:

- Maintain neighborhood schools
- Maintain current grade structure
- Try to keep elementary schools sizes to below approximately 450 students each
- Redistrict as a “no cost” first step
- Include Education Center and Carr School in the planning process
- Consider the integrated pre-school program in the planning process
- Consider modular classrooms as short-term solutions
- Respect Mass Pike as an elementary school district boundary
- Try to respect Route 9 as an elementary school district boundary
- Maintain (or create) coherent feeder patterns to middle and high schools
- Classrooms that are 800 square feet or larger can accommodate 22 students
- Maintain (or provide) spaces for After Care
- Build capacity into elementary system early on
- Remediate the neediest buildings early in the process
- Create reasonable school sizes, neither super-sized nor extremely small
- The long-range plan can be revisited and adjusted as new information becomes available
- Consider cost to the city as well as state funding
- Be good neighbors in the community

The first priority of the option is to alleviate current and projected overcrowding. The second priority is to replace aged, obsolete, and educationally deficient facilities. The third priority is to renovate and upgrade buildings to provide appropriate educational spaces and environments.

The updated option still requires renovation of Carr School to be used as a swing space for the students during the future school construction projects. The option assumes that Newton will continue to update the Statements of Interest to the Massachusetts School Building Authority to qualify for funding assistance. The option provides a multi-phased approach; how long it may take will be determined by community commitment and support, annual review of enrollment projections, and the City’s capacity to oversee and fund building projects.

In brief, the updated option is intended to accommodate the enrollment in the existing elementary and middle school buildings; no additional school building is projected to be required. The option outlines schools that can accommodate additions as well as renovations and those schools that due to site or other constraints would have renovations only. The updated option highlights the needs of the Integrated Pre-School Program in the future planning. The intent of the long-range plan is to build capacity in the system early on and to centrally locate this capacity to provide flexibility in accommodating the fluctuations in student population.

The option allows for future flexibility in response to reassessment at each step of the long-range plan. October enrollment projections are to be reviewed each year and the long-range plan will be adjusted to reflect new findings.

## 2 Introduction

Working with the Newton Schools Facilities Sub-Committee, the scope to update the 2007 Master Plan was defined and commenced in August 2011. The assessments began with site visits to all 21 buildings and gathering and review of relevant maintenance and purchasing records over the past 4 years to ascertain the work completed in the time period since the previous assessment. Additionally, the school department provided the most up to date student enrollment projections for review and incorporation.

### Challenge

The City of Newton has 15 neighborhood elementary schools, four middle schools, one former school building used mainly by the school administration and, in part by the Pre-School Program, and one former school building leased to other programs. The majority of the buildings are greater than 50 years old and just four buildings have undergone additions/ upgrades in the last 15 years. The facilities are tired and have many code-related deficiencies. Many of the educational spaces do not meet today's standards in terms of size, type and quantity of spaces. Additionally, the system has experienced continual increases in the enrolled population and project further increases in the next 5 years; all of which provide a challenge to the already overcrowded and over tasked facilities.

### Objective

The objective of this study update is to provide the City of Newton and the Newton Public Schools with a space needs assessment and long-range utilization plan that will either reconfirm or modify previous held assumptions in the near-term and in the long-term will be flexible to changes in demographics and needs.

### Scope

The study consists of four distinct parts:

- Review and update of educational and facility standards
- Review and incorporation of current enrollment projections
- Update the facilities assessments
- Update the previously-approved system-wide option

## 3 Standards

School building standards were established to guide future educational space planning and facility physical plant planning. The standards have been updated to reflect current needs and guidelines. These standards provide a benchmark to assess the existing educational spaces and facility conditions.

### Facility Standards

The school building standards specify preferred materials and systems to be used in future new and/or renovated facilities. These standards were initially developed and have been reviewed with individuals from the school's facility department. The materials and systems specified for Newton school buildings should be durable, easy to maintain, provide energy efficient performance, and be environmentally conscience. It was deemed upon review of the previously established standards that the only material modification is to specify epoxy flooring in the toilet rooms. Refer to the 2007 Master Plan, Volume II, Appendix A for the detailed Elementary and Middle School Standards for Facility, Systems and Site.

### Educational Space Standards

Educational specifications had been developed for elementary, middle and pre-school programs, using the Massachusetts School Building Authority guidelines in effect in 2007 as a reference to develop Newton-specific requirements. Since 2007, MSBA's guidelines have been modified and we have provided four draft MSBA Space Summaries reflective of Newton's requirements in light of the most recent State guidelines.

#### Elementary School Program:

The following educational and education-related spaces continue to be essential elements of Newton's inclusive program requirements:

- Elementary school size to be below approximately 450 students each
- Dedicated After School Classroom in each school
- Food preparation facilities in each school
- Resource Center and a Learning Center for Speech & Language in each school
- Offices and related spaces to house special programs:
  - Reach Program
  - ELL Program
  - Mentor Program
  - Occupational and Physical Therapy Programs
  - Autism Therapy and Observation Program
  - ABA ("Safe Room") Program
  - School Psychologist
  - School Social Worker
  - MCAS Testing.

The draft prototypical educational specifications developed for Newton's elementary schools differ slightly from the MSBA guidelines:

- Core classrooms in existing elementary schools shall be considered acceptable if they contain at least 800 net square feet (for 22 students); for new schools or additions to existing schools, core classrooms shall have at least 850 net square feet.
- The recommended size for a gymnasium should be 3000 nsf, this is half the MSBA recommended size, but is in line with Newton's curricula requirements. On average the existing elementary school gymnasium is 2860 nsf.
- Each school should have a dedicated After School space with office and storage facilities. The minimum size should be 1000 nsf and the maximum size should be 1450 nsf.
- With regard to special education requirements, all schools should have adequate office, meeting and storage space for the following programs and services: Learning Center, Literacy Center, ELL Program, OT/PT Program, Speech and Language Program, the School Psychologist, the School Social Worker, and other special programs as needed.

