

 Build **BPS**

10-Year

Educational and Facilities
Master Plan



March 2017



Participating Firms:

SMMA

MGT

WSP | PB

Mass Insight

New Vista

Dr. James Jennings

Contents

Executive Summary

1 Introduction

- 24 What is the 10-year Educational and Facilities Master Plan?
- 24 Why BPS will benefit from an Educational and Facilities Master Plan?
- 26 What does the BuildBPS Educational and Facilities Master Plan include?
- 28 What does the BuildBPS plan not include?
- 29 What does BuildBPS teach us about capacity?
- 31 Acknowledgments

2 BuildBPS

- 35 Scope of Work
- 36 Project Phases
- 38 Team Organization

3 Context

- 47 Boston, Massachusetts
- 49 Boston Public Schools (BPS)
- 50 BPS Educational Program by Typology
- 58 BPS Building Portfolio
- 72 BPS Grade Configurations and Pathways
- 77 BPS Student Assignment and Choice

4 Educational Planning

- 84 Purpose and Charge
- 85 Approach and Methods
- 88 BPS Educational Vision
- 96 Re-Imagining and Re-Inventing Schools to Achieve BPS's Educational Vision
- 101 Re-Imagining Grade and Portfolio Configurations to Achieve BPS's Educational Vision
- 103 Advisory Committee Members

5 Demographics

- 107 Purpose and Charge
- 108 Approach and Methods
- 109 Findings
- 119 Advisory Committee Members

6 Educational and Facilities Assessment

- 123 Purpose and Charge
- 124 Approach and Methods
- 128 Findings
- 151 Advisory Committee Members

8 Finance

- 163 Purpose and Charge
- 164 Approach and Methods
- 165 Findings
- 169 Advisory Committee Members

7 Community Engagement

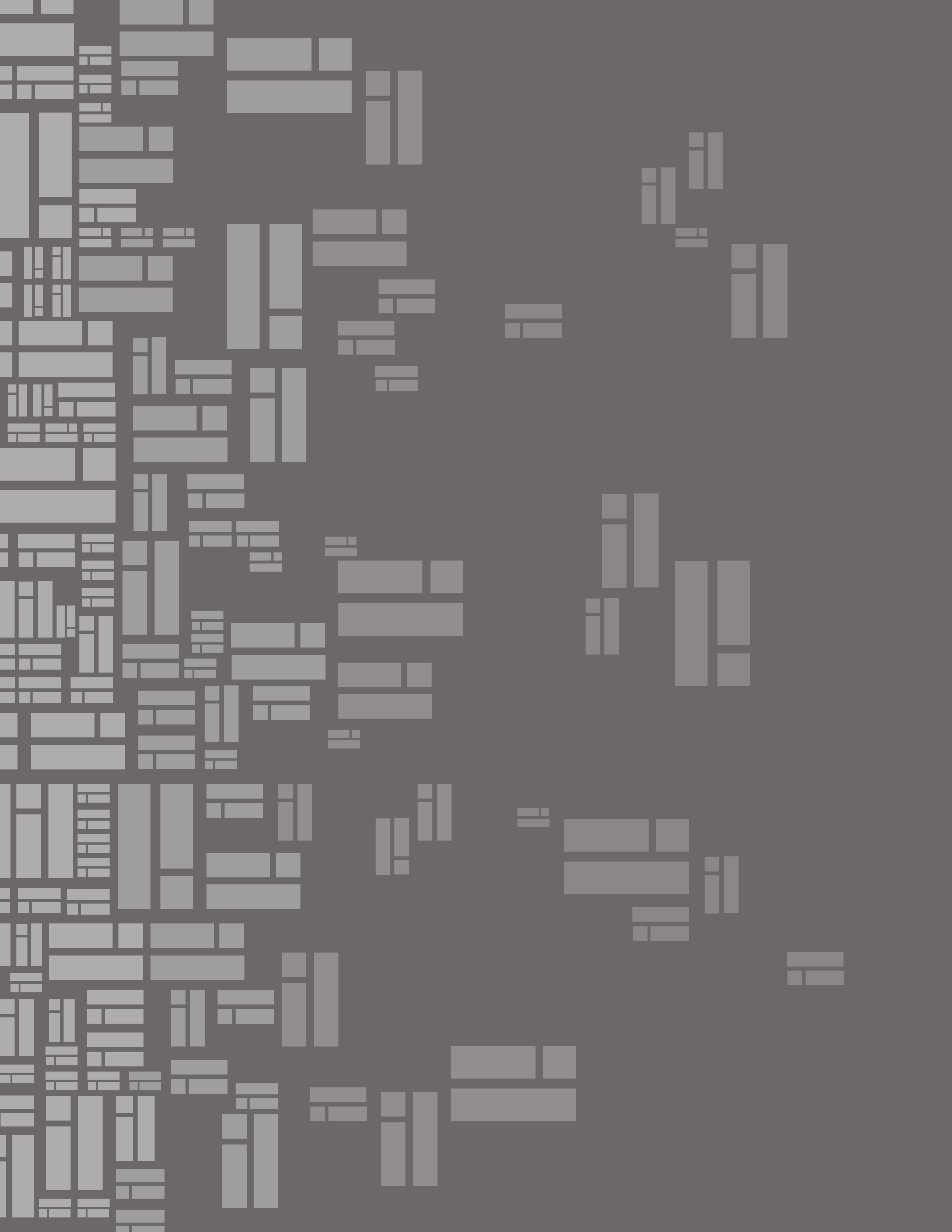
- 155 Purpose and Charge
- 156 Approach and Methods
- 157 Findings
- 159 Advisory Committee Members

9 Planning Principles

- 173 Planning Principles

10 Taking Action

- 196 Immediate Action
- 204 Engagement
- 224 Building and Maintaining Momentum





Participating Firms:

SMMA

MGT

WSP | PB

Mass Insight

New Vista

Dr. James Jennings



Executive Summary

Build **BPS**





Dear Neighbor,

I recently announced a 10-year, \$1 billion investment in the buildings and classrooms of the Boston Public Schools. Boston's schools are out of date. Our teachers, principals, and staff work tirelessly and creatively to keep them safe and supportive learning environments. But the fact is, 65 percent of Boston's 127 schools were built before World War II, fewer than half of those have been fully renovated, and it shows. In that time, we built an elevated expressway, tore it down, and buried it in a tunnel downtown. We should be able to build great schools. They are our ultimate investment in the future.

That's why, for over a year, we've been gathering community input and hard data on our school buildings' needs — and imagining new possibilities for their future. We've put it all together in **BuildBPS**, our 10-year Educational and Facilities Master Plan.

BuildBPS is going to transform the way we plan, build, and renovate school facilities. And more: it's going to unlock everything else we need to do to prepare students for 21st-century success. We are going to create not just modern schools, but flexible space that will allow our district to meet new potential as the City and the world evolve.

The next phase of BuildBPS calls for deep and ongoing engagement. BuildBPS is a living document. We're going to build on the knowledge, creativity and dedication in our school communities to re-imagine and renew Boston's public school infrastructure. Together we will plan and build to create a new era of equity and excellence in Boston's schools.

Sincerely,

A handwritten signature in black ink, appearing to read "Martin J. Walsh". The signature is fluid and cursive, written over a light blue rectangular background.

Martin J. Walsh, Mayor



“We shape our buildings; thereafter they shape us.”

Sir Winston Churchill

The students and teachers of Boston deserve the healthiest, most progressive, most motivating learning environments possible. Although learning can and does occur anywhere, the fact is, buildings matter. The environments in which teaching and learning take place contribute to the overall performance of students. Simply put, great school buildings add value and enhance the learning experience.

The BuildBPS 10-year Educational and Facilities Master Plan is a dynamic and strategic document. As the City of Boston begins its journey to transform the BPS building portfolio, we offer this master plan, which encompasses the aspirations and goals of all stakeholders, along with the data and ideas needed to bring them to fruition. For the past 18 months, the team working on it has endeavored to accumulate and synthesize a great amount of information that will aid the City, BPS, and the community in making informed decisions, and in developing a unified approach for this major revitalization program.

As with any master plan, it will be important for the City and BPS to continue to revisit this document—always adjusting and refocusing to accommodate change. In other words, changes in City infrastructure, advancements in pedagogy or technology, formations of new partnerships, and innovations in building technologies are all factors that may prompt the modification of the path forward. Over the next 10 years, it is guaranteed that changes will occur, but what must remain is the commitment to a unified plan for facility advancement districtwide.

BuildBPS has come to fruition with contributions from five advisory committees: Educational Planning, Demographics, Educational and Facilities Assessment, Community Engagement, and Finance. This report is organized around those five committees; the information and professional analysis contained in each section is meant to contribute to the important discussions and the work ahead with the community. In addition, the BuildBPS Dashboard, a web-based data visualization tool, helps to organize and communicate all information collected and analyzed during the project.



Educational Vision and Planning

The demands of the modern world differ vastly from those of the past. Preparing students to succeed in today's economy, as well as in the economy of the future, will require buildings that support transformative teaching and learning methodologies. The majority of Boston's school buildings were designed to support older, rigid approaches to education.

Preparing students to be college- and career-ready will serve to close both the achievement and opportunity gaps, equipping them with 21st century communication, collaboration, and critical-thinking skills, and helping them grow into creative, global citizens.

BPS has developed a vision for the district around the core values of equity, coherence, and innovation, forging a path of NextGeneration Learning that is:

- Rigorous and demanding
- Differentiated and equitable, with full access to a broad range of rigorous curricula
- Whole-learner focused
- Cross-disciplinary
- Multi-modal, multi-channel, and technology-enabled
- Collaborative among all school community members
- Expansive and inclusive of a wide variety of learning opportunities beyond the classroom
- Culturally and linguistically sustainable

To achieve these goals, the district's schools and learning environments will need to be:

- Flexible, to accommodate changing needs
- Sensory, and responsive to intellectual, physical, social, and emotional experiences
- Contextual, and considerate of community and neighborhood needs
- Safe and secure, fundamental to being able to learn
- Networked beyond school walls

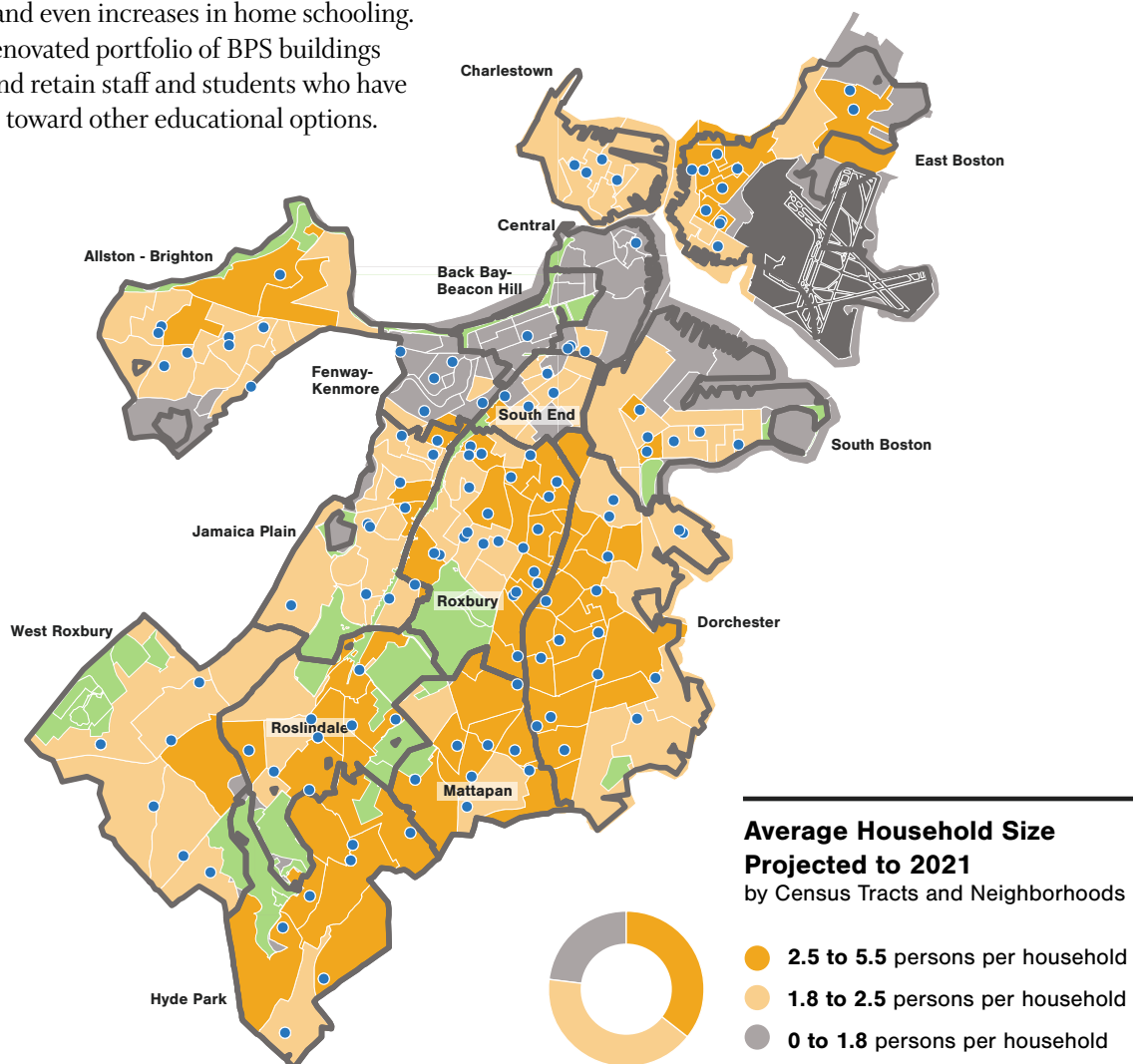
BuildBPS identifies the characteristics of buildings, sites, and learning environments needed for school buildings to meet the educational goals set out for the students and the district. Transformative environments will engage students, fostering in them a lifelong excitement for learning and achievement.



Demographics

Boston's overall population has been on the rise, owed, in part, to our robust economy and the strength of our healthcare and higher education infrastructure. BPS's population is anticipated to grow modestly over the next decade, in contrast to the decline realized over the past 10 years. Most of this student-population growth is anticipated to be within Boston's communities of color. In addition, it is expected that higher-than-state averages for English learner and special education services will continue to increase.

BPS continues to face significant competition for student-aged children, due to parochial and private school options, increased charter school seats, the METCO program, and even increases in home schooling. An improved and renovated portfolio of BPS buildings could help attract and retain staff and students who have traditionally turned toward other educational options.





Educational and Facilities Assessments

The BuildBPS team assessed the entirety of the BPS building portfolio, rating each facility, on a scale ranging from “deficient” to “excellent,” in four categories:

- Facilities Assessment – Building: The physical conditions of the buildings, in terms of age, design, construction methods, and materials
- Facilities Assessment – Site: The quality, condition, and capacity of the various exterior spaces and components of the facility
- Educational Facility Effectiveness – Learning Environments: The inherent building characteristics and introduced equipment (e.g., furniture and technology), as well as the physical appearance and condition
- Educational Facility Effectiveness – Spaces: An evaluation of what spaces exist and the general adequacy of shapes and sizes relative to MSBA standards

These categories all have relationships with one another. Findings for each school can be visually sorted and analyzed in the BuildBPS Dashboard, and can be updated to reflect repairs and renovations as they occur.



Overall Scores by Typology

The assessment team visited all of the Boston Public Schools’ buildings, collecting and organizing data into the following four categories: **Facility Assessment–Building, Facility Assessment–Site, Educational Facility Effectiveness: Learning Environments, and Educational Facility Effectiveness: Spaces.**

Each of the assessment items is categorized into primary and secondary considerations. The primary considerations are weighted by a factor of 3 in order to differentiate the elements that (1) require significant time to repair or replace, (2) construction costs greater than the singular element’s cost factor, and (3) create a construction challenge (degree of difficulty) in order to repair. The weighted scoring allows for the most critical criteria to establish the overall scores and not be overly influenced by important but more readily repaired/replaced elements.

School Name	EFE: Learning Environments	EFE: Spaces	FA: Site	FA: Building
Adams, Samuel Elementary	2	2	3	2
Alighieri, Dante Montessori School	3	2	3	4
Bates, Phineas Elementary	3	2	3	3
Beethoven, Ludwig Van Elementary	3	2	3	5
Blackstone, William Elementary	3	3	3	4
Bradley, Manassah E. Elementary	2	2	3	3
Channing, William E. Elementary	2	2	2	3
Chittick, James J. Elementary	3	2	2	3
Clap Innovation School	2	2	4	3
Condon, James F. Elementary	3	3	4	4
Conley, George H. Elementary	3	2	3	3
Dever, Paul A. Elementary	3	3	3	2
Dickerman Elementary	1	1	3	4
Dudley Street Neighborhood School	3	2	3	3
Ellis, David A. Elementary	2	2	3	3
Endicott	1	1	3	3
Everett, Edwards Elementary	2	1	4	3
Grew, Henry Elementary	4	2	4	4
Guild, Curtis Elementary	3	2	4	4
Hale, Nathan Elementary	3	2	2	3
Hamilton, Alexander	1	1	3	3
Harvard/Kent Elementary	4	3	4	3
Henderson, Dr. William W. Inclusion (Lo..	2	2	3	3
Higginson Elementary	2	2	3	3
Holmes, Oliver Wendell Elementary	2	2	3	3
Kennedy, John F Elementary	3	2	3	3
Kennedy, Patrick Elementary	3	2	3	3
Kenny, Thomas J. Elementary	3	2	4	3
Manning, Joseph P. Elementary	3	2	3	3
Mason, Samuel W. Elementary	2	2	2	3
Mather Elementary	3	3	3	3
Mattahunt Elementary	3	3	3	5
Mendell, Ellis Elementary	3	2	3	3
Mozart, Wolfgang A. Elementary	3	2	3	3
O'Donnell, Hugh R. Elementary	3	2	3	3
Otis, James Elementary	3	2	3	3
Perkins, Michael J. Elementary	3	1	3	3
Philbrick, John D. Elementary	2	2	3	3
Quincy, Josiah Elementary	3	2	4	3
Russell, William E. Elementary	3	2	3	3
Shaw, Pauline A. Elementary	3	2	3	3
Stone, Lucy Elementary	1	1	4	4
Sumner, Charles Elementary	3	2	4	3
Taylor, Charles H. Elementary	3	2	3	3
Tynan, Joseph P. Elementary	3	3	3	4
UP Academy Holland	3	3	4	4
Winship, F. Lyman Elementary	2	2	3	3
Winthrop, John Elementary	3	2	3	3

K-8 Schools

School Name	EFE: Learning Environments	EFE: Spaces	FA: Building	FA: Site
Boston Teachers Union K-8 School	3	2	4	3
Curley K-8 (Lower School)	3	2	4	3
Curley K-8 (Upper School)	3	2	4	3
Edison, Thomas A. K-8	2	2	4	3
Eliot, John K-8 (Lower School)	3	2	3	3
Eliot, John K-8 (Upper School)	3	2	4	3
Gardner Pilot Academy K-8	2	2	4	4
Greenwood, Sarah K-8	3	2	3	4
Haley K - 8, Dennis	3	2	4	4
Hennigan, James W. K-8	3	2	4	4
Hernandez, Rafael K-8	2	2	3	3
Higginson/Lewis K-8	2	2	3	3
Horace Mann School for the Deaf and H..	2	2	4	3
Hurley, Joseph K-8	4	2	4	4
Jackson/Mann K-8	2	2	4	3
Kilmer, Joyce K-8 (Lower School)	2	2	3	4
Kilmer, Joyce K-8 (Upper School)	3	2	3	3
King, Martin Luther, Jr K-8	3	2	3	4
Lee, Joseph K-8	3	3	4	4
Lyndon, Patrick K-8	2	2	4	4
Lyon, Mary K-8	2	2	4	3
McKay, Donald K-8	2	2	3	3
Mildred Avenue K-8	5	4	5	5
Mission Hill K-8	4	3	4	4
Murphy, Richard K-8	3	3	4	3
Ohrenberger, William H. K-8	4	2	4	3
Orchard Gardens K-8	4	4	5	4
Perry, Oliver Hazard K-8	3	2	3	3
Roosevelt, Franklin D. K-8 (Lower Scho..	5	2	5	5
Roosevelt, Franklin D. K-8 (Upper Scho..	3	2	5	3
Tobin, Maurice J. K-8	2	2	3	3
Trotter, William Monroe K-8	3	2	4	3
Umana Academy, Mario K-8	2	2	4	3
UP Academy Dorchester	3	3	4	3
Warren/Prescott K-8 Lower	3	3	4	3
Young Achievers Science & Math K-8	3	2	4	3

Middle Schools

School Name	EFE: Learning Environments	EFE: Spaces	FA: Building	FA: Site
Edwards, Clarence R. Middle	2	2	4	2
Frederick, Lilla G. Middle	5	4	5	5
Irving, Washington Middle	2	2	4	3
McCormack, John W Middle	3	3	4	4
McKinley Middle	2	2	3	2
Rogers Middle School			3	2
Timilty, James P. Middle	2	2	3	3
UP Academy Boston	3	3	3	2

Early Learning

School Name	EFE: Learning Environments	EFE: Spaces	FA: Building	FA: Site
Baldwin Early Learning Pilot Academy	2	2	4	4
East Boston Early Education Center			5	4
Ellison/Parks Early Education School	5	3	5	4
Haynes Early Education Center	4	3	5	4
West Zone Early Learning Center	3	2	4	4
Lee Academy at the Fifield	2	2	3	3

High Schools 6-12 & 7-12

School Name	EFE: Learning Environments	EFE: Spaces	FA: Building	FA: Site
Boston Green Academy	3	2	4	4
Boston Latin Academy	2	3	4	3
Boston Latin School	3	3	4	4
Carter Development Center	4	1	4	4
Henderson, Dr. William W. Inclusion (U..	2	2	3	3
O'Bryant, John D. School of Mathemati..	4	2	4	5
TechBoston Academy	3	3	3	3

High Schools 9-12

School Information School Name	EFE: Learning Environments	EFE: Spaces	FA: Building	FA: Site
Another Course to College	3	2	4	4
Boston Adult Technical Academy	4	2	4	3
Boston Arts Academy	3	3	4	2
Boston Community Leadership Academy	3	3	4	3
Boston Day & Evening Academy	2	2	4	4
Boston International Newcomers Acade..	2		3	2
Brighton High	2	2	3	3
Burke, Jeremiah E. High	2	3	3	4
Charlestown High	3	3	4	4
Community Academy	2	2	2	2
Community Academy of Science & Health	3	3	3	3
Dorchester Academy	4	2	4	3
East Boston High	2	2	4	4
English High, The	3	3	4	4
Excel High	2	3	3	3
Fenway High	4	3	5	4
Greater Egleston Community High	5	2		
Greenwood, Elihu Leadership Academy			3	3
Kennedy, Edward M. Academy for Healt..	3	2	4	3
Kennedy, Edward M. Academy for Healt..	3	1		
Lyon, Mary High	2	2	4	3
Madison Park Technical Vocational High	4	3	4	4
McKinley, Wm So. End Academy	2	3	4	4
McKinley, Wm. Preparatory High	2	2	3	2
Muniz, Margarita Academy	4	2	5	4
New Mission High	3	3	4	3
Snowden International School at Copley	2	2		
Urban Science Academy	3	3	4	4
West Roxbury Academy	3	3	4	4

Capacity

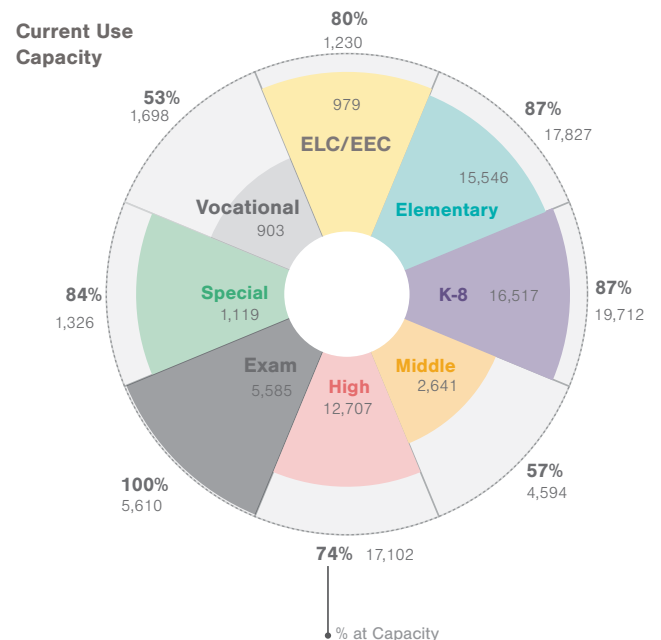
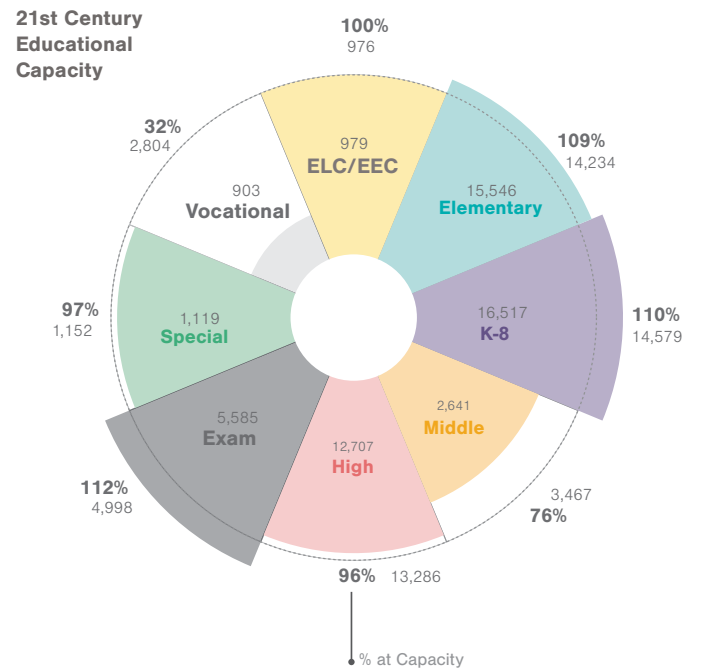
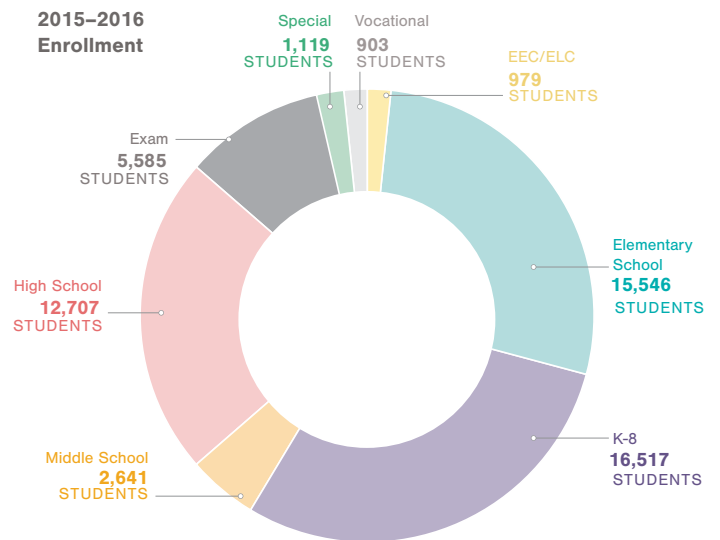
The BuildBPS team engaged in extensive analysis to bring greater clarity to the question of BPS capacity. Through our extensive exploration, one fact remained perfectly clear: there is no universally-accepted way to calculate capacity. It is not simply a matter of measuring square footage or counting desks and chairs. Rather, capacity raises a complex set of questions about how much space is available, and how that space may be appropriately used to serve students of particular ages, in various programs, for a wide range of uses.

The BuildBPS team utilized two approaches to analyze the capacity of the district’s many complex and varied buildings. The variations between the two methods will provide the District with a range to work within when determining future investments in facilities.

In summary, the buildings as they are configured today with the current programs represent a capacity of about 69,100 seats. As the district makes continued investments in facilities, the district will move from the Current Use Capacity of today (69,100 seats) towards the 21st Century Educational Capacity of tomorrow (55,500 seats).

The 21st Century Educational Capacity Model represents a more holistic understanding of space needs and learning environments in the district. The State has developed a series of educational space standards for new construction that represent one perspective on what spaces and how much space is needed for 21st Century Learning. It accounts for additional spaces such as enrichment programs, specialty subjects (e.g. art and music), dedicated spaces for counseling and therapies, and other supports that will transform our schools and activate the learning and teaching experiences of the future.

The Current Use Capacity Model represents BPS’ capacity in its buildings today. Based on the current students and programs in each building, it measures how our space is being utilized today. It accounts for schools with extra empty classrooms, as well as for schools where not all classrooms are full. This model improves on previous efforts to calculate capacity by defining which spaces are “capacity-generating” and by taking into account the space needs of particular student populations (particularly students with disabilities and English learners), variations in class size by grade level established by the teachers’ contract and how middle and high schools are scheduled at 90% and 85% utilization respectively.



Enrollment by Typology

	Enrollment SY15/16	21st Century Educational Capacity			Current Use Capacity		
		# of Seats	+/-	% at Capacity	# of Seats	+/-	% at Capacity
Early Learning	979	976	-3	100%	1,230	251	80%
Elementary	15,546	14,234	-1,312	109%	17,827	2,281	87%
K-8	16,517	14,579	-1,938	113%	19,712	3,195	84%
Middle	2,641	3,467	826	76%	4,594	1,953	57%
High	12,707	13,286	579	96%	17,102	4,395	74%
Exam	5,585	4,998	-587	112%	5,610	25	100%
Special	1,119	1,152	33	97%	1,326	207	84%
Vocational	903	2,804	1,901	32%	1,698	795	53%
Total	55,997	55,497	-500	101%	69,098	13,101	81%

Enrollment by Neighborhood

	Enrollment SY15/16	21st Century Educational Capacity			Current Use Capacity		
		# of Seats	+/-	% at Capacity	# of Seats	+/-	% at Capacity
Allston-Brighton	4,282	4,248	-34	101%	5,215	933	82%
Back Bay/Beacon Hill	373	215	-158	174%	377	4	99%
Central Boston	1,990	2,217	227	90%	2,642	652	75%
Charlestown	2,389	2,537	148	94%	3,092	703	77%
Dorchester	8,411	8,494	83	99%	10,415	2,004	81%
East Boston	5,244	4,308	-936	122%	5,793	549	91%
Fenway/Kenmore	3,393	2,884	-509	118%	3,616	223	94%
Hyde Park	2,147	1,753	-394	122%	2,784	637	77%
Jamaica Plain	4,113	4,090	-23	101%	5,265	1,152	78%
Mattapan	2,811	3,536	725	79%	4,147	1,336	68%
Roslindale	2,556	1,744	-812	147%	3,382	826	76%
Roxbury*	10,575	9,215	-1,360	115%	11,955	1,380	88%
South Boston	2,632	3,239	607	81%	3,595	963	73%
South End	1,191	1,727	536	69%	1,521	330	78%
West Roxbury	2,987	2,484	-503	120%	3,603	616	83%
Madison Park*	903	2,804	1,901	32%	1,698	795	53%
Total	55,997	55,497	-500	101%	69,098	13,101	81%

* Madison Park is excluded from Roxbury for this analysis due to the unique nature of vocational capacity.

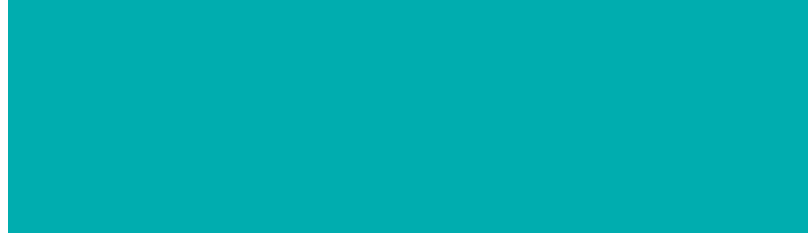
Finance

The City of Boston is embarking on the challenging task of upgrading BPS facilities to meet the needs of 21st Century education. BuildBPS, therefore, establishes a \$1 billion commitment over 10 years of investments that the City will fund primarily with money from its annual general obligation bond issues, and by partnering with the Massachusetts School Building Authority (MSBA). Mayor Walsh's \$1 billion commitment is more than double the capital spending on BPS facilities over the last decade.

BuildBPS developed cost-model data for repair and renovation projects to serve as an order-of-magnitude planning tool. Working closely with BPS, the City will need to prioritize projects to take advantage of MSBA offerings, such as the Accelerated Repair Program, which provides grants in support of roof, boiler, and window replacements; and the Core Program, which provides grants for renovation, addition, and new building projects.

Community Engagement

During the course of this study, BPS undertook several community engagement events, ranging from a districtwide survey to multiple neighborhood “Kitchen Table Talks,” to gather input from residents, parents, teachers, and students about the state of Boston’s school buildings. This feedback informed many components of this report and, moving forward, community engagement will play an integral role in determining options for projects and for prioritizing investments.





Moving Forward

At the highest level, this master plan provides the City, BPS, and the community with a set of building blocks that will lead Boston forward. It also plans for the future, calling for new, state-of-the-art schools focused on developing students for success in Boston's current and future economy.

BuildBPS goals are aligned with Superintendent Chang's vision for Boston Public Schools:

- **Coherence:** Infuse the system with a sense of logic
- **Innovation:** Build a culture of change that generates new solutions at every level of BPS, from classrooms to schools to the central office
- **Equity:** Ensure that the district progresses equally and collectively

BuildBPS explicitly states the need for community engagement and involvement in helping to advance big ideas into action. To initiate these discussions, BuildBPS proposes forming a new organizational body focused solely on BPS building projects. This new entity would help shape and manage the district's unified approach to capital improvement and new schools, and continue to engage community stakeholders with each step forward.

Boston is embarking on a major revitalization and transformation of its public school facilities. Through BuildBPS, Bostonians will have some of the best facilities in the nation – safe, efficient schools that meet the needs of contemporary teaching methods and are capable of supporting the City's highly regarded educational achievements and reputation. BuildBPS is the foundation for significant, long-term investment in Boston's public school system, and will yield benefits for all students across the City.





Planning Principles

Taking into consideration BPS's educational vision, and conclusions drawn from the analyses of population trends, district capacity, building conditions, and community feedback, the following principles have been identified to guide engagement, planning and capital spending over the next decade.

Nearly every building in the BPS portfolio is in need of some repair or renovation; therefore, to prioritize, every potential project needs to be considered through the lens of these planning principles.

BPS Planning Principles

1

Leverage real-time facility assessment data to prompt and validate investment choices.

4

Improve the match between educational programs and their facilities.

2

Create school environments that promote student and staff safety and well-being.

5

Maximize the energy efficiency of BPS facilities.

3

Align building capacity to enrollment and demographic trends citywide.

6

Focus new school construction primarily in high-growth neighborhoods with limited options for site expansion.

A Foundation of Engagement

7

Focus initial school renovation and expansion projects primarily in neighborhoods where school building sites can be expanded and where swing space is available.

9

Develop program and building utilization plans in neighborhoods that are not projected for high-growth among youth populations and have excess building capacity.

8

Expand K1 seats in neighborhoods where the estimated supply of high-quality seats does not meet demand, in accordance with analysis from the Universal PreK policy development process.

10

Optimize the geographic distribution of BPS high schools.

BuildBPS will embark on a new chapter of engagement in which the planning principles outlined above will build on the knowledge, creativity and dedication in our school communities to re-imagine and renew Boston's public school infrastructure.

Immediate Action

Over the next 10 years, many steps will be taken and much work done in the effort to move BuildBPS forward and rebuild Boston's school building portfolio. The following are actions that can be taken immediately to pave the way for future investments:

1

Commit \$1 billion to Boston's school buildings to catalyze long-term investment.

3

Implement a robust community collaboration process to guide ongoing and long-term decision making.

5

Undertake several "prototype" projects, to model standards from the BPS educational vision.

2

Establish an office dedicated to managing BuildBPS investments and projects.

4

Invest in new school furniture and technology, to promote 21st century learning and teaching methodologies.

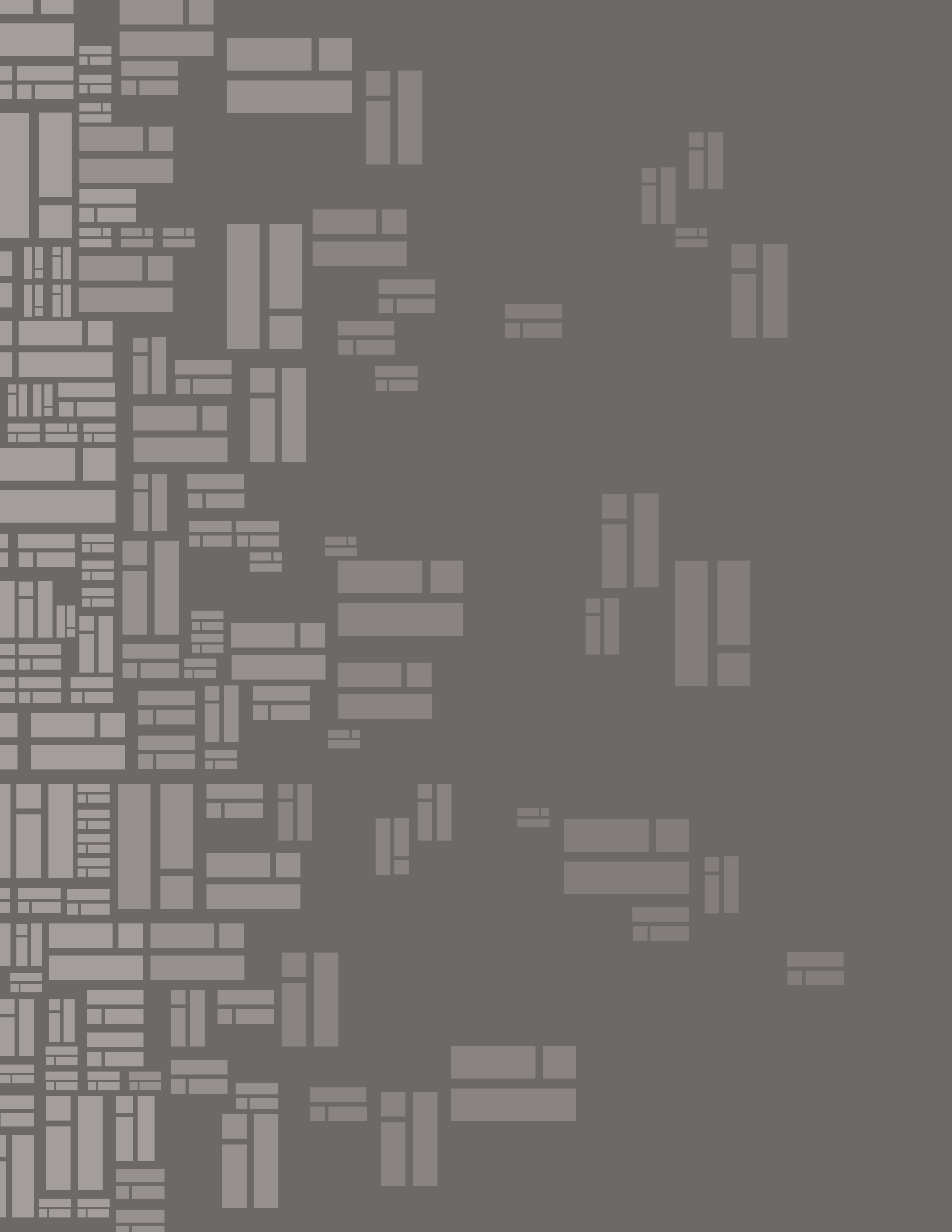
Future BuildBPS Community Engagement Outline

2017

March	BuildBPS Information Sessions	BPS and the City will host open sessions in which residents can learn more about BuildBPS, and what the future holds. These will be opportunities to ask questions and share initial feedback and ideas about BuildBPS. BuildBPS office hours will also be held during this time for the community to inquire about the project or to offer one-on-one feedback. The sessions also will feature tutorials on using the data dashboard.	Individual School Community Meetings	Every school site council and school governing board will review and discuss their school's assessment, as well as BuildBPS as a whole. These meetings will take place as part of an existing site council meeting, or as a separate meeting unto itself. Each school will be able to compile ideas and feedback, and submit them to BPS. The district will provide tools and resources to guide the discussions.
April				
May	Neighborhood Workshops	A series of neighborhood workshops will bring each section of the City together to promote a deeper understanding of the schools and facilities in each neighborhood. These forums will enable students, parents, staff, and residents to share their experiences, ideas, and concerns. Most importantly, the workshops will include facilitated problem-solving sessions to engage stakeholders and help prioritize investments and propose solutions.		
June				
July				
August	School Building Office Review	The new school building office will collect all ideas generated by the community at site council meetings and neighborhood workshops. The ideas will be reviewed, and further analysis will be conducted to determine what their implementation would involve, logistically and financially. During this time, the school building office will update the facilities and demographic data, and the BuildBPS Dashboard will also be updated.		
September				
October				
November	Neighborhood Prioritization Meeting	Community members will learn more about the feasibility of the ideas generated in the workshops and provide input on proposed projects for the year ahead.		
December				
2018	January	Funding and Implementation		
		Based on the work conducted over the previous nine months, the City and BPS will include priority projects in Boston's capital budget proposal.		