For the purposes of establishing the long-range educational adequacy of Newton's 15 existing elementary schools, it was agreed in 2007 that modular classrooms, regardless of age or current condition, would not be considered educationally acceptable. In this update, the modular classrooms have been assessed and included with acknowledgement that units older than 10 years will begin to fail and need maintenance/ repairs and units older than 20 years should be replaced with permanent construction.

Newton has various sized elementary schools, both existing and as would be the result of any long-range planning effort; in an effort to accommodate this and using the MSBA format, two draft educational space summaries were developed. The draft space summary includes one additional general classroom to allow for fluctuations in enrollment. See **Appendix B** of this report for two detailed Draft Elementary School Space Summaries. They are titled "draft" for further discussion and development by the full School Committee, the School Department and Newton educators will be required to finalize the specifications prior to commencing a feasibility study effort.

#### Middle School Program:

The summaries below highlight Newton's four middle schools' gross square foot per pupil in comparison to the current State guidelines. In 1997, both Brown and Day received small additions and Oak Hill was expanded with a significant addition. Bigelow has not been expanded since opening as a middle school in 1993. Both Day and Brown, based on gross square feet, should be able to accommodate approximately 850 students; based on this calculation, Brown is under capacity and Day is at capacity. Newton offers innumerable special programs that make this simple calculation difficult to rely on in order to fully establish space needs. Due to the projected



increase in the projected enrollment at Day to 900 students, a 6-classroom addition is in the planning stages at this time.

Oak Hill received a four-classroom modular addition in 2010; as the summary below shows, even with this addition, the school is undersized, per State guidelines, to serve its population. Bigelow is sized to accommodate 500 students and is currently over-enrolled with a 5-year projected increase to 588 students, redistricting may be required to accommodate the increase.

	Bigelow Middle 533 Students	Oak Hill Middle w/ modulares 612 Students
Total Net Area	62,014	68,428
Net Area per Pupil	116	112
Actual Gross Area	92,500	96,000
<b>Gross Area per Pupil</b>	<b>174</b>	<b>157</b>
<b>Gross Area per Pupil per MSBA Guidelines</b>	<b>179</b>	<b>172</b>

	Brown Middle 677 Students	Day Middle 845 Students
Total Net Area	93,459	103,609
Net Area per Pupil	138	123
Actual Gross Area	146,000	145,600
<b>Gross Area per Pupil</b>	<b>216</b>	<b>172</b>
<b>Gross Area per Pupil per MSBA Guidelines</b>	<b>166</b>	<b>160</b>

To sum up our educational space analysis of the four middle schools, they are better able, both because of the available square footage in the system and in the flexibility of programming and scheduling afforded at the middle school level, to provide the necessary educational space than many of the elementary schools in the City.

A review of the previously developed preliminary middle school space requirements was conducted in light of the most current Massachusetts School Building Authority guidelines; included in **Appendix C** are two Draft Middle School Space Summaries, one for a 550-student and the other for 850-student school.

**Integrated Pre-School Program:**

The program’s needs have not decreased or been ameliorated in the past four years, so it bears repeating the needs of this program here:

The Newton Public School system is a large urban/suburban school district known for its excellence in the education of general and special education students, particularly for its successful commitment to the philosophy of inclusion. Newton provides both inclusion programming and Applied Behavioral Analysis (ABA) self-contained models of instruction for students with Autism Spectrum Disorder (ASD) from Preschool-age 22. The ABA classrooms are in limited buildings as they are considered system-wide programs: preschool ABA classrooms are at the Educational Center at 100 Walnut Street; elementary ABA classrooms are at Countryside and middle school ABA classrooms are at Brown Middle. In addition, there is consensus that there are more challenging students in the Newton Public Schools (not just those with ASD) now who would have been enrolled in out of district placements in prior years.

Newton’s city-wide Pre-school Program is one of the jewels of its public school system. There is ample evidence that the demand for access to the Pre-school Program is increasing. There is equally ample evidence that the Pre-school Program is not housed adequately at present - currently, the Pre-school Program is split between classrooms on the lowest level of the Educational Center and in the Lincoln-Eliot School - and that a consolidated Pre-school facility, either in its own building or in a separate wing of a larger school facility, should be an important part of any program of improvements to the Newton Public School system.

Conversations with the Coordinator of the Pre-school Program led to the development of a theoretical educational specification for an Integrated Pre-School to accommodate 276 students. This would include 184 students with disabilities and 92 students without disabilities. There would be 30 full-time equivalent staff and 22 full-time-equivalent aides (total staff would be approximately 70). The required spaces would be as listed below:

Description of Spaces	Unit Size	Total Area
Classrooms	12 @ 640	7,680
Motor Clinic	4 @ 600	2,400
Speech & Language	6 @ 150	900
Offices	7 @ 150	1,050
Teachers' Room		750
Work Room		500
Conference Room		250
Gymnasium		2,500
Gym Storage		250
Cafetorium		1,500
Kitchen		550
Parent Waiting Area		350
Reception		210
Secretary		200
Principal		250
Mail Room		100
Duplicating Room		100
Records Room		100
Nurse's Office		200
Changing Room		60
Shower/Exam Room		100
<b>Total Net Area</b>		<b>20,000</b>
<b>Gross Area@ 1.50 Net-to Gross</b>		<b>30,000</b>

As outlined in the updated System-wide Option, the most likely home for a consolidated Integrated Pre-School Program would be in an addition to Carr School, where it would share the space with the on-going, "swing space" elementary schools, or in an entirely separate, new facility, location to be determined. These are the school systems' youngest and most fragile occupants and a solution to their space needs should be made a top priority; likely a sub-committee will be formed to determine the best option to serve this population.

## 4 Enrollment Projections

In November of each year, the Newton Public Schools issues an Enrollment Analysis Report for the current school year with enrollment projections for the next five years. The Enrollment Analysis Report issued in November 2011 is the document used to update the enrollment impact for this Updated Master Plan.

The 2006 Analysis Report noted that the previous year under-projection resulted in a change of methodology to better capture emergent trends of the previous three years. A tapering formula was added for years 4-6 to avoid over-projecting. A comparison of the 2011-12 projection with the actual 2011-12 enrollment shows that this change of methodology resulted in a significant over-projection. The elementary school projection in 2006-07 was for 958 additional students or an 18% increase. In fact the actual 2011-12 enrollment increased by 369 students - a 7% increase over 2006-07.

In 2006, projected 2011-12 enrollments for six schools were expected to see changes of -6 to +6% and nine others would have double digit increases from 18% to 50%. In fact, 10 schools had changes of -3% to +10% while increases at the other five schools ranged from 12% to 23%. Only at Burr does the current enrollment match the

projection. However, that the 2011-12 elementary enrollments increased only 7% overall instead of the projected 18% is no cause for celebration. It simply means that while the rate of over-crowding has abated somewhat, the system is in fact still more overcrowded now than in 2006.

The projection for the next five years, presumably using the same methodology that captures recent trends, now indicates a modest overall increase of 3% with individual elementary school enrollments changing from -16% to +16%. However, as with the five year period just past, the over-crowding continues at half of the elementary schools.

At the middle schools, the actual 2011-12 enrollments at Oak Hill, Day and Brown are also less than projected. The overall increase is 193 students and 8% instead of the projected 371 and 15%. However the overall enrollment for 2016-17 is still projected to increase by 156 students or 6%. Because the middle school enrollment is largely based on students already in the elementary schools, the projected increase at the middle schools is more reliable and inevitable.

See **Appendix I** for the Enrollment Projections analysis in spreadsheet format.

## 5 Assessment

The 2007 Report space needs assessment of 21 buildings including the 15 active elementary schools, 4 middle schools, the Education Center and Carr School, has been reviewed and updated. The buildings were assessed in three categories:

- Facility Condition
- Educational Space
- Enrollment Growth

### Facility Condition Assessment

The previously developed facility standards were reviewed to reflect the preferred materials and systems to be used at Newton's schools. These standards provide a benchmark to assess the current facility conditions.

The School Department and the Public Buildings Department provided information on work done since the 2007 Report and their on-going efforts at each of the properties. The School Department has both a Preventative Maintenance Program and an on-going Capital Projects Implementation Plan.

The same professional as in 2007 toured each facility to provide a consistent review that enables comparison of the facilities condition. Unlike in 2007, the modular spaces are included in this facility condition assessment.

Since 2007, Capital Projects have included replacement of windows, boilers, emergency generators, roof top mechanical units, roofing, and gymnasium flooring. The School Department, in association with the utility company, installed light sensors at the middle schools. The following is a summary of the types and quantities of projects that have been accomplished in the past four years:

- Upgrades to a portion of the toilet rooms at most schools
- Upgrades to a portion of the flooring at 14 out of the 21 buildings
- New boilers at nine schools
- New emergency generator at one school
- New windows and exterior doors at four schools
- New modular classrooms at six schools, with three more schools to receive modulares this Fall
- Various mechanical and electrical upgrades at the middle schools
- New vertical lift for accessibility at one school
- New lockers at Brown, Day, and Zervas

The work has improved the quality of the environments and should be commended as a legitimate effort to tackle a seemingly insurmountable amount of needs. The building stock is old (all but 4 buildings out of the 21 in this master plan are greater than 50 years old) and as such has many physical plant needs.

The overall facility condition ranking of each building, its systems, and site ranges from: “1-new or in good condition needing ordinary maintenance” to “4-poor condition with replacement required.” This simple, four level ranking was modeled after MSBA’s facilities’ rating and though it is indicative of the facility’s condition, it does not allow for subtle variations to take into account, for example, a new boiler or new flooring; this being stated, it has been determined that while acknowledging all the good work accomplished in the past four years, it is not enough in any one building to dramatically change its status from, for instance, “fair condition with repairs or replacement required” to “good condition with minor repairs required.”

Therefore, those facilities with the highest levels of needs remain the same: Angier, Cabot, and Ward; all are greater than 80 years old. The correlation between the age of the facilities and the need for improvements or replacement is not an unusual finding. Countryside, Horace Mann, Lincoln-Eliot, and Zervas are grouped just a tier below the highest level of need. The buildings assessed with the lowest level of facility condition need are Bowen, Memorial-Spaulding, Williams, and Oak Hill. These buildings have all had additions and partial renovations within the past 15 years and are therefore in the best physical condition of the 21 buildings assessed.

The remaining facilities are in need of various levels of renovation work. All buildings require upgrades to the mechanical, electrical and plumbing systems. The majority of the buildings require at least some level of upgrades to meet the accessibility codes, such as toilet rooms, building entries or vertical circulation.

See **Appendix F** of this report for the updated, detailed Facility Assessment for each of the buildings in this study.