Year Two and Beyond

Based on lessons learned in year one, the City and BPS officials may adapt the process to ensure successful community engagement, essentially repeating the cycle to prioritize projects for year two and beyond.



1

Participating Firms:

SMMA
MGT
WSP | PB
Mass Insight
New Vista

Introduction

What is the 10-year Educational and Facilities Master Plan?

Why BPS will benefit from an Educational and Facilities Master Plan?

What does the BuildBPS Educational and Facilities Master Plan include?

What does the BuildBPS plan **not** include?

What does BuildBPS teach us about capacity?

Acknowledgments

Build **BPS**



MCKAY SCHOOL



Introduction

The schoolhouse is a bedrock of any community, as iconic in our streetscapes as the church steeple and the corner store. Most American children spend at least 13 years of their childhood in school buildings—learning and growing in classrooms, science labs, art studios, performance spaces, cafeterias, gymnasiums, and schoolyards.

Here in Boston, the birthplace of public education, more than 56,000 students and 8,000 employees—plus countless parents, partners, volunteers, and other visitors—walk through the doors of BPS schools every day. As a city that values public education, there is a responsibility to create safe, clean, state-of-the-art school buildings in which to teach and learn. Today, too many of the BPS facilities do not reflect Boston's deep commitment to outstanding public schools. Educators and students alike make the best possible use of the spaces available, but they deserve much more than the aging building stock currently has to offer.

BuildBPS represents a powerful opportunity to transform our school buildings in every neighborhood of the city. This educational and facilities master plan marks a new era of investment supported by a commitment of \$1 billion to the modernization of Boston Public Schools.

What is the BuildBPS 10-Year Educational and Facilities Master Plan?

Launched in September 2015 by Boston Mayor Martin J. Walsh, the Boston School Committee, and Boston Public Schools (BPS) Superintendent Dr. Tommy Chang, BuildBPS is a process to develop a 10-Year Educational and Facilities Master Plan that provides a strategic framework for aligning BPS building construction and renovation projects with the district’s educational priorities. The plan is designed to guide capital investment to ensure that BPS facilities are equipped to accommodate innovative changes in learning and instruction.

In January 2017, Mayor Walsh announced that BuildBPS will be supported by a \$1 billion investment in school construction and renovation. The master plan establishes the principles and priorities for making this historic investment in ways that will have the greatest impact on student success.

Why will BPS benefit from an Educational and Facilities Master Plan?

BPS’s building infrastructure is old. Sixty-five percent of the district’s 134 school buildings were constructed before World War II to standards that are now long outdated. Many BPS school buildings are in poor condition, in need of repair or replacement. From new boilers to new windows, the district and the City are in a constant cycle of upkeep to maintain these old buildings.

Many BPS buildings are also ill-fitted for the ways that teaching and learning happen today. What schools teach and how students are taught have changed significantly from the model that these buildings were designed to support, and that so many of us grew up with: teacher at the front of the room, lecturing to rows of students.

Teaching and learning can be effective in many types of settings, including suboptimal ones. However, in order for teaching and learning to be most powerful, school buildings must inspire learning; enable instruction; promote access, health, and comfort; and foster community. Right now, BPS’s building portfolio—on the whole—falls short of performing these functions. BuildBPS presents the school system, the City, educators, parents, and students with the opportunity to ensure that, over time, Boston builds spaces and buildings fully supportive of modern learning approaches and the people who constitute school communities.

Beyond the physical challenges that current school buildings present which limit effective instruction, there are larger systems challenges. BuildBPS presents the district with the opportunity of adding coherence to the building portfolio. The location of schools across Boston’s neighborhoods is more an artifact of history than of responsive planning. There is not a clear logic to where schools and programs are sited in the City.



Mayor Walsh has committed a \$1 billion investment in school construction and renovation to support BuildBPS.

As will be highlighted in other sections of this report, BPS has an unusually high number of grade configurations. Consequently, many students endure multiple school transitions over the course of their K–12 education in Boston. Transitions are hard for students, and moving to new settings and programs frequently can result in lower grades, reduced self-esteem, and less class preparation, as well as lower social support and extracurricular involvement. In addition to being detrimental for students, these transitions also make it difficult for families to anticipate their child’s journey and to have confidence planning for their child’s future.

The abundance of grade configurations across BPS means that feeder patterns—how students move between schools as they advance grades—are inconsistent and can be difficult to anticipate. Feeder pattern confusion is most acute, for example, in the middle school years. Students are moving through BPS elementary schools at different points. Because of the number of grade-level entry and exit points, schools

often lose students in the years leading up to middle school, and families have to navigate a sometimes confusing array of options.

BuildBPS provides Boston’s education stakeholders an opportunity to bring greater clarity and logic to the school system and its building portfolio. Working toward this end gives stakeholders the chance to create greater stability and predictability for students and families, to decrease school attrition, and to better manage school transportation.

Lastly—and maybe most importantly—Boston’s recent history is one in which planning decisions have been made without the benefit of a larger vision for BPS’s infrastructure and its sustainability, and without a clear set of priorities for the investments needed to improve learning opportunities and learning spaces. BuildBPS provides the BPS community the framework necessary for consistent, strategic, and transparent decision-making, as well as for capital investment across the district.

What does the BuildBPS Educational and Facilities Master Plan include?

BuildBPS is composed of two main components: the written plan (what you're reading right now) and the BuildBPS Dashboard (a web-based data visualization tool).

The Written Plan

First, BuildBPS includes important updates to the district's vision for student learning and instruction. Specifically, updates have been made to BPS's organizational values, its vision for its graduates, its instructional vision, and its objectives for system-wide improvements that reflect both its historical work and the emerging strategic direction that Superintendent Chang is defining.

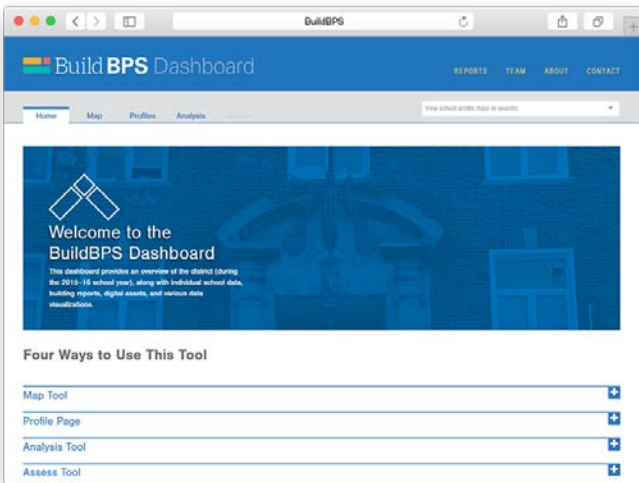
Second, this plan includes the results of critical studies and compiles data that serves as the basis for setting priorities for new investments in BPS school buildings. The first study is an assessment of the physical integrity and educational adequacy of all 134 school buildings (127 school communities). The physical assessments consider building layout, systems (e.g., HVAC, plumbing) functionality, and environmental conditions. The educational adequacy assessments observe and document the size and quantity of spaces for the programs offered in each building. Neither attempts to examine school performance or instructional quality. To support the quantitative assessments, BPS also collected input from parents, students, staff, and other stakeholders regarding the present and future state of Boston's educational facilities. The second study that this plan draws on is a detailed demographic analysis of Boston's school-aged populations, and projections of changes in the number and location of students and their families over the next decade.

Third, this plan presents a set of school building portfolio planning principles intended to guide the City's and the District's capital projects over the next decade. The principles were determined through careful analysis of patterns revealed by the facilities assessment data and examination of historical and projected demographics trends. The principles also take into account feedback from parents, students, staff, and other stakeholders—gathered through surveys, events, and other community-engagement activities—about the conditions, accessibility, and educational adequacy of school spaces. Perhaps most important, the identified planning principles are aligned with the district's educational vision and seek to promote **equity** of access to high-quality facilities across the City; **coherence** (or logic) across the school building portfolio, in terms of the scaffolding of grade levels and school types across neighborhoods; and **innovation**, by establishing guidance for the development of modern learning spaces.

Fourth, this plan outlines the next phase of BuildBPS, which will focus on deeper community engagement to guide decision-making and identify specific projects aligned with 10-year investment priorities. It is important that decisions about particular buildings and schools be made with input from educators, parents, and students.

Finally, this plan frames the options for financing the next 10 years of capital improvements, which the City will fund primarily with money from its annual general obligation bond issues and in partnership with the Massachusetts School Building Authority (MSBA). Mayor Walsh's dedication to providing the students in BPS with quality facilities is reflected in the plan's vision.

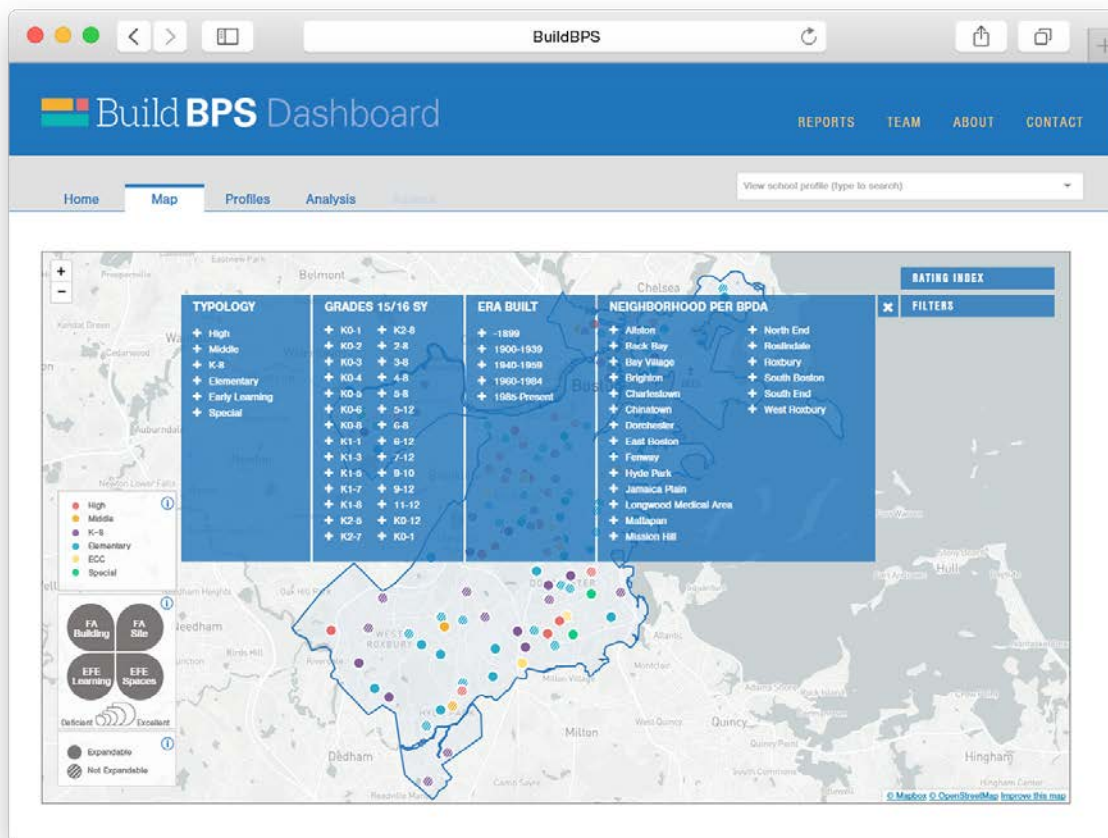




The Data Dashboard

Since commencement of this plan, the BuildBPS management team has stated its commitment to engaging the community and deciding, together, a best path forward for BPS. In support of this objective, the team began meeting to discuss how best to share the substantial amount of data made available by the assessment effort.

In line with Mayor Walsh’s vision for analytics and the leveraging of data, the concept of a data dashboard was introduced by SMMA to encompass all building reports, digital assets, and various data visualizations. The BuildBPS Dashboard, housed on a web-based platform, provides the community with a complete overview of the district (during the 2015–16 school year), along with individual school data. Analysis tools and data visualizations also offer insight into the conditions of school buildings and educational environments, helping users more fully understand the relationships that BPS buildings have with one another and the City in general. The BuildBPS Dashboard is built to allow for the continuous updating of data. It can be found at www.BuildBPS.org.





What does the BuildBPS plan not include?

BuildBPS is strictly focused on understanding the fitness of the current school building portfolio to meet the demands of a 21st century learning environment, as well as identifying potential ways to modernize BPS’s learning spaces and buildings.

BuildBPS does **not** include an evaluation of instructional or program quality, nor an evaluation of school performance as determined by student outcomes. These variables have no bearing on the planning principles recommended in this plan.

BuildBPS does **not** identify buildings or schools slated for major renovation, relocation, or closure over the next 10 years. Potential projects (including new school builds) or significant changes to the BPS school building portfolio will be made in the context of a community-engagement process, described later in this plan.

BuildBPS does **not** outline a strict roadmap for school building investment. Principles highlighted in the plan are important guides for capital investment. This said, context and conditions change quickly in Boston, in the Commonwealth, and across the country. These principles have to be revisited on an ongoing basis and revised, as required, to respond to the district’s needs, available resources, emerging opportunities, and unforeseen challenges.

What does BuildBPS teach us about capacity?

One of the long-standing, fundamental questions about the BPS building portfolio has been: What is the true capacity of the Boston Public Schools? In other words, how many seats for students does BPS truly have available in each school and district wide, and how does that capacity compare to current enrollment and where students live today? The answers to these questions are essential for a number of reasons, including determining the most efficient use of financial resources. There has been considerable interest and debate among the community—as well as several internal and external reports—about whether BPS operates an appropriate number of buildings to serve the current size of the student population.

According to BPS, this was one of the questions explored by the Long Term Financial Planning team, whose work began in Fall 2015 and is ongoing. The Advisory Committee that produced the plan identified “footprint”—the number of schools, classrooms and programs that BPS offers—as one of the “10 Big Ideas” that merited further community discussion. The group considered the size of BPS school buildings, the inconsistency of grade configurations, the impact of specialized programs, and other factors, to ask whether BPS buildings as a whole are at capacity, and what steps might be taken to optimize the district to ensure that BPS can offer the best possible education going forward.

The BuildBPS team engaged in extensive analysis to bring greater clarity to the relationship between BPS capacity and enrollment. A detailed discussion of the matter is contained in Section 6: Facilities Assessment. Through our extensive exploration, one fact remained perfectly clear: **There is no universally-accepted way to calculate capacity.** It is not simply a matter of measuring square footage or counting desks and chairs. Rather, capacity raises a complex set of questions about how much space is available, and how that space may be appropriately used to serve students of particular ages, in various programs, for a wide range of uses.

There is no universally-accepted way to calculate capacity.



Recent analyses of BPS capacity to date have approached the exercise with methodologies that relied on rough estimates and averages that did not account for the space needs of particular student populations (particularly students with disabilities and English language learners), variations in class size by grade level established by the teachers' contract or how middle and high schools are scheduled at 90% and 85% utilization respectively. Even if those factors are accounted for, however, the result is often a limited assessment of classroom capacity, rather than a holistic look at the full range of space needs in schools—such as rooms for enrichment programs, specialty subjects (e.g. art and music), dedicated spaces for counseling and therapies, and other supports. The calculation of true capacity depends heavily on the assumptions applied about these spaces. The standards for new construction used, for example, by the Massachusetts School Building Authority (MSBA), provide one perspective on what spaces and how much space is needed to create a 21st Century Learning environment.

Ultimately, SMMA and our colleagues—working closely with City and BPS officials—have discovered that, while the BPS has space for more students on the whole, **there is significant variation across the system by typology and neighborhood.** We estimate that in the aggregate, the buildings as they are configured today represent a district-wide capacity of about 69,100, which is in excess to the current enrollment of 56,520 students. However, as the district moves closer to meeting the Educational Vision described in this document and space perceived as “excess” is put to effective educational use, the district’s capacity will trend towards 21st Century Educational Capacity of 55,500 students.

As the District makes continued investments in facilities, the District will move from Current Use Capacity of today (69,100 seats) towards the 21st Century Educational Capacity of tomorrow (55,500 seats).





SMMA



Mass Insight
EDUCATION



Acknowledgments

The successful completion of an undertaking as complex and significant as BuildBPS is not possible without the efforts of countless, invaluable contributors. SMMA wishes to thank the following people and organizations for their time, energy, patience, and dedication throughout the entirety of the BuildBPS process.

The City of Boston Mayor's Leadership Team; Education Cabinet; Operations Cabinet Office of Budget Management; and Environment, Energy and Open Space Cabinet

Office of BPS, including the Boston School Committee, Superintendent's Team, and Facilities Management Department and countless BPS staff across all schools.

BPS Citywide Parent Council (CPC)

Boston Teachers Union (BTU)

Boston Student Advisory Council (BSAC)

Special Education Parents Advisory Council (SPEDPAC)

Boston Planning & Development Agency (formerly, Boston Redevelopment Authority)

City of Boston Public Facilities Department (PFD)

Horan Communications

BuildBPS owner's project manager (OPM), Pinck & Co.

SMMA consulting partners: MGT of America (MGT); WSP | Parsons Brinckerhoff (WSP | PB); Mass Insight Education (Mass Insight); New Vista Designs for Learning (New Vista); and James Jennings, PhD



2



Participating Firms:

SMMA
MGT
WSP|PB
Mass Insight
New Vista



BuildBPS

Scope of Work

Project Phases

Team Organization

Build**BPS**



BuildBPS

Scope of Work

In late 2014, the City of Boston issued a request for proposals, to identify a consulting team to assist BPS and the City in:

- Developing and documenting guiding principles and program recommendations for BPS educational approaches that will be the foundation for determining the system's building infrastructure needs;
- Examining city-wide demographic and BPS enrollment trends, to anticipate BPS school building capacity needs across the City;
- Developing a facilities condition assessment, to document existing facilities' conditions, identify capital repair needs, and provide a database of facilities information; and
- Developing options to repair, renovate, replace, consolidate, and/or build new schools. These options are to be accompanied by a comprehensive financing strategy.

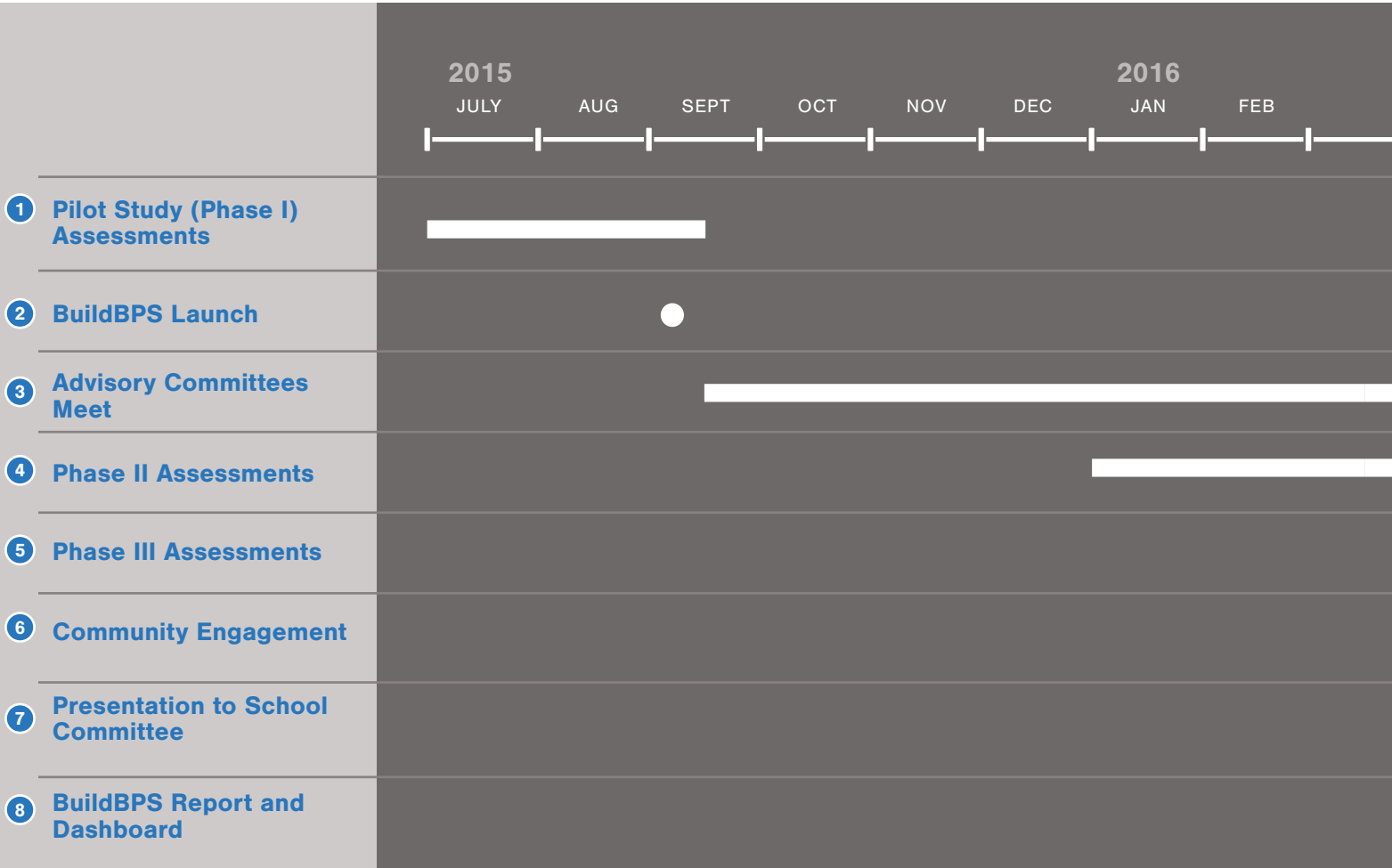
In May 2015, SMMA was selected as the consultant to conduct what would become an 18-month planning process. SMMA was supported by project manager Margaret Wood, from the consulting firm Pinck & Co., as well as BPS and City of Boston staff.

Project Phases

SMMA was conscious of the time and effort that would be required of BPS staff, relative to its visiting and assessing 127 schools in 134 buildings. The team developed a pilot process (Phase I) for three schools, to create an educational and facilities assessment framework, develop a draft assessment tool, and test assessments to verify data accuracy and significance. Once that process was complete, the team conducted a second round of assessments (Phase II) that focused on a cohort of buildings by typology and era. This provided greater insight into the buildings’ general construction means and materials, and allowed for deeper understanding of physical conditions and educational “fit.” The third and final round

(Phase III) involved assessing all remaining buildings in the BPS portfolio, with minimal disruption to the buildings’ teaching and learning.

Educational planning, demographics studies and community-engagement activities were undertaken concurrent to the assessments. At the conclusion of the assessments, financial planning activities commenced to provide estimates for repairing, renovating, and improving the facilities’ overall conditions.



1 Pilot Study (Phase I) Assessments

Preliminary analysis of Burke, Henderson, and Umana Schools, to develop tools and templates for the process

2 BuildBPS Launch

Official kickoff of BuildBPS

3 Advisory Committees Meet

Advisory committees meet regularly to discuss status of work and advance plan

4 Phase II Assessments

Assessment process piloted in 19 schools

5 Phase III Assessments

Remaining 105 schools assessed

6 Community Engagement

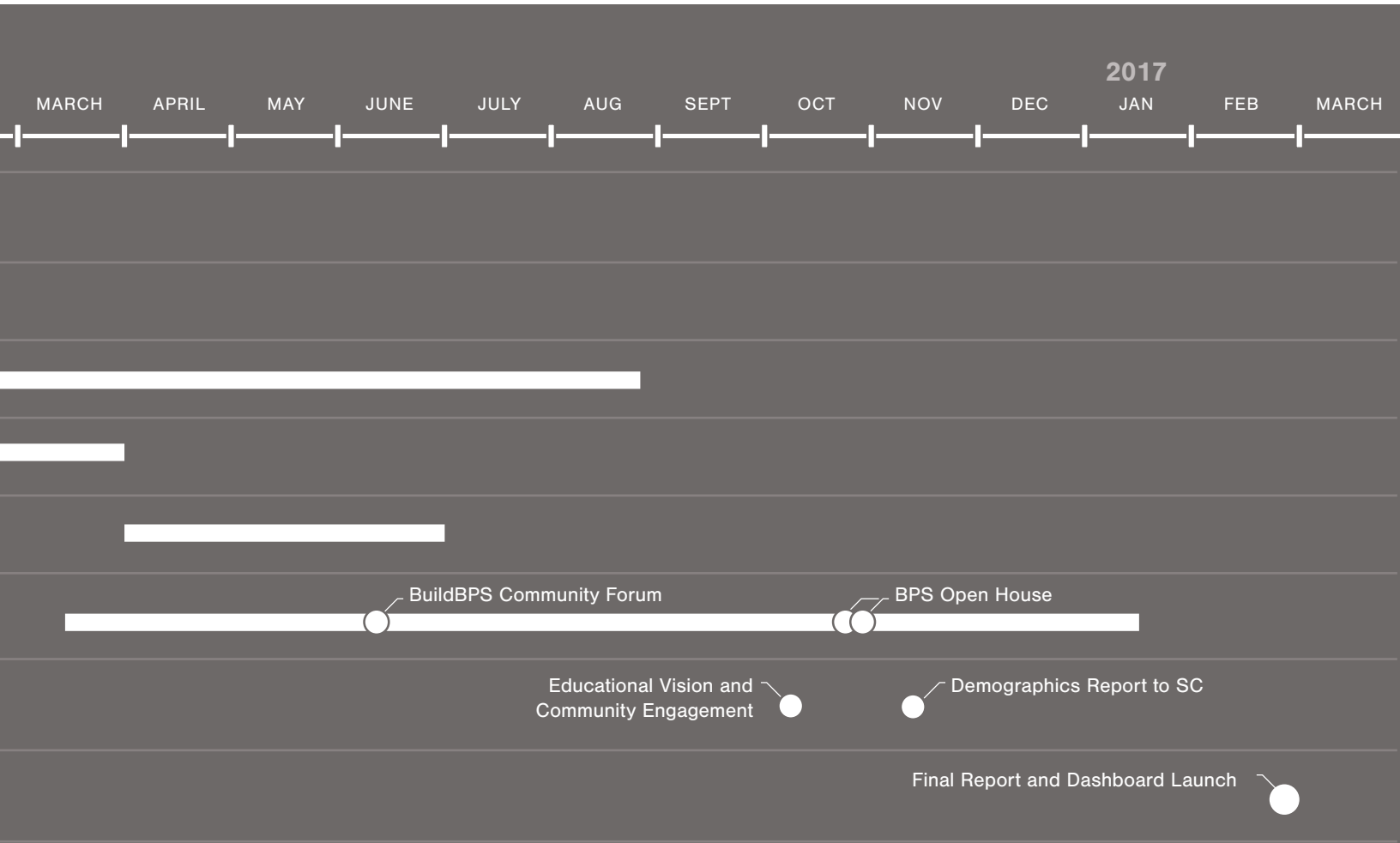
Ongoing efforts to collect stakeholder input through surveys and activities, including Community Forums, Kitchen Table Talks, Open Houses, etc.

7 Educational Vision and Demographics

Educational Vision and Community Engagement Report Drafts presented to School Committee

8 BuildBPS Report and Dashboard

Final BuildBPS report published, BuildBPS Dashboard goes live



BuildBPS Team Organization

The BuildBPS Core Planning Team

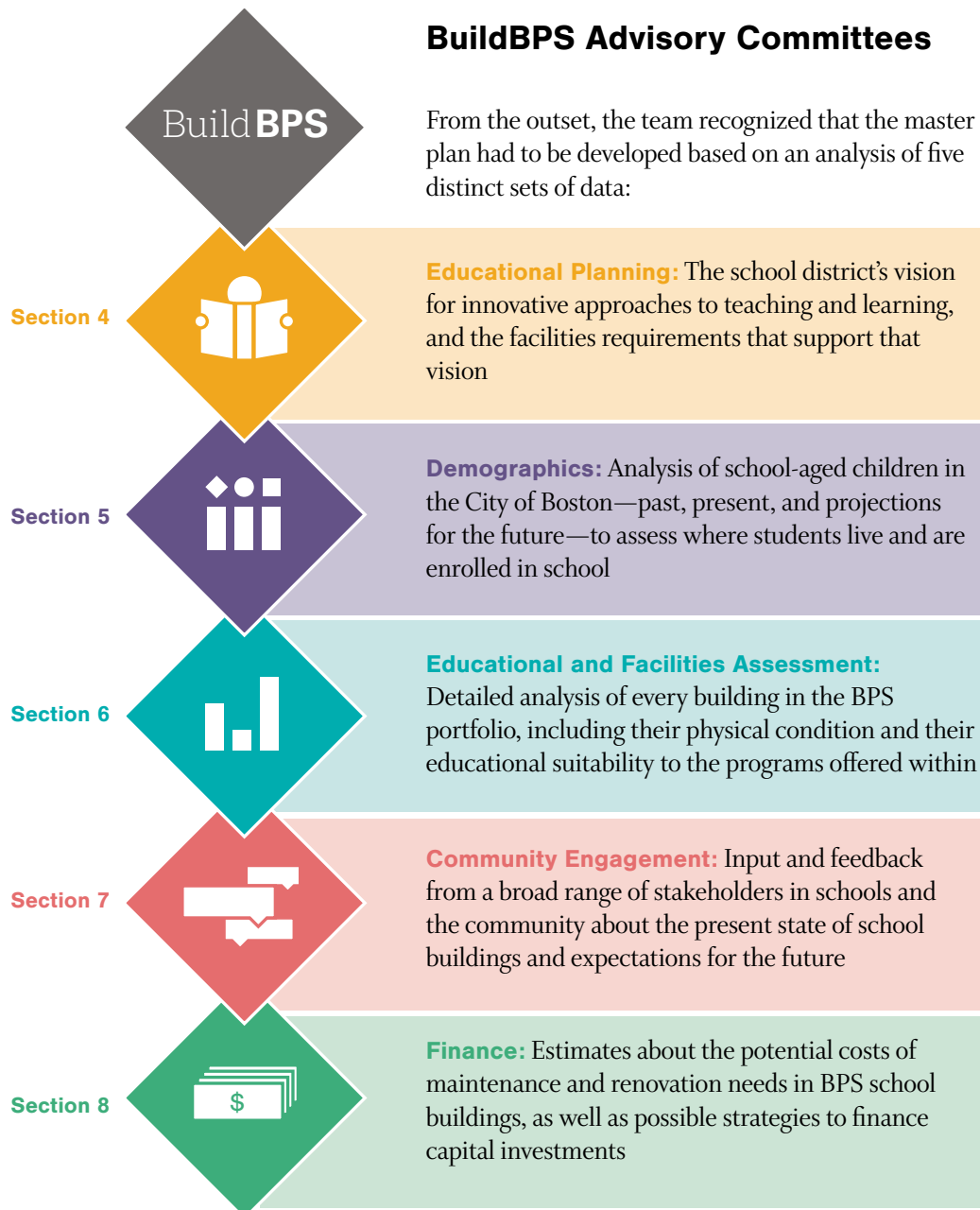
BuildBPS is led by the City of Boston, the Boston School Committee, and BPS. SMMA is the lead planning and design firm, and Pinck & Co. is the project manager. BuildBPS is overseen by a management team composed of senior officials from the City of Boston and BPS.

Critical to the success of the BuildBPS process is the synthesis of the following:

- **Participants:** The school district cannot undertake a credible educational and facilities master planning process on its own. In addition to expertise from consultants and deep collaboration with the City of Boston, a successful plan requires meaningful involvement from, and engagement with, a broad range of stakeholders from schools and the community.
- **Data:** To provide informed guidance about capital investment in school buildings, the master plan must collect, analyze, and integrate five broad sets of data, some pre-existing, and some generated via this process.

This section describes in greater detail the “who” and the “how” of BuildBPS: the organization of the team leading the work, and the steps undertaken to develop the plan.

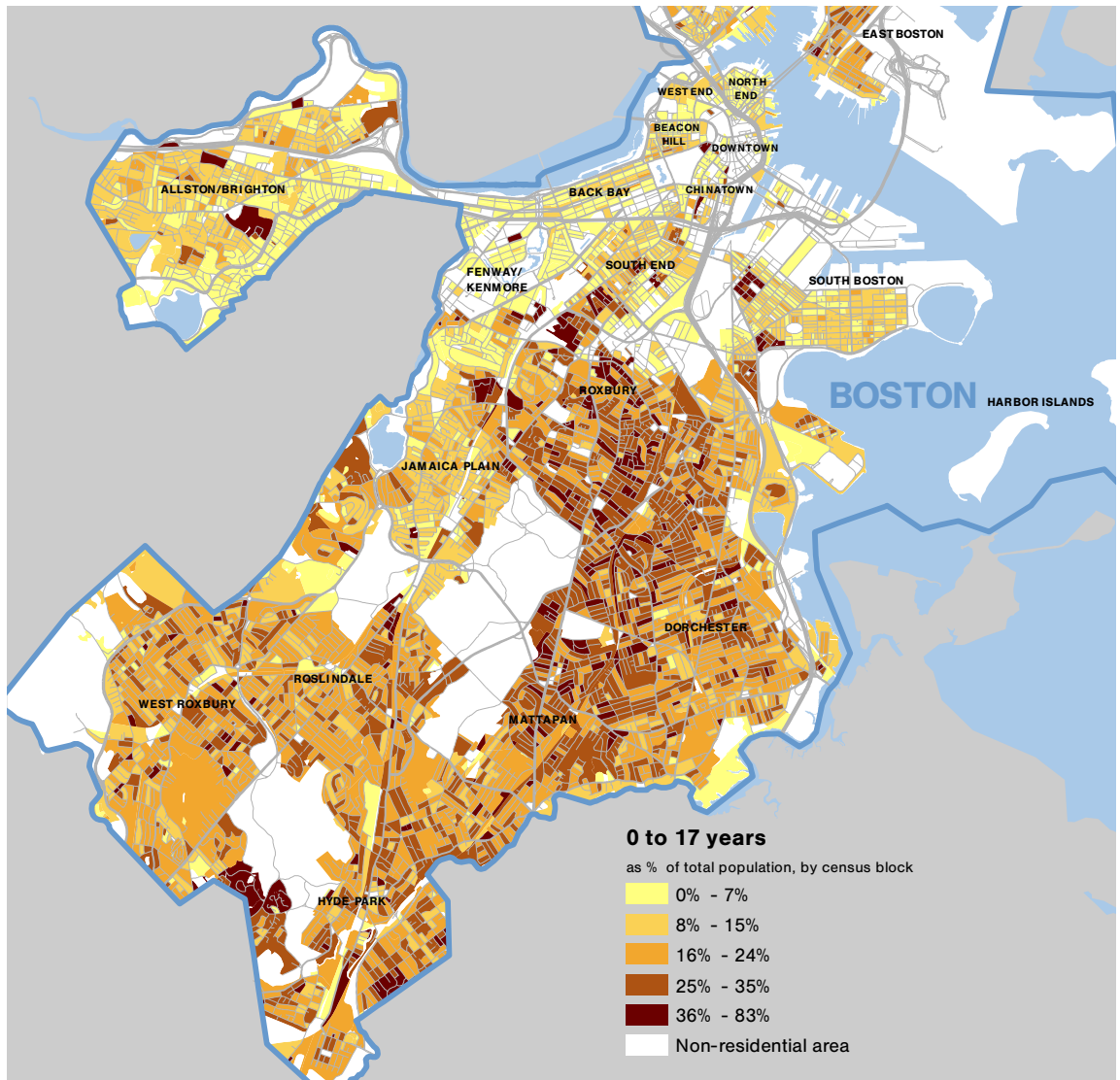




To engage deeply in each of these five areas of work, the management team established five advisory committees, composed of representatives from the Mayor’s Office and other City departments; BPS administrators, faculty, and students; partner organizations; parents and other community members; and expert consultants in relevant fields.

The advisory committees met from Fall 2015 to Fall 2016 to collect and analyze data, examine challenges and opportunities, compile findings, and provide guidance to the BuildBPS planning team.

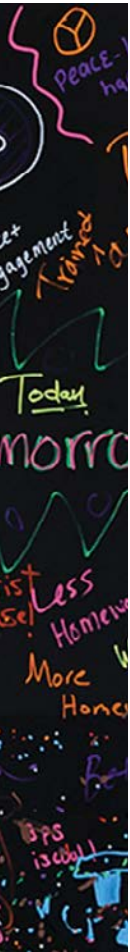
Map from Boston Planning & Development Agency: Boston Census 2010 Demographics, Children 0 to 17 Years



Demographics

This team was tasked with developing analyses of the distribution and growth (or decline) of school-aged populations in the City of Boston by neighborhood, race, and grade level.

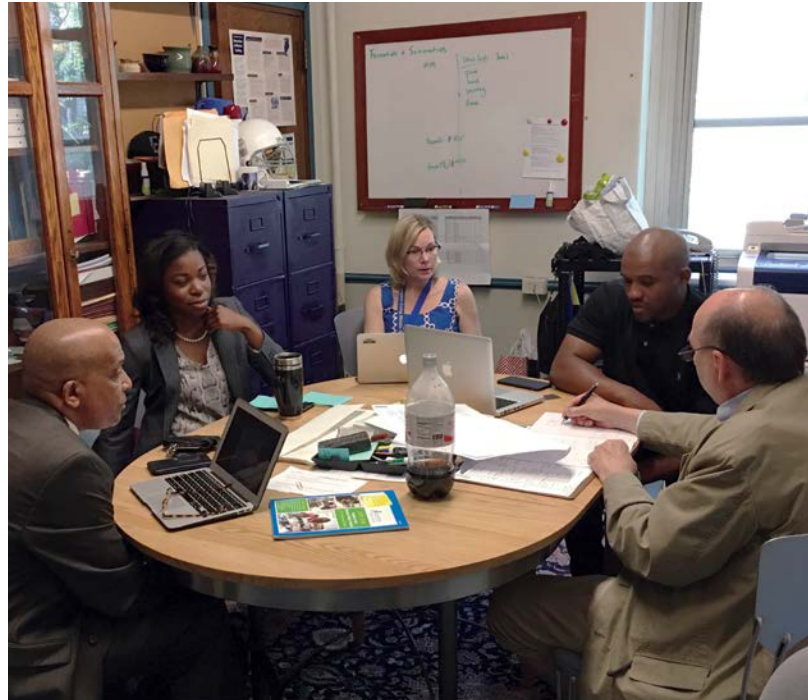
The team worked closely with BPS, the City of Boston, and the Boston Planning & Development Agency (BPDA), to develop enrollment projections that will be used to estimate the district's space needs over the next 10 years. It reviewed current student population numbers, historical enrollment patterns, and anticipated changes in housing patterns in Boston, to analyze where school-age children are likely to live over the coming decade. This information will be used to identify areas of population growth and decline, as well as to inform school siting and feeder-pattern strategies for different parts of the City.