### **Educational Space Assessment**

Educational specifications were developed to reflect Newton’s current educational programs and they have been updated to reflect the most recent Massachusetts School Building Authority’s guidelines. The educational specifications are comprised of required program spaces, the quantity of spaces and the sizes (square feet) of each space. These space standards provide a benchmark to assess the existing school spaces and to plan new schools. See **Appendices B and C** and earlier text in this report for the complete information.

The space needs are a factor of the number of students and the amount of physical space (referred to as the net or gross square feet per pupil), this does not take in all particulars (such as special education space needs) but is a good indicator. Newton’s elementary schools range from 89 to 150 gross square feet per pupil, conversely the MSBA guidelines for the same range of students is 157 to 180 gross square feet per pupil. This indicates the space deficits found in the Newton schools as compared to today’s standards.

The previously developed matrix showing the age, enrollment, gross and net area of each school, allowing us to calculate the net-to-gross area, the gross area per pupil and the net area per pupil has been updated to reflect the current information. The matrix also includes the number of classrooms in each school that are less than 800 net square feet (nsf) in size, the number of modular classrooms in use at each school and the number of educationally adequate (i.e. 800 nsf or larger) classrooms in each school. One change in this assessment is that modular spaces over 800 nsf and that are used as a general classroom are included in the classroom count designated as “CR”.

Once the matrix was updated, each school was sorted by individual categories. Ten separate sorts were made using the key indicators to establish the overall condition of the educational spaces for each building. The schools were ranked in descending order on the basis of their adequacy in each category, with a ranking of 1 being the best and 15 being the worst. The categories/ key indicators are: (1) net area, (2) net-to-gross ratio, (3) gross area per pupil, (4) net area per pupil, (5) number in educationally inadequate classrooms, (6) number of modular classrooms, (7) number of educationally acceptable classrooms, (8) size of library, (9) size of gymnasium and (10) the combined size of the multi-purpose room and/or auditorium. See **Appendix G** for the complete Elementary School Educational Space Assessment Matrix. See **Appendix H** for the Educational Space Needs Rating, this is a summary of the totals of each elementary school’s ranking within the categories identified, less item (6), the modular classrooms, as they are now incorporated into the classroom count when greater than 800 sf and used as a classroom.

The educational space needs rating has not varied greatly from the 2007 assessment; those with the highest level of needs (Angier, Cabot, Peirce, Ward, and Zervas) and those with the lowest level of needs (Bowen, Burr, Memorial-Spaulding, and Williams) remain, with some fluctuations within the groups due to the incorporation of

modular classroom spaces as a “positive” in this assessment. (Previously modular classrooms were included as a “negative” in the ranking because they are not of permanent quality.)

The high level of need reflects the undersized classrooms, the low net square feet of space per pupil, and the minimal size or quantity of the shared spaces (library, gym, and cafeteria). Many of the educational space deficiencies are due in part to the age of the buildings. The principals, faculty and staff should be commended for their creative use of space and the exceptional educational programs despite the severity of need in educational space. Educational requirements have changed dramatically in the past 50 years, reflecting the following when comparing current needs to past construction:

- Special needs programs were not included.
- Music and art were not taught outside of the classroom.
- Lunches were taken at home; therefore no cafeterias were required.
- Full-time kindergarten was not established.
- Structured after school programming was not established.

In 2007, only six of the fifteen elementary schools had a multi-purpose space that could be used for school lunches, now that number has grown to 11; these spaces have been carved out of larger spaces (and by leveling the floor), taken over from other program spaces, or set up in a wide corridor. This leaves Bowen, Horace Mann, Mason-Rice, and Zervas at the bottom of this category without a space to serve lunch or for the school population to gather.

Burr was the clear winner, followed by Williams, Memorial-Spaulling, and Bowen all with a level 1 rating, three of which have received additions in recent years (Bowen in 2000, Williams in 2001, and Memorial-Spaulling in 2002). Countryside, Horace Mann and Franklin are grouped together at level 2 and Underwood, Lincoln-Eliot and Mason-Rice are ranked at level 3. As a statistical note: we disregarded each schools individual ranking in the category of total current enrollment and total gross area since we do not feel that these two categories are reflective of true educational adequacy, since the net-area-per pupil is a more accurate indication of the ability of the facility to handle the current enrollment.

These rankings include the current and pending modular classrooms, though we do not believe they are a permanent long-term solution, they have served their purpose to accommodate short-term enrollment needs. There are 21 modular spaces in the system currently, with four more coming on-line this Fall; this simply underscores the need for a comprehensive plan to renovate and expand many of the city’s existing elementary facilities, particularly in light of the continued anticipated enrollment growth over the next five years.

### **Enrollment Projections Assessment**

We reviewed, as we did in 2007, the current enrollment projections as provided by NPS. In summary, growth is expected at 11 out of the 15 elementary schools and 3 out of 4 middle schools. The net change, in the 5-year projection, at the elementary grades is a 3% increase and at the middle school there is a projected 6% increase. This seems manageable with the use of buffer zones, but what it does not indicate is the current status of overcrowding at a number of the schools. We looked at overcrowding as it relates to general classrooms and found six schools that are currently overcrowded. And it is worth noting that this includes the modular classrooms, even those that are greater than 20 years old and have outlived their expected lifespan. What is harder to quantify (beyond the square foot per pupil noted above) is the limited space for special education and shared use.

At the elementary schools, those expected to have the highest increase over the next five years are Angier (40 additional students), Zervas (45 students), Horace Mann (47 students), Bowen (49 students), and Burr (64 students). Combining these numbers with the other projected ups and downs, there will be 175 more students in the elementary system. Over the next five years at the middle schools, growth is projected for both Bigelow (54 students) and Brown (94 students); the major difference between Bigelow and Brown is that Brown has the capacity to handle its growth and Bigelow cannot as easily absorb the increase. If the projections hold true for the next five years, coupled with the past five years of growth, Bigelow will have a 19% increase in population, translating to having 87 more students than the school was planned for in the early 1990’s. Day shows a peak at 895 students in just two years, this is why a planning effort is underway.