Facilities Assessment

This team was tasked with documenting existing school conditions and schools' capacity to house various educational programs.

Led by architects, engineers, and educational planners from SMMA and its subcontractors, and in partnership with each school's principal, the team conducted both facilities and educational adequacy assessments. Facilities assessments inventoried building layout and conditions. Educational assessments documented the adequacy of spaces for the educational programs offered in each building. These assessments focused only on the building, the site, and the effectiveness of the building as an educational facility. They did not attempt to evaluate school performance in terms of student outcomes or quality of teaching and learning.



Professional planning team meeting with school leadership on site



Community members offering their viewpoints on the future of school buildings during a BuildBPS "Kitchen Table Talk" in the summer of 2016

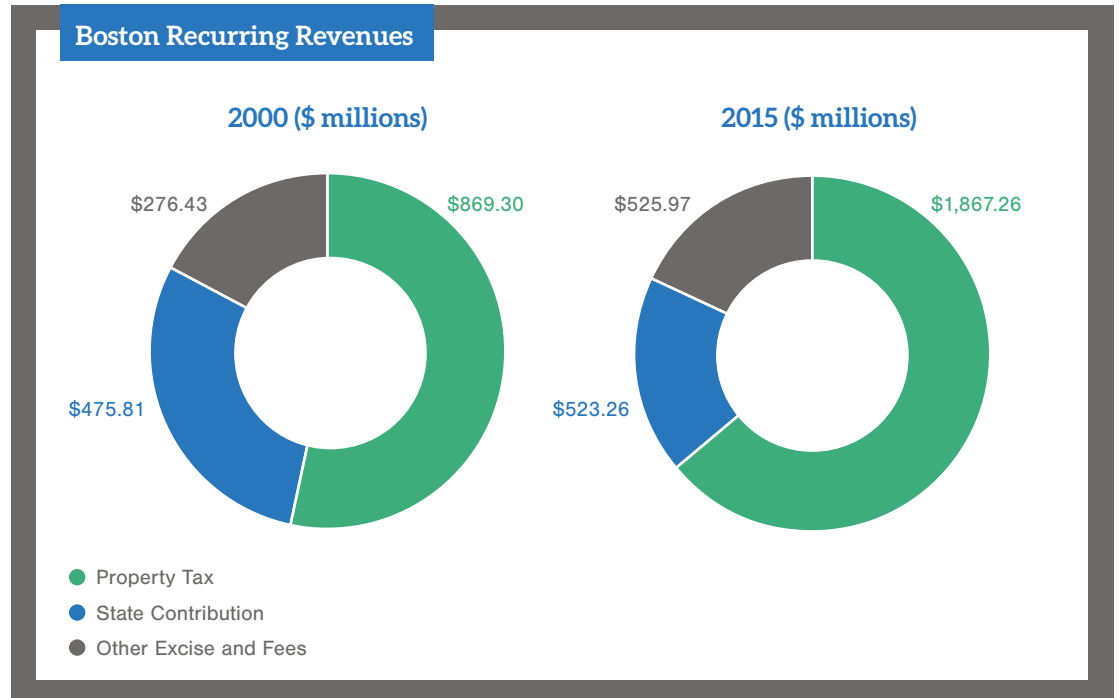


Community Engagement

This team was tasked with gathering perspectives and feedback from BPS staff, students, parents, and other stakeholders about the present and future state of Boston's educational facilities.

In addition to developing a multilingual survey and hosting public events, the team met regularly to develop and launch a broad range of communications tools and strategies, geared toward increasing public awareness about and involvement in BuildBPS.





Source: 2008 Boston CAFR (pg.112–113), 2015 CAFR (pg.122–123)



Finance

This team was tasked with conducting an analysis of long-term building maintenance, modernization, and new-building construction costs; and exploring financing strategies to generate revenue for repair, upgrade, and new-building projects.

The team investigated potential capital costs associated with an undertaking as large as BuildBPS. Additionally, committee members explored options for financing potential projects, to ensure that any proposed construction or renovation is within the City’s financial capability. Financing options explored include issuing city bonds, leveraging current MSBA funding streams, proposing multiple project packages with the MSBA, identifying potential dedicated revenue sources in the City budget, and developing new public-private partnerships.



3



Participating Firms:

SMMA
MGT
Mass Insight
New Vista



Context

Boston, Massachusetts

Boston Public Schools (BPS)

BPS Educational Program
by Typology

BPS Building Portfolio

BPS Grade Configurations
and Pathways

BPS Student Assignment
and Choice

Build **BPS**



Context

Boston, Massachusetts

Boston, Massachusetts, is the 22nd largest city in America and the largest in New England. It covers 48 square miles and 23+ neighborhoods, and is home to approximately 640,000 residents. Heralded as one of the theaters of the American Revolution and the birthplace of many important social movements that have shaped American democracy, Boston has become a city known for its higher education and medical institutions, as well as its growing knowledge and innovation economies.¹

The City's population is growing rapidly: Boston added nearly as many residents over the past five years as it did the previous 20, and between 2010 and 2014, its population grew 6%, compared to 3% for both Massachusetts and the nation as a whole. By 2030, Boston is projected to have approximately 724,000 residents, and is on track to reach—and likely exceed—its previous peak population of 801,000 by 2050. Today, Boston's population composition is changing.²

¹ Imagine Boston 2030 (IB2030), Expanding Opportunity, November 2016 Draft

² Imagine Boston 2030



Boston has become more diverse.

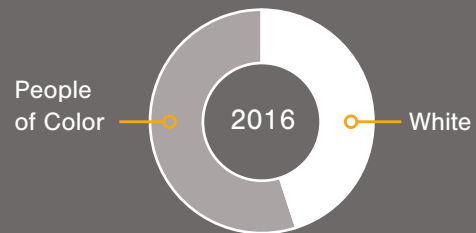
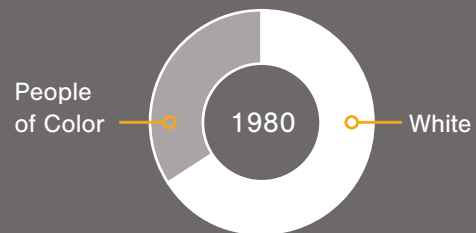
In 1980, about two-thirds of Boston’s population was white. Today, more than half of its residents are people of color. Foreign-born Bostonians comprise more than a quarter of the population, and 51% of Boston’s children live with at least one foreign-born parent.³

Boston’s immigrants are coming from new places.

In 1970, the majority of Boston’s immigrant population came from Europe; today, immigrants from the Americas make up half of the City’s foreign-born population, and residents from Asia represent a quarter. The Dominican Republic, China, and Haiti are the three most common countries of origin for Boston’s foreign-born residents.³

Boston’s population is dynamic.

Two of the largest resident age groups in Boston—those between 25 and 34 years old, and between 35 and 44 years old—are typically the two age groups considered to be the most likely to be childbearing. Despite increased population in these segments, Boston is not seeing more births, and there are more people living in the City of Boston who fall above these age groups, contributing to an older average age—an average that is only increasing.



³ Imagine Boston 2030

BPS is the home of many firsts in the nation: the first public school, first public elementary school, first public school system, and first public high school.

Dr. Tommy Chang became BPS superintendent on July 1st, 2015.

BuildBPS is intended to become one of the cornerstone initiatives of his administration to be aligned with the goals and objectives of the district's strategic implementation plan.

Boston Public Schools

Founded in 1647, BPS is the oldest school district in the country and the 73rd largest in America. It is home to 56,520 K2 to grade 12 students⁵ and 10,255 staff, including approximately 6,900 teachers, 1,500 aides, and 850 administrators. Today, BPS is one of the most diverse school districts in the nation; the district is 42% Hispanic, 35% Black, 14% White, and 9% Asian. Nearly one in every two students speaks a language other than English at home, and BPS students come from 138 different countries. One in five BPS students has a disability, and 70% are economically disadvantaged.⁴

BPS is the home of many firsts in the nation: the first public school (Boston Latin School, 1635), first public elementary school (Mather Elementary School, 1639), first public school system (1647), and first public high school (English High School, 1821). BPS is currently regarded as one of the highest-performing urban school districts in America. On the “Nation’s Report Card,” produced by the National Assessment of Educational Progress, Boston students’ performance is on par with the national average for all public schools, including suburban schools, in grade 4 reading and in grade 8 mathematics. The percentage of students who pass all grade-10 MCAS tests rose from 57% in 2008, to 75% in 2015. Since 2007, the BPS four-year graduation rate has steadily increased, reaching its highest rate ever in 2015 (70.7%).

Dr. Tommy Chang became BPS superintendent on July 1st, 2015. BuildBPS is intended to become one of the cornerstone initiatives of his administration to be aligned with the goals and objectives of the district’s strategic implementation plan. The district is governed by the seven-member Boston Public School Committee, whose members are appointed by the Mayor of Boston.



⁴ That is, participating in one or more of these state-administered programs: Supplemental Nutrition Assistance Program (SNAP), Transitional Aid to Families with Dependent Children (TAFDC), Department of Children & Families (DCF) Foster Care, and MassHealth

⁵ As of December 2, 2015

BPS Educational Programs by Typology

Throughout this report, typology refers to grade levels served. These include early education centers (EECs) and early learning centers (ELCs), elementary schools, K–8 schools, middle schools, and high schools.

Educational programs have an impact on the numbers, sizes, and types of spaces in schools. They also impact student movement through the system. How can **equity** for authentic learning opportunities be achieved across the wide portfolio of buildings? Is there **coherence** in the way one navigates the system, ensuring the same level of quality, regardless of path? Are buildings equipped to facilitate **innovation** along existing and new paths?

Grade-level structures, program-space availability, and learning-environment quality all impact the effectiveness of school buildings. Similarly, school buildings themselves can have both positive and negative impacts on programs.

Early Childhood

Early childhood education is one of BPS’s strengths. National research acknowledges BPS’s success in significantly narrowing pre-K achievement gaps, and BPS is building on its pre-K model to strengthen early grade instruction throughout the system. The BPS Department of Early Childhood focuses on pre-kindergarten through the second grade.

For purposes of this discussion, early childhood is defined as:

- K0: Ages 2.9 to 4 (pre-K; special education students with general education peers)
- K1: Age 4 (pre-K)
- K2: Age 5 (Kindergarten)
- Grade 1

Approximately 11% of BPS’s pre-K students attend the district’s six EECs/ELCs. The remainder are incorporated in elementary and K–8 schools. Early childhood programs are currently spread across 84 schools in 16 different grade configurations. It is worth noting that, in September 2017, the current Mattahunt Elementary School will be transformed as a new early elementary school, initially serving students in K0 through grade 1.

Some of the newer EECs and ELCs are good models for future BPS buildings, although this school type should maintain its original intended preschool grade configuration.



Elementary Schools

There are 84 schools in the BPS portfolio that include the elementary grades. In that group, there are numerous grade configurations, resulting in a wide range of facilities with varying space and program types and sizes. The predominant configurations are K-5 and K-8. The following elementary-level programs impact the need for spaces or student movement, or both;

- **Advanced Work Class (AWC):** This is a full-time BPS program that provides an accelerated academic curriculum for students in grades 4, 5, and 6. Students in the program are expected to complete more schoolwork and more home study. Participation is by invitation only, based solely on the student's scores on the TerraNova eligibility exam. AWC is offered in only some elementary, K-8, and middle schools. In total, 21 schools offer some type of AWC program.
- **Enrichment Programs:** Many of the schools currently serving the elementary years lack dedicated spaces for the arts (e.g., visual art, music, dance, etc.), and many others do not have those programs at all. As part of the visioning process, BPS identified the goal of adding these enrichment programs and teaching spaces to all schools, whether within existing footprints by means of building additions and renovations, or, if possible, through the formation of strategic connections in surrounding neighborhoods.
- **Science Classrooms:** Many schools currently serving the elementary years also lack dedicated spaces for science. During the visioning process, BPS identified the goal of adding these core academic teaching spaces to its elementary schools.



Elementary School
Science



Art on a Cart

Secondary Schools

Middle school grades (6–8) are currently housed in 47 schools across 13 different grade configurations. Boston’s three exam schools all include grades 7 and 8; they account for 24% of the grade 7 and 8 population. The three grade 7–12 exam schools—Boston Latin School, Boston Latin Academy, and John D. O’Bryant School of Mathematics & Science—have a combined population of 5,585 students, comprising roughly 22% of the district’s total grade 7–12 population (24,495). There are currently 85 different schools in the district that serve some subset of students in grades 7–12.

Middle Grades

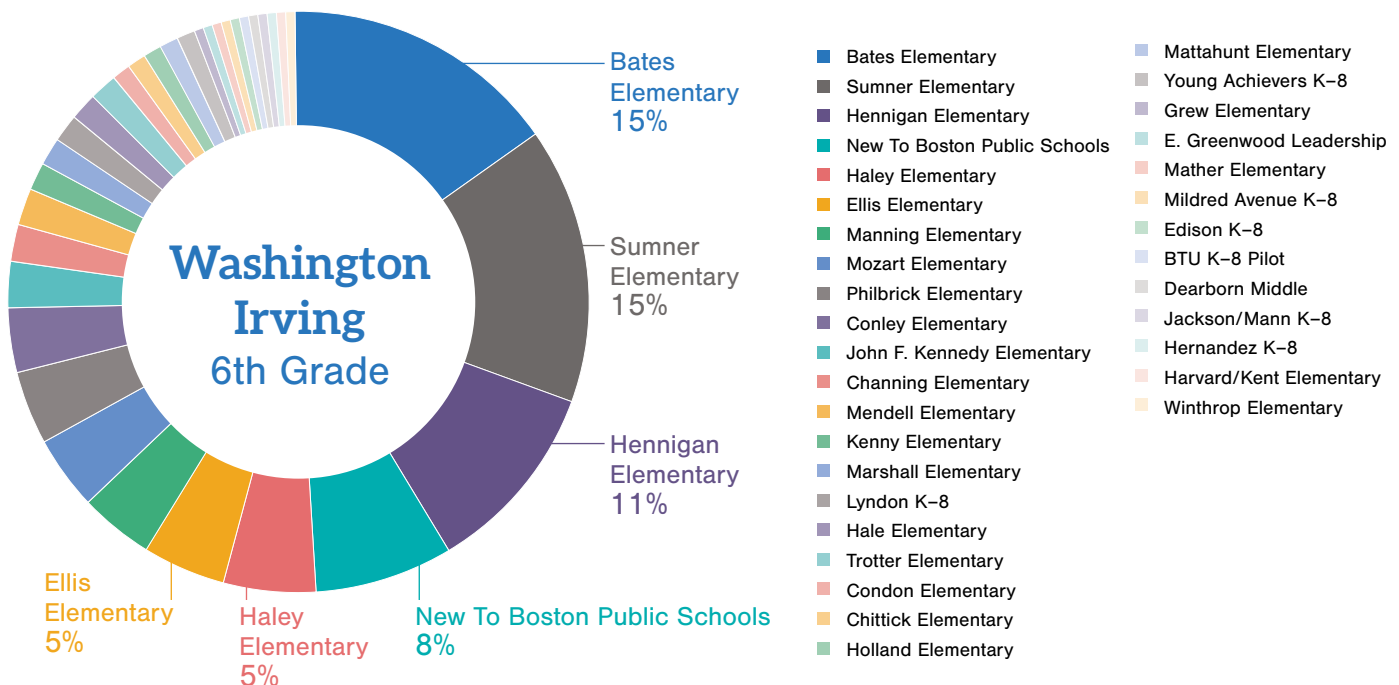
These are the grades in which students make the most frequent transitions between schools, due to such contributing factors as the AWC program; access to exam schools; and competition from charter schools, which often start at grade 5.

Many of the K–8s will be faced with the challenge of providing classroom spaces for future, sometimes specialized curricula, or for curriculum with inappropriate facilities. For example, specifically regarding science labs:

- Many K–8 schools lack them entirely
- Many are undersized, in poor condition, and lack adequate preparation and storage areas
- Many lack the services and proper facilities required for experimentation

Similar to elementary schools, a significant number of the district’s schools currently serving the middle years do not have spaces for the arts, and many that lack the spaces also lack the programs. Spaces for career, vocational, and technical education (CVTE), as well as technology, are also frequently missing. BPS identified the goal of adding these programs during the visioning process, which will put pressure on the existing buildings.

Washington Irving Middle, 6th Grade Students
Actual Feeder Schools: where did the students come?





High School Redesign



Increasing offerings—core curriculum, enrichment programs, or CVTE—will increase the number of teaching spaces needed in the schools. In some cases, spaces for those new offerings will be general education classrooms; in others, additional specialty classrooms and labs will be required.

High School Grades

The average high school enrollment is 600, but this is misleading, as four of the largest high schools range in enrollment from 1,428 at John D. O’Bryant School of Mathematics & Science to 2,439 at Boston Latin School, meaning there are many very small high schools that serve as specialty environments. Many of these schools with limited student populations, unsurprisingly, have additional capacity. Consideration should be given to allowing school sizes to grow to capacity. Other schools have very successful programs, but are limited in population by the buildings they occupy. Matching programs with buildings, or planning new facilities for these programs, should be considered. In 2015–16, BPS embarked on its High School Redesign project, which sought to:

- Deliver on the fundamental goal of preparing every young person for post-secondary, career, and lifelong success by redesigning the learning experience
- Make near-term changes to high school instructional, skill building, and support practices that will benefit current high school students and expand their access to post-secondary options
- Align efforts to promote rigor and relevant learning across the K–12 pipeline
- Fully engage communities in thinking about the future of learning, and affirm the collective investment the City will make in young people
- Increasing offerings—core curriculum, enrichment programs, or CVTE—will increase the number of teaching spaces needed in the schools. In some cases, spaces for those new offerings will be general education classrooms; in others, additional specialty classrooms and labs will be required

English Learners (EL)

BPS provides several instructional program options tailored to meet the diverse needs of English learners (ELs) and the educational preferences of their families. The ultimate goals for each program are for ELs to meet performance criteria determined by the Commonwealth of Massachusetts in attaining academic proficiency in English and grade-level core-content instruction (for example, English-language arts, mathematics, social studies, and science).

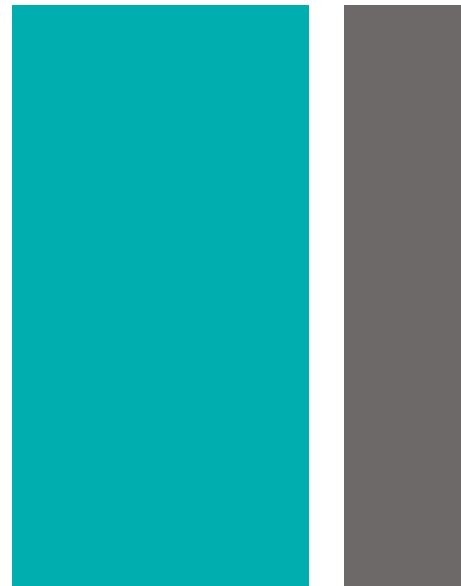
EL is an umbrella under which the following three instructional programs fall, all of which have space implications:

- **Dual Language Two-Way Bilingual Education:** This program is the instruction of core curriculum in two languages and is currently offered in four K–8 schools and one high school. BPS plans to expand the program to Kreyòl studies in the 2017–18 school year.
- **Sheltered English Immersion (SEI):** These programs are available in most schools in the BPS portfolio, and continue to expand across the City. As they do, they will require additional space and resources. The programs are available in both specific-language (5) and multilingual programs.
 - **Specific Languages:** In this model, students are all ELs who speak the same native language, are taught by qualified teachers, and are classified by English Language Development (ELD) levels 1 to 3. Sheltered instruction is intended to make instruction in grade-level academic content areas more accessible to EL students. The language of instruction is English, with native language clarification provided when needed. Students also receive English as a Second Language (ESL) instruction, which is designed to teach English to EL students.
 - **Multilingual:** In this model, students are all ELs from various linguistic backgrounds apart from the specific-language programming, are taught by qualified teachers, and are classified by ELD levels 1 to 3. Sheltered instruction is intended to make instruction in academic content areas more accessible to EL students. The language of instruction is English. Students also receives ESL instruction.

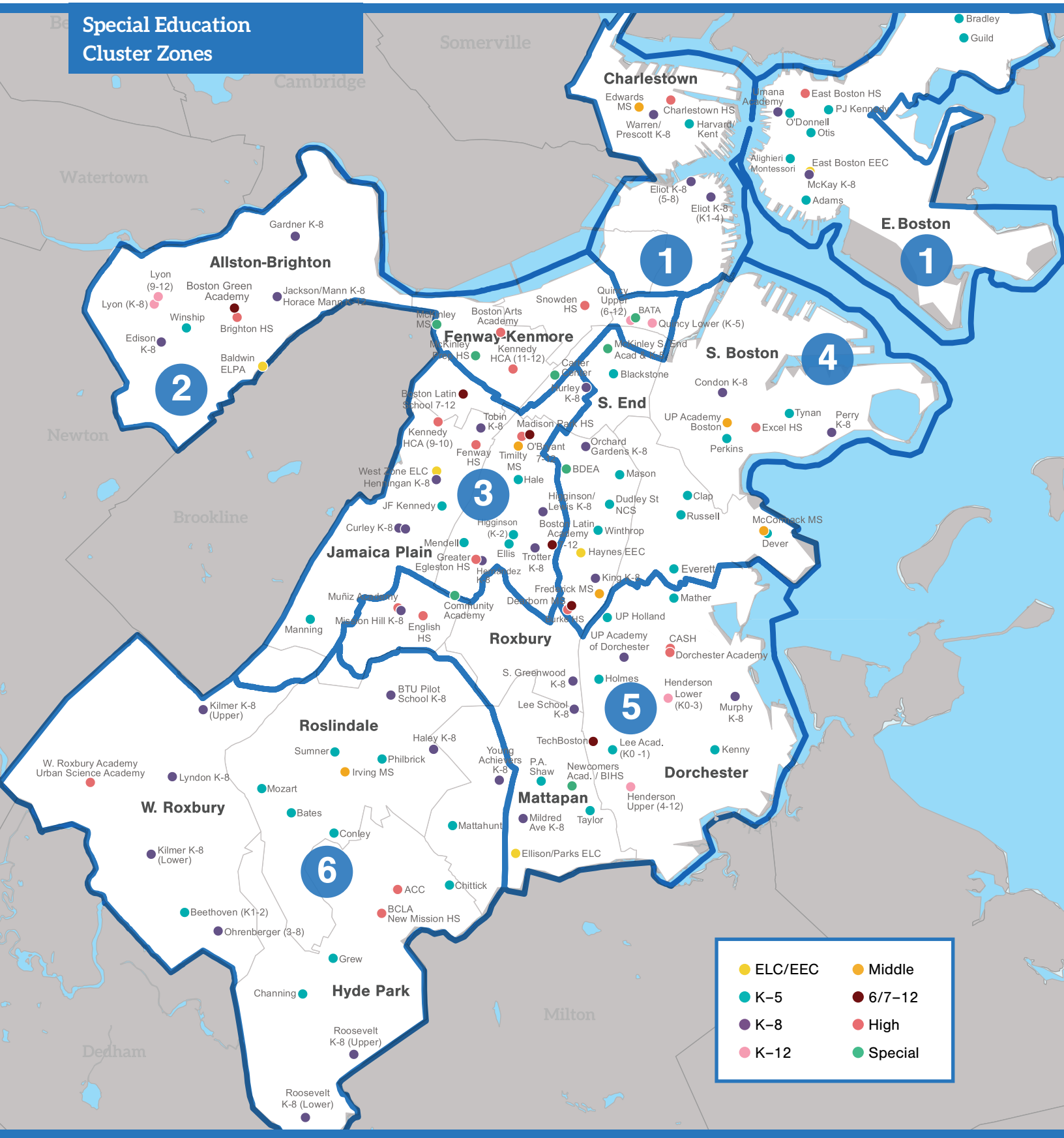




- Students with Limited or Interrupted Formal Education (SLIFE):** SLIFE students are all newcomer ELs aged 9 years or older, have ELD levels 1 or 2, are at least two years behind their grade-level peers in native-language literacy, and have limited or interrupted formal schooling. Students in High-Intensity Literacy Training (HILT) for SLIFE in specific-language programs receive instruction in each student's native language, while students in the HILT for SLIFE multilingual program are from various linguistic backgrounds. Students receive intensive literacy instruction in their native language, as well as age-appropriate core content instruction in their native language, taught by qualified teachers. Upon exiting this program, students are prepared to enter an SEI program. As it continues to expand across the City, the program will require additional space and resources, impacting select schools.



Special Education Cluster Zones



● ELC/EEC	● Middle
● K-5	● 6/7-12
● K-8	● High
● K-12	● Special

Special Education

BPS serves students with a wide range of disabilities, from mild to severe, in a comprehensive array of special education programs. These programs represent significant space needs across the district, impacting all schools. The proper types, sizes, and locations of special education learning environments are critical to serving the needs of these children.

BPS has a large special education program spread throughout the district, with many sub-separate programs across six cluster zones, ensuring availability close to where students live. The sub-separate programs include:

- Autism (18 schools)
- Emotional impairment, including fragile (26 schools)
- Severe intellectual impairment (2 schools)
- Mild intellectual impairment (17 schools)
- Moderate intellectual impairment (11 schools)
- Multiple disabilities (5 schools)
- Physical impairment (3 schools)
- Sensory impairment—hearing (1 school)
- Sensory impairment—vision (1 school)
- Specific learning disability (27 schools)

Inclusion is a primary goal for special education. BPS is committed to educating every student in the least restrictive environment possible. Inclusive education is an opportunity for schools to meet the needs of all students. It is based on a belief that all children can learn together, in the same schools and classrooms, with appropriate supports. For planning purposes, it is assumed that up to, but not more than, 25% of all classroom spaces should be dedicated to special education. This would include programs that serve the general population, but also the sub-separate programs hosted by each school. This would require relocation of some programs to other schools.

A comprehensive, systemwide review of special education needs and locations is recommended to achieve a program distribution that coincides with grade configurations and schools. The goal would be to better distribute the programs across schools.

Ongoing Program Advancements

A number of recent BPS programs and initiatives have resulted in academic improvements, some of which are outlined here. In certain cases, those improvements have required, or will require in the future, additional academic spaces and resources across the district.

- The number of students taking an Advanced Placement (AP) exam has doubled over the past 10 years, increasing from 2,078 students in 2005, to 4,136 in 2015. Along with greater access to AP courses and exams, 45% of students have received a qualifying score of 3 or higher.
- More than 17,000 students now have access to arts-learning opportunities during the school year. Today, 93% of students in pre-kindergarten through grade 8 receive **weekly, year-long arts instruction**, up from 67% in 2009. The number of high school students receiving any arts instruction more than doubled from 2009 to 2015, increasing from 26% to 63%.
- In the 2016–17 school year, BPS offers full-day pre-kindergarten education for over 2,400 four-year-olds, up from 700 in 2005.
- Expanded Learning Time (ELT) is one of the key ways in which the district hopes to provide a high-quality education for all. Schools in the BPS system can expand the day by leveraging the Schedule A initiative, (an Extended Learning Time ELT agreement between BPS and The Boston Teachers Union) having turnaround status, or by becoming an autonomous school. In the 2015–16 school year, **53 schools had ELT for all students**. BPS is currently conducting non-evaluative research with the American Institutes for Research to better understand how these schools are using their extra time to increase positive student outcomes.
- One in five students attends one of BPS's **award-winning summer learning initiatives**, nationally recognized for excellence in summer learning in 2013.

BPS Building Portfolio

Buildings in the BPS portfolio range in era of construction from the 1870s to the present, a span of approximately 145 years. The system serves students from age 2.9 years to age 22 years, and operates 127 schools using 134 buildings. There are 23 grade configurations that make up the following general categories: early education, elementary, K–8, middle, and high schools.

School Building Statistics (for School Year 2015–16)

127 operational schools, broken down as follows:

- 123 schools housed in BPS-owned buildings
- 16 schools sharing eight buildings
- Parts of three schools (Snowden International School at Copley, Edward M. Kennedy Academy for Health Careers, and Warren/Prescott K–8 Upper School) housed in leased buildings
- One school entirely housed in leased buildings (Greater Egleston High School)
- Two schools under construction (Dearborn STEM Academy and Eliot Upper School)
- Two schools in design (Josiah Quincy Upper School and Boston Arts Academy)

Bubble Diagram Key

The Boston Public Schools Portfolio (across) is represented by individual “bubble” icons (proceeding pages) to help illustrate the numeric quantities of each typology (school grade configuration) and the population of each. Subsequent options can then be demonstrated in this diagrammatic manner.



Existing School



In Design or Construction



Multiple Schools in Single Building

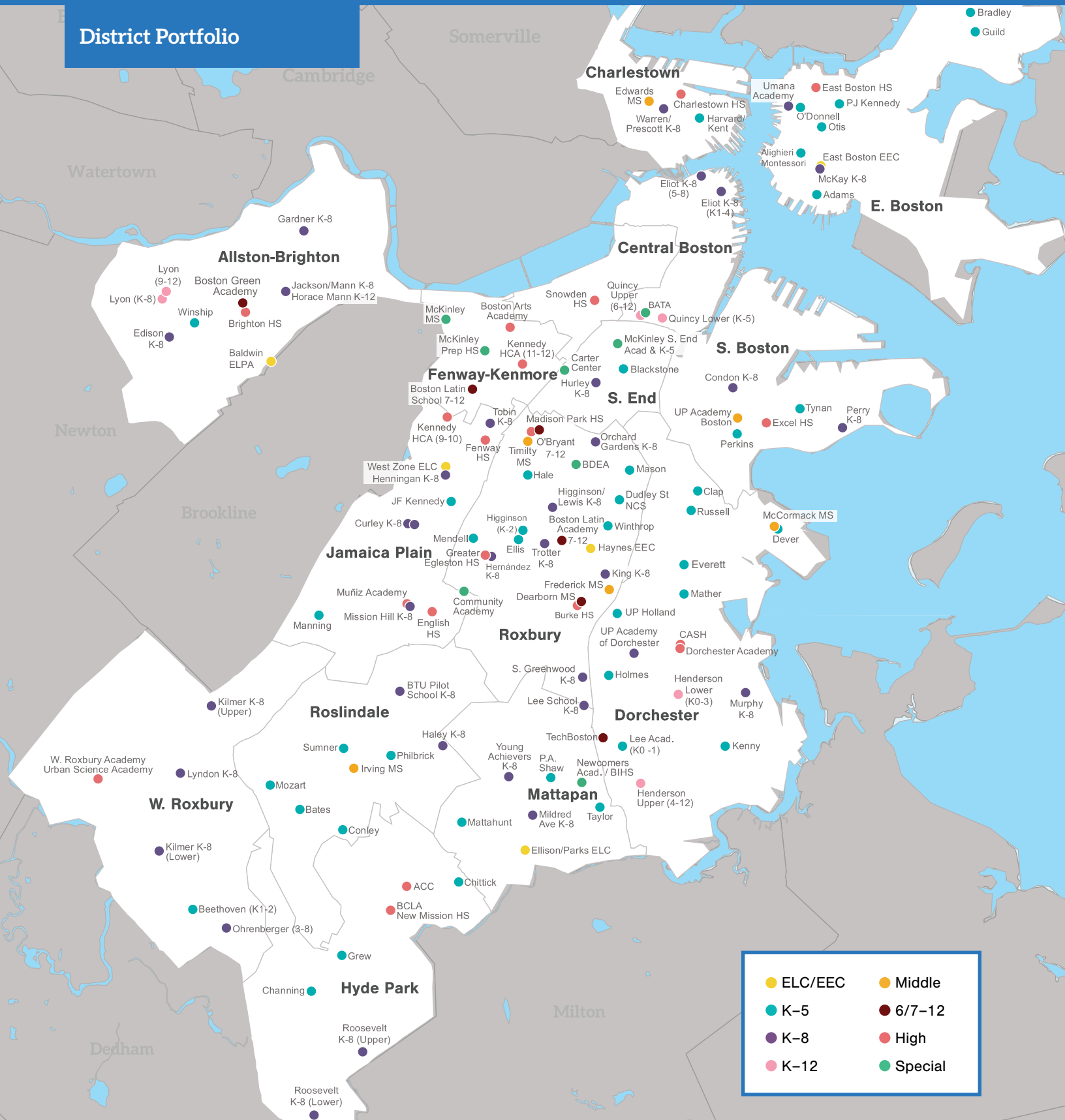


Single or Multiple Schools in Multiple Buildings



Separate School Typology Attached Building

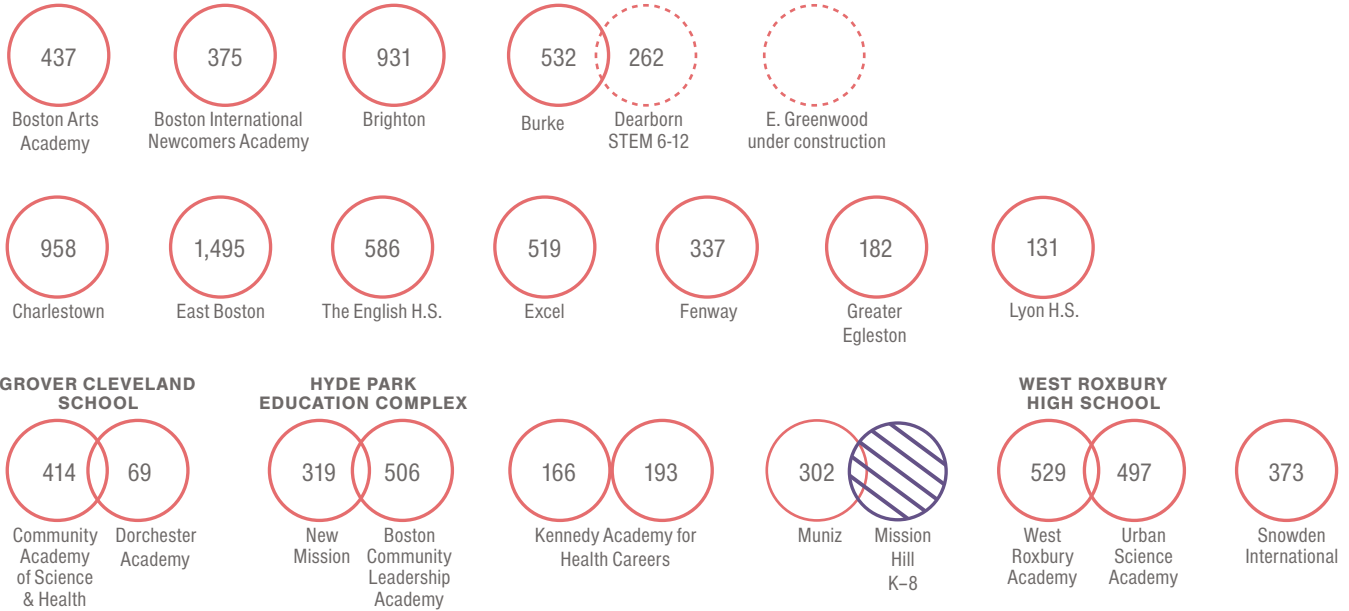
District Portfolio



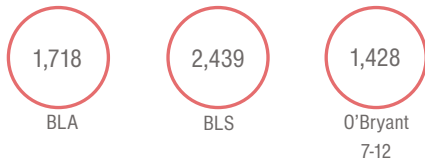
● ELC/EEC	● Middle
● K-5	● 6/7-12
● K-8	● High
● K-12	● Special

High Schools *19,195 students | 31 schools in 29 buildings | 619 st/school*

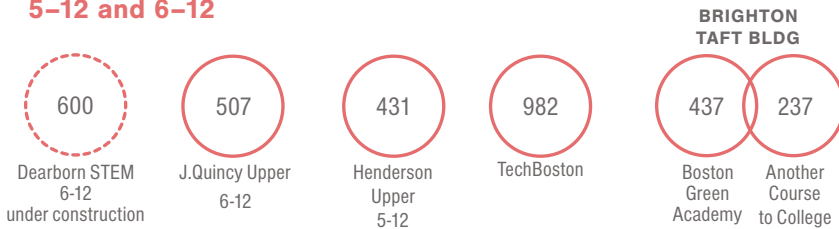
9-12 High Schools *Enrollment as provided by DESE - October 1, 2015*



7-12 High Schools



5-12 and 6-12



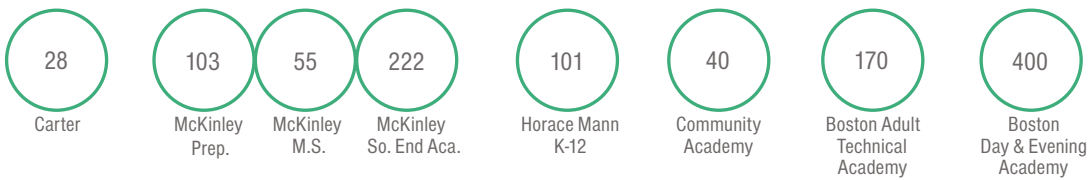
Vocational



6-8 Middle Schools *2,461 students | 6 schools in 6 buildings | 455 st/school*



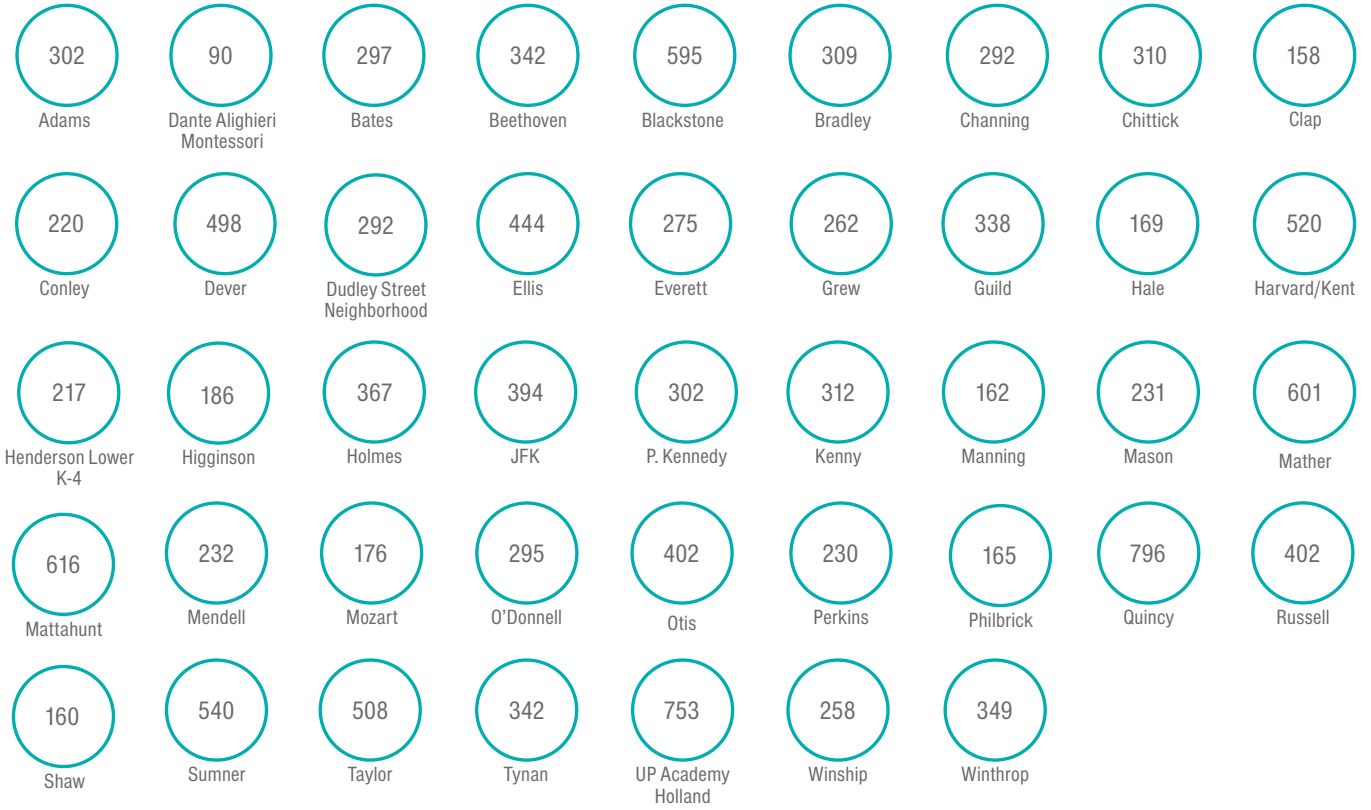
Special Schools *1,119 students | 7 schools in 8 buildings | 156 st/school*



K-8 Schools *16,517 st | 34 schools in 37 buildings | 492 st/school*



K-5 Schools *15,546 st | 43 schools in 43 buildings | 361 st/school*



EEC/ELC 979 st | 6 schools in 6 buildings | 163 st/school

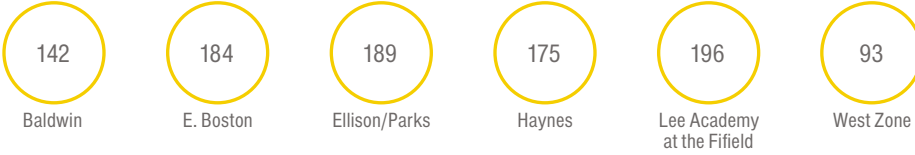
307 students K0/K1 in 6 buildings

310 students K-2 in 6 buildings

295 students grade 1 in 6 buildings

36 students grade 2 in Ellison/Parks

31 students grade 3 in Ellison/Parks



Non-EEC/ELC Buildings

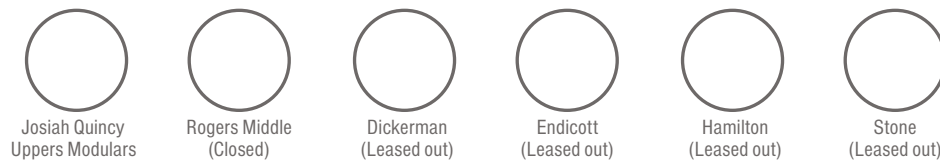
2,459 students K0/K1 in 69 buildings

Properties

Leased to BPS



City of Boston Properties



3: Context



Dearborn STEM Academy



Dearborn STEM Academy,
Jonathan Levi Architects

The 16 schools sharing eight buildings are:

1. Boston Green Academy, and Another Course to College (ACC moved to Elihu Greenwood Leadership Academy for the 2016–17 school year)
2. Dorchester Academy, and Community Academy of Science and Health
3. Jackson/Mann K–8 School, and Horace Mann School for the Deaf and Hard of Hearing
4. Margarita Muñiz Academy, and Mission Hill K–8
5. New Mission High School, and Boston Community Leadership Academy
6. West Roxbury Academy, and Urban Science Academy
7. West Zone Early Learning Center, and James W. Hennigan K–8 School
8. Burke, Jeremiah E. and Dearborn STEM Academy (while under construction)

134 buildings in inventory, broken down as follows:

- 120 BPS buildings in operation
- Three buildings under construction (Dearborn STEM Academy, Elihu Greenwood Leadership Academy [project completed in SY16 and ACC moved in for the 2017–2017 school year], and one of the Eliot Upper School buildings)
- Four buildings leased to other entities (Quincy E. Dickerman School, William E. Endicott School, Alexander Hamilton Elementary School, and Lucy Stone Elementary School)
- One closed building (William B. Rogers Middle School)
- One modular classroom building (Josiah Quincy Upper School at Josiah Quincy Elementary School)
- Five buildings leased from other entities (Greater Egleston High School; Edward M. Kennedy Academy for Health Careers [11-12], Snowden International School at Copley [two locations], and Warren/Prescott K–8 Upper School)



Boston’s School Building Portfolio and Background

BuildBPS breaks down the district’s building portfolio into eras of construction, from pre-1900 to present:

- Pre-1900 (11 buildings)
- 1900–1939 (72)
- 1940–1959 (8)
- 1960–1984 (33)
- 1985–present (10)

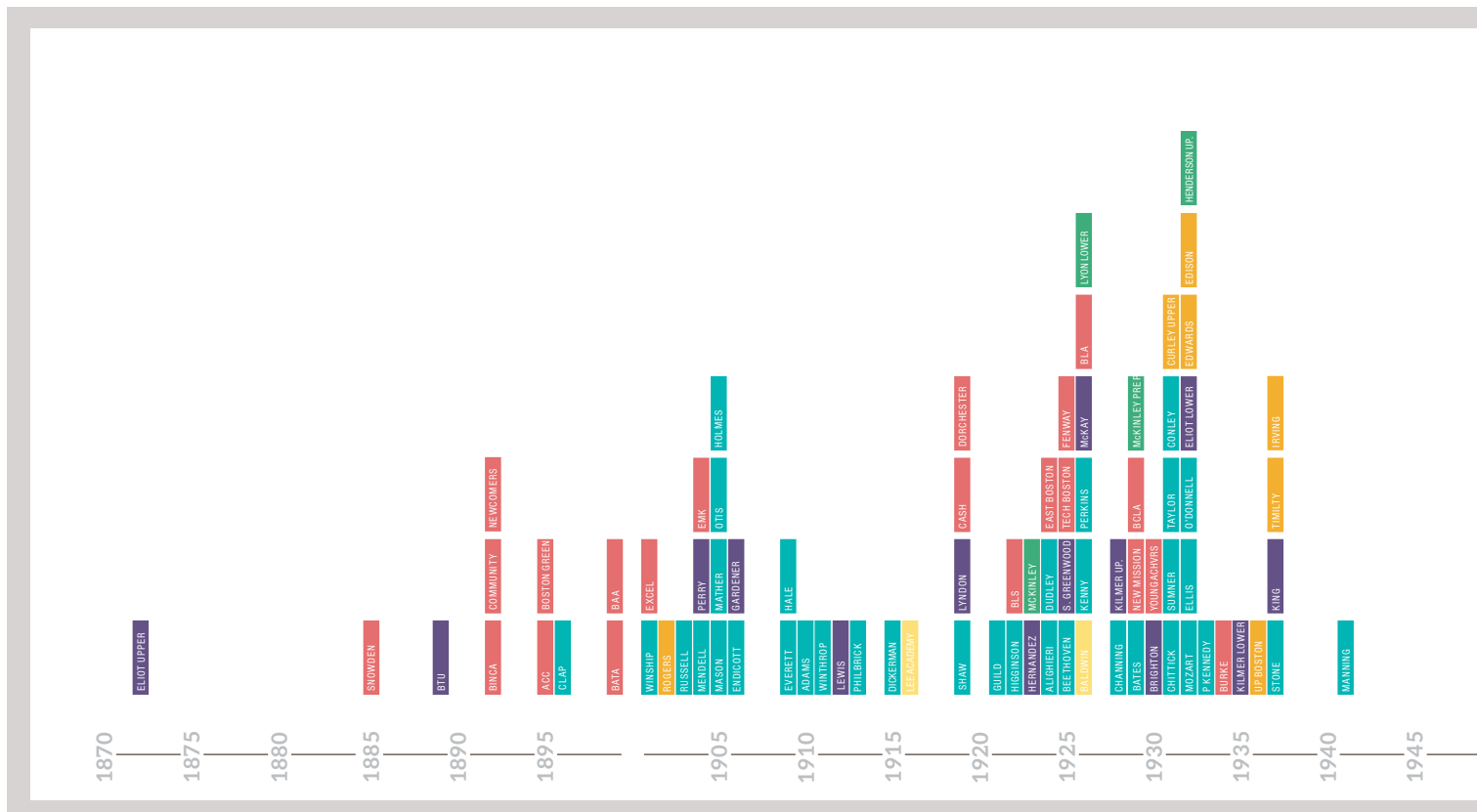
Each era has characteristics that reflect both the educational pedagogy and construction means and methods of the period, with some overlap between certain eras.

There are two time periods that warrant more detailed explanation: Pre-World War II, which includes eras that share some characteristics; and the 1970s, a period of significant construction with very distinct pedagogy and building systems.

Pre-World War II School Buildings

Although the characteristics of school buildings vary considerably, schools built prior to World War II, in general, share a number of similar features.

Elementary schools were designed and built as “neighborhood” schools. Most students walked to school and went home for lunch. In the earliest-built schools, desks and chairs were bolted to the floor, and classrooms were set up for teacher-focused learning. These buildings often lack large core spaces, such as gymnasias, cafeterias, and media centers, as well as elevators, toilets on multiple levels, ramps, and proper mechanical service space. The thicker, sometimes bearing, wall construction and wide hallways translate to low overall net-to-gross ratios, (refer to Section 6 Capacity sub-section). As a result, much more of the school footprint consists of non-functional space.





Historic

Typical characteristics include:

Early Education and Elementary Schools

Classrooms:

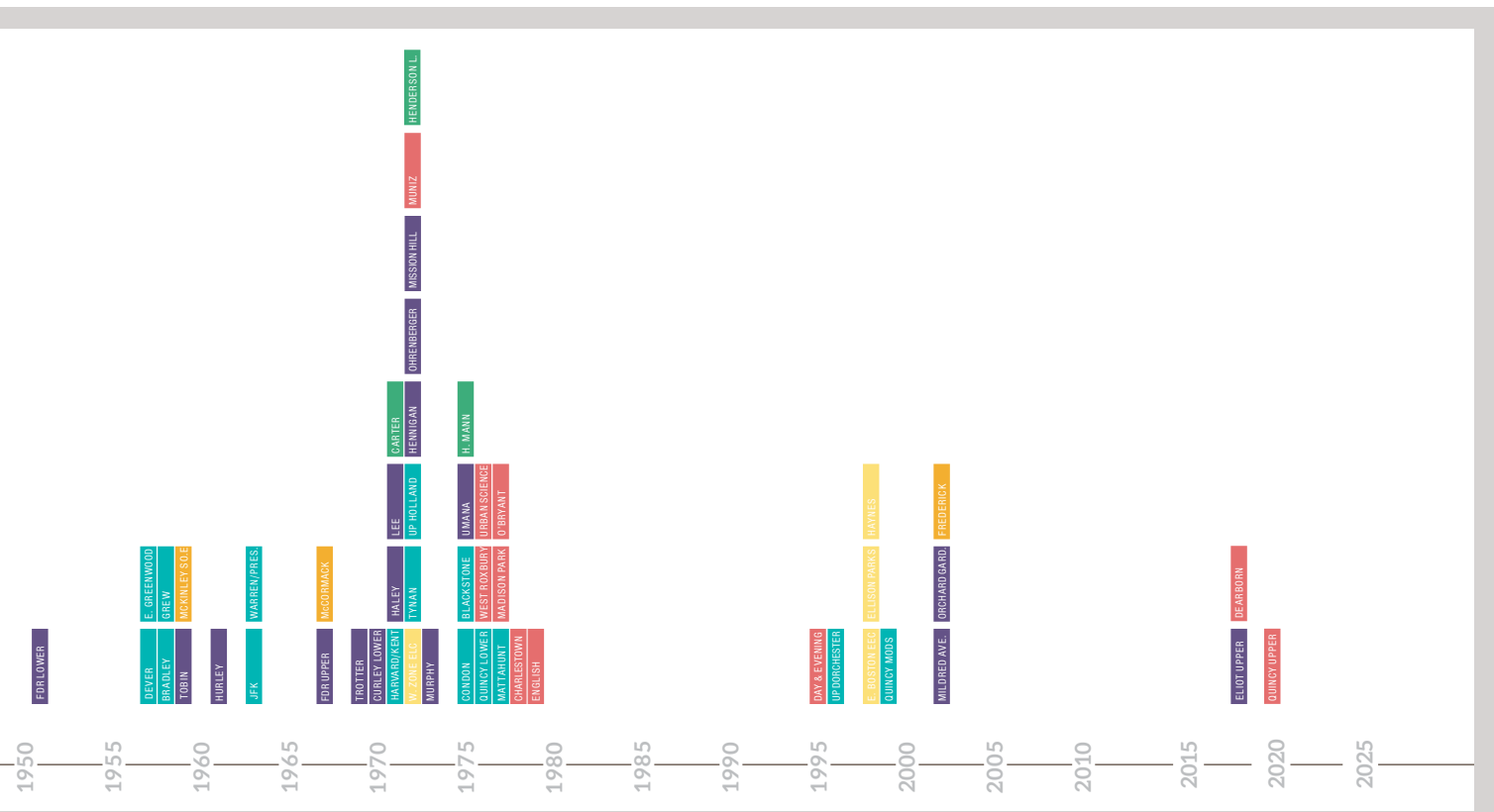
- Pre-K and K, rooms are generally undersized, and **rarely have toilets**.
- Many K0 and K1 programs are housed in small programs (often, a single classroom) throughout elementary and K–8 schools.
- Classrooms are **typically small**, many between 650 and 700 square feet, compared to today’s standard of 900 to 1,000 square feet as set by the MSBA.
- Classrooms often have a **single teaching wall**. At the time of construction, everyone faced forward, necessitating only one chalkboard. A number of schools have been retrofitted with additional markerboards, but general overcrowding and the placement of informal storage and book shelves often impede teachers’ access to the boards.
- Classrooms **lack organized or built-in storage** for teachers and students, often resulting in informal storage systems that give a cluttered look and further reduce usable classroom area.



Current Pre-WWII



Modern 21st Century Classroom



3: Context

- Classrooms lack proper ventilation. Most classrooms were designed with gravity ventilation systems, consisting of exhaust grilles, often in the ceiling of coat storage areas, with ducts to the roof and a wind-driven turbine vent. These systems relied either on the wind to initiate convection, or, without wind, simple convection. Most have long since been blocked up to save energy and reduce heat loss. Other ventilation systems in the district include the following:
 - Operable windows (weather-dependent use): Today, limit stops are recommended on operable windows for child safety reasons.
 - Unit ventilators: Certain schools use these, with some units as old as 80 years. These systems are often inoperable, inefficient, and incapable of filtering air, and many have lost their connection to outside fresh air due to improperly designed window replacement projects.
- Handicapped Accessibility: Although elevators have been added to some schools, many are without. Therefore, many buildings do not comply with ADA standards. Other building components that do not meet handicapped accessibility standards include:
 - Toilet facilities (availability, size and configuration, location)
 - Stairs (rise and run, nosing, handrail rails)
 - Doorways (push and pull clearances, hardware)
 - Signage (raised letters, Braille)





Small school, small site

- Many schools were designed with toilet facilities only at the basement level. Although plumbing code allows for children to travel one floor to access toilets, buildings of this era are often three and four stories tall, and almost none have in-classroom toilets for pre-K and K classrooms.
- Despite not being designed to be occupied as classrooms, many of these schools have teaching areas in unventilated basements. The basement floor, wall, and ceiling surfaces are often rough construction, and acoustics is often an issue.
- Many schools have been modified to include space for cafeterias and play rooms, though they are typically undersized and unventilated.
- Most schools do not have appropriate kitchen preparation or serving areas.
- Some buildings lack a gymnasium.
- Many schools lack adequate temperature-control capabilities, resulting in spaces being too hot or too cold.
- Many schools were constructed on small urban sites, with limited or no on-site parking and outdoor play areas.

Middle Schools and High Schools (Secondary Schools)

Middle schools (at the time of construction, junior high schools) and high schools of this era share many of the same characteristics as elementary schools. Some middle schools and K–8 schools were likely built as elementary schools, while others were converted from high schools as they have become incapable of serving the grades for which they were originally intended.

There are some middle and high school buildings of this era that were designed with components that one would expect to see in today’s school buildings, including:

- Toilets at upper levels
- Ventilation systems (though not meeting today’s code requirements, if original to the building)
- Cafeterias
- Gymnasias



1970s-Era School Buildings

In the late 1960s and 1970s, Boston undertook a new school building program that saw the construction of approximately 30 new schools, all with common characteristics. Central to each school were open plans and the BOSCO building system. Despite issues with these design philosophies, the buildings were constructed using modern materials, (e.g., steel frame construction, allowing for adaptation to contemporary needs), and comprise some of BPS’s best building stock.

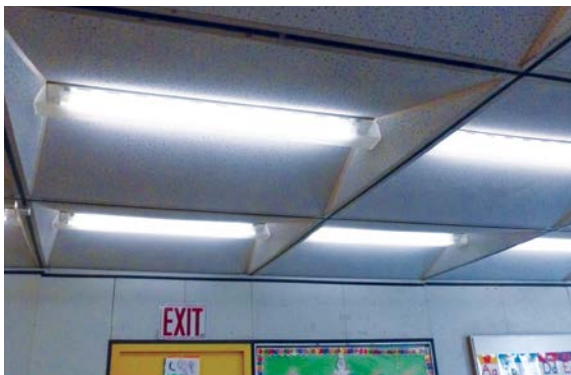
Open Plans

The schools were designed and constructed as “open plan,” meaning they had few partitions separating classrooms from one another and few corridors. Such was the educational pedagogy of the time. The concept promoted the creation of flexible teaching spaces that could adapt to large- or small-group, as well as individualized, instruction. These spaces were also intended to provide better

opportunities for team teaching. This open-plan concept was short-lived, however, for several reasons, including:

- Teaching spaces were often noisy, because of the lack of walls, coupled with mechanical system activity
- Visual distractions from teaching spaces open to each other
- A lack of professional development for teachers to understand how to best operate in the spaces

Today, some 1970s-era schools remain open-plan spaces, but most have been partitioned over time. Many floor plans did not easily accommodate partitioning, resulting in small, large, or oddly shaped rooms.



BOSCO Building System

The BOSCO building system was one that incorporated a standardized 5'x5' planning module, movable partitions, and standardized column spacing. The system was intended to allow classroom walls (e.g., partitions) to be rearranged quickly and inexpensively, to accommodate different space needs or changes to teaching methodology. Electrical and mechanical systems were standardized, with the intent of them being interchangeable and flexible.

Because the open-plan concept was not embraced by educators, spaces were partitioned off over time, to create individual classrooms. As part of the partitioning, ceiling systems, lighting, and ventilation/AC diffusers were replaced. It is likely that, in some cases, the necessary mechanical controls were not fully integrated into the revised configurations, resulting in teaching spaces that

lack appropriate ventilation and temperature control. These engineering systems now range from 40 to nearly 50 years old; in many cases, they have outlived their useful life. A number of these school buildings are due for substantial renovations, which may include partitioning for 21st century learning environments, other educational improvements, and building code and engineering systems upgrades.

“Modern” School Buildings (1985 to Present)

School buildings of this era that pre-dated the MSBA were partially an outgrowth of the Blue Ribbon Commission for Community Learning Centers reports of 1995 and 1996. Three EEC/ELC’s and three K-8 and middle schools were “feature” schools of this period, and remain some of the best school buildings in the district.

School buildings designed and constructed after 2008 have, for the most part, been built in partnership with the MSBA; the same will be true of future new school construction. Partnerships with the MSBA are highlighted by significant capital grant funding. The MSBA provides educational facility planning resources and space guidelines for both new construction and renovation projects. It also works with individual school departments to develop an “educational plan” for each project, which then allows requirements to be customized to meet the district’s needs.



BPS Grade Configurations and Pathways

Current Grade Configurations

U.S. public school districts are most commonly organized into the grade configurations of elementary (K–5), middle (6–8), and high schools (9–12), with perhaps a few anomalies to account for special programs. The change points of grades can differ by district, but whatever they are, they typically remain consistent across the school system. While this framework forms the general basis for the grade structure of schools in Boston, exceptions abound.

Some schools occupy more than one building. (For example, the Kilmer Lower School and Kilmer Upper School are both part of the Kilmer K–8 School). When viewed by “school,” there are 23 different grade configurations; when viewed by “individual buildings,” there are 30.

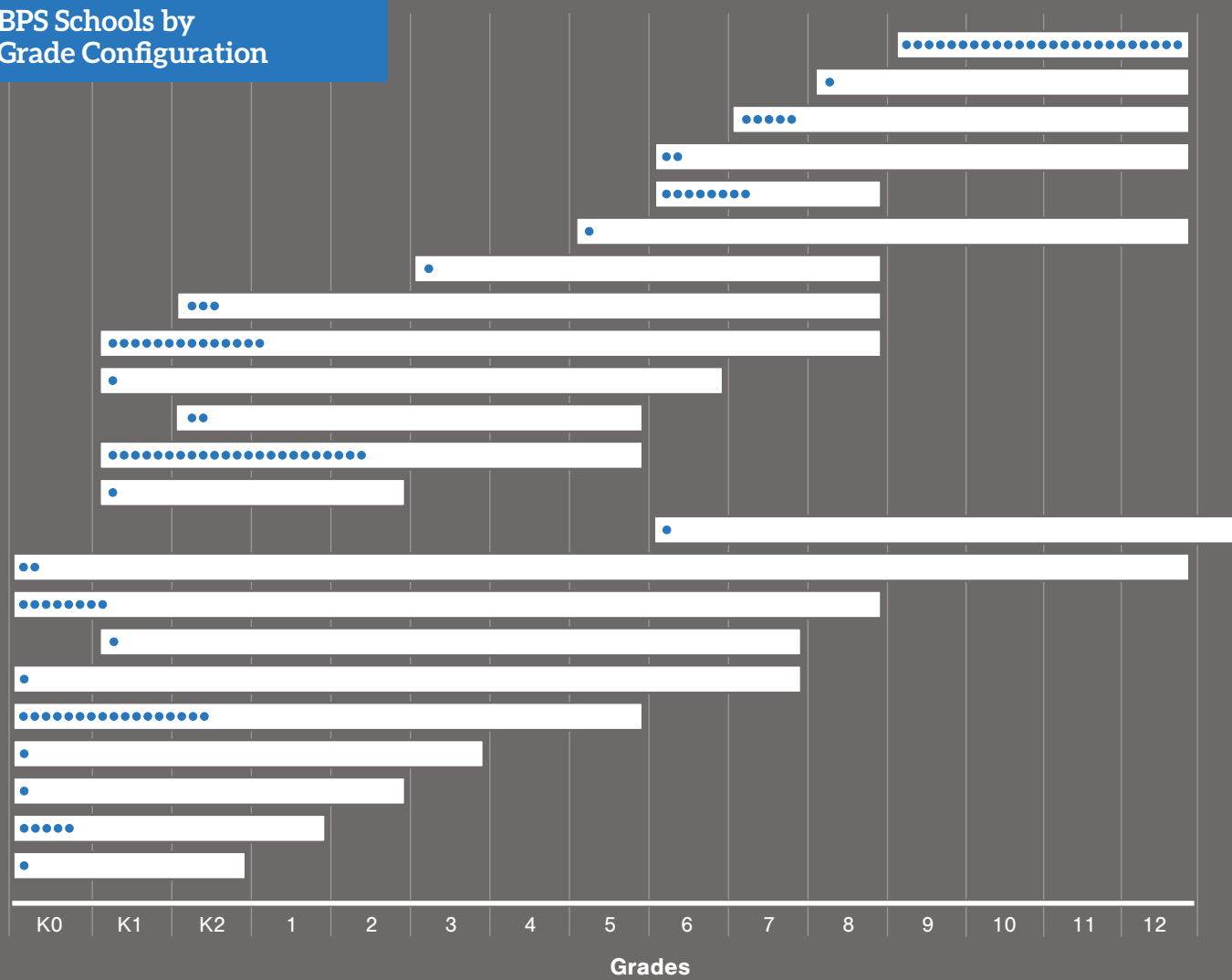
The following chart illustrates BPS’s unusually large number of grade configurations.

Superintendent Chang often cites reducing the number of grade configurations as an opportunity to promote “coherence” across the district. Doing so will improve the clarity and predictability of pathways for families. Additionally, simplified grade structures can make it easier to standardize and uniformly upgrade

curriculum, maintain equity, and allow for more regularity with matriculation pathways. Anticipated outcomes of these realignments include:

- Families understanding and being assured of pathways
- A reduced number of students leaving the BPS system

BPS Schools by Grade Configuration



○ One school with configuration

Grade configurations need to take into account numerous factors, including:

- Community input
- Educational pedagogy
- Capacities of current building inventories, considering needed spaces that may not exist at present (e.g., music, art & media centers, etc.)



Most often, school systems take on a pyramidal configuration, with a large number of elementary schools feeding fewer middle schools that, in turn, feed fewer high schools. As illustrated in the following graphic, BPS has a rather thick, almost cylindrical, configuration. This is, in large part, because of the multiple grade configurations that serve grades 6 through 8 and the large number of high schools. Refer to bubble diagrams on pages 60–63 of this section.

BPS lacks defined pathways from pre-K to grade 12, with few exceptions; the strongest pathways that do exist are in between pre-K and grade 8. Some of these are in single K–8 schools, while others are schools that pair buildings serving the lower and upper grades (similar to the aforementioned Kilmer example).

Issues That Impact Pathways

Student Movement

The current inconsistency among grade configurations presents significant challenges in students embarking on a logical, predictable educational pathway. It appears that, for BPS, student movement between schools, as well as in and out of the system, is significant. Although this movement is well known, it necessitates discussion and review. Major contributors are:

- AWC for grades 4, 5 and 6: Since AWC is offered only in some elementary, K–8 and middle schools, many students transfer, typically between grades 3 and 4. Those schools without AWC then “backfill” seats of leaving AWC students.
- Student transfers to out-of-district schools (primarily, charter schools): Many charters begin at grade 5, providing students/parents an alternative to BPS middle schools. In addition to students transferring out, others are using those openings to move to a school higher on their “choice” list. Students enrolling in parochial high schools are another source of student movement.
- Students leaving K–8s and middle schools to enter exam schools: As a byproduct, there appears to be a large amount of “backfilling,” with students transferring to a school higher on their “choice” list (generally, an academically higher-performing school).



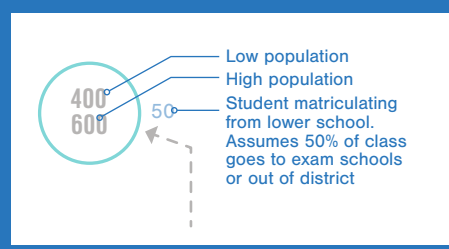
K–8 Paired Schools

Over the last few decades, a number of schools in BPS were organized into multi-building campuses for K–8 typology schools. The growth of this model has compounded some of the challenges associated with serving all middle grade school students in an equitable way:

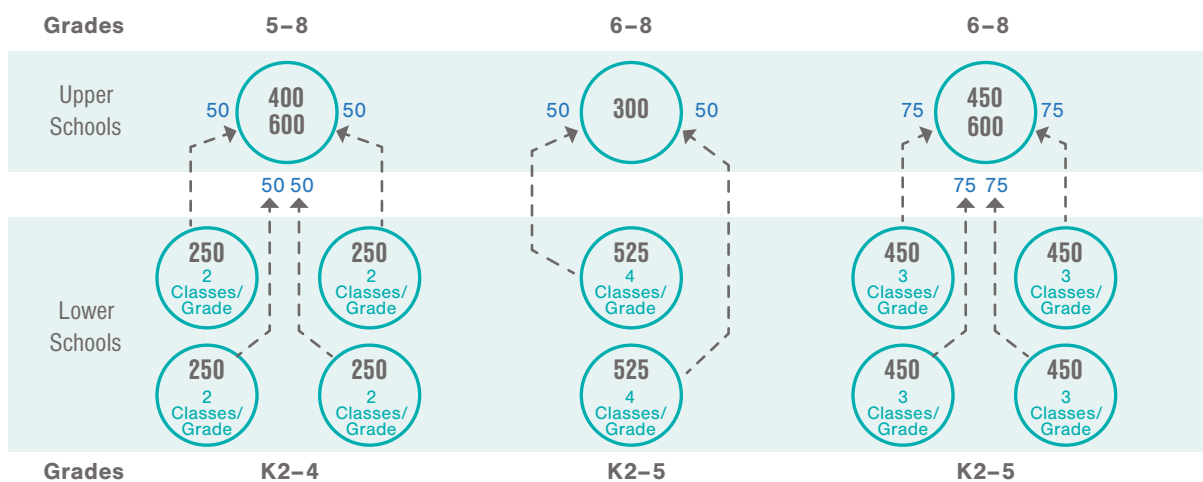
- Exam schools’ grade 7–12 structure serves high achieving students well, but in a traditional junior high school environment. The larger size of these schools creates inherent schedule and space-use conflicts similar to K–8 schools.
- Uneven Advanced Work Class (AWC) distribution tends to prepare students for the exam school model and impacts the upper grades of K–8s, with some schools gaining a reputation as feeder schools for the exam schools.
- Few students choose into the middle schools, and assignment into the schools makes them inconsistent in their feeder patterns over time.
- There is limited appropriate grade 7 and 8 programming within converted older elementary school buildings, due to lack of spaces and the smaller scale of these buildings.

- There is a lack of student critical mass for effective team-teaching models, which work best when sharing 4 to 5 teachers with specialty disciplines for 100 to 125 students per team. Some 7th and 8th grades in the K–8 schools have under 50 students per grade.
- Very small grade 7 and 8 populations are spread across a great number of facilities, impacting the type and number of specialty courses that can be offered.

The hypothetical model below demonstrates an example of creating additional “paired” schools at the lower grade levels (minimum two strands) and linking to upper school campuses with structured team-teaching and appropriate programming for a more cohesive and coherent pathway for middle school students. Over time, in this example, it would become easier to predict the number of students matriculating to exam and pilot/magnet schools or those electing to stay within the K–8 structure.



K–8 Paired Schools

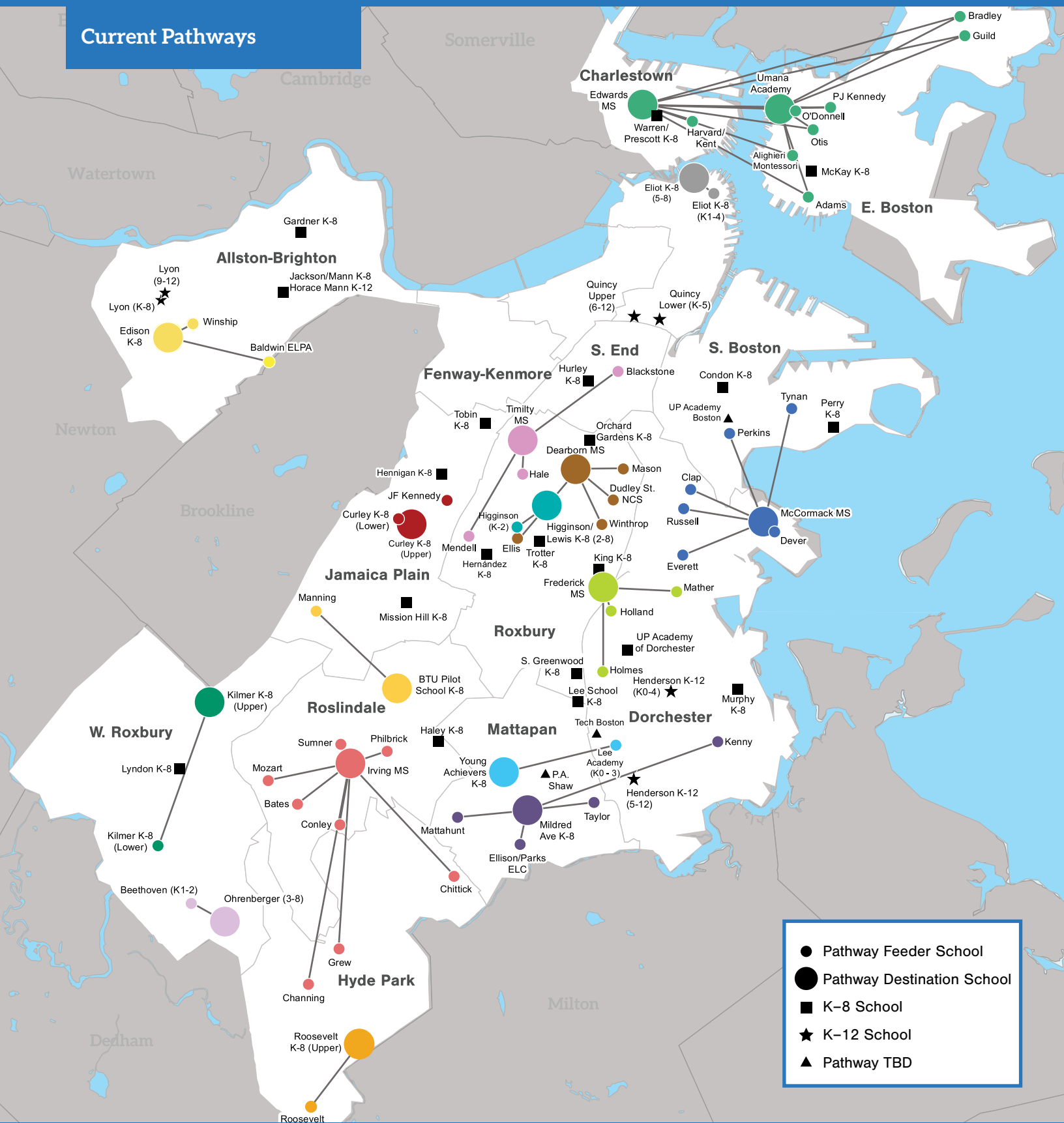


This diagram represents a hypothetical way for BPS elementary and K–8 schools that lose 50% of their 7th and 8th grade population schools to create “sister” or shared schools. By creating partner schools, a critical mass of students and consistent feeder patterns are established, while more effective and age-appropriate team-

teaching and specialty programming can be effectively applied. School pairings can be within a neighborhood or across neighborhoods depending on compatibility and equitable transportation. It is important that the shared schools foster an environment of community.

By limiting the groupings, examples like this can avoid the Washington Irving Middle School example illustrated earlier in this section on page 52.

Current Pathways



Student Assignment and Choice

No examination of BPS as a school system can ignore the complexity of the process by which students are assigned to schools—and the resulting need for widespread yellow-school-bus transportation. Dating back to the desegregation plans that began in the 1970s, Boston has maintained various forms of a student assignment policy that includes significant parental choice and student movement across the City's neighborhoods.

The scope of BuildBPS does not include any analysis of student assignment outcomes or parental choice patterns. However, given that BuildBPS is heavily focused on how school buildings are utilized, it is important to acknowledge the role of the assignment policy, in order to meet the needs of the district's students and families.

Student Assignment Policy

BPS uses a home-based policy to assign students to pre-kindergarten through grade 8. All BPS high schools remain citywide options for students.

Foundational to this policy is:

- Using the student's home as the starting point (BPS outlines numerous criteria for choosing schools, based on distance from home, school program offerings, school academic performance, and the idea of multiple options)
- Offering families a range of choices for their children's education
- Giving priority to the siblings of enrolled students
- Supporting English-language learners and students with disabilities

Understanding the Home-Based School Choice Plan

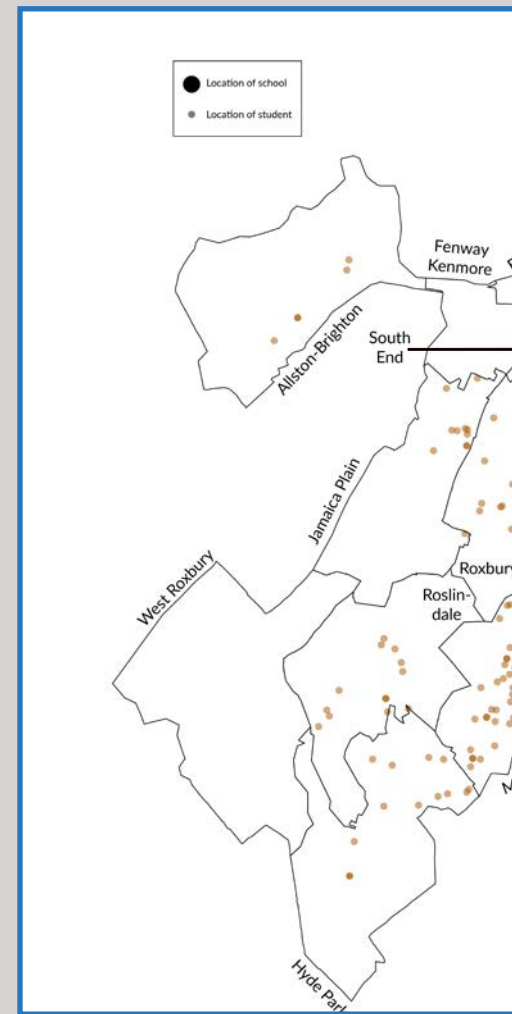
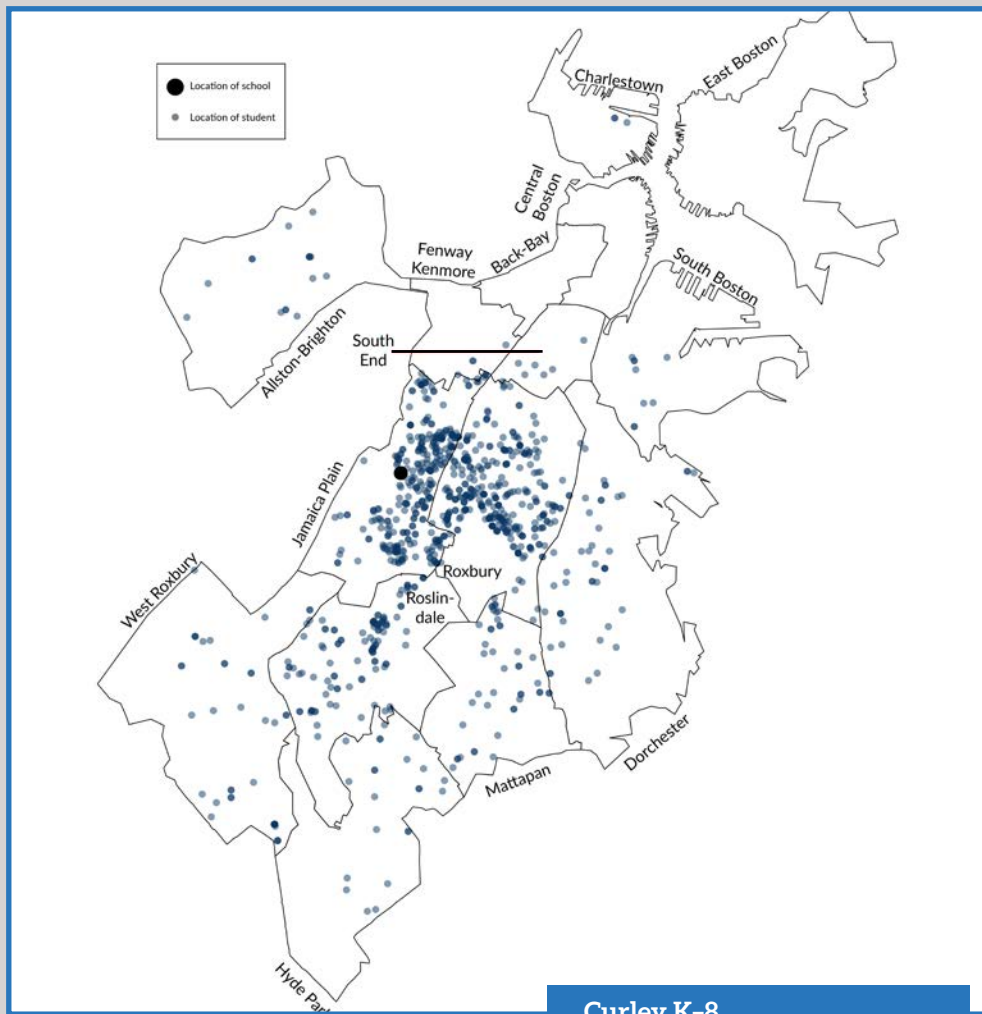
What are "priorities?" In many instances, a school will not have room for every student who lists it as a choice. When this occurs, a computerized program assigns students based on choice and priorities, as well a random number assigned to each applicant. Sibling priority is BPS's highest priority; others include EEC/ELC priority (for entry to grade 2) and East Boston priority (to minimize transportation in and out of East Boston).