See **Appendix I** for the backup information for the Projected Enrollment Population Growth Rating; this shows that significant growth is expected to occur at both the north and south sides of Newton at both the elementary and middle school grades. Additionally, in **Appendix L** is a spreadsheet showing Capacity vs. Enrollment summarizing the overall space needs.

Based on the detailed and objective re-assessment of each property within each of the three categories, a numerical evaluation has been updated for each property. An evaluation rating of 1, 2, 3 or 4 was developed, with a 1 rating for the lowest level of need in that category and a 4 rating for the highest level of need. See **Appendix J** of this report for the Existing Schools Assessment Summary Sheet and **Appendix K** for the graphic representation of the Assessment.

## 6 Updated System-wide Option

Each of the existing school sites has different potential for expansion, replacement, or improvements, depending on site constraints and building configurations; please reference the 2007 Long-Range Facilities Master Plan, Volume I, Section 6 for this detailed information. Option 3, previously developed and vetted, was selected by the School Committee as the best option; we have used this as the starting off point for the updated system-wide option.

The updated option represents a multi-phased approach to a long-range plan that addresses the facility conditions, educational space needs and the projected enrollment growth. The previously developed planning assumptions were maintained; see the Executive Summary in Section 1 for the complete list.

The first priority of the option is to alleviate current and projected overcrowding. The second priority is to replace aged, obsolete, and educational deficient facilities. The third priority is to renovate and upgrade facilities to provide appropriate educational spaces and environments.

The option still will require redistricting and renovation of Carr School to be used as swing space for the building projects. As mentioned previously, the large enrollment projections from 2007 did not materialize, though the system did grow significantly, and it is projected to grow by another 175 elementary and 156 middle school students in five years. The option assumes the City of Newton will continue to update its Statements of Interest to the Massachusetts School Building Authority to begin the application process for future funding assistance. The option provides a multi-phased approach; how long it may take will be determined by community commitment and support, review of annually updated enrollment projections, and the City's ability to oversee and fund building projects.

Option 3 Updated includes the high likelihood of replacing Angier in its entirety with new construction; providing additions and renovations or replacement of six elementary schools, and renovations to five elementary schools. Three schools, Bowen, Memorial-Spaulding, and Williams, have had recent upgrades and are not expected to have significant needs, beyond regular maintenance, in the foreseeable future. It is not a coincidence that the six schools slated for additions or replacement are also intended to be larger facilities when complete than the subsequent five schools that will receive renovations only. This is in an effort to build capacity early on in the planning process to begin to handle fluctuations in student population. The schools slated for renovations-only are, for the most part, land-locked; depending on when the work is to be scheduled for these buildings, it may be that replacement would be recommended.

The elementary schools with the highest needs, based on facility condition, educational space, enrollment, and existing capacity are: Angier, Cabot, and Zervas. In summary:

### ANGIER:

- Constructed in 1919, it is the oldest school building in the system.
- It has the largest quantity of undersized classrooms (18); just two are greater than 800 nsf.
- It is at the highest level of facilities needs per HMFH's ranking and MSBA's.

- It currently has the most overcrowding in the system; it should have (based on classroom quantity and sizes) 340 students and there are currently 395 students. The building is 51,300 gsf and with the expected enrollment increases, and per MSBA guidelines, the building should more appropriately be sized at 67,000 gsf.
- It has innumerable educational space needs, including classroom size, special education/ program spaces; and nearly the lowest net-square feet per pupil in the system (68 vs. MSBA guidelines of 108) and, similarly, has a gross sf/pupil of 131 vs. MSBA 169.
- A tight 2-acre site, centrally located in the City.

#### CABOT:

- Constructed in 1929, it is the 4<sup>th</sup> oldest school building in the system, with a 1957 addition, and 4-plus modular classrooms (two of which are 20 years old).
- It is 3<sup>rd</sup> in the largest quantity of undersized classrooms (12).
- It is at the highest level of facilities needs (including the modular additions) per HMFH's and MSBA's rankings.
- Even with the 4 modular classrooms, the building is overcrowded (based on classroom quantity and size); the building is 45,095 sf (w/ modular spaces) and, per MSBA, would be more appropriately sized at 69,000 sf to serve the student population.
- It has innumerable educational space needs, including classroom size, special education/ program spaces; and the lowest net-square feet per pupil in the system (66 vs. MSBA guidelines of 102) and, similarly, has a gross sf/pupil of 102 vs. MSBA 163.
- The smallest site (along with Underwood) of just 1 acre, centrally located in the City.

#### ZERVAS:

- Constructed in 1954 and, as of this Fall, with five modular spaces.
- Even with the modular spaces, the building is just 36,000 gsf; for its population, MSBA guidelines would require a building of 59,000 gsf. Zervas' overcrowding is not in its classroom size or quantity, but in its support spaces: the building has only a small (one of the smallest in the district at 2400 sf) gymnasium for any large group gathering and there is no auditorium or cafeteria; the students eat lunch in their classrooms and there is just one special education room, which 5 instructors share. For square feet comparison: Zervas has nsf/pupil of 79 and gsf/pupil of 112; MSBA guidelines would have 120 nsf and 177 gsf/pupil.
- It has the 6<sup>th</sup> largest site of the elementary schools (5.28 acres) and is centrally located in the City. Due to its small building size and lower student population number (just three other schools have of lower enrollments), it creates an ideal opportunity to increase capacity in the system early on.