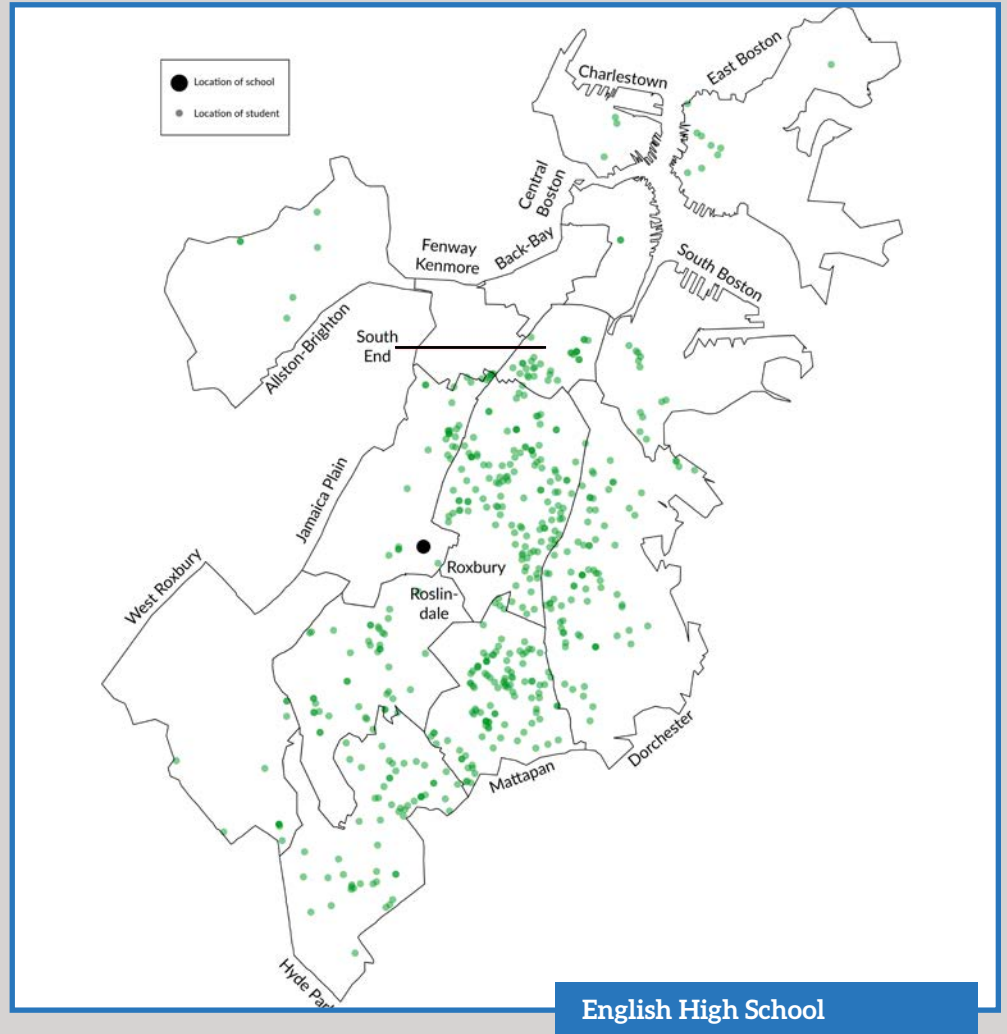
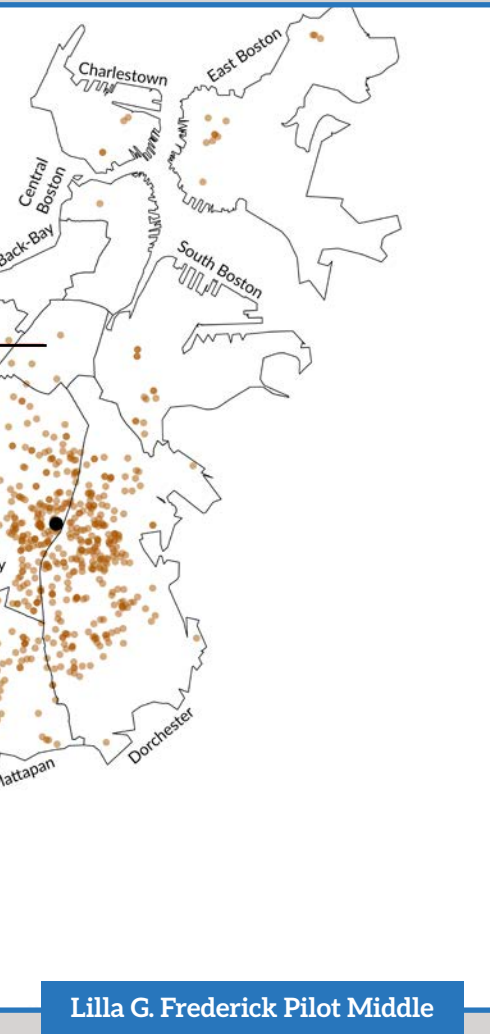
The reality of student distribution across BPS

Many students travel far from home to the school they have chosen or to which they were assigned, reasons for which are innumerable. Ramifications of this fact include:

- Many young children traveling far from home to attend school
- Children spending a great deal of time in transit to and from school
- Significant operational costs for transportation

The following three maps show where students live (colored dots) in relation to the Curley K–8, Lilla G. Frederick Pilot Middle, and English High Schools (black dot). These schools have student populations that geographically span large parts of the City.





Lilla G. Frederick Pilot Middle

English High School



4

Participating Firms:

SMMA
MGT
Mass Insight
New Vista

Educational Planning

Purpose and Charge

Approach and Methods

BPS Educational Vision

Re-Imagining and Re-Inventing
Schools to Achieve BPS's
Educational Vision

Re-Imagining Grade
and Portfolio Configurations
to Achieve BPS's
Educational Vision

Advisory Committee Members

Build **BPS**

back civics! #farmtoschool

IMAGINATION

Stronger collab w/ students & Parents Form Local libraries museums, camp

specialized pedagogy for ages 3-8 and 8-12

More smaller classes

Hands on learning every day

More Stems Programs *especially for 3 grades

More Spoken Word Opportunities! #Grabthatmic

Arts

Bring back more physical

Good lunch & breakfast please

Technology for students in every school!

Music in Schools

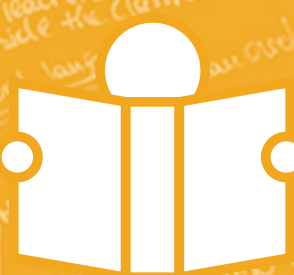
More Teachers inside the classrooms

access to

enrollment

Structure programs with more quality teachers

more transpare



accountable

Do what you want

Increased resources + Staff

↳ Early Intervention

↳ Early Evaluation + IEP's that are truly individualized!

afford

Nice

Love

MOMMY

Education

Franny

Guidance

schuten



de kids

Elliot Teachers

page Access

BPS

Boston Public Schools



Artist for HUMANTTY

More math



10LM9B
O+E=
E X B=
H 10=
H 4=
MIX 100=
BIX 102

Reading

1 in of
I imagine
is more
H por - any
shon Noige
JACK

Classes

Educational Planning

This section presents the Educational Vision for BPS as developed by Superintendent Chang, Chief of Education Rahn Dorsey and BPS’s senior management team and is informed by priorities and principles that emerged from the School Committee Strategic Framework, Superintendent’s 100-day Plan, the High School Redesign Initiative, BPS Strategic Implementation Plan and the Educational Planning Advisory Committee.

Purpose and Charge

The Educational Planning Advisory Committee was established to work with the Superintendent’s leadership team on the alignment of priorities for modernizing school facilities with BPS’s educational vision.

The BPS educational vision is core to the development of the BuildBPS initiative. The district needs an ambitious ideal for the caliber of student it intends to produce, as well as clear pedagogical priorities and well-defined instructional and support strategies. A framework—like the educational vision—that articulates what BPS’s teaching and learning foci will be, and how the district intends to deliver instruction and support, is also necessary for the development of programming, tools, and physical spaces that fully support the district’s educational agenda. It is not overstating the matter to say that the educational vision is the foundational element of any master plan.



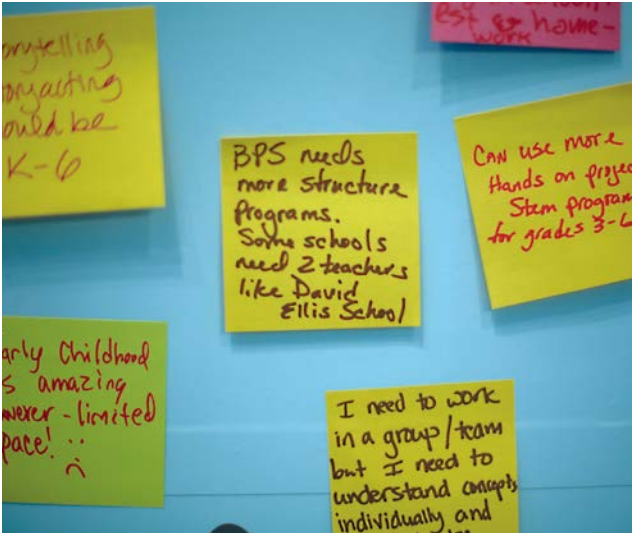
Approach and Methods

The BuildBPS process began by revisiting and sharpening the district's educational vision. Between January and June of 2016, the Educational Planning Advisory Committee—composed of district, City, and school leadership; and BTU, parent, and student representatives—met to:

- Review BPS's vision statements, to understand the strategic direction that the district has pursued in recent years and to provide input regarding elements that have evolved under Dr. Tommy Chang's leadership;
- Explore space and facilities options that might enhance BPS's educational vision; and
- Examine and understand the “logic” (and inconsistencies) behind BPS's building locations, feeder patterns, and grade configurations.

As part of the process, key BPS staff delivered presentations of their departmental goals to, and led discussions with, the Educational Planning Advisory Committee. Input provided by the committee was then used by a smaller team of district leaders to craft the educational vision, which:

- Grounds all of its elements in BPS's guiding values of equity, coherence, and innovation;
- Synthesizes an updated vision of the typical BPS graduate, drawing, in part, on work done previously by the Boston School Committee and through BPS's High School Redesign process;
- Outlines the knowledge and skills that the district expects all students to acquire, reflective of a whole-learner approach to student preparation;
- Proposes two important sets of principles: the first, providing a guide for classroom approaches to teaching and learning; the second, broad guidance for the design of learning spaces; and
- Includes a set of objectives that, when achieved, will enable BPS to be a more educationally dynamic, logical, and efficient system.



Boston School Committee Strategic Plan: Aspirations for BPS

The following aspirations are outlined in the Boston School Committee’s Strategic Plan; one of the documents used to inform the Education Vision that follows.

1.

BPS will graduate all students as life-long learners and engaged global citizens, well-prepared for post-secondary pathways.

In addition to continuing to increase the graduation rate across the district, BPS is focused on improving the outcomes of students after graduation.

With the inclusion of the term “post-secondary pathways,” Boston Public Schools aims to expand the definition of post-graduate student success. BPS is committed to helping students build the 21st century knowledge and skills necessary to succeed in whatever path they choose, whether college or career.

2.

BPS will be a district of all high-performing schools, eliminating both the opportunity gap and the achievement gap.

BPS recognizes the ways in which race, ethnicity, socioeconomic status, English proficiency, community wealth, familial situation, and other factors perpetuate lower education attainment for certain groups of students, and is fully committed to eliminating the achievement gap that persists across the district.¹ Boston believes that a lever for addressing this is to focus on the opportunity gap: the disparity in access to quality education resources needed for all children to be academically successful.² BPS will work diligently to eliminate this opportunity disparity both within and across schools. The district cannot allow pockets of high performance to define the success of the district. Rather, BPS must urgently address our most struggling schools and our most struggling student populations in order to close achievement gaps across Boston, and ensure each and every student has the opportunity for post-secondary success.

¹<http://edglossary.org/opportunity-gap/>

²<http://www.otlcampaign.org/issues/opportunity-gap/overview>

3.

BPS will recruit, hire, develop, support and retain highly effective, culturally proficient school and district leaders, teachers, and staff who are held accountable for improving student outcomes.

As research has repeatedly demonstrated, effective educators drive better outcomes for students. With this in mind, the district will continue to push bold leadership and talent development initiatives that create the proper conditions for attracting, nurturing, and retaining the highest caliber talent. In particular, the district will place heavy emphasis on recruiting culturally proficient staff, meaning individuals who demonstrate the skills and knowledge to effectively serve students from diverse cultures and socioeconomic backgrounds. The district will also continue to improve the timeliness and quality of district support to school-level staff in an effort to continuously foster an environment of mutual accountability between schools and the central office.

4.

BPS will make effective and equitable use of all available resources.

Boston Public Schools has made great strides toward equitable resource allocation with the implementation of a weighted student funding formula, which ensures that all students are funded equitably, regardless of which school they attend. Boston will build on this work by continuing to emphasize equitability. “Equitable” does not necessarily mean the same for all, but rather that resources (dollars, time, and people) are allocated based on student need. For example, a student with a disability may be allocated a higher dollar amount than a student in general education due to differing needs.

5.

BPS will strengthen student, family, and community investment to enable student success.

Driving sustainable change requires the combined efforts of an entire community. The district envisions a system in which each BPS school is deeply embedded in and responsive to the needs of the immediate surrounding community. This community-centered education will ensure that 1) the social and moral context of the community is deeply integrated in the cultural fabric of the school, and 2) schools provide their students with access to the full wealth of education and civic resources available in the city. This collective community investment will allow all students to better apply what they’re learning to the world around them and to connect their studies to personal, real-life scenarios. Together, strong family and community engagement will ultimately help drive student success across a number of different outcome measures.

BPS Educational Vision

The world of today and tomorrow is vastly different from the world of yesterday for which our schools were designed and built. Today and tomorrow are propelled by innovation: smartphones, social media, artificial intelligence, robotics, nanotechnology, biotechnology, the internet of things, alternative energy, and forces we have not yet imagined will shape the lives of the next generation. Our schools, on the other hand, were created in and for an industrial economy, steady-state classrooms that produced a standardized workforce for manufacturing and service jobs. As the nation's first school district nurturing the talent for a city that defines the cutting edge of the Innovation Economy, Boston and BPS are uniquely positioned to take the lead in redesigning schools to bridge the divide between past and future. We can lead the nation in developing next generation schools—by reimagining both the physical design of our spaces and transforming the vital learning that happens in these spaces.

The 10-year Educational and Facilities Master Plan provides the City of Boston and BPS a series of tremendous opportunities to envision, create and renovate learning spaces to support and challenge our students to see a world beyond their own and be a leader in it. Our current kindergarten students will be in 10th grade in 2027; while we cannot predict the next game changing technology or industry, we can create learning environments that launch all students into a successful future.

BPS Core Values

In consultation with our community, we have arrived at three core values to guide our reimagining efforts. These core values speak to who we are as a community, and they move us towards who we want to become. Bostonians value equity, we value coherence, and we value innovation.

Equity

Priority

To eliminate system bias and provide authentic learning opportunities for all students.

Goal

We will develop our future leaders into self-determined, independent learners who are able to pursue their aspirations. We will open the doors to the Innovation Economy for all our learners.

Context

Everything we choose to do, or not do, can widen or narrow opportunity and achievement gaps. While Boston is proud that we are one of the highest performing urban school districts in the country, and we continue to invest in education (\$>20K per child), there are consistent and persistent opportunity and achievement gaps that exist in access to advanced coursework and enrichment, as well as student achievement that cut across racial, socioeconomic, linguistic, and gender lines. There are also opportunity gaps in access to the exciting and lucrative jobs of Boston's Economy. BPS will make decisions—instructional, staffing, financial, etc.—using an equity lens so that students who are most in need of support receive it.

Coherence

Priority

To focus BPS' educational model on teaching and learning, and build collaborative, caring, and efficient ways to deliver resources to students, families, teachers, and staff.

Goal

We will reduce inconsistencies and inequities in the way our schools and district are organized in order to create a system of care. We will make our operations and learning environments student-centered.

Context

Creating coherence is essential to improving delivery of instruction and services to students. It makes the system more manageable for families, educators, and administrators, and it makes the system itself more sustainable. There is currently a great deal of incoherence—redundancy and confusion—in our system. For example, BPS currently has over 20 different grade configurations. We have schools that are K0–2, K–5, K–6, K–8, 7–12, 9–12, and many more. Each time a learner moves from one school to another, there is a risk of relationships and learning paths being disrupted. Fewer transitions in a learner's educational career strengthens their learning pathway and development.

Innovation

Priority

To build a culture of change that generates new solutions at every level of BPS from classrooms to schools to the central office.

Goal

We will enable our students and employees to become leaders, advocates, entrepreneurs and innovators for Boston and the world. We will open the doors to the Innovation Economy for all our learners, youth and adult.

Context

For our system to become a learning-centered one that generates new solutions to local and larger problems, we must grow everyone's capacity to empathize, analyze and define, ideate, prototype, and test. We must grow the agency of every member of our system so they feel empowered to make the organization better by making it more focused on the needs of our students. We need to unlock the power of technology to bring coherence and equity to our system: by personalizing learning for adults and students so that routine tasks can become automated and creativity unleashed, by making data responsive to the needs of learners, by growing our communications and community-building capacity within and across schools, the central office, and the community. And we must design spaces that enable all these things to happen.

BPS Vision for Student Success

BPS is clear that every student must possess a special blend of academic and technical knowledge, life skills and personal qualities to excel in any number of colleges and universities, thrive in an ever-evolving economy and assume the reins of leadership in Boston and places beyond. As we look out toward the future, we believe that our academics and enrichment have to equip BPS students with:

- Learning and Innovation Skills: Creativity, Critical Thinking, Communication and Collaboration
- Information, Media and Technology Skills: Information Literacy, Media Literacy, ICT (Information, Communications and Technology) Literacy
- Life and Career Skills: Adaptability, Initiative, Social and Cross-Cultural Skills, Productivity, and Leadership

If BPS helps students build relevant knowledge, skill and qualities, then they will be:

- Career Ready
 - Fundamental to our work are the skills, knowledge, and capacity necessary for college and career. We must be clear about what capabilities future workers will need and design our system to develop these in our kids.
- Equity Oriented
 - Where do we learn about injustice? Where are the opportunity gaps? The actions of the adults, peers, and systems in our lives are read daily and studied more closely than any textbook. BPS has the ability to shape significant elements of our kids' early experiences, to bend these to speak better to the value of equity.

- Community Contributors
 - We don't just want to climb the ladder, but to reach back to pull others up too. Our communities are a reflection of ourselves, and our students are critical in shaping what these look like over time. Our schools are communities in themselves, and we practice daily what each student can bring to theirs.
- Full of Agency
 - We want kids to see themselves in potential futures and to believe in their ability to affect change. School can help them recognize the role and potential of the individual.

The successful BPS graduate is one who, six years after graduating high school, is gainfully employed in a middle-skills job and a productive, contributing citizen who believes in his or her ability to effect change.

BPS Vision for NextGeneration Learning

In order to ensure that we are graduating students who are career ready, equity oriented, prepared to contribute to their communities and full of agency, our approaches to instruction and learning have to be modernized. The ways that we educate students have changed very little over the last 125 years, but the world has changed dramatically. While we've seen significant advancements in science, technology and innovation, K-12 education has seen fewer advancements. For example, high school graduation requirements have remained largely similar over the last 100+ years.

1ST SECONDARY SCHOOL YEAR.	2ND SECONDARY SCHOOL YEAR.
Latin 5 p.	Latin 5 p.
English Literature, 3 p. } . . . 5 p.	Greek 5 p.
" Composition, 2 p. } . . . 5 p.	English Literature, 3 p. } . . . 5 p.
German or French 4 p.	" Composition, 2 p. } . . . 4 p.
Algebra 5 p.	German 4 p.
History 3 p.	French 4 p.
	Algebra,* 2½ p. } 5 p.
	Geometry, 2½ p. } 5 p.
	Astronomy (12 weeks) 5 p.
	Botany or Zoölogy 5 p.
	History 3 p.
	<u>37½ p.</u>
	* Option of book-keeping and commercial arithmetic.
3RD SECONDARY SCHOOL YEAR.	4TH SECONDARY SCHOOL YEAR.
Latin 5 p.	Latin 5 p.
Greek 4 p.	Greek 4 p.
English Literature, 3 p. } . . . 5 p.	English Literature, 3 p. } . . . 5 p.
" Composition, 1 p. } . . . 5 p.	" Composition, 1 p. } . . . 5 p.
Rhetoric, 1 p. } . . . 5 p.	" Grammar, 1 p. } . . . 5 p.
German 4 p.	German 4 p.
French 4 p.	French 4 p.
Algebra* 2½ p.	Trigonometry, 2 p. ½ yr. } . . . 2 p.
Geometry 2½ p.	Higher Algebra, 2 p. ½ yr. } . . . 2 p.
Chemistry 5 p.	Physics 5 p.
History 3 p.	Anatomy, Physiology, and Hy- giene, ½ yr. 5 p.
	History 3 p.
	Geol. or Physiography, 3 p. ½ yr. } . . . 3 p.
	Meteorology, 3 p. ½ yr. } . . . 3 p.
	<u>37½ p.</u>
	* Option of book-keeping and commercial arithmetic.

In order to ensure that we are graduating students who are career ready, equity oriented, prepared to contribute to their communities and full of agency, our approaches to instruction and learning have to be modernized.

The table above shows a list of courses recommended by the Committee of Ten in 1894. The high school transcript of the future should communicate what students know and are able to do through measures of competency and micro-credentials.

Our students cannot afford to fall behind the times. In fact, the education that we provide in our schools has to anticipate the changes occurring in our communities, workplaces and across society. We have to integrate new ideas, tools and instructional methods into the learning routine if students are to be fully prepared to navigate, excel in and contribute to an ever-changing world. With this in mind, we are declaring that, in BPS:

NextGeneration Learning is rigorous and cognitively demanding.

“If we want students to develop the capacity to think, reason, and problem solve, then we need to start with high-level, cognitively complex tasks.”—Stein and Lane 1996

All Boston Public School’s students will be cognitively and socio-emotionally engaged in schools. They have to be prepared to meet tomorrow’s opportunities and challenges. Cognitive demand refers to the kind and level of thinking required of students in order to successfully engage with and solve the task. When school work is rigorous and cognitively demanding, it is aligned to grade-level standards, requires higher order thinking skills, requires strategic thinking and in many cases, involves complex texts. Further, rigorous and cognitively demanding work is designed for students to demonstrate their mastery of knowledge and skills and to apply each to discipline-specific and interdisciplinary tasks. Lastly, in math, rigorous and cognitively demanding tasks balance conceptual knowledge, procedural knowledge, and application.

NextGeneration Learning is differentiated and promotes equitable and full access to rigorous curricula.

Students bring a variety of skills, needs and interests to learning. Therefore, there should be not a one-size-fits-all approach to instructional goals, methods, materials, and assessments that work for everyone. Flexible approaches that meet the needs of individual students are critical. For example, Universal Design for Learning (UDL) is a framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn. We will achieve greater equity by not just addressing underachievement but by recognizing the assets and the diversity that all students bring to bear in the learning process.

In order for learning to be effectively differentiated, teachers have to be committed to knowing their students as learners and affirming their cultural and linguistic backgrounds. They must customize lesson plans, pacing and interventions based on what they know about students. Lastly, teachers will need to provide multiple access points to lessons and information, a variety of means for students to process new information, and many avenues through which students can demonstrate what they’ve learned.

NextGeneration Learning is “whole learner” focused, intent on nurturing young people who are intellectually inquisitive, socially engaged and emotionally resilient.

Learning must encompass every aspect of the individual—academic, social, emotional, cultural and physical. Students need learning

experiences that emphasize the skills of independence and resilience: communication, critical thinking, teamwork, financial literacy, conflict resolution, and empathy.

NextGeneration Learning is cross-disciplinary.

The world we live in does not silo information in the ways that our traditional educational process does. In the modern workplace, information is contextualized and integrated. Our teaching and learning will mirror this cross-disciplinary reality, seeking opportunities to bring together multiple subject areas in applied settings.

NextGeneration Learning is multi-modal, multi-channel and technology-enabled.

The work of the future will require individuals to be comfortable toggling between modes, receiving, synthesizing, and communicating information continuously. This will occur in a range of contexts, with information access, learning, and communication taking place in traditional physical forms, digital spaces, and face-to-face interactions.

NextGeneration Learning demands collaboration among all school community members (e.g., student-teacher, student-student, teacher-teacher, teacher-parent, etc.).

Today, too much teaching and learning is done in isolation. Our work environments, however, expect teams to work together to tackle problems and to generate new solutions. We will develop this capacity in our students by practicing collaborative and contextual methods in our teaching and learning.

These NextGeneration Learning elements reflect and activate BPS's core values—promoting educational equity, creating greater system logic or coherence across BPS and encouraging innovation to accelerate needed change and transformation.

NextGeneration Learning is expansive and is inclusive of a wide variety of learning opportunities beyond school classrooms.

Meaningful connections that extend beyond the classroom help our students build future pathways to success. Learning in and out of the classroom challenges students to develop as critical and strategic thinkers: putting what they learn in context, and helping them make connections. Partnerships with a rich array of business, community, government, and higher education resources connect learning in the classroom to meaningful work and pathways to future success.

NextGeneration Learning promotes cultural and linguistic sustainability.

NextGeneration Learning uses the cultural knowledge, prior experience, frames of reference, and performance styles of diverse students to “make learning encounters more relevant and effective in promoting academic achievements” and to teach “to and through the strengths of students” (Gay, 2000). Such an approach is validating and affirming of the cultures, languages, and identities that students bring to BPS classrooms, viewing them as assets and keys to unlock powerful instruction rather than hindrances to learning. BPS will use Culturally and Linguistically Sustaining Practices to promote student agency and social justice, minimize social threats and maximize social connections and promotes a more positive working environment through cross-cultural exchange and understanding. If viewing this report in PDF format, please visit the following link for more information:

[Dr. Chang's personal experience on these issues illustrates Embracing Diversity](#)

BPS Vision for NextGeneration Learning Spaces

When considering what type of learning spaces we want, we need to consider what type of learners we want. NextGeneration learning should be active, collaborative, playful, creative, and self-directed. It should foster collaboration and small group learning; it should facilitate the use of new technologies and integrate content across the disciplines.

The ways that school space is arranged and classrooms are set up say a lot about the kind of instruction we can expect to see in them. Think about who is positioned to see and hear the person leading a discussion (student or teacher), the space a teacher occupies in the classroom (can she easily move around to attend to different student needs, or is she the “sage on a stage” doing the thinking for the students?), the way that students are able to collaborate (with flexible seating and tables), the light and temperature within the learning space (are students and teacher comfortable). All of these factors, and others, have an impact on what kind of teaching and learning experience a student has.

In BPS, space needs to be designed to improve teacher and student morale and boost student achievement; improve the health and safety of school communities; attract and retain teacher talent in schools for longer; and improve attendance for teachers and students (21st Century School Fund, 2011). If we wish to promote NextGeneration learning, we need to shift away from the “egg carton” designs of traditional classrooms and schools where learning tends to be sedentary, passive, and controlled. We need schools that design, create, and use space differently to promote a modern approach to learning.

Following, we outline BPS’s vision for NextGeneration learning spaces. This vision is responsive to the elements of NextGeneration learning presented above. It is also intended to guide the facilities-related recommendations that follow in this report and facilities projects that will be undertaken in coming years.

NextGeneration Learning Spaces are flexible spaces.

Our infrastructure requires that we work within constraints. We also know that the perfect school today could be outdated tomorrow; the pace of change in the world requires us to create spaces that will flex to meet future demands. Flexible spaces facilitate differentiated and cross-disciplinary learning; support multi-modal, multi-channel and technology enabled learning; and allow for greater collaboration. We must configure and furnish space, in existing and new buildings, to be agile and serve multiple purposes. In flexible spaces:

- Classrooms large enough to create multiple zones and breakout spaces to support differentiation, personalization, special needs support and Universal Design for Learning (UDL) approaches.
- Adult and student learners collaborate across all spaces- school, community, and virtual. Space is created for teacher planning, collaboration, and professional development.
- Current and new technology can be installed and adapted to support high-quality learning.
- Furniture is comfortable and can be reconfigured easily.

The following article illustrates how furniture can improve student engagement:

<http://www.gettingsmart.com/2015/01/can-classroom-furniture-improve-student-engagement/>



NextGeneration Learning Spaces are sensory spaces.

Our existing spaces often prioritize the intellectual life of the individual. We want our spaces to recognize that learning is not just intellectual, but a physical, social and emotional experience, and that to educate, we must engage our students' senses and personalities as well as their minds. Sensory spaces support whole learner approaches. Sensory spaces are:

- Open and non-constraining, including movable walls;
- Connected with nature (natural light, fresh air) via operable windows and outdoor learning spaces;
- Comfortable and stimulating;
- Appropriately climate controlled with adequate ventilation;
- Spaces for de-escalation and calming;
- Immersed in soothing colors and lack clutter;
- Promote social interaction, self-management, self-awareness, and responsible decision making;
- Feature arts programming (music, visual arts, dance, theater, etc.) and physical activity.

NextGeneration Learning Spaces are contextual spaces.

Our district is comprised of largely old buildings in diverse neighborhoods across a dense urban landscape. We must be imaginative in applying our vision to the context of our district and our specific schools. We

also must recognize the unique aspects of individual communities and neighborhoods within our city, creating opportunities for our schools to reflect this diversity. Contextual spaces leverage assets - rooms, offices, gathering spaces, gardens, parks, community centers - in the local neighborhood environment as teaching and learning spaces. Contextual spaces promote positive identity formation, cultural proficiency and cultural sustainability because:

- Students are able to identify, within the spaces, elements which positively reflect of the local culture and neighborhood identity.
- Community is welcome into the learning environment and schools spaces facilitate partnership and meaningful connection with residents and organizations in Boston neighborhoods.
- Students regard these spaces as extensions of their traditional learning environments that focus on celebrating the place / community.
- The spaces promote student agency by featuring and celebrating young people's work.
- Students can control their environments by moving furniture, displaying work and ideating on surfaces.

NextGeneration Learning Space is safe space.

Feeling safe: getting to and home from school as well as at school is a critical part of having a good and supportive learning environment.

Aspects of school building safety and security, (not all of which can be addressed by the buildings themselves) include: entry sequence, secure building perimeter, technology, safety personnel, and teacher and staff teamwork.

NextGeneration Learning Spaces, in and beyond school walls, can and should be networked.

Dissolving boundaries, whether physical, organizational, or mental, opens up new opportunities to achieve our objectives. We must think systemically as we seek to achieve our educational vision, looking beyond the unit of the classroom — or even the school — to find new ways to give our students the experiences we want them to have. Networking modern learning spaces enable an expansive learning experience. When community learning spaces are networked:

- Students are able to share their learning across their educational spaces, the city as a whole, and globally as well.
- Students are connected across the city, 24-hours a day so learning can take place anytime, anywhere.
- Students are encouraged to move across spaces (classroom to classroom, school building to school building, school to neighborhoods, etc.) so their learning is amplified.



Re-Imagining and Re-Inventing Schools to Achieve BPS’s Educational Vision

BPS has many challenges ahead. Re-imagining and re-inventing Boston’s schools is the most direct means of achieving the goals of **equity, coherence, and innovation**. Merely tweaking the system would likely change too little to have a meaningful impact.

Re-invention has been the path chosen by some of the most successful school systems in the world, including those in Finland, Japan, and Singapore, as well as Shanghai, China, and Ontario, Canada.

The educational visioning process has afforded those involved to explore many aspects of the system, providing an opportunity to closely study its school buildings and better understand how these learning environments affect student and teacher engagement. The process has addressed questions like:

- Is this a welcoming environment, a place in which I want to spend the day?
- Do I feel safe at school?
- Does the school stimulate me intellectually?
- Is the environment comfortable and healthy?

The answers to these questions are directly tied to overall student success.

Throughout the winter and early summer of 2016, seven educational visioning sessions were held to discuss a wide range of topics; agendas and presentations for all meetings are available on the BPS website.

Learning and Support Spaces

Each new or renovated school may have a unique program, based on the needs of the community. The following space program is for new schools; existing schools to be renovated should use the same space program and design patterns as goals. It is understood that all buildings may not accommodate the full program.

Early Education

The locations and configurations of the pre-K grades K0 and K1 will require additional study. There are strong precedents for EECs around the City.

- Reinforce and expand existing EEC and ELC schools, to relieve K–5 & K–8 facilities. Increase the number of EEC and ELC schools where shared resources and grade-level collegial planning can benefit students.
- To the extent possible, BPS’s EEC programs and classrooms should meet accreditation criteria established by the National Association for the Education of Young Children (NAEYC).
- K0 and K1’s will remain part of elementary schools (K–6 and K–8) in existing buildings that have appropriate size and amenities for the grade level, or have specific need. Renovate Pre-K rooms in existing elementary and K–8 schools to meet NAEYC criteria, when possible.
- Remove K0 and K1 programs from some elementary and K–8 schools, aggregating in EEC facilities that meet criteria where possible.
- Where building additions may be possible and grade level is desirable, create appropriately sized spaces, with toilet rooms.
- New construction should provide appropriately sized spaces, to meet curriculum needs, including student support spaces and toilet rooms in classrooms.
- Flexible learning and play space to support early literacy, mathematics, science, and creative expression.
- Indoor and outdoor play space.
- Space to ensure good health practices, including eating, resting, hand-washing, and toilet use.
- Space for student support.
- Space for individual and small group teaching.
- Space for teacher collaboration.





Elementary Schools

The following space program is for new schools. Existing schools slated to be renovated should also use the same space program and guiding principles as goals. It is understood that all buildings may not accommodate the full program. It is recommended that new schools include no fewer than two strands (classrooms) per grade; three or more is acceptable where the size can be accommodated. Single-strand schools should be expanded to at least two strands. Where facilities prohibit growth, schools could be relocated to larger facilities and/or combined with other schools.

- General education and support classrooms
- Special education classrooms and support spaces
- Substantially-separate classrooms and support spaces with characteristics that address the specific disabilities in schools designated to include special programs
- Small group/breakout space to serve project work, differentiated learning, and for de-escalation and sensory calming
- Art
- Music
- Science classroom/lab
- Maker space(s) to support hands-on and STEM/STEAM programs
- World languages classroom(s)
- Library/media center
- Cafeteria with stage
- Gymnasium
- Teacher planning/collaboration areas
- Clustered classroom design with shared commons space to support 21st century education (when possible)
- Dedicated IT head-end and support areas

Secondary Schools (7–12)

Big picture issues at these grade levels include:

- A need to significantly reduce the grade configurations that serve the middle years to primarily K–8 and 7–12 schools
- Consolidate students in schools that are large enough to offer an increased curriculum to include the arts (e.g., art, music, dance, etc.), multidisciplinary STEAM programs, and multiple CVTE offerings
- K-8 schools should be large enough to support middle grade “teams”, grades 5-8, 6-8 or 7-8.



Grades 6–8, whether they are in K–6, K–8, or 7–12, should share similar characteristics (to the extent possible) as grades 9–12.

- General education and support classrooms
- Special education classrooms and support spaces
- Substantially-separate classrooms and support spaces with characteristics that address the specific disabilities, in schools designated to include special programs
- Small group/breakout space(s) to serve project work, differentiated learning, and for de-escalation and sensory calming
- Art (multidisciplinary)
- Music (instrumental and vocal)
- Science classrooms/labs
- Maker space(s), to support hands-on and STEM/STEAM programs
- World languages classroom(s)
- Library/media center
- Cafeteria
- Gymnasium, alternative PE, and support spaces
- Auditorium or alternative gathering/performance space
- Teacher planning/collaboration areas
- Clustered classroom design, with shared commons space, to support 21st century education (when possible)
- CVTE spaces (Chapter 74 and non-74, where curriculum dictates)
- Dedicated IT head-end and support areas



Special Education and English Learner Goals

BPS has a large special education program spread throughout the district, with many sub-separate programs. A comprehensive, system wide review is recommended to achieve program distribution that coincides with grade configurations and schools.

For planning purposes, it is assumed that up to, but not more than, 25% of the classroom spaces be dedicated to special education. This would include programs that serve the general population, but also the sub-separate programs hosted by that school.

Special Education Building Goals:

- Provide properly sized and appointed classrooms for the specific sub-separate program needs
- Provide breakout space and space within classrooms for differentiated and personalized learning
- Provide space for de-escalation and sensory calming
- Provide flexible, ergonomic furniture
- Improve access to student technology

Sub-Separate Programs:

BPS has a large special education program/services spread throughout the system, with many sub-separate programs, including:

- Autism (18 schools)
- Emotional impairment, including fragile (26 schools)
- Severe intellectual impairment (2 schools)
- Mild intellectual impairment (17 schools)
- Moderate intellectual impairment (11 schools)
- Multiple disabilities (5 schools)
- Physical impairment (3 schools)
- Sensory impairment – hearing (1 school)
- Sensory impairment – vision (1 school)
- Specific learning disability (27 schools)

All schools include special education that serves the general population. The many sub-separate programs listed previously are distributed across the City, though in certain cases, not evenly. Some schools host multiple sub-separate programs, in addition to general special education. This can put an undue pressure on the school building and the students. It is recommended that sub-separate programs be more evenly distributed across the school portfolio.

- Multiple programs, depending on their specialty, can increase the percentage of special needs students in an inclusion setting
- Multiple programs occupy classrooms that might otherwise serve enrichment programs beneficial to all students
- Schools with sub-separate programs need to be reviewed to ensure the appropriate facilities are provided that help facilitate the needs of the specific disability, including:
 - Toilet, shower, and changing facilities
 - Space for de-escalation and sensory calming
 - OT/PT space and equipment





Re-Imagining Grade and Portfolio Configuration to Achieve BPS's Educational Vision

BPS has proposed a grade configuration goal of pre-K–6 and 7–12. The reality of the existing portfolio of buildings suggests that the actual configurations will likely be a hybrid for some time to come. Anticipated configurations include:

- EEC and ELC
- K1–6
- K–8
- 7–12
- 9–12

Moving from the current 23 grade configurations to five will have both advantages and challenges.