A graphic representing the Updated Option follows after this section. A chart follows that indicates the number of classrooms intended at each location, the "plus one" classroom to be built-in to each building project to provide additional capacity to handle fluctuations in future enrollments without the additions of modular classrooms, the student populations resulting at each school, and the rough "order" of the projects. Beyond the already voted-upon agreement that Angier will be the first school project, all other schools are "ordered" by being grouped together. Further review will be required to determine what the second, third, and so on, projects may be.

Each of the four middle schools requires some level of renovations, with Oak Hill requiring the least amount of work. System-wide Oak Hill is in the best physical condition as it was just put on-line as a middle school less than 15 years ago. The increased enrollment at the middle school grades within 5 years can be accommodated within the four existing middle schools with redistricting.

It is the recommendation of this Master Plan that the Integrated Pre-School Program is relocated, in its entirety, to a more appropriate situation. If at all possible, the Carr School should be added on to, as well as renovated, to accommodate the Pre-School on a permanent basis, while the remainder of the facility is occupied as a swing space by an elementary school population. If this is not possible, it is the recommendation of this Master Plan that a sub-committee, dedicated to the task of relocating the Pre-School to appropriate facilities, be established and charged with this important work.

## Proposed Phasing

The proposed phasing for the Updated Option assumes concurrent activities are possible within each step:

Step 1 – years 1 and 2

- Redistrict as needed
- Design and renovate Carr School for use as swing space (and expansion for the Integrated Pre-School Program)
- Begin design process for a New Angier School
- Continue on-going maintenance projects

Step 2 – years 3 and 4

- Construct a New Angier School on its site
- Begin design process for the next (#2) school project
- Continue on-going maintenance projects

Step 3 – years 5 and 6

- Construct the next (#2) school project
- Begin design process for the next (#3) school project
- Continue on-going maintenance projects

Step 4 – years 7 and 8

- Construct the next (#3) school project
- Begin design process for the next (#4) school project
- Continue on-going maintenance projects

Once Step 4 is complete, the total new and/or expanded and renovated building stock, assuming the first three projects are Angier, Cabot, and Zervas, will accommodate 245 additional students at these three centrally located sites. This additional capacity will at the least, accommodate the 5-year projected enrollment and allow for thoughtful redistricting and at best eliminate the need for additional modular classrooms in the elementary system (AND eliminate a few of the oldest modular spaces in the system in the process).

All of this assumes one viable swing space (Carr); if the City were able to manage (both financially and administratively) implementation of the master plan process more quickly, then a second swing space would be needed. Previous thoughts on this possibility include purchasing Aquinas or evacuating the Education Center (thereby establishing new locations for the school administration and the Pre-School Program) to be used as swing space.

## Project Budget Estimates

The study team developed budgetary cost numbers for potential projects and they have been updated here. Escalation is not factored into the following budgets, and cannot be determined until a schedule for implementation has been agreed upon.

### Project Budgets in today's construction dollars\*:

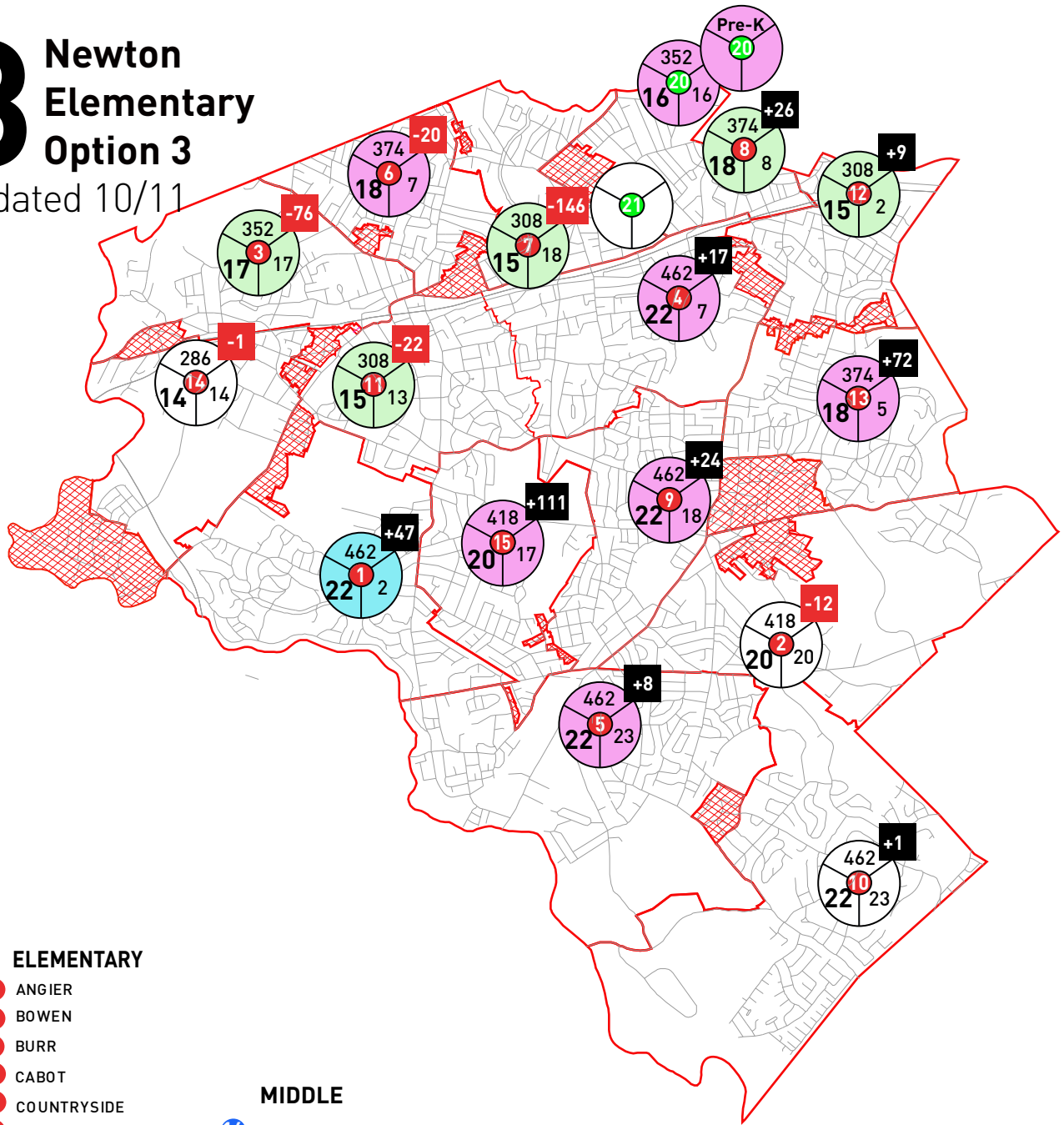
New 462-student, 22-classroom elementary school (approx. 73,000 gsf per MSBA)	\$25,500,000
Renovations-only range per existing building	\$780,000 - \$15,900,000
Average per building renovation cost	\$7,500,000