K–6 Challenges Moving Forward

- Meeting the instructional vision and guiding principles will be challenging in the many small schools in the portfolio.
- Pre-K–6 schools will work best in new buildings specifically designed for that configuration.
- Adding grade 6 to existing elementary schools will present challenges. In small schools, it will likely require the removal of K0 and K1 classrooms. Even with that, there likely will not be a 1-to-1 swap of rooms.
 - Grade 6 will add pressure to building core spaces, such as cafeterias, gymnasias, and libraries. Numerous schools currently lack such spaces.
 - Grade 6 may not allow schools to reincorporate art and music programs.



7–12 Challenges Moving Forward

- Middle school grades (6–8) are currently housed in 47 schools in 13 different grade configurations.
- Assuming the middle school and high school schedules can be the same, the schools have an opportunity to share resources, including teachers and specialty rooms (e.g., CVTE and enrichment programs).
- The larger student body wishing to attend CVTE and enrichment programs can justify the hiring of full-time/ dedicated teachers for the school.
- Grade 7–12 schools will work best in new buildings specifically designed for that configuration. This grade structure will serve students from ages 12 to 18 +/-.
- To the extent possible, separating the populations of the middle and high schools will be likely highly desirable for parents. These separations can include school entry, academic classroom zones, student toilets, and locker rooms.
- For schools in which these types of separation are not possible, there will likely be high reliance on different schedules for classes. Having different schedules becomes a liability when trying to share resources (e.g., rooms and teachers).



Educational Planning Advisory Committee Members

- Ross Wilson, Convener
- Donna Muncey, BPS Deputy Superintendent of Strategy
- Rahn Dorsey, Chief of Education
- Ben Vainer, Mayor's Office
- Karla Estrada, BPS Deputy Superintendent of Student Services
- Mary Driscoll, BPS Principal Leader
- Caren Walker Gregory, BPS Headmaster Edward M. Kennedy Academy for Health Careers
- Ayla Gavins, Principal, Mission Hill K-8
- Erin Borthwick, BPS Principal, Mozart K-5
- Carleton Jones, BPS Facilities Management Department
- Khadijah Brown, BPS Facilities Management Department
- Mary McCoy, City of Boston Office of Budget Management
- Brian McLaughlin, City of Boston Public Facilities Department
- Heshan Berents-Weeramuni, Citywide Parent Council
- Harneen Chernow, Citywide Parent Council
- Paul Tritter, Boston Teachers Union
- Jessica Tang, Boston Teachers Union

Design Team Participants

- Alex Pitkin, SMMA
- Philip Poinelli, SMMA
- David Stephen, New Vista
- Michael Contompasis, Mass Insight
- Susan Zoller, MGT
- Joe Clark, MGT

Owner's Project Manager

- Margaret Wood, Pinck & Co.



5

Participating Firms:

SMMA

MGT

Dr. James Jennings

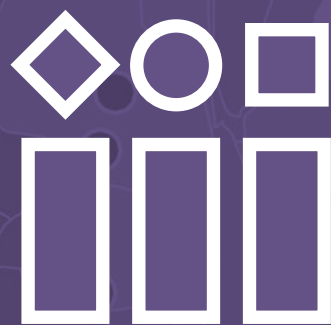
Demographics

Purpose and Charge

Approach and Methods

Findings

Advisory Committee Members



Demographics

Purpose and Charge

The Demographics Advisory Committee was established to facilitate the development of a 10-year student enrollment forecast for BPS—broken out by neighborhood and population sub-groups—and to draw conclusions on what imminent population changes could mean for BPS facilities.

The full demographics report can be found by clicking on the Reports tab on the BuildBPS Dashboard.

Approach and Methods

In July 2015, the master planning project management team and Demographics Advisory Committee members began looking at how the changing demographics of both Boston and BPS were impacting the district's schools. Meetings with various agencies and City and district personnel yielded insight into current and potential trends.

The Demographics Advisory Committee looked specifically at demographic and enrollment trends to develop projection models for future student enrollment, and to determine what influence these enrollment patterns would have on facilities and BPS as a whole. Work began with an examination of historical demographic data from the City's planners and demographers, as well as longitudinal historical district data. Boston conducted housing and demographic analyses for its citywide Imagine Boston 2030 vision plan, allowing BuildBPS to coordinate data sets and variables. The data included district enrollment and grade-level information, sub-group population percentage data, and geographical information related to existing neighborhoods and assignment zones.

The demographics report is comprised of two sections: the initial report conducted by MGT, and an addendum completed by Dr. James Jennings, Professor Emeritus of Urban and Environmental Policy & Planning at Tufts University. The addendum was developed to complement the overall report, utilizing a racial, ethnic, and geographic (i.e., neighborhood) lens in the presentation and analysis of population and school data.

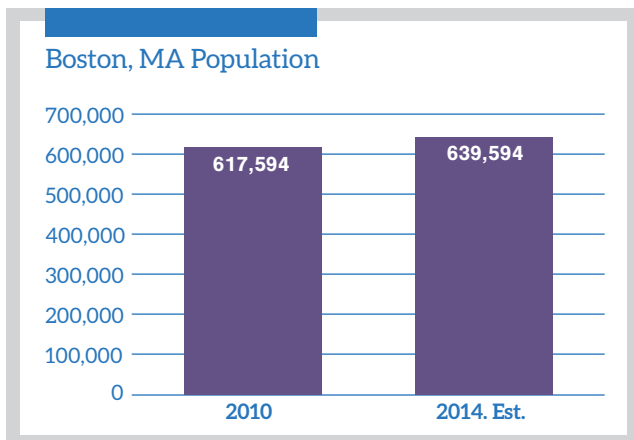
Boston conducted housing and demographic analysis for its citywide Imagine Boston 2030 vision plan, allowing BuildBPS to coordinate data sets and variables.



Findings

Boston's population has been on the rise.

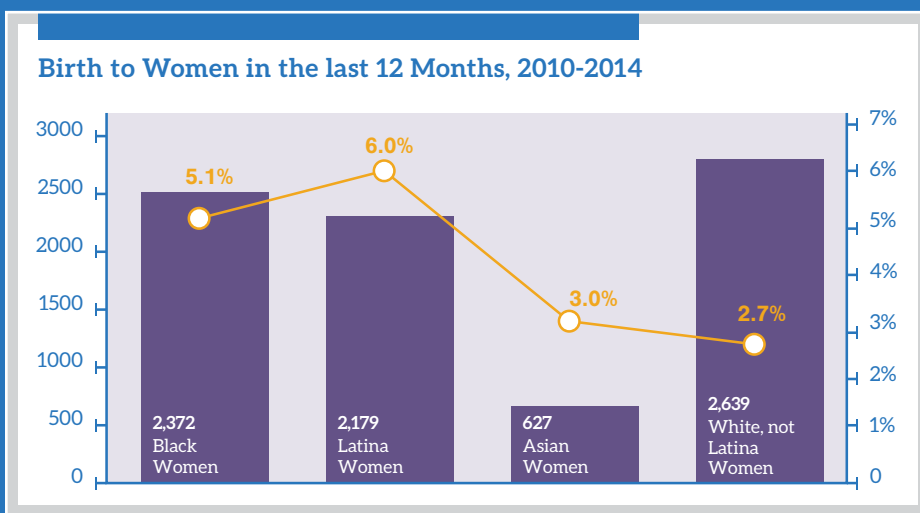
Between 2010 and 2014, the City of Boston's population increased 3.6%, to 639,594. Since the recession of 2008–11, Boston has realized significant and continuous growth, attributable primarily to more job opportunities in the technology and healthcare sectors, larger enrollments at higher education institutions, and an increase in new housing units. The City's general population is rising across all age groupings, but overall, Boston's population is aging, which means the citywide population growth is not seen as significantly impacting the student-age population. There was no significant change in the Boston birth rate between 2008 and 2012; there was an increase in the birth rate among Latina women, and a decrease in the birth rate among white women.



Between 2010 and 2014, the City of Boston's population increased 3.6%, to 639,594.

Source: US Census Bureau

There was an increase in the birth rate among Latina women, and a decrease in the birth rate among white women.



Birth rate change for all women
Population distribution by race and ethnicity

BPS’s share of student-age population dropped over the last 10 years, but will increase moderately over the next 10.

For the 2006–07 school year, total BPS K2–12 enrollment stood at 56,957 students. By 2015–16, it had decreased to 56,520, with an overall enrollment percentage of school-age children in Boston of 72.5%.

The decrease in capture rate was largely driven by growth in charter and private schools. The popular METCO program, which places students of color in neighboring and suburban district schools, remains consistently subscribed.

Recent parochial school closures impacted the capture rate, although less dramatically than in previous years. This has been somewhat mitigated by a number of highly regarded high schools that have grown their programs, including extending offerings down to the middle school grades in direct response to the overall geographic misalignment of school buildings and student population centers, as well as incoherent pathways for families.

10-Year Enrollment of School-aged Children Living in Boston, 2007–2016 School Years

	BPS ¹		Charter ²		METCO ³		Private		Parochial		Other ⁴		Total
2015–16	56,520	72.5%	9,240	11.9%	2,844	3.7%	4,262	5.5%	4,573	5.9%	470	0.60%	77,909
2014–15	56,956	73.1%	8,255	10.6%	2,815	3.6%	4,133	5.3%	5,278	6.8%	463	0.59%	77,900
2013–14	56,866	73.8%	7,139	9.3%	3,072	4.0%	4,091	5.3%	5,401	7.0%	435	0.56%	77,004
2012–13	56,905	73.9%	6,726	8.7%	3,088	4.0%	4,149	5.4%	5,713	7.4%	471	0.61%	77,052
2011–12	56,526	74.9%	5,467	7.2%	3,043	4.0%	4,063	5.4%	5,939	7.9%	458	0.61%	75,496
2010–11	56,731	76.3%	4,785	6.4%	2,903	3.9%	3,621	4.9%	5,884	7.9%	440	0.59%	74,364
2009–10	55,891	74.9%	4,663	6.3%	3,183	4.3%	3,709	5.0%	6,678	9.0%	458	0.61%	74,582
2008–09	55,927	75.0%	4,806	6.4%	3,142	4.2%	3,733	5.0%	6,555	8.8%	425	0.57%	74,588
2007–08	55,949	74.8%	4,372	5.8%	3,051	4.1%	3,651	4.9%	7,261	9.7%	486	0.65%	74,770
2006–07	56,957	74.6%	4,405	5.8%	3,034	4.0%	3,606	4.7%	7,906	10.4%	450	0.59%	76,358

10-year enrollment in BPS relative to total student-age population

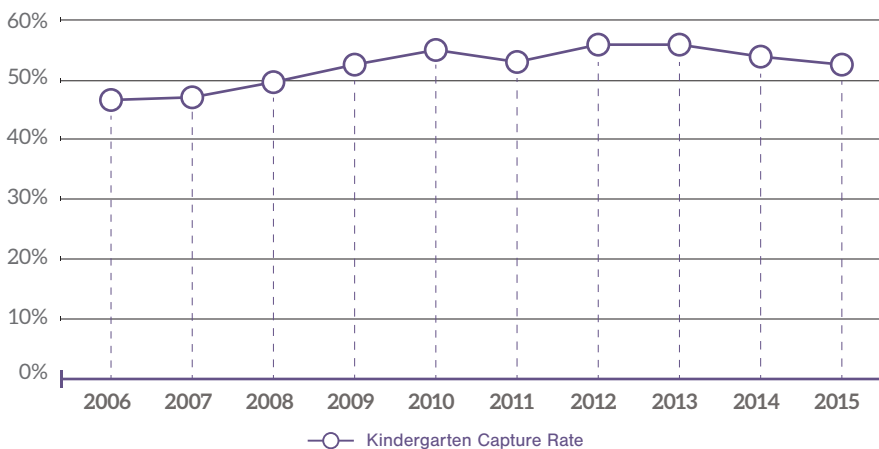
¹ BPS students, including students attending an in-district Horace Mann Charter School

² Commonwealth Charter School students

³ Metropolitan Cooperative students attending a public school in another district

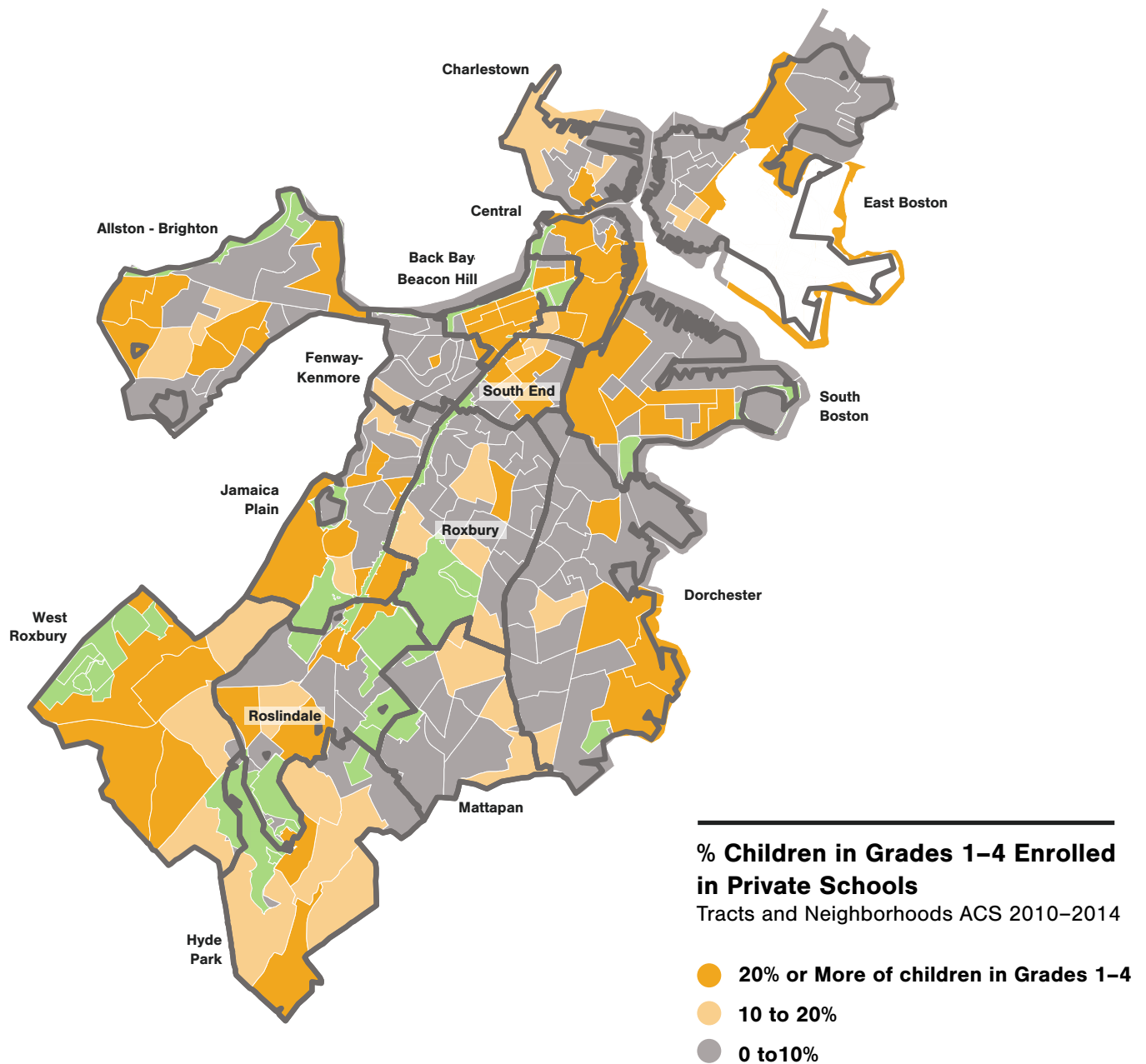
⁴ Includes privately placed Special Education, educational collaborative, homeschooled students and other placements

Historical Capture Rates

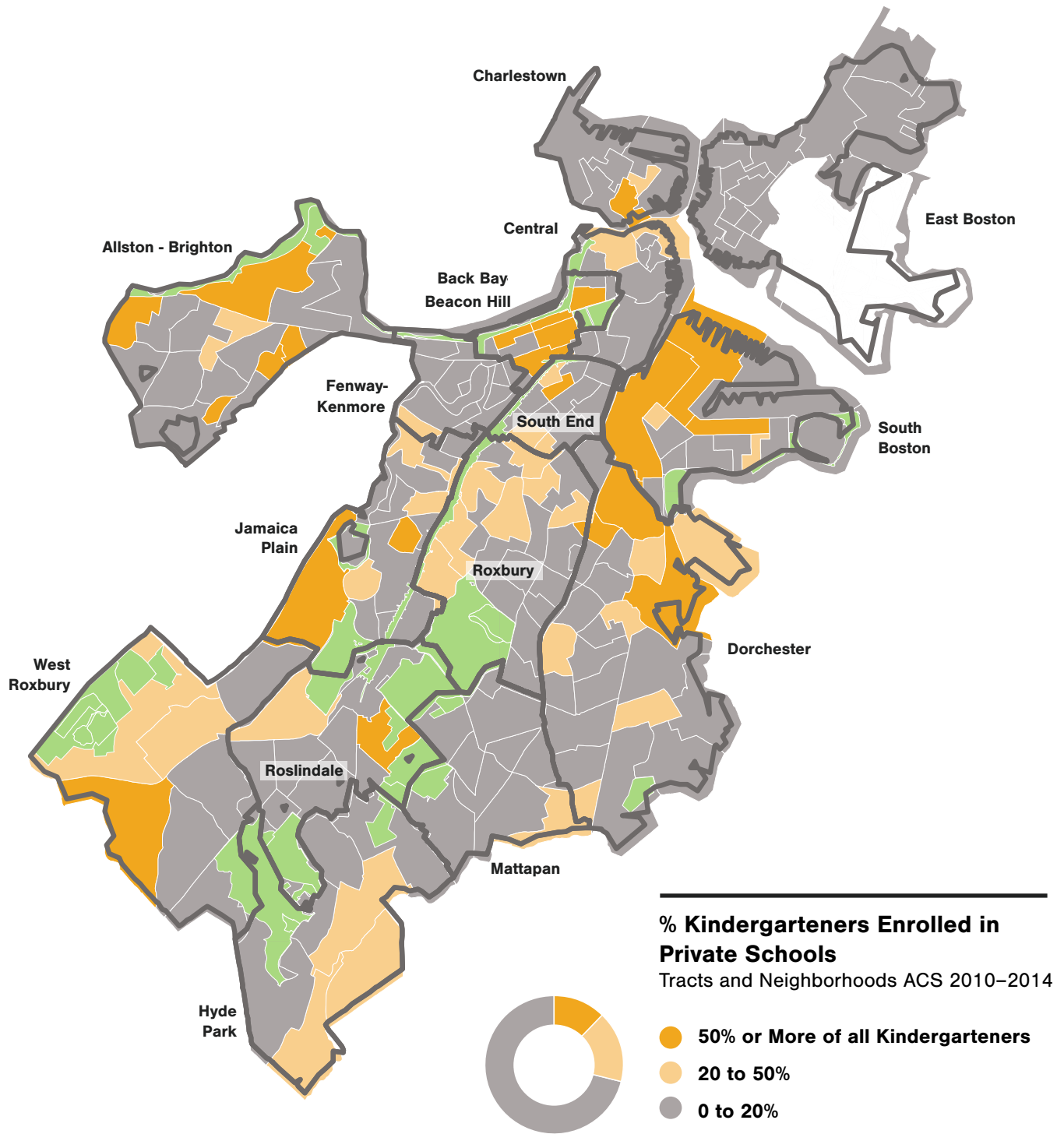


10-year capture rate in BPS; the capture rate is used to forecast the percentage of live births that resulted in kindergarten enrollment five years later

Source: MGT



Another enrollment-based discussion focuses on the capture rates for various neighborhoods. Some neighborhoods send a higher proportion of children to private and parochial schools at earlier ages; others (like Mattapan, Roxbury, and East Boston) are more likely to send children to a BPS school.

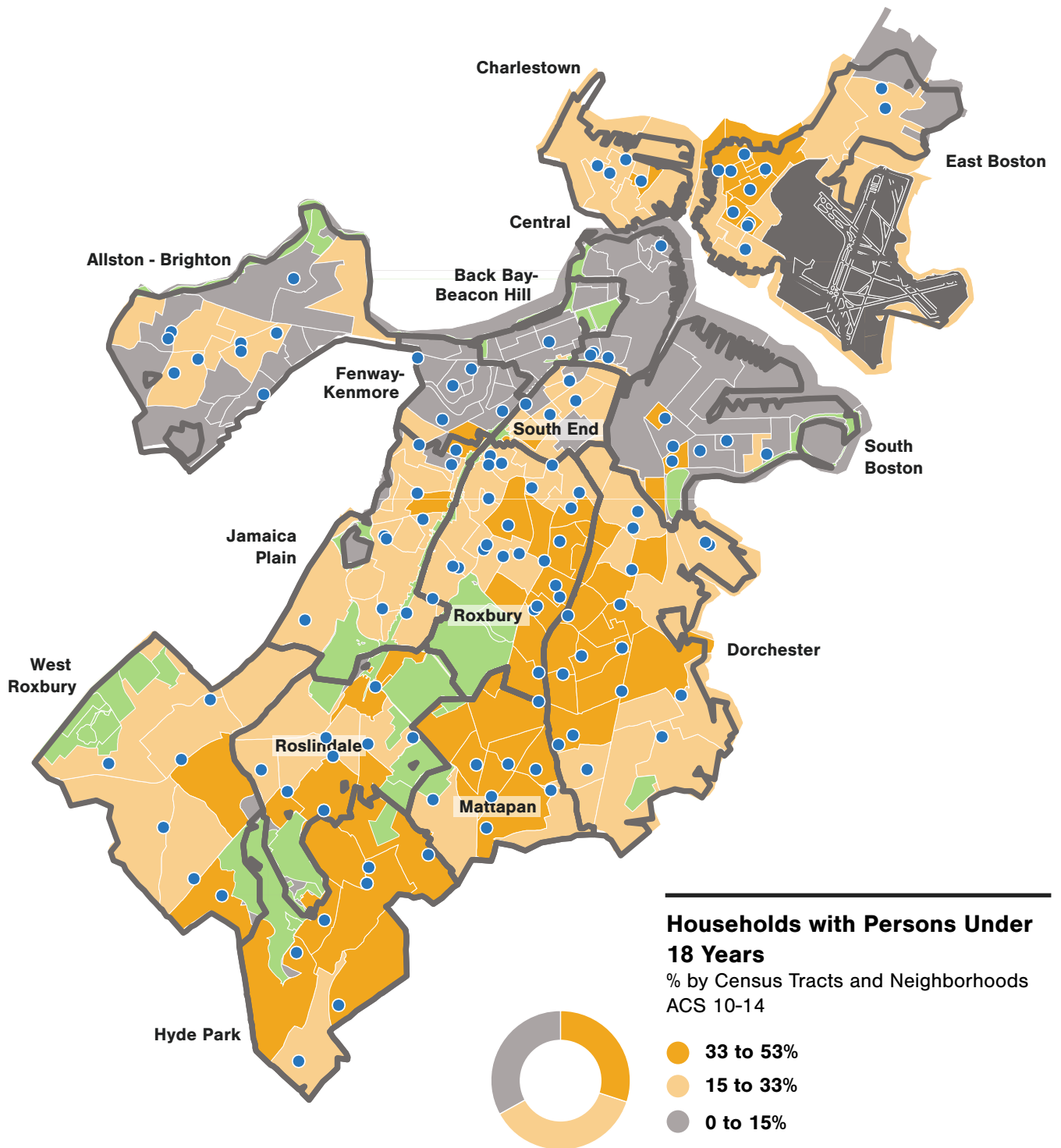




Boston’s general populations by ethnicity, race, and neighborhood greatly influence school composition across BPS.

All race and ethnicity groups are growing across the BPS district. At the same time, for BPS district enrollment, the total non-Hispanic white population percentage continues to drop, and the percentage of school-age children of color continues to rise.

	Total	Black	%	Latino	%	Asian	%	White (Not Latino)	%
		160,342		117,514		58,545		294,432	
Under 5 years	33,398	10,377	6.5%	9,459	8.0%	2,196	3.8%	11,366	3.9%
5 to 9 years	27,869	10,990	6.9%	8,538	7.3%	1,910	3.3%	6,431	2.2%
10 to 14 years	26,845	11,012	6.9%	8,678	7.4%	1,900	3.2%	5,255	1.8%
15 to 17 years	17,635	7,373	4.6%	5,469	4.7%	1,550	2.6%	3,243	1.1%
18 and 19 years	30,831	5,429	3.4%	5,507	4.7%	3,568	6.1%	16,327	5.5%
20 to 24 years	78,909	15,430	9.6%	13,640	11.6%	8,945	15.3%	40,894	13.9%
25 to 29 years	80,987	13,317	8.3%	11,269	9.6%	8,140	13.9%	48,261	16.4%
30 to 34 years	57,531	10,610	6.6%	10,041	8.5%	5,665	9.7%	31,215	10.6%
35 to 44 years	78,827	20,176	12.6%	16,227	13.8%	7,654	13.1%	34,770	11.8%
45 to 54 years	71,461	21,347	13.3%	13,325	11.3%	5,981	10.2%	30,808	10.5%
55 to 64 years	60,699	17,481	10.9%	8,735	7.4%	5,082	8.7%	29,401	10.0%
65 to 74 years	35,409	10,055	6.3%	4,094	3.5%	3,028	5.2%	18,232	6.2%
75 to 84 years	20,500	4,801	3.0%	1,811	1.5%	2,029	3.5%	11,859	4.0%
85 years and over	9,932	1,944	1.2%	721	0.6%	897	1.5%	6,370	2.2%



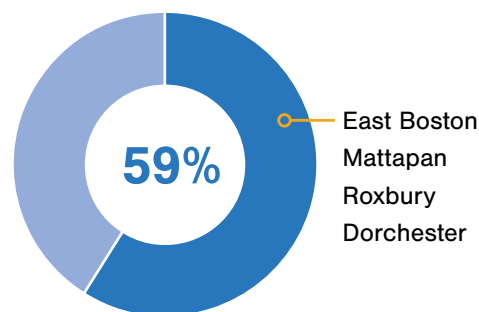
Boston's neighborhoods vary in student enrollment.

At present, four Boston neighborhoods (East Boston, Mattapan, Roxbury, and Dorchester) are home to 59% of the City's school-age children. The projected percentage of growth is also highest in these neighborhoods for the foreseeable future.

In-District Enrollment By Neighborhood

	K0	K1	K2	1	2	3	4	5	6	7	8	9	10	11	12	Total
Allston-Brighton	42	128	179	214	182	186	165	150	165	196	151	251	191	163	185	2,548
Back Bay/Beacon Hill	2	10	19	17	14	18	13	11	9	14	14	10	8	13	8	180
Central Boston	10	35	94	101	85	79	61	65	58	64	51	56	56	65	57	937
Charlestown	7	51	144	152	149	141	118	101	114	108	106	110	99	95	97	1,592
Dorchester	86	504	803	887	922	894	894	742	740	772	782	947	917	911	1,020	11,821
East Boston	59	252	511	548	552	587	491	420	396	379	365	587	484	450	426	6,507
Fenway/Kenmore	5	13	30	45	42	43	27	23	23	19	28	28	31	27	16	400
Hyde Park	31	163	221	267	244	240	253	191	195	202	217	284	281	308	347	3,444
Jamaica Plain	20	140	223	254	221	228	218	186	179	179	188	198	201	212	235	2,882
Mattapan	51	197	347	419	405	396	350	335	328	345	336	469	413	415	476	5,282
Roslindale	32	178	252	295	294	292	258	207	204	247	214	275	260	289	308	3,605
Roxbury	77	431	745	784	867	799	774	591	595	639	620	772	719	688	769	9,870
South Boston	11	104	122	173	168	169	144	130	126	136	133	154	154	128	145	1,997
South End	22	77	189	172	214	223	193	169	161	197	160	208	192	182	207	2,566
West Roxbury	16	169	240	202	226	209	170	174	130	177	157	215	180	186	199	2,650
Other (not specified)	3	3	3	9	17	21	18	14	14	16	14	20	30	24	33	239
In-District Total	474	2,455	4,122	4,539	4,602	4,525	4,147	3,509	3,437	3,690	3,536	4,584	4,216	4,156	4,528	56,520

Four Boston neighborhoods account for 59% of BPS's student population



BPS Enrollment Projections

Enrollment across the district is expected to grow at a rate of 2,515 students over the next 10 years, or approximately 0.4% per year. Among a number of factors contributing to the modest enrollment growth are an aging population, a small increase in birth rate, a reduction in some populations' segments, and a growth in charter school enrollment.

BPS 10-Year Enrollment Projections

Grade	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26
K2-5	25,488	25,464	25,627	25,890	26,149	26,455	26,798	27,124	27,461	27,708
6-8	10,937	10,859	10,807	10,741	10,799	10,823	10,921	11,077	11,142	11,093
9-12	17,678	17,646	17,669	17,692	17,805	17,818	17,872	17,919	17,868	17,817
K2-12	54,103	53,969	54,103	54,323	54,753	55,096	55,591	56,120	56,472	56,618

Note: These projections do not include K0/K1 enrollment



Charter schools are having an impact.

Boston's charter school population has nearly doubled since the 2010-11 school year, moving from 4,785 students to 9,240 for 2015-16. The number of charter school seats continues to grow, as a result of the state achievement gap legislation enacted in 2010, and the City projects that an additional 4,368 students could attend charter schools by the 2025-26 school year. Currently, there is an 18% cap on the percentage of the City's net school spending that the state can assess from Boston to pay for charter schools (an increase from 9% in 2010). GIS mapping and charter school development maps show that charter schools continue to target neighborhoods and populations currently underserved by BPS.

Boston's charter school population has nearly doubled since the 2010-11 school year, moving from 4,785 students to 9,240 for 2015-16.



Source: <http://www.masscharterschools.org/schools/boston>
 Map identifies both Commonwealth charters and in-district BPS charters.

There are chances for dramatic shifts in Boston’s population over the next 10 to 15 years.

The BPDA, in its Imagine Boston 2030 citywide master plan study, projects a significant amount of growth throughout the City, based on U.S. Census, immigration, and live birth data, as well as housing starts. These data points are being used to examine where and how much the City’s population will grow over the next 10 to 15 years. If current projections come to fruition, an additional 10,000 school-age children could be added to Boston’s schools. However, it is unclear what percentage would be captured by BPS, particularly without the City making significant investments in its current school building portfolio. BPS is strongly encouraged to continue to revisit these projections on an annual basis, and to update them to reflect current trends and data.

Implications for Facilities Planning

Based on the data collected and the previously summarized results, we have learned that the overall population in Boston is getting older and not producing as many children as it once did. However, births among specific ethnic groups continue to rise, and BPS has the ability, through GIS mapping, to highlight where these particular populations are concentrated and growing. Utilizing this information will provide BPS insight as to where space and program needs could evolve across the district, ensuring that additional seats are provided to prevent overcrowding, or that seats are realigned where enrollment is decreasing. While this finding may have implications for the location and distribution of school buildings across neighborhoods, it may be even more important in planning the distribution of programs, services, and supports that guarantee cultural competency and sustainability in BPS.

If current projections come to fruition, an additional 10,000 school-age children could be added to Boston’s schools.



Demographics Advisory Committee Members

- Alvaro Lima, Convener
- Rahn Dorsey, Chief of Education
- Katie Hammer, City of Boston Office of Budget Management
- Ben Vainer, Mayor's Office
- Phillip Granberry, Boston Planning & Development Agency
- Nate Kuder, BPS Finance Department
- Barry Kaufman, BPS Operations Department
- James Racanelli, BPS Operations Department
- Carleton Jones, BPS Facilities Management Department
- Victor Castro, Citywide Parent Council

Design Team Participants

- Philip Poinelli, SMMA
- Alex Pitkin, SMMA
- Joe Clark, MGT
- James Jennings, PhD, Tufts University

Owner's Project Manager

- Margaret Wood, Pinck & Co.

Births among specific ethnic groups continue to rise, and BPS has the ability, through GIS mapping, to highlight where these particular populations are concentrated and growing.





Participating Firms:

SMMA
MGT
WSP | PB

**Educational
and Facilities
Assessment**

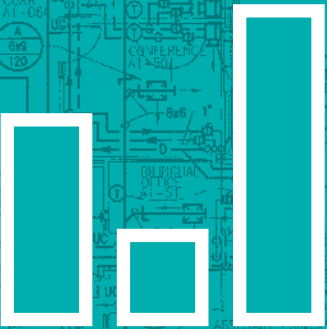
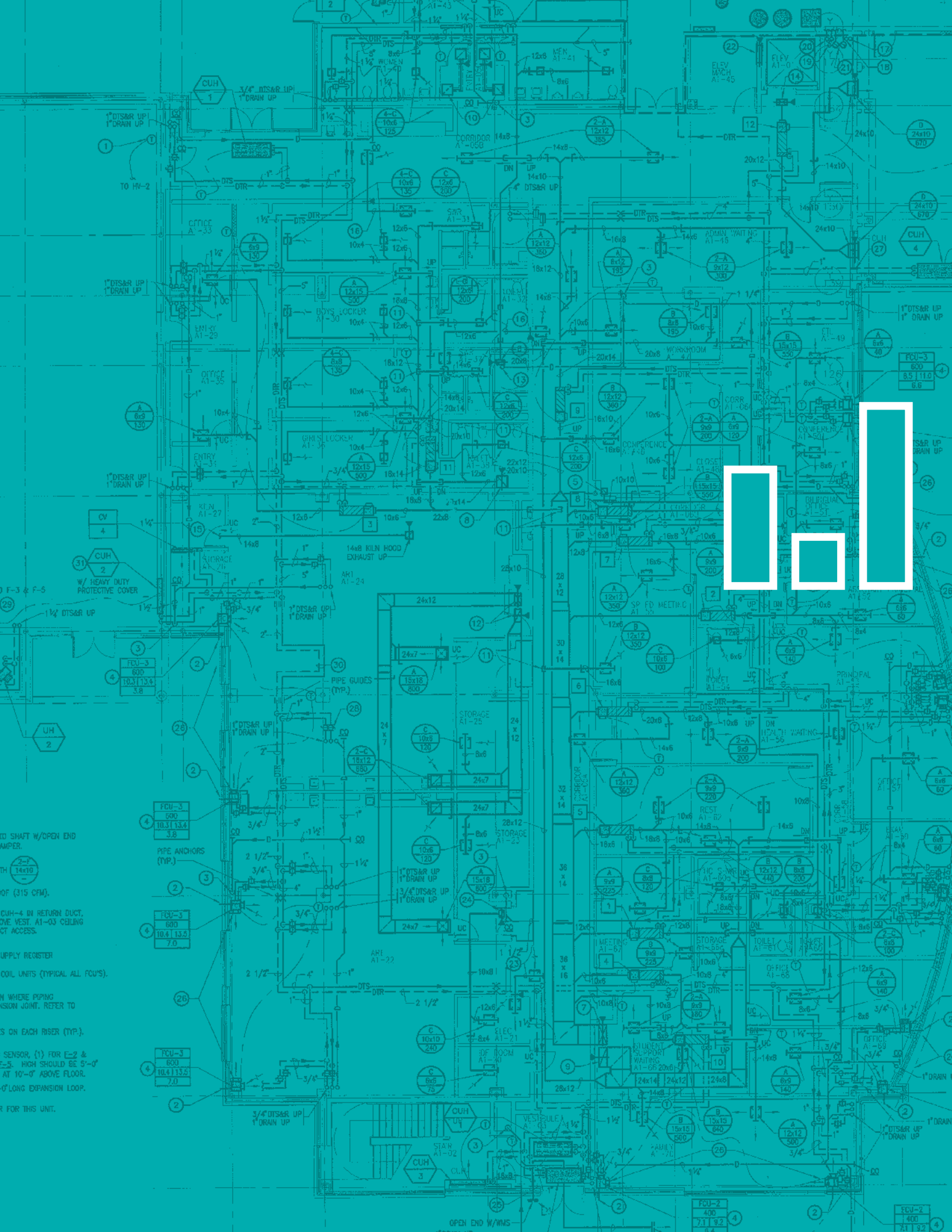
Purpose and Charge

Approach and Methods

Summary of Findings

Advisory Committee Members

Build **BPS**



Educational and Facilities Assessment

Purpose and Charge

There is no single way to conduct an educational and facilities assessment—districts around the country have used a variety of means, depending on the size of the building portfolio, timing, budget, and desired outcomes. The Educational and Facilities Assessment (E+FA) team was charged with developing a methodology that would work for BPS, to express the complexity and variety of the district’s portfolio of schools. The main objective was to accurately assess the existing conditions and uses of every BPS school and building, as well as their ability to house various educational programs. The E+FA team was then responsible for finding a way to share the substantial amount of data collected with the BPS community in a digestible and useful format. All assessment data and definitions are searchable on the web-based BuildBPS Dashboard.

Each school’s individual educational and facilities assessment report can be found by clicking on the Reports tab on the BuildBPS Dashboard.

The following organizations worked together to accomplish the E+FA process:

Boston Public Schools
Facilities, Principals,
BPS administrators

SMMA
Lead E+FA Planning Firm

MGT
Demographics & Educational Planning
Sub-consultant

New Vista
Educational Planning Sub-consultant

WSP | PB
Facilities Assessments & Financial
Planning Sub-consultant

Pinck & Co.
Owner’s Project Manager



Each phase’s discovery process helped the team gain more insight into and familiarity with the portfolio, informing an appropriate and comprehensive assessment methodology finely attuned to BPS’s needs.

Photos: Top to bottom right

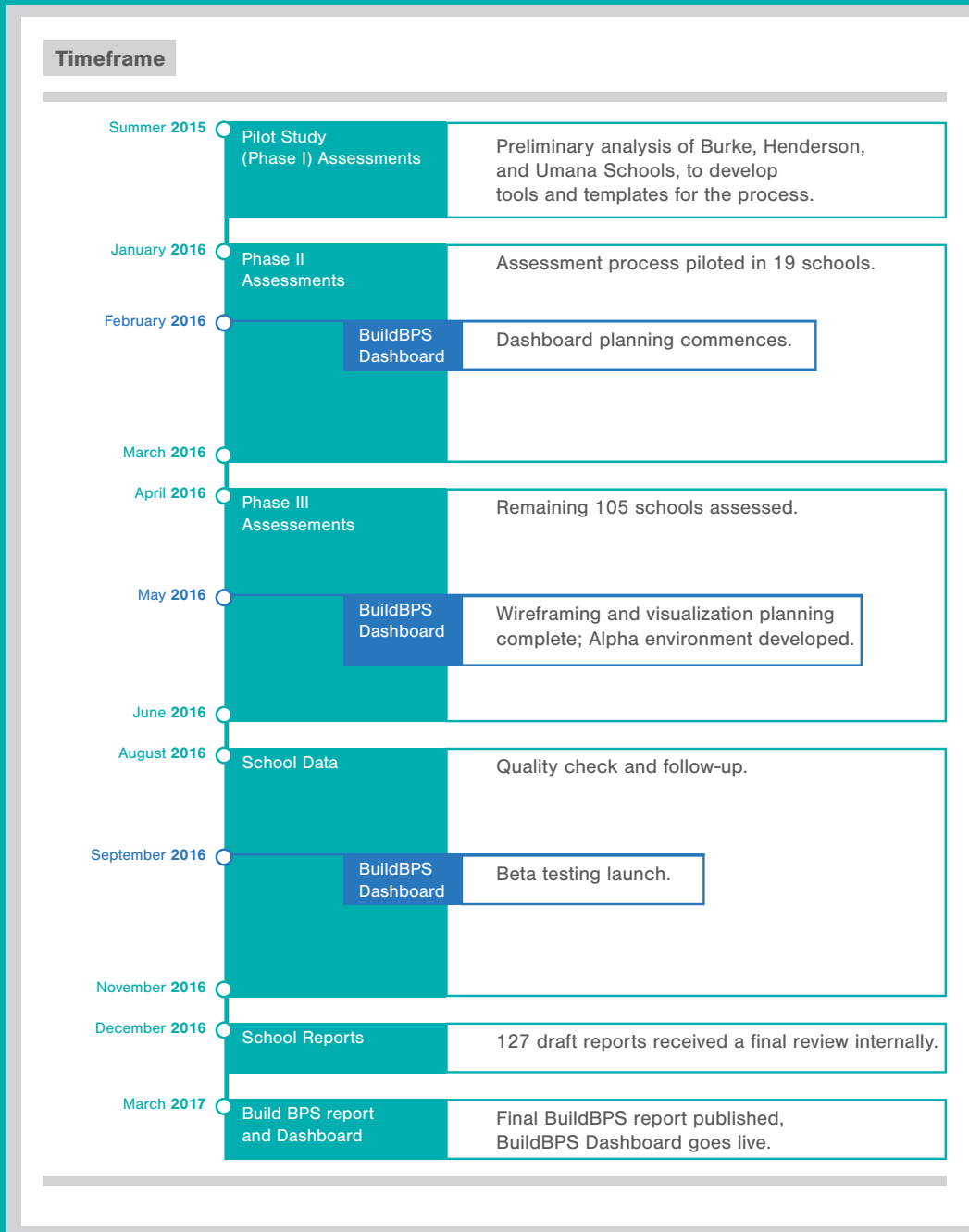
- Jeremiah E. Burke HS
- Mario Umana Academy
- Dr. William W. Henderson Upper and Lower Schools



Approach and Methods

The BuildBPS team approached this study with the understanding that every school building required comprehensive assessment. Due to the diverse and complex nature of the BPS real estate portfolio, SMMA proposed a three-phase plan, consisting of a pilot phase (Phase I), a methodology test phase (Phase II), and a main assessment phase (Phase III). Each phase’s discovery process helped the team gain more insight into and familiarity with the portfolio, informing an appropriate and comprehensive assessment methodology finely attuned to BPS’s needs.

In August 2015, the E+FA team conducted a three-school, four-building pilot study, representing Phase I of BuildBPS. The schools chosen were the Jeremiah E. Burke High School, the Mario Umana Academy, and the Dr. William W. Henderson Upper and Lower Schools. A comprehensive building due diligence report was completed for each.



Upon completion of the pilot phase, the BuildBPS management team reviewed the findings and determined that the approach taken during the pilot phase went beyond the needs of the project and would be difficult to manage and update consistently over time. The team also concluded that facility information without educational planning and vision would not result in a clear path forward.

The inclusion of data measuring the effectiveness of each building as an educational facility (labeled as Educational Facility Effectiveness criteria) would give the district the clearest understanding of how each facility could be transformed to meet the needs of a rich, diverse, 21st century education.

Four Assessment Categories: The Clover

To simplify both the process and the data collected, the team decided to move forward with a heavily detailed, yet fully accessible approach that would provide the necessary insight into the building portfolio and also be

easily updatable by BPS in the future. The assessments were organized into four main categories, focusing on each school's facility, site, educational learning environments, and spaces, as follows:

Facilities Assessment–Building:

This category of the assessment considered the physical condition of the buildings, in terms of age, design, construction methods, and materials. Building assessments also determined existing components and/or systems' conditions at a specific point in time.

Facilities Assessment–Site:

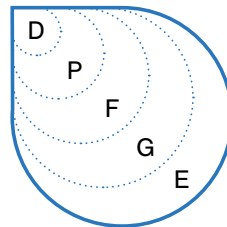
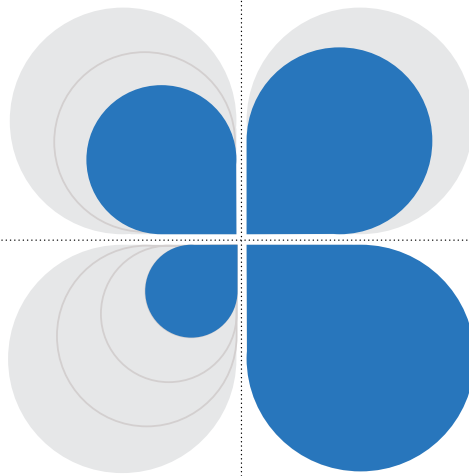
This category considered the quality, condition, and capacity of the various exterior spaces of the facilities. These spaces include landscaped, educational, recreational, vehicular, and pedestrian areas. The on-site evaluation was complemented by detailed study/research of the sites from web-based resources.

Educational Facility Effectiveness–Learning Environments:

This category considered the quality of the physical environment inside the buildings, both in terms of inherent building characteristics and introduced equipment (e.g., furniture and technology), as well as the physical appearance and condition of each.

Educational Facility Effectiveness–Spaces:

This category compared the sizes of educational spaces to Massachusetts 963 CMR¹ guidelines for 21st century teaching and learning in new capital projects. This quantitative analysis is important for establishing the level of adequacy of the existing spaces for educational delivery. It also indicates whether a facility is deficient in, or missing, dedicated educational spaces normally found in buildings of its grade level and typology.



¹ Massachusetts 963 CMR, listed in the Code of Massachusetts Regulations (CMR), refers to the guidance promulgated by the Massachusetts School Building Authority for its School Building Grant Program.

In each category, the team then selected a set of facility and educational effectiveness criteria that would be graded on a five-point scale. Assessment criteria were broken into primary and secondary criteria, as determined by the BuildBPS management team. In general, the primary criteria include elements that have a direct impact on teaching and learning, incur substantial cost to improve or

repair, and/or impact other building systems/components. Depending on the upgrades required, buildings may need to be unencumbered of students (i.e., vacant) for the duration of the work. Secondary criteria can be updated or supplemented more easily and are typically more standalone in nature.

Category	Primary Criteria	Secondary Criteria	Rating Scale
Facilities Assessment—Building (FA-B)	Life Safety: Means of Egress Life Safety: Fire Alarm Security: Entry Sequence MAAB/ADA Accessibility Heating Distribution Systems Ventilation Distribution Systems Plumbing Distribution Systems Structural Systems	Electrical Service Boilers Roof Membrane Toilets and Fixtures Façade Life Safety: Fire Protection—Sprinklers Lighting Quantity & Control Windows	Adequate: System or element is in new or like-new condition and functioning optimally; only routine maintenance and repair required Minor: System or element functioning reliably; routine maintenance and repair required Moderate: System or element functioning minimally; repair or replacement of some or all components required Replace: System or element is non-functioning, not functioning as designed, or unreliable; repair or replacement of some or all components required Not Present: System or element is non-existent, non-functioning, not functioning as designed, or unreliable; replacement required
Facilities Assessment—Site (FA-S)	MAAB/ADA Accessibility Walkways/Curbs/Sidewalks Play Areas Drainage Parking Quality	Drop-Off/Pick-Up Routes Walls & Slopes Site Lighting Fencing Neighborhood Streets	Adequate: Well maintained Minor: Requires repair to be well maintained Moderate: Requires substantial repair effort by specialists Replace: Non-existent but necessary, or requires replacement Not Present: Non-existent and unnecessary
Educational Facility Effectiveness—Learning Environments (EFE-LE)	Ventilation Natural Daylighting Lighting Quality Air Quality Acoustical Environment (Inviting/Stimulating/Comfortable)	Technology: Power Technology: Wireless Technology: Interactive Furniture Finishes Adjacencies of Learning Environments Outdoor Classrooms	Excellent: Elements meet needs for 21st century teaching and learning Good: Elements contribute to teaching and learning Fair: Elements somewhat interfere with teaching and learning Poor: Elements detract from or interfere with teaching and learning Deficient: Non-existent or inoperable systems or elements
Educational Facility Effectiveness—Spaces (EFE-S)	Classrooms (<i>Depending on Typology, These Include Pre-K and Kindergarten</i>) Teacher Planning Small Group Science Art Music Vocations and Technology Media Center Cafeteria	Gymnasium (<i>Because This Program Space Is Sometimes Served by Local Community Spaces</i>) Auditorium Stage Medical Administration & Guidance Air-Conditioned Technology Network Room	Excellent: Exceeds Massachusetts 963 CMR net square footage (NSF) guidelines (+10% or greater) Good: Appropriate to house current enrollment and educational program; NSF meets Massachusetts 963 CMR guidelines (-10% to +10%) Fair: Appear to be adequately sized for current enrollment and educational program; NSF somewhat less than Massachusetts 963 CMR (-10% to -20%) Poor: Not adequately sized for current enrollment and educational program; NSF at least 20% less than Massachusetts 963 CMR guidelines Deficient: Dedicated space does not exist.

With the categories and criteria in place, the BuildBPS team conducted a second phase to test its newly refined methodology. In this phase, 19 schools of diverse typologies and eras were chosen and then evaluated within the new matrix.

To meet the charge of engaging the community in the data, the team introduced the concept of a data “dashboard” that would encompass all building reports, digital assets, and various data

visualizations. The BuildBPS Dashboard provides the community with a complete overview of the district (during the 2015–16 school year), along with individual school data. The data allows for a comprehensive review of each facility, from its building and site conditions to its surroundings, helping users to more fully understand the relationships that BPS buildings have with one another and with the City in general.

Findings

The E+FA team study of the entire BPS portfolio of schools led to a number of observations, within the following categories, relative to the long-term needs and goals of BPS and the City of Boston:

- Typologies
- Capacity
- Swing Space
- Climate Preparedness
- Partnerships

School Typologies

Throughout this report, typology refers to the grade levels served. These include early education centers (EECs) and early learning centers (ELCs), elementary schools, K–8 schools, middle schools, and high schools. The following provides general information about each typology, including building condition and program space statistics from each.

EECs and ELCs

The City of Boston’s pre-kindergarten program, serving three-, four-, and five-year-old children, is a highly regarded model often cited in national studies. Over time, the EECs (which were designed specifically to support the pre-school ages in K0 and K1 classrooms) have evolved into more of an ELC model, whereby the programs have grown to include classrooms up to grade 3. There are many positive reasons for this outgrowth, and the program’s success is undeniable, but the unintended consequence is that only 307 of 979 students (31%) in the six EEC/ELC facilities are pre-school-age, while 2,459 K0 and K1 students (89% of the students in these grades) are scattered in classrooms across 69 BPS elementary or K–8 schools, making delivery of age- and pedagogy-specific staffing and programming more challenging.

EECs:

East Boston EEC:
184 pupils

Haynes EEC (Roxbury):
175 pupils



ELCs:

Baldwin Early Learning Pilot Academy (Allston-Brighton):
142 pupils

Ellison/Parks Early Education School (Mattapan):
189 pupils

Lee Academy Pilot School (Dorchester):
196 pupils

West Zone ELC (Jamaica Plain):
93 pupils

Three of these six schools are state-of-the-art facilities constructed after 1985, and are specific to the needs of the pupils and families they serve, and the neighborhoods in which they reside. All six are on excellent sites, but the three older facilities have poor learning environments and all score poorly when considering space needs for grade levels above kindergarten (K2).

Data from the assessments includes:

- 3/6 facilities (50%) have good/excellent overall FA-B scores, these are the three new facilities
- 2/6 facilities (33%) have good FA-S scores
- 2/6 facilities (33%) have poor EFE-LE scores
- 6/6 facilities (100%) have fair to poor EFE-S scores (this is a reflection of ELCs having elementary-age students in them, and also stems from some of them being older facilities with very small classrooms)



By continuing the successful and well-established EEC model, staff and services can be more readily directed toward the needs of Boston's youngest pupils. Increasing the number of K0- and K1-specific seats in the existing centers and adding more buildings in the district for kindergarten through grade 3 will free up capacity in the currently overcrowded elementary schools. That new capacity can then be used for arts & music rooms and media centers, and potentially science, technology, and maker spaces, which would help the district achieve its educational vision.



Ellison/
Parks EEC

Elementary Schools

Elementary grades are generally considered grades K2–5, though there are a number of variations that include younger or older grades. We have grouped 44 schools into this category of elementary schools. The buildings range in era of construction from pre-1900 to present, with a large percentage built before World War II. Many of these buildings, therefore, suffer from the same challenges that affect most of the pre-WWII buildings in BPS’s portfolio. They are typically undersized by a fair margin and fail to meet certain programmatic and technology goals for the

district. Balancing the desire and need for home-based, high-quality schools with effective, operationally appropriate elementary schools is a challenge.

Possibly the largest hurdle, programmatically, for elementary schools—should BPS move forward with its desire to expand more K–5 schools to K–6—will be incorporating grade 6 and creating dedicated teaching spaces for enrichment programs. Improving or introducing mechanical ventilation will also be difficult.

Data from the assessments revealed that:

Building Condition

- 71% of the schools are housed in buildings built prior to WWII
- 10/48 facilities (21%) have good/excellent FA-B scores
- 12/48 facilities (25%) have good FA-S scores (no excellent scores)
- 33/48 facilities (69%) have deficient or poor ventilation
- 11/48 facilities (23%) have poor EFE-LE scores

Program Spaces

- 35/48 facilities (73%) have poor to deficient EFE-S scores
- 29/48 facilities (60%) lack a dedicated art room
- 28/48 facilities (58%) lack a dedicated music room
- 25/48 facilities (52%) lack a library/media center

K–8 Schools

Many of the older K–8 schools started out as elementary schools, and they share many of the same characteristics. We identified and evaluated 34 K–8 schools in 37 buildings.

Possibly the largest challenges, programmatically, for K–8 schools will be incorporating true team-teaching and learning environments, project-based learning methodologies, and science/technical education teaching spaces, in addition to dedicated teaching spaces for enrichment programs, such as the arts. It is best when these schools are large enough to support full-time specialty teachers.

Improving or introducing mechanical ventilation in these school buildings will also be challenging.



Data from the assessments revealed that:

Building Condition

- 47% of the schools are housed in buildings built prior to WWII
- 17% of the students in K–8 schools have an additional transition point associated within a two-building K–8 split-site school (e.g., students in schools such as the Eliot K–8 Innovation School transition from one building to another during the course of their studies)
- 23/36 facilities (64%) have good/excellent FA-B scores
- 13/36 facilities (36%) have good to excellent FA-S scores
- 22/36 facilities (61%) have

deficient ventilation

- 10/36 facilities (28%) have poor EFE-LE scores

Program Spaces

- 27/36 facilities (75%) have poor to deficient EFE-S scores
- 25/36 facilities (69%) lack a dedicated art room
- 17/36 facilities (47%) lack a dedicated music room
- 13/36 facilities (36%) lack a library/media center



Middle Schools

There are only six middle schools across the City. The majority of the middle school-grade students attend K–8s, exam schools, or other secondary schools serving these grades as part of a 6–12 or 7–12 model. As with the K–8 schools, a challenge for the middle schools will be incorporating career and technical education teaching spaces, as well as dedicated teaching spaces for enrichment programs.

Data from the assessments revealed that:

Building Condition

- 5/7 facilities (71%) of the schools are housed in buildings built prior to WWII
- 3/7 facilities (42%) have good/excellent FA-B scores
- 4/7 facilities (57%) have good/excellent FA-S scores
- 5/7 facilities (71%) have deficient or poor ventilation
- 3/7 facilities (42%) have poor EFE-LE scores

Program Spaces

- 3/7 facilities (42%) have poor/deficient EFE-S scores
- 3/7 facilities (42%) have poor art room scores
- 5/7 facilities (71%) have poor/deficient music room scores
- 4/7 facilities (57%) lack a library/media center
- 4/7 facilities (57%) have poor vocational space scores



High Schools

BPS has 30 high schools in 28 buildings.¹ Many of these older facilities struggle to meet the high expectations for 21st century educational environments. Much of the high school portfolio is dated and particularly lacks project-based and collaborative learning spaces required for today’s pedagogy and BPS.

¹ Not including special high schools, such as the Boston Adult Technical Academy, the Carter School, Community Academy, or McKinley Schools.

Data from the assessments revealed that:

Building Condition

- 22/36 facilities (61%) of the schools are housed in buildings built prior to WWII
- 21/36 facilities (58%) have good/excellent FA-B scores
- 15/36 facilities (42%) have good/excellent FA-S scores
- 16/36 facilities (44%) have deficient or poor ventilation
- 10/36 facilities (28%) have poor EFE-LE scores

Program Spaces

- 22/36 facilities (61%) have poor/deficient EFE-S scores
- 22/36 facilities (61%) lack a dedicated art room
- 23/36 facilities (64%) lack a dedicated music room
- 18/36 facilities (50%) lack a library/media center
- 13/36 facilities (36%) lack technology or vocational spaces



Overall Scores by Typology



Early Learning

	Baldwin Early Learning Pilot Academy	East Boston Early Education Center	Ellison/Parks Early Education School	Haynes Early Education Center	Lee Academy at the Field	West Zone Early Learning Center
Overall Scores						
EFE: Learning Environments	2	1	5	4	2	3
EFE: Spaces	2	1	3	3	2	2
FA: Site	4	4	4	4	3	4
FA: Building	4	5	5	5	3	4
Priority Items						
Boilers	3	4	5	5	2	5
Roof Membrane	1	4	5	5	4	3
Toilets Fixtures	3	5	5	5	5	3
Windows	4	5	5	5	4	4

Middle Schools

	Edwards, Clarence R. Middle	Frederick, Lilla G. Middle	Irving, Washington Middle	McCormack, John W Middle	McKinley Middle	Timilty, James P. Middle	UP Academy Boston
Overall Scores							
EFE: Learning Environments	2	5	2	3	2	2	3
EFE: Spaces	2	2	2	3	2	2	3
FA: Site	2	5	3	4	2	3	2
FA: Building	4	5	4	4	3	3	3
Priority Items							
Boilers	3	4	2	1	3	4	3
Roof Membrane	4	5	4	4	2	2	2
Toilets Fixtures	5	3	4	3	2	4	3
Windows	4	4	4	2	2	2	2

High Schools 7–12

	Boston Green Academy	Boston Latin Academy	Boston Latin School	Carter Development Center	Henderson, Dr. William W. Inclusion (Upper School)	O'Bryant, John D. School of Mathematics & Science	TechBoston Academy
Overall Scores							
EFE: Learning Environments	3	2	3	4	2	4	3
EFE: Spaces	2	3	3	1	2	2	3
FA: Site	4	3	4	4	3	5	3
FA: Building	4	4	4	4	3	4	3
Priority Items							
Boilers	5	5	4	3	3	2	3
Roof Membrane	4	5	5	5	4	5	5
Toilets Fixtures	3	3	3	5	1	5	2
Windows	3	5	5	4	5	3	4

High Schools 9–12

	Another Course to College	Boston Adult Technical Academy	Boston Arts Academy	Boston Community Leadership Academy	Boston Day & Evening Academy	Boston International Newcomers Academy	Brighton High	Burke, Jeremiah E. High	Charlestown High	Community Academy	Community Academy of Science & Health	Dorchester Academy	East Boston High	English High, The
Overall Scores														
EFE: Learning Environments	3	4	3	3	2	2	2	2	3	2	3	4	2	3
EFE: Spaces	2	2	3	3	2	2	2	3	3	2	3	2	2	3
FA: Site	4	3	2	3	4	2	3	4	4	2	3	3	4	4
FA: Building	4	4	4	4	4	3	3	3	4	2	3	4	4	4
Priority Items														
Boilers	3	4	4	4	5	3	4	4	5	2	4	4	2	5
Roof Membrane	4	2	4	5	4	3	4	5	4	2	4	4	4	4
Toilets Fixtures	5	3	4	3	5	3	2	3	5	2	4	4	5	5
Windows	4	5	5	5	2	3	4	2	5	4	3	3	3	2

	Excel High	Fenway High	Greater Egleston Community High	Kennedy, Edward M. Academy for Health Careers 9-10	Kennedy, Edward M. Academy for Health Careers 11-12	Lyon, Mary High	Madison Park Technical Vocational High	McKinley, Wm So. End Academy	McKinley, Wm. Preparatory High	Muniz, Margarita Academy	New Mission High	Snowden International School at Copley	Urban Science Academy	West Roxbury Academy
Overall Scores														
EFE: Learning Environments	2	4	5	3	3	2	4	2	2	4	3	2	3	3
EFE: Spaces	3	3	2	2	1	2	3	3	2	2	3	2	3	3
FA: Site	3	4	4	3	1	3	4	4	2	4	3	1	4	4
FA: Building	3	5	1	4	1	4	4	4	3	5	4	1	4	4
Priority Items														
Boilers	3	5	1	5	1	5	4	5	2	4	4	1	5	5
Roof Membrane	5	5	1	5	1	4	5	2	4	5	5	1	2	2
Toilets Fixtures	5	5	1	4	1	3	4	5	3	4	3	1	3	3
Windows	4	5	1	3	1	4	3	3	3	5	5	1	2	2

Elementary Schools

	Adams, Samuel Elementary	Alghieri, Dante Montessori School	Bates, Phineas Elementary	Beethoven, Ludwig Van Elementary	Blackstone, William Elementary	Bradley, Manassah E. Elementary	Channing, William E. Elementary	Chittick, James Clap School	Innovation F. Elementary	Condon, James F. Elementary	Conley, George H. Elementary	Dever, Paul A. Elementary	Dudley Street Neighborhood School	Ellis, David A. Elementary	Everett, Edwards Elementary
Overall Scores															
EFE: Learning Environments	2	3	3	3	3	2	2	3	2	3	3	3	3	2	2
EFE: Spaces	2	2	2	2	3	2	2	2	2	3	2	3	2	2	1
FA: Site	3	3	3	3	3	3	2	4	4	3	3	3	3	3	4
FA: Building	2	4	3	3	4	3	3	3	4	3	2	3	3	3	3
Priority Items															
Boilers	2	5	2	5	4	5	4	5	2	2	3	3	3	3	3
Roof Membrane	3	4	3	5	5	5	5	3	2	4	5	4	3	4	2
Toilets Fixtures	2	5	2	4	3	3	4	3	5	3	4	2	2	5	2
Windows	2	5	3	5	4	2	4	2	4	4	4	2	2	2	4

	Grew, Henry Elementary	Guild, Curtis Elementary	Hale, Nathan Elementary	Harvard/Kent Elementary	Henderson, Dr. William W. Inclusion (Lower School)	Higginson Elementary	Holmes, Oliver Wendell Elementary	Kennedy, John F. Elementary	Kennedy, Patrick Elementary	Kenny, Thomas J. Elementary	Manning, Joseph P. Elementary	Mason, Samuel W. Elementary	Mather Elementary	Mattahunt Elementary	Mendell, Ellis Elementary
Overall Scores															
EFE: Learning Environments	4	3	3	4	2	2	2	3	3	3	2	3	3	3	3
EFE: Spaces	2	2	2	3	2	2	2	2	2	2	2	2	3	3	2
FA: Site	4	4	2	4	3	3	3	3	4	3	2	3	3	3	3
FA: Building	4	4	3	3	3	3	3	3	3	3	3	3	3	5	3
Priority Items															
Boilers	4	4	2	4	3	2	3	4	2	4	4	3	5	3	3
Roof Membrane	4	5	1	3	4	4	4	2	4	5	1	1	5	5	5
Toilets Fixtures	4	4	4	4	2	2	2	3	2	2	3	2	2	5	2
Windows	5	2	5	4	2	2	4	5	2	4	4	3	4	4	4

	Mozart, Wolfgang A. Elementary	O'Donnell, Hugh R. K-8 Elementary	Otis, James Elementary	Perkins, Michael J. Elementary	Philbrick, John D. Elementary	Quincy, Josiah Elementary	Russell, William E. Elementary	Shaw, Pauline A. Elementary	Sumner, Charles Elementary	Taylor, Charles H. Elementary	Tynan, Joseph P. Elementary	UP Academy Holland	Winship, F. Lyman Elementary	Winthrop, John Elementary
Overall Scores														
EFE: Learning Environments	3	3	3	3	2	3	3	3	3	3	3	3	2	3
EFE: Spaces	2	2	2	1	2	2	2	2	2	2	3	3	2	2
FA: Site	3	3	3	3	3	4	3	3	4	3	3	4	3	3
FA: Building	3	3	3	3	3	3	3	3	3	3	4	4	3	3
Priority Items														
Boilers	2	2	5	4	5	5	3	5	2	5	5	4	5	2
Roof Membrane	5	3	3	4	4	2	2	5	4	4	3	3	3	4
Toilets Fixtures	2	2	2	2	2	4	2	3	5	2	5	5	4	2
Windows	5	3	2	4	5	2	4	5	4	4	3	5	5	3

K-8 Schools

	Boston Teachers Union K-8 School	Curley K-8 (Lower School)	Curley K-8 (Upper School)	Edison, Thomas A. K-8	Eliot, John K-8 (Lower School)	Eliot, John K-8 (Upper School)	Gardner Pilot Academy K-8	Greenwood, Sarah K-8	Haley K-8, Dennis	Hennigan, James W. K-8	Hernandez, Rafael K-8	Higginson/ Lyman K-8	Horace Mann School for the Deaf and Hard of Hearing	Hurley, Joseph K-8
Overall Scores														
EFE: Learning Environments	3	3	3	2	3	3	3	3	3	3	2	2	2	4
EFE: Spaces	2	2	2	2	2	2	2	2	2	2	2	2	2	2
FA: Site	3	3	3	3	3	3	4	4	4	4	3	3	3	4
FA: Building	4	4	4	4	3	4	4	3	4	4	3	3	4	4
Priority Items														
Boilers	3	3	4	5	4	2	4	5	4	5	3	4	4	5
Roof Membrane	5	2	4	4	1	2	5	4	5	3	2	4	4	4
Toilets Fixtures	4	3	2	5	2	4	4	3	3	3	2	3	3	4
Windows	5	2	2	4	4	5	4	5	4	4	4	2	3	5

	Jackson/Mann K-8	Kilmer, Joyce K-8 (Lower School)	Kilmer, Joyce K-8 (Upper School)	King, Martin Luther, Jr. K-8	Lee, Joseph K-8	Lyndon, Patrick K-8	Lyon, Mary K-8	McKay, Donald K-8	Mildred Avenue K-8	Mission Hill K-8	Murphy, Richard K-8	Ohrenberger, William H. K-8	Orchard Gardens K-8	Perry, Oliver Hazard K-8
Overall Scores														
EFE: Learning Environments	2	2	3	3	3	2	2	2	5	4	3	4	4	3
EFE: Spaces	2	2	2	2	3	2	2	2	4	3	3	2	4	2
FA: Site	3	4	3	4	4	4	3	3	5	4	3	3	4	3
FA: Building	4	3	3	3	4	4	4	3	5	4	4	4	5	3
Priority Items														
Boilers	4	5	5	4	3	4	5	4	5	4	5	5	5	5
Roof Membrane	4	4	3	4	3	5	4	5	5	5	4	4	5	3
Toilets Fixtures	3	5	5	3	4	2	3	4	5	3	2	4	5	4
Windows	3	2	2	4	5	4	4	2	5	5	2	4	5	2

	Roosevelt, Franklin D. K-8 (Lower School)	Roosevelt, Franklin D. K-8 (Upper School)	Tobin, Maurice J. K-8	Trotter, William Monroe K-8	Umana Academy, Mario K-8	UP Academy Dorchester	Warren/ Prescott K-8 Lower	Young Achievers Science & Math K-8
Overall Scores								
EFE: Learning Environments	5	3	2	3	2	3	3	3
EFE: Spaces	2	2	2	2	2	3	3	2
FA: Site	5	3	3	3	3	3	3	3
FA: Building	5	5	3	4	4	4	4	4
Priority Items								
Boilers	5	5	2	4	4	4	5	4
Roof Membrane	4	5	5	5	5	2	4	4
Toilets Fixtures	5	4	5	2	4	4	5	4
Windows	5	4	3	5	4	2	4	4

Capacity

As outlined in the Introduction, the BuildBPS team engaged in extensive analysis to bring greater clarity to the question of BPS capacity. Through our extensive exploration, one fact remained perfectly clear: **There is no universally-accepted way to calculate capacity.** It is not simply a matter of measuring square footage or counting desks and chairs. Rather, capacity raises a complex set of questions about how much space is available, and how that space may be appropriately used to serve students of particular ages, in various programs, for a wide range of uses.

Recent analyses of BPS capacity to date have approached the exercise with methodologies that relied on rough estimates and averages that did not account for the space needs of particular student populations (particularly students with disabilities and English learners), variations in class size by grade level established by the teachers' contract or how middle and high schools are scheduled at 90% and 85% utilization respectively. Even if those factors are accounted for, however, the result is often a limited assessment of classroom capacity, rather than a holistic look at the full range of space needs in schools -- such as rooms for enrichment programs, specialty subjects (e.g. art and music), dedicated spaces for counseling and therapies, and other supports. The calculation of true capacity depends heavily on the assumptions applied to these spaces. The standards for new construction used, by the Massachusetts School Building Authority (MSBA) for example, provide one perspective on what type of spaces and how much space is needed for 21st Century Learning.

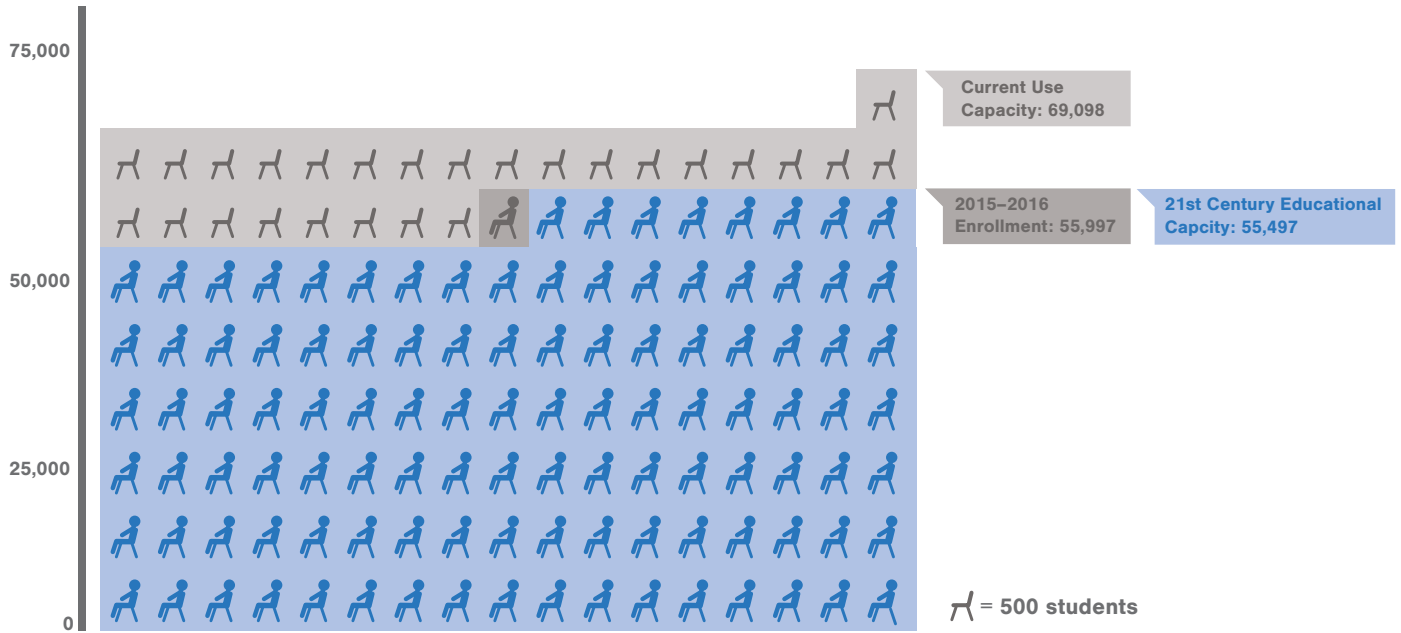
Why Is It Important to Understand Capacity?

Understanding districtwide capacity is imperative for adequate and effective annual planning, particularly to ensure successful implementation of the district's student assignment policy. In addition, there are real impacts on student learning. When a building is overcapacity, students' capacity to learn can be compromised. Conversely, running buildings and classrooms under capacity is a costly and an inefficient use of resources.

What Are Some Things to Remember When Considering BPS Capacity?

- Calculating capacity is not straightforward. *Counting all desks or students does not equate capacity. At its most basic level, practical capacity should be thought of as the number of students that can fit in the school's classrooms within the limits of the class sizes established in the teacher's contract and the program use for that space.*
- Capacity has to be considered by typology. *The capacity of a building depends entirely on the educational programs within it. A building has a very different capacity if it serves high school students than if it serves elementary school students, given both the differences in space requirements and classroom sizes, therefore excess capacity in a high school cannot offset a shortage in an elementary school without changes to the facility.*
- Some students have more than one seat in their school. *This is due to most special education and English learner (EL) students sitting in general classrooms, but also using pull-out and support spaces throughout the school day.*
- Programs for enrichment require space. *The BPS Educational Vision desires spaces for arts, music, science, world languages, technology, etc., that are in addition to the core classrooms.*

- Non-educational spaces are currently being used as classrooms. *Older buildings often use spaces that are not designed for educational use, such as sub-ground level spaces with or without windows, due to space constraints.*
- Older buildings in the BPS system have smaller classrooms. *Undersized classrooms typically found in many older BPS buildings cannot accommodate the class size established by the teacher's contract.*




How Did BuildBPS Calculate Capacity?

As highlighted above, there is no universally-accepted way to calculate capacity. Therefore, the BuildBPS team utilized two approaches to analyze the capacity of the district’s many complex and varied buildings.

The 21st Century Educational Capacity Model represents a more holistic understanding of space needs and learning environments in the district. The State has developed a series of educational space standards for new construction that represent one perspective on what spaces and how much space is needed for 21st Century Learning. In this model, the State’s standards were applied to each building

in the district. It accounts for additional spaces such as enrichment programs, specialty subjects (e.g. art and music), dedicated spaces for counseling and therapies, and other supports that will transform our schools and activate the learning and teaching experiences of the future. While it is unlikely that every building in the district will be modified or rebuilt to match the exact standards outlined by the State, this model is one approach to evaluate all the buildings in the district based on their ability to meet “realistic, contemporary and future-oriented educational program goals.”

Methodology: 21st Century Educational Capacity

Gross Square Footage per Building	divided by	Recommended Gross Square Footage per Student
The sum of all areas of all floors, including mezzanines, stairwells, and sub-ground level space having a floor slab and suitable headroom ¹ . Areas that are used exclusively as community center spaces are excluded. The use of an overall gross area calculator is not intended to disregard any facility’s ability to serve as a 21st century learning environment, as there are many factors that contribute to learning. However, gross area can be an important metric for the district, as it looks across its entire portfolio of buildings for alignment between capacity and programmatic appropriateness, and, ultimately, equity.		The standards are based on model educational programs for facilities and prescribe a variable gross square foot per student allowance that fluctuates with enrollment (145-235 GSF per student depending on typology). The gross square foot per student factor ² is a summation of each itemized educational space needed to meet “realistic, contemporary and future-oriented educational program goals” and includes both core academic spaces as well as space for art and music, technology programs, food service, and so on. ³ While these recommended factors do not take into account the nuances of a given school’s programming, it allows for a comparison across the district.



¹ Gross Square footage numbers for the buildings were provided by BPS Facilities staff.

² Gross square footage (GSF), as opposed to net square footage (NSF), is used so that comparisons could be made regardless of efficiency of design or use of space. When looking at GSF space multipliers, it is important to note that the GSF tends to increase for middle and high schools, as larger spaces such as gymnasias, auditorias, and associated support spaces become more prevalent. These spaces require more GSF, although they do not contribute to increasing a school’s capacity.

³ The gross square footage per student defined in 963 CMR 2.06(6) includes a baseline assumption that 8% of the total planned enrollment will be enrolled in separate special education programs. The percentage of BPS students receiving special education service exceeds 8%; this difference needs to be taken into consideration when applying the MSBA standards on future projects.

The Current Use Capacity Model represents BPS’s capacity in its buildings today. Based on the current students and programs in each building, it measures how our space is being utilized today. It accounts for schools with extra empty classrooms, as well as for schools where not all classrooms are full. This model improves on previous efforts to calculate capacity by defining which spaces are “capacity-generating” and by taking into account the space needs of particular student populations (particularly students with disabilities and English Learners), variations in class size by grade level established by the teachers’ contract and how middle and high schools are scheduled at 90% and 85% utilization respectively.

Methodology: Current Use Capacity Model

Number of Capacity-Generating Classrooms	<i>Multiplied by</i>	Number of Students per Classroom	<i>Multiplied by</i>	Utilization Factor (for Middle and High Schools)
<p>Through the facility assessment site visits and analysis of floor plans provided by BPS, data was gathered on the number of classrooms that are capacity-generating. Capacity-generating is defined as core general education classrooms, which includes science for grades 6-12, and substantially separate special education and English Language programs. Empty and/or unused classrooms in buildings were also counted.</p>		<p>The number of students were determined by the educational norms and standards established in the teacher’s contract given the classroom’s current use (see values in table below). While there are some classrooms in the district that could physically hold more than 30 students, it is assumed classrooms cannot serve more students than specified in the teacher’s contract. In addition, if a classroom is being used today for dedicated, substantially separate SPED or EL programming, a lower capacity number was applied, reflecting the specific needs of that student population (see the table on the next page for more details)</p>		<p>In this case, utilization is defined as the educationally-appropriate percentage of the school day that a teaching station can be used for instruction. Industry-standard utilization factors are 85% for high schools and 90% for middle schools. What this means is that a well-utilized high school “classroom” is used 85% of the school day. This is due to the large number of high school curricula offerings spread across the day, with students moving from classroom to classroom, but not all together. Not all rooms can be full for all periods of the day. Middle schools, because they use a “teaming” approach, with many students moving from classroom to classroom together, are able to be scheduled more efficiently. This is why the higher utilization rate of 90% is applied. Elementary school classrooms do not have a utilization factor applied to them because they are essentially home rooms, and students remain in the same room for the majority of the day, unless there are other enrichment program rooms in the building.</p>

What is the Capacity for Boston Public Schools by Typology and Neighborhood?

As stated earlier, there is no universally-accepted way to calculate capacity. The table on the following page identifies the results of both methodologies as outlined above in detail. The variations between the two methods will provide the District with a range to work within when determining future investments in facilities. In summary, the buildings as they are configured today with the current programs represent a capacity of about 69,100 seats. As the district makes continued investments in facilities, the district will move from the Current Use Capacity of today (69,100 seats) towards the 21st Century Educational Capacity of tomorrow (55,500 seats).