\*Budgets do not include: phasing escalation, demolition, hazardous material abatement, temporary classrooms, relocation, leased space, or land acquisition costs.



# 3 Newton Elementary Option 3

Updated 10/11



## ELEMENTARY

- 1 ANGIER
- 2 BOWEN
- 3 BURR
- 4 CABOT
- 5 COUNTRYSIDE
- 6 FRANKLIN
- 7 HORACE MANN
- 8 LINCOLN-ELIOT
- 9 MASON-RICE
- 10 MEMORIAL-SPALDING
- 11 PEIRCE
- 12 UNDERWOOD
- 13 WARD
- 14 WILLIAMS
- 15 ZERVAS
- ⊠ BUFFER ZONES

## MIDDLE

- 16 BIGELOW
- 17 BROWN
- 18 DAY
- 19 OAK HILL
- ⊠ BUFFER ZONES

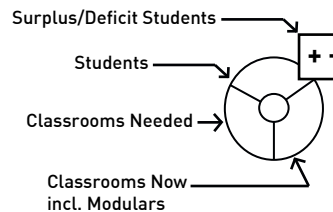
## OTHER

- 20 CARR
- 21 EDUCATION CENTER

## POSSIBILITIES

- No Change  Elem.
- Renovations
- New or Renovations/ Additions
- New

## KEY



**Newton Schools Study**  
**Preferred Option 3 - Updated**

October 2011

School Name	quantity of classrooms		quantity of students				
	Unit	22/CR	2017	deficit	surplus	net	
Angier	22	21+1	462	415		47	
Cabot	22	21+1	462	445		17	
Zervas	20	19+1	418	307		111	
Countryside	22	21+1	462	454		8	
Franklin	18	17+1	374	394	20		
Mason-Rice	22	21+1	462	438		24	
Ward	18	17+1	374	302		72	
Burr	17	16+1	352	428	76		
Horace Mann	15	14+1	308	454	146		
Lincoln-Eliot	18	17+1	374	348		26	
Peirce	15	14+1	308	330	22		
Underwood	15	14+1	308	299		9	
Bowen	20	19+1	418	430	12		
Memorial-Spaulding	22	21+1	462	461		1	
Williams	14	13+1	286	287	1		
<b>Total</b>	<b>280</b>	<b>265+15</b>	<b>5830</b>	<b>5,792</b>	<b>277</b>	<b>315</b>	<b>38</b>

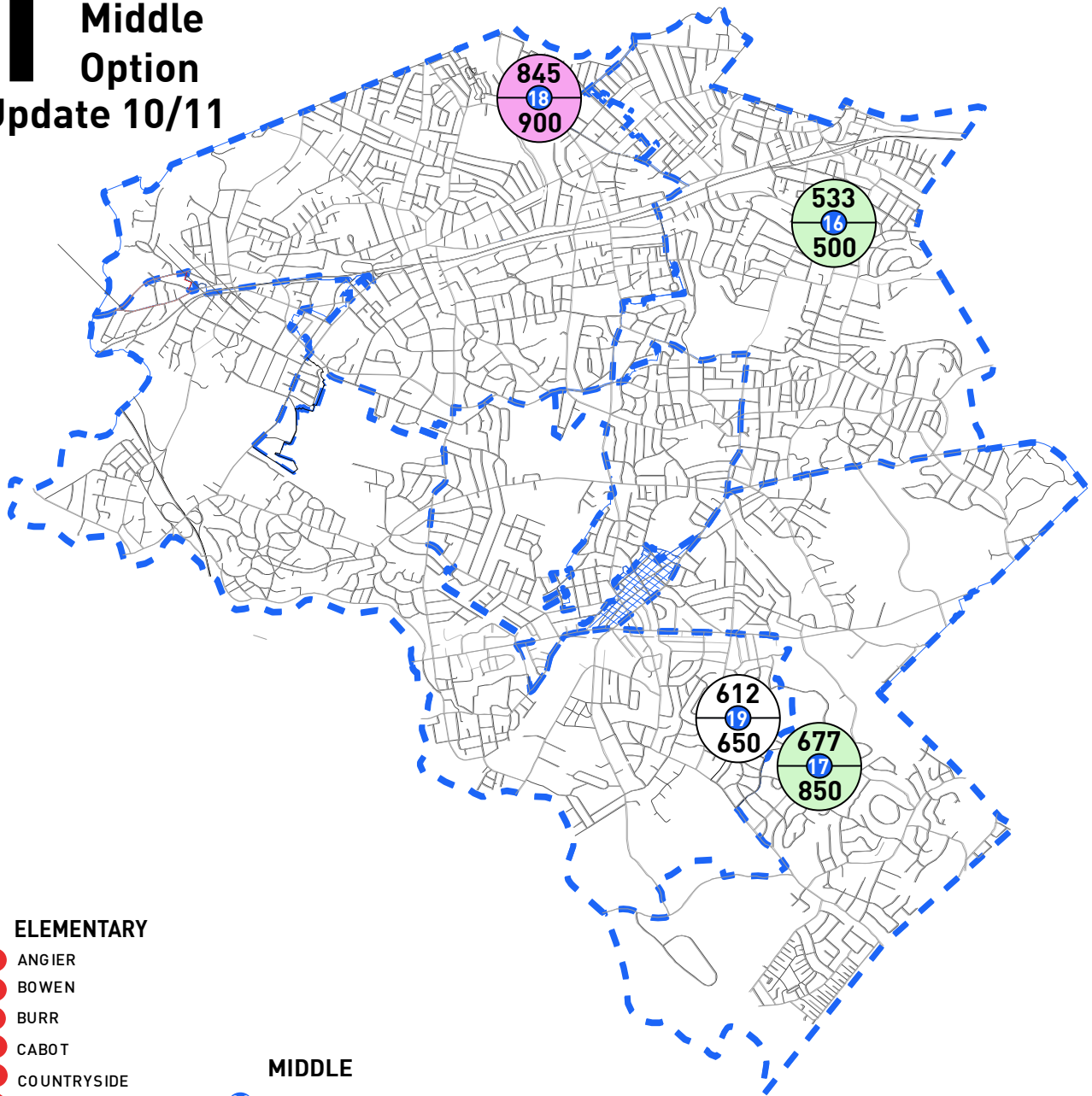
**Resulting system configuration: 5 schools w/22 CRs, 2 schools w/20 CRs, 3 schools w/18 CRs, 1 school w/17 CRs, 3 schools w/ 15 CRs and 1 school w/ 14 CRs**

**Analysis:**

School	Classroom Quantity
<b>Replacement highly likely:</b>	
Angier	22
<b>Expansion possible with additions or replacement:</b>	
Cabot	22
Countryside	22
Franklin	18
Mason-Rice	22
Ward	18
Zervas	20
<b>Renovation-only intended; site constraints make expansion difficult without replacement:</b>	
Burr	17
Horace Mann	15
Lincoln-Eliot	18
Peirce	15
Underwood	15
<b>No expansion/ renovation intended at this time:</b>	
Bowen	20
Memorial-Spaulding	22
Williams	14
<b>Total</b>	<b>280</b>

**Note:** Carr School is intended to be renovated and added on to for use a swing space and as the new location for the Integrated Preschool Program.


# 1 Newton Middle Option Update 10/11





## ELEMENTARY

- 1 ANGIER
- 2 BOWEN
- 3 BURR
- 4 CABOT
- 5 COUNTRYSIDE
- 6 FRANKLIN
- 7 HORACE MANN
- 8 LINCOLN-ELIOT
- 9 MASON-RICE
- 10 MEMORIAL-SPAULDING
- 11 PEIRCE
- 12 UNDERWOOD
- 13 WARD
- 14 WILLIAMS
- 15 ZERVAS
-  BUFFER ZONES





## MIDDLE

-  16 BIGELOW
-  17 BROWN
-  18 DAY
-  19 OAK HILL
-  BUFFER ZONES

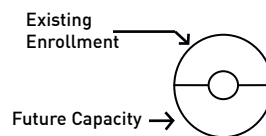
## OTHER

-  20 CARR
-  21 EDUCATION CENTER

## POSSIBILITIES

- No Change 
- Renovations 
- Renovations/ Additions 
- New 

## KEY



## 7 Conclusion

In conclusion, the City of Newton faces a unique challenge that, at times, has and will seem daunting; Newton is poised to begin the process of evolving their 19<sup>th</sup> century school building stock into places of 21<sup>st</sup> century learning. The School Department, School Committee, and the City are wise to have provided for this updated report; the report re-highlights the physical plant needs, the education space needs, and the impact that the growing and fluctuating enrollments have on the overall school needs.

A long-range master plan provides a road map to guide the process, it is in no way an absolute or a mandate, but instead is meant to highlight the needs, the priorities, and to provide the groundwork for moving the process forward. This updated master plan directs the City and School Department to the facilities most in need, while putting those needs in perspective with all the concurrent needs in the school system. One important goal of this master plan update is to provide this information for incorporation into the City-wide planning efforts, a goal that has been achieved when the Mayor, in his presentation in early November, included the schools in the City's Capital Plan.

Newton has a strong, progressive educational program led by dedicated administrators, principals and faculty. The system's reputation for high student performance has been achieved in spite of its outdated and deteriorating physical plant. Updated, modern facilities will enhance and strengthen the educational good works already in place in Newton. For this challenge to not seem so daunting, the scale and scope of the needs must be addressed in a step-by-step process that is acceptable to City officials and the taxpayers.

The updated long-range planning option is intended as a guide for the School Department, the community and City officials to address the educational needs. The option provides for future flexibility and on-going reassessment at each step as new information is made available; each future building project will begin with a thorough feasibility study to establish and finalize the needs and scope.