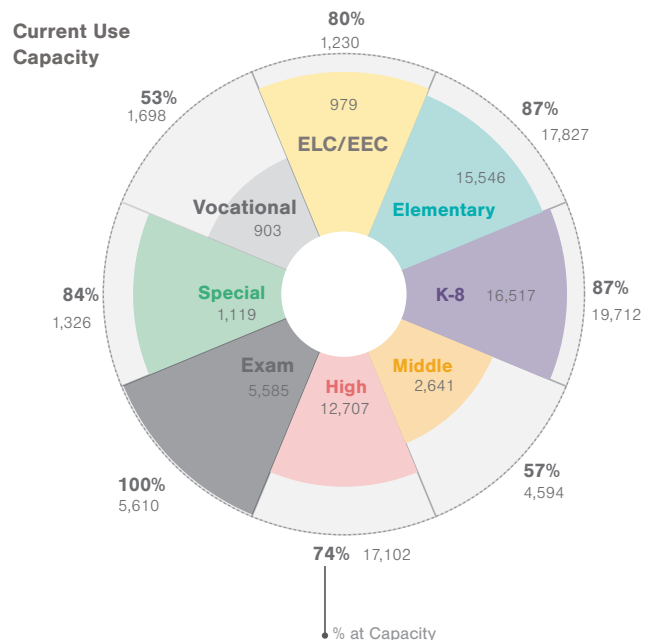
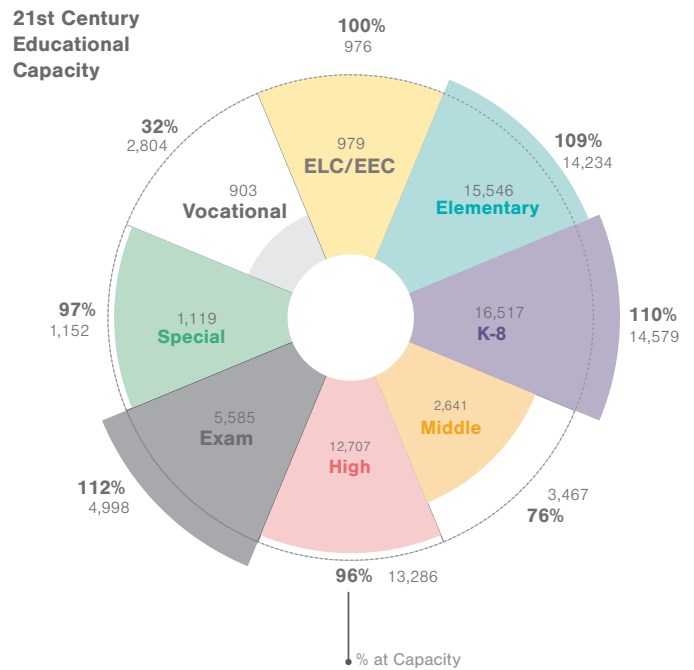
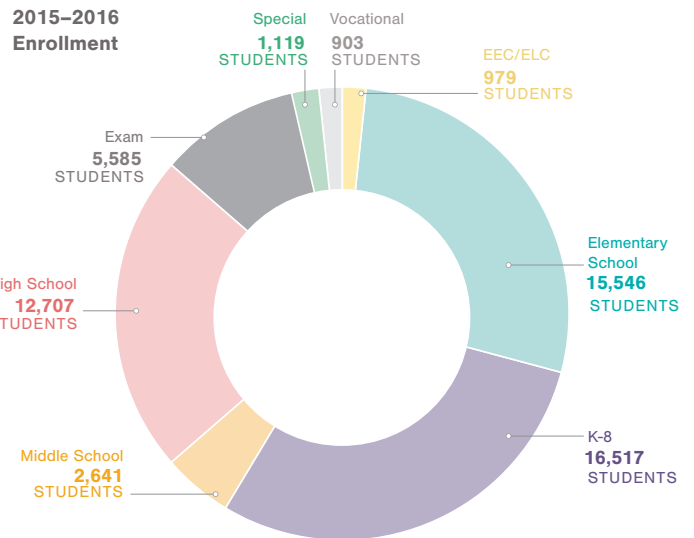
Students per Classroom Values

General Education	
GRADES	STUDENTS
K0, K1, K2, Grades 1 and 2	22
Grades 3-5	25
Grades 6-8	28
Grades 9-12	31

Special Education	
GRADES	STUDENTS
Early Childhood Center-Based	9
Early Childhood Inclusive	15
Autism	10
Emotional Impairment	10
Intellectual Impairment	12 (Low/moderate) 6 (High)
Multiple Disabilities	8
Physical Disabilities	8
Sensory Impairment-Hearing	6
Specific Learning Disabilities	12
Inclusion (Gr. K2-3)	20

English Learners	
GRADES	STUDENTS
SEI / Dual Language	20 (25 students with a paraprofessional)
SLIFE	15

Please note: General education values were determined by the values in the teacher's contract. The Special Education and EL values were determined in conjunction with BPS SPED and EL departments based on both state educational standards and the teacher's contract.



Enrollment by Typology

	Enrollment SY15/16	21st Century Educational Capacity			Current Use Capacity		
		# of Seats	+/-	% at Capacity	# of Seats	+/-	% at Capacity
Early Learning	979	976	-3	100%	1,230	251	80%
Elementary	15,546	14,234	-1,312	109%	17,827	2,281	87%
K-8	16,517	14,579	-1,938	113%	19,712	3,195	84%
Middle	2,641	3,467	826	76%	4,594	1,953	57%
High	12,707	13,286	579	96%	17,102	4,395	74%
Exam	5,585	4,998	-587	112%	5,610	25	100%
Special	1,119	1,152	33	97%	1,326	207	84%
Vocational	903	2,804	1,901	32%	1,698	795	53%
Total	55,997	55,497	-500	101%	69,098	13,101	81%

Enrollment by Neighborhood

	Enrollment SY15/16	21st Century Educational Capacity			Current Use Capacity		
		# of Seats	+/-	% at Capacity	# of Seats	+/-	% at Capacity
Allston-Brighton	4,282	4,248	-34	101%	5,215	933	82%
Back Bay/Beacon Hill	373	215	-158	174%	377	4	99%
Central Boston	1,990	2,217	227	90%	2,642	652	75%
Charlestown	2,389	2,537	148	94%	3,092	703	77%
Dorchester	8,411	8,494	83	99%	10,415	2,004	81%
East Boston	5,244	4,308	-936	122%	5,793	549	91%
Fenway/Kenmore	3,393	2,884	-509	118%	3,616	223	94%
Hyde Park	2,147	1,753	-394	122%	2,784	637	77%
Jamaica Plain	4,113	4,090	-23	101%	5,265	1,152	78%
Mattapan	2,811	3,536	725	79%	4,147	1,336	68%
Roslindale	2,556	1,744	-812	147%	3,382	826	76%
Roxbury*	10,575	9,215	-1,360	115%	11,955	1,380	88%
South Boston	2,632	3,239	607	81%	3,595	963	73%
South End	1,191	1,727	536	69%	1,521	330	78%
West Roxbury	2,987	2,484	-503	120%	3,603	616	83%
Madison Park*	903	2,804	1,901	32%	1,698	795	53%
Total	55,997	55,497	-500	101%	69,098	13,101	81%

* Madison Park is excluded from Roxbury for this analysis due to the unique nature of vocational capacity.

Elementary School Case Study

The BuildBPS team used an elementary school as an example of a pre-WWII facility that illustrates many of the renovation challenges relative to capacity analysis in the BPS system. By taking the classroom analysis further, through visualization, the team hopes to clearly show how individual site and building circumstances will play a critical role in determining the future viability of any individual facility to meet 21st century goals.

Existing 600-square-foot classroom

Typical of many schools of this pre-WWII era, small cellular classrooms are often narrow, and lose up to 100 square feet due to cloak closets within the rooms. Rooms are teacher-centric in this condition, with a singular teaching wall at the front, and students are required to sit in traditional rows to meet minimum capacity goals. Ventilation is often achieved through floor-mounted unit ventilators, which are ineffective, noisy, and take up valuable floor area.



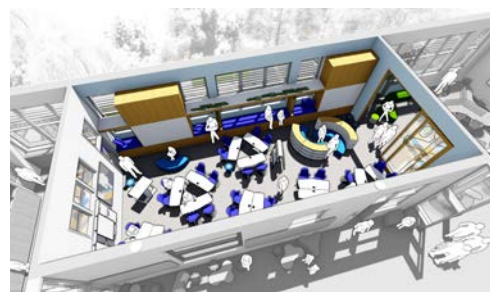
Working within the building's framework

By placing lockers in corridors and removing wardrobes from classrooms, additional space for learning can be created. By introducing mobile and flexible furniture, and modernizing technology and the distribution of teaching walls and displays throughout the room, Universal Design for Learning is more likely to occur. Ventilation may still need to utilize unit ventilation technology, and inefficient units may need to be expanded to offset floor-area gains.



Transforming beyond the classroom

By exploring more expansive renovations, classrooms can grow to accommodate furniture and technology. This can result in added transparency and openness, connecting classrooms to shared spaces such as resource rooms, a small group-learning areas, maker spaces, media centers, etc. In this case, six small classrooms become three modern classrooms and one resource room, small group room, and shared cloak spaces. In this transformed environment, capacity of the building will drop as the number of classrooms move from six to three.

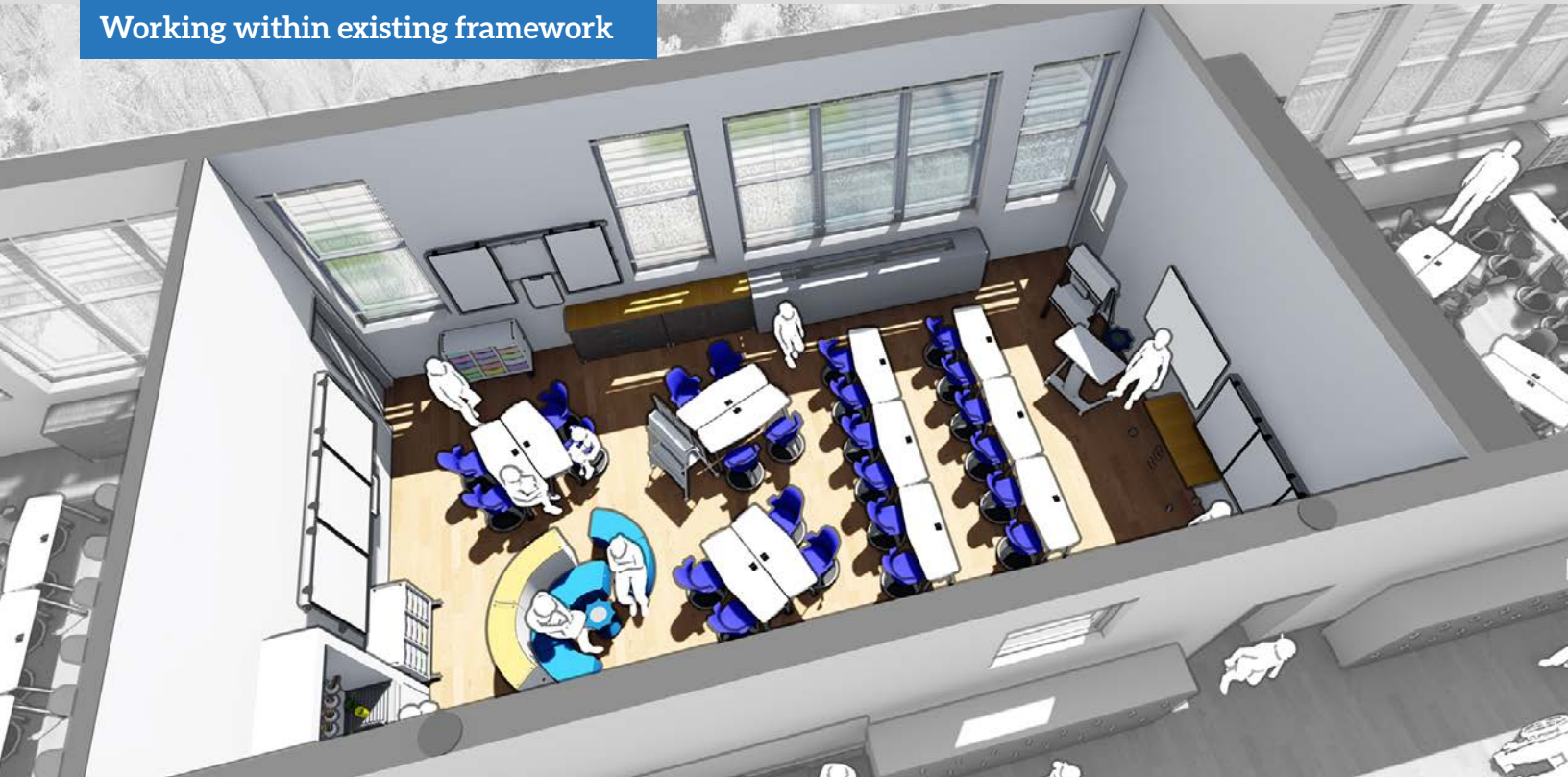


Capacity

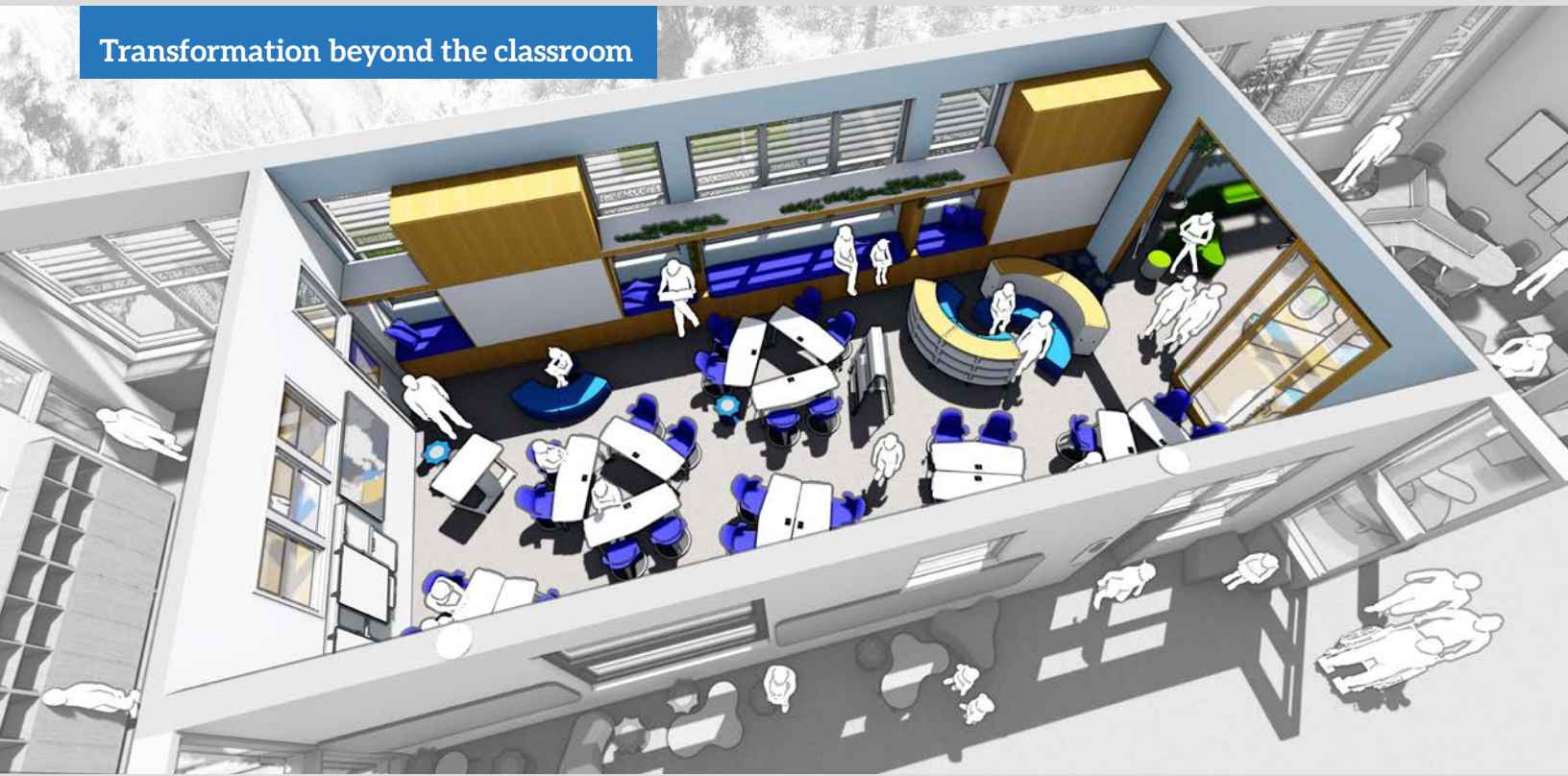
Elementary schools can be analyzed at 100% utilization, as general education and inclusion students occupy “home” rooms. National averages use a 40 NSF/pupil minimum for classroom spaces; a typical 22-student classroom should have a minimum of 880 NSF. The existing smaller classrooms therefore should have an occupancy of 15–17 pupils—a number often exceeded.



Working within existing framework



Transformation beyond the classroom





Existing Environments

The second floor features double-loaded corridors and small, densely packed classrooms. A few regular education classrooms have been converted for special education, but there are no toilets and none of the enhanced educational program spaces (e.g., art, music, media, science, or maker spaces) found in today's 21st century learning environments.

Transformed Environments

Where reconfigurations are possible, classrooms can be sized appropriately for the required class sizes. In this depiction, toilet rooms are added, as well as teacher planning, maker, special education inclusion, and small group instruction spaces.

Challenges

- Seismic: Analysis of shear walls and bracing
- Ventilation: New and expanded unit ventilators vs. rooftop mechanical units
- Historic Facades: Sensitive design of existing and any additions
- Cost: Triggers for accessibility, toilets, etc.

Swing Space

Swing space is defined as a space temporarily serving students away from areas undergoing renovation that will eventually serve those students. It can comprise new space, including temporary modular classrooms, or existing vacant space available for district use.

BPS has often been stymied by a lack of appropriate swing space, as well as few available sites capable of accommodating additions or complete new-school construction. As is the case in other densely populated cities, the construction or repurposing of a few key BPS facilities could be used to leverage the entire district's needs. A new or renovated swing space facility, without the customization that would accompany a particular school program, should be considered and could serve as a flexible testing ground for the goals outlined as part of the district's educational vision. Regardless of how it is realized, the availability of swing space is made necessary by the nature of the renovations and educational transformations detailed in the educational vision. Students and staff will need to relocate during construction and large-scale renovation projects.

Typology must be considered in any discussion pertaining to swing space. Modifying older facilities in the portfolio to meet a wide range of programmatic needs is challenging and makes creating an equitable framework for all students more difficult. The size of the impacted student population must also be considered. Dearborn STEM Academy students have been utilizing excess space at Jeremiah E. Burke High School during the construction of the new Dearborn STEM Academy building (to be opened in September 2018), but the size of the Dearborn enrollment is comparatively small; this option could be difficult to replicate in situations where the population to be moved is larger.

Factors to consider when contemplating the potential build-out or renovation of BPS swing space include:

- Location
- Specific typology to be served
- Size (a facility must be large enough to accommodate maximum populations within a typology)
- Potential for the use of partnership or leased space (e.g., during the renovation of Boston Latin School in 1988–89, three of the school's six grades were housed in available space at the nearby Massachusetts College of Art)
- Long-range building use and sustainability
- Long-range site viability

Swing spaces:

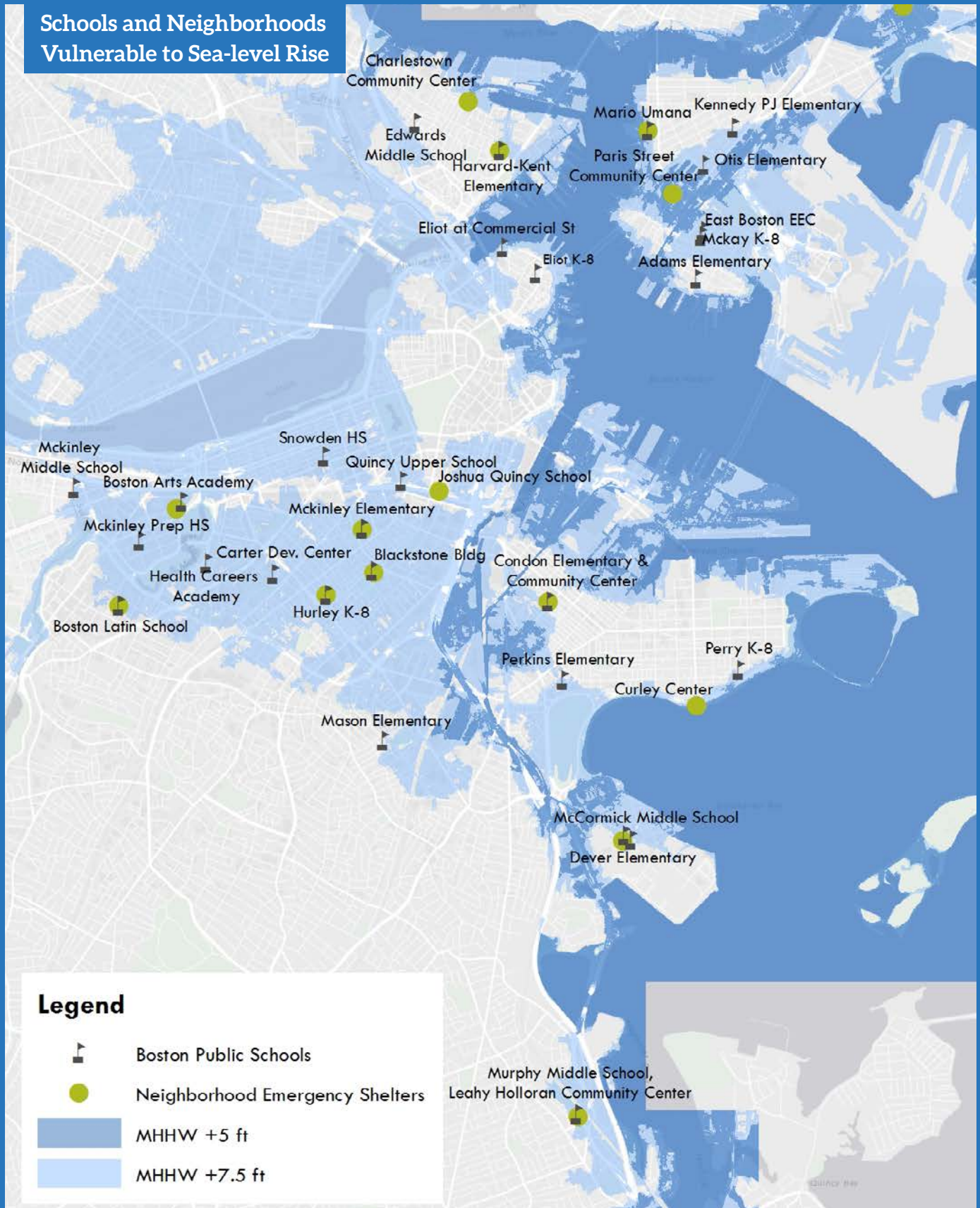
- Can be used to create multi-strand K–6 and K–8 schools
- Will see children moved to comparable or better environments during construction of new schools or renovations of existing schools for these students
- Can be used as “laboratories” for professional development and enrichment spaces
- Will potentially allow capacity to be increased where most needed
- Can eventually become the permanent home of existing or new schools, at the conclusion of the master plan.

Swing space is defined as a space temporarily serving students away from areas undergoing renovation or construction.

Swing space can occur within modular classrooms on the same site or on a remote site or entirely within other buildings.



Schools and Neighborhoods Vulnerable to Sea-level Rise



Climate Preparedness

As a coastal city, Boston faces significant challenges relative to climate change and predicted sea level rise, as documented in various recent local, regional, and national studies. As part of the BuildBPS assessments, each building and site has been evaluated for long-term risk, noting locations in low-lying coastal zones and flood plains, and considering general building “hardness” and ability to be made resilient.

School buildings are frequently the largest facilities in Boston’s densely developed neighborhoods, and are largely overlooked when regarding the City’s vulnerability and overall institutional resiliency. Many older school buildings tend to be located on prominent, higher-elevation sites, aligning with public education’s civic aspirations. Numerous school buildings in the BPS portfolio include large gathering spaces, such as gymnasias, auditoria, and cafeteria with cooking facilities. Preparing BPS’s facilities to remain operational, or to serve as emergency support centers during or after major weather events, should be a long-term strategy for the City’s resiliency planning efforts.

Factors to consider when regarding Boston’s and BPS’s buildings include:

- Long-range building sustainability
- Site viability
- Contribution to the City’s energy efficiency goals and policies
- Resiliency and contribution within a network of City or districtwide shelters

Currently, no BPS schools meet Red Cross or Federal Emergency Management Agency (FEMA) emergency shelter designations (they are not required to obtain licensed designation). Many communities today attempt to acknowledge the importance that school facilities play during seasonal or catastrophic events, and take measures to meet as many criteria as possible when planning and designing their facilities.

Considerations may include:

- Increased emergency generator capacity
- Photovoltaic arrays on suitable rooftops (see Climate Ready Boston studies)
- Shelter equipment, cots, and first aid storage space
- Emergency food storage capacity

BuildBPS utilized mapping and analysis provided by FEMA and the Urban Land Institute, as coordinated with numerous City agencies. The result identified that approximately 10 schools are within or directly adjacent to the 100-year flood zone and/or five feet (vertical) of mean higher-high water (MHHW), and will likely be impacted by sea-level rise within the next 50 years. Additionally, another 15 schools are within 7.5 feet (vertical) of MHHW will likely be impacted by sea-level rise within the next 100 years. Updated modeling and mapping from Climate Ready Boston and the Massachusetts Department of Transportation (MassDOT) should be incorporated into the next iteration of the plan, particularly as evolving climate science, modeling, and data continue to rapidly improve and evolve.



Partnerships

Partnerships have always played an important role in the BPS system. Whether formal or informal, public or private, the district's relationships with Boston's many educational and economic players have provided value-added services, enrichment opportunities, and places for growth that enhance learning and contribute to the overall BPS experience for students and teachers.

Over the next 10 years, it will be important to examine the potential of expanding and formalizing existing partnerships, while continuing to develop new ones. Doing so will increase access to more enrichment opportunities, create a network of shared learning and activity spaces, and help students identify areas of interest that align to the talent needs of the public and private sectors around the City.

This would include the development of regional, networked STEM and STEAM learning and maker spaces, and would allow students to be introduced to career pathways in medical, pharmaceutical, and other industries. Additionally, vocational training and apprenticeships would be a win-win for trade unions throughout Greater Boston that are in need of the next-generation workforce.

Facilities Assessment Advisory Committee Members

- John Hanlon, BPS Chief of Operations, Convener
- Al Taylor, BPS Administrator of Operations
- Carleton Jones, BPS Facilities Management Department
- Khadijah Brown, BPS Facilities Management Department
- Brian Chambers, BPS Facilities Management Department
- Mary Driscoll, BPS Principal Leader
- Ben Vainer, Mayor's Office
- Austin Blackmon, City of Boston Environment, Energy and Open Space Cabinet
- Joe LaRusso, City of Boston Environment, Energy and Open Space Cabinet
- Brian McLaughlin, City of Boston Public Facilities Department
- Mary McCoy, City of Boston Office of Budget Management
- Nick Kraman, Citywide Parent Council
- Joel Thompson, Citywide Parent Council
- Richard Stutman, Boston Teachers Union

Design Team Participants:

- Lorraine Finnegan, SMMA
- Philip Poinelli, SMMA
- Alex Pitkin, SMMA
- Chris Hazel, WSP | PB
- Susan Zoller, MGT
- Joe Clark, MGT

Owner's Project Manager

- Margaret Wood, Pinck & Co.





7

Participating Firms:

SMMA

Community Engagement

Purpose and Charge

Approach and Methods

Community Survey

Advisory Committee Members

Build **BPS**





Community Engagement

Purpose and Charge

The Community Engagement Advisory Committee was established to ensure that BuildBPS incorporated widespread input from the full range of BPS stakeholders—most notably, parents, students, teachers, administrators, community partners, and other residents. The group was charged with designing and providing execution support for a range of activities that would inform and involve the community throughout the process, providing opportunities for stakeholders to submit comments, ask questions, and propose ideas.

The full community engagement report can be found by clicking on the Reports tab on the BuildBPS Dashboard.

Approach and Methods

Through a series of live and digital activities, the Community Engagement Advisory Committee collected input from families, staff, and other BPS community members regarding various aspects of the BuildBPS process. The group facilitated discussions about both the current state of school buildings and priorities for future investments and improvements.

Additionally, committee members provided direction and feedback about the communications tools and resources that would be most useful to stakeholders.

The group helped design and execute five major components:

A community survey



Home About BPS Schools

Build BPS

BuildBPS

About

A districtwide community forum



A series of informal "Kitchen Table Talks"

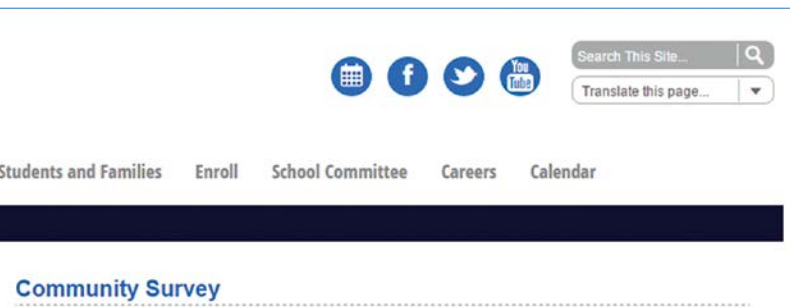


A communications toolkit to disseminate information



Community Survey

Available in nine languages, the community survey was conducted in two rounds and generated 2,186 responses from April 2016 through December 2016. The second round of surveys was conducted for a larger and more diverse sample. Respondents rated and provided comments on topics related to school buildings, particularly the current conditions of specific schools. The survey also asked respondents to rate the range and quality of academic and non-academic programs offered by the schools.



A citywide, weekend-long open house, featuring interactive exhibitions hosted by BPS staff and teachers

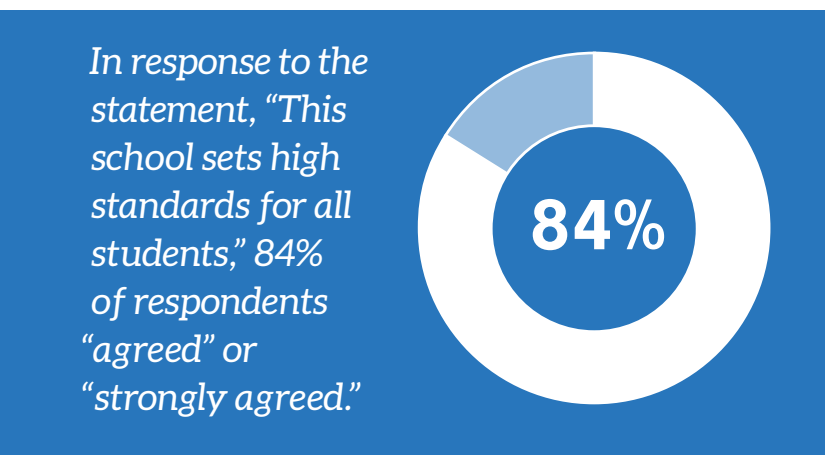


Results and Findings

Several major themes emerged from the responses to the survey. Most notably, the findings revealed that:

- Stakeholders are generally dissatisfied with the condition of BPS buildings, citing extensive need for renovations and repairs.
 - When asked to rate the condition of school facilities overall, only 40% of survey participants chose “good” or “excellent,” while 47% rated the buildings “fair” or “poor.”
 - School bathrooms, in particular, received very low marks, with 63% of respondents rating them “fair” or “poor.”

- Respondents reported vast inconsistency across the district, in terms of the types of specialized spaces available in school buildings.
 - When asked to rate particular features in schools, a significant percentage of respondents indicated that the feature “does not exist” in their school: library (31%), gymnasium (26%), auditorium (24%), science labs (43%), art room (41%), computer lab (40%), music room (44%), outdoor classroom (49%).
 - Many respondents particularly noted the lack of spaces available for student support services.
- There is widespread need for modernization of the school buildings, particularly in terms of safety and security features and instructional technology.
 - Only 38% of respondents “agreed” or “strongly agreed” with the statement: “The school has sufficient technology.”
- Despite these facilities shortcomings, respondents generally gave high marks to the range and quality of academic and extra-curricular programs offered by the schools.
 - 61% of respondents rated the quality of teaching and programs “excellent” or “good,” while 64% rated the range of class offerings “excellent” or “good.”
 - In response to the statement, “This school sets high standards for all students,” 84% of respondents “agreed” or “strongly agreed.”
- School buildings are inconsistent in their appropriateness for serving students with disabilities.
 - A series of questions specifically about special education programs yielded a range of opinions about the accessibility of school buildings, as well as the use of spaces specifically for special education programs.
 - 47% of respondents “agreed” or “strongly agreed” with the statement, “Special needs students have the ability to access the whole school.”
 - 47% “agreed” or “strongly agreed” with the statement, “The school has appropriate indoor space for students with disabilities who need a quiet space.”



Community Engagement Advisory Committee Members

- Monica Robert, BPS Office of Engagement, Convener
- Rahn Dorsey, Chief of Education
- Ben Vainer, Mayor's Office
- Mary McCoy, City of Boston Office of Budget Management
- Mary Ann Crayton, BPS Office of Engagement
- Carleton Jones, BPS Facilities Management Department
- Christopher English, City of Boston Office of Intergovernmental Relations
- Lara Merida, Boston Planning & Development Agency
- Lisa Connor, Special Education Parent Advisory Council
- Dianne Lescinkas, Special Education Parent Advisory Council
- Gloria West, Citywide Parent Council
- Latoya Gayle, Citywide Parent Council
- Andre Dorsainvil, Citywide Parent Council
- Jessica Tang, Boston Teachers Union
- Darlene Lombos, At-Large Boston Student Advisory Council

Design Team Participants

- Lorraine Finnegan, SMMA
- Alex Pitkin, SMMA

Owner's Project Manager

- Margaret Wood, Pinck & Co.





Participating Firms:

SMMA
WSP | PB

Finance

Purpose and Charge

Approach and Methods

Findings

Advisory Committee Members



\$



Finance

Purpose and Charge

The City of Boston is embarking on the challenging task of upgrading BPS facilities to meet the needs of a 21st century education. The Finance Advisory Committee was charged with framing options for financing the capital needs required to meet these ambitions. BuildBPS, therefore, establishes a \$1 billion commitment over 10 years of investments that the City will fund primarily with money from its annual general obligation bond issues, and by partnering with the Massachusetts School Building Authority (MSBA). Mayor Walsh's \$1 billion commitment is more than double the capital spending on BPS facilities over the last decade, and his dedication to providing BPS students with quality facilities is reflected in the plan's vision.

The full finance report can be found by clicking on the Reports tab on the BuildBPS Dashboard.

Approach and Methods

A Vision for Better Schools

To create welcoming schools that provide Boston’s students access to a world-class education, the Mayor has committed to a plan to identify and fund needed capital improvements across the school district. BuildBPS embodies a spirit of rebirth, addressing accrued capital asset investment funding shortfalls and setting Boston on a course for achieving significant improvements over the long term.

Historically, Boston has built new schools and maintained existing schools funded by its own general obligation bonds and the Commonwealth’s school building assistance program (formerly managed by the Department of Education and currently managed by the MSBA).

To approach financing the BuildBPS master plan, the members of the Finance Advisory Committee reviewed several possible sources including existing City of Boston borrowing levels and allocations to BPS projects, historic funding awards received from the MSBA, and other possible revenue streams. After reviewing multiple funding streams and understanding the limitations to the City of Boston’s legal authority to change its tax structure under state law, members of the committee determined that the most expedient and reliable way to fund BuildBPS was to maximize the City’s borrowing within its debt affordability policy and improve its ability to leverage resources from the MSBA.



BuildBPS embodies a spirit of rebirth, addressing accrued capital asset investment funding shortfalls and setting Boston on a course for achieving significant improvements over the long term.

Findings

The Challenge—High Costs and High Demand

BPS's facilities require substantial investments beyond what previous levels of City capital spending from general obligation bonds and MSBA contributions have historically supported. Most of the 134 school buildings in the BPS system are old—older than the average across the Commonwealth. As such, many roofs, windows, heating, and other critical systems are deficient or severely inefficient. Additionally, the cost of construction in Boston is higher than the average across the Commonwealth (and nation), making it difficult to stretch each invested dollar.

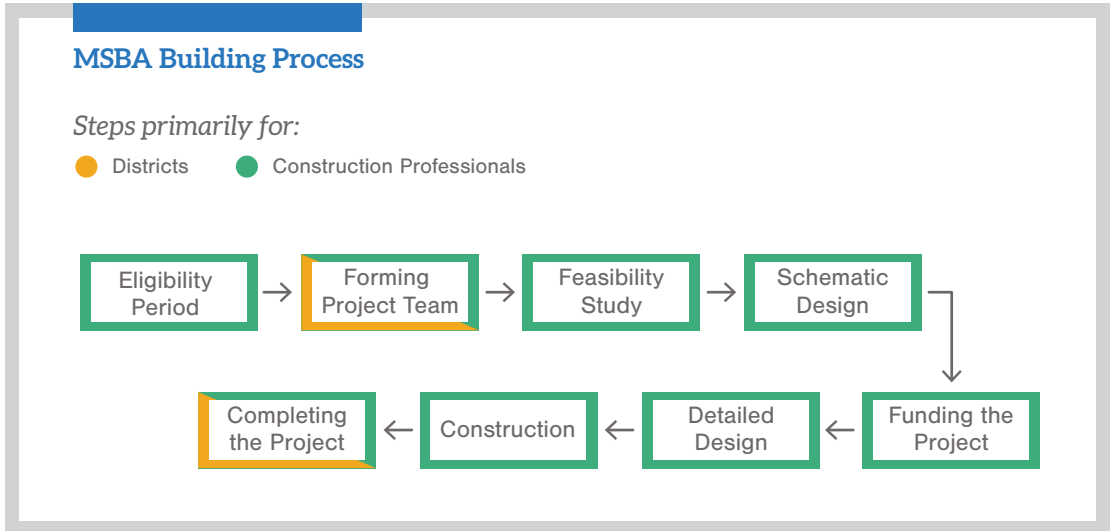


Mayor Walsh and Superintendent Chang inherited a backlog of repair needs that will exceed the City's investment over the past ten years (for a definition of what constitutes "repair," see the Reports tab on the BuildBPS Dashboard). Additionally, in over 75% of cases, repair costs are high enough to trigger legal thresholds that would require extensive renovations. Such renovations will need to address items such as accessibility, life safety code and fire protection improvements, additions of ventilation systems where existing systems are nonexistent or not up to code, and structural upgrades to address seismic event mitigation. Also, it should be noted that much of what can be done to building systems that are past their useful life has already been done, and that the maintenance of such systems is likely a considerable burden to preventive maintenance efforts and budgets.

BPS's operation will need to be considered when addressing these repair and renovation projects. The costs will also be driven by the need to identify swing space capacity for temporarily housing education programs. Although some swing space exists, there will be costs associated with matching the swing space available with the grade-level or education-specific needs.

To meet the student needs identified in BuildBPS, there will be high costs associated with constructing additions to expand undersized spaces and identifying new sites given the realities of urban land use.





Because the costs of building in Boston are high, Boston has experienced challenges with project costs exceeding the MSBA’s construction cost square foot cap currently set at \$312 sq/f. The MSBA Program funds a percentage of major renovation or new construction projects through a reimbursement system.

A reimbursement rate is assigned to each school district based on income and poverty factors. BPS’s calculated reimbursement rate has ranged recently between 65 and 75 percent based on this system, but the City of Boston’s actual return on major projects is less than that based upon the eligible square foot cap the MSBA sets annually and their determination of ineligible costs.

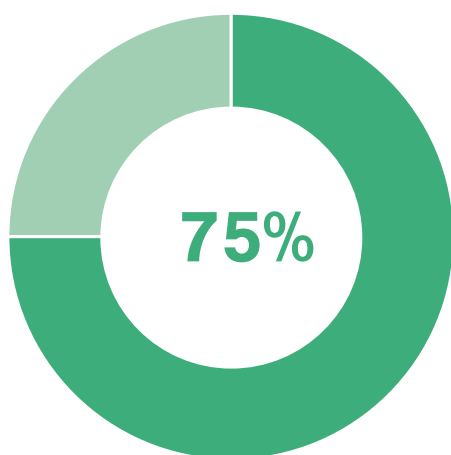
For example, the Dearborn STEM Academy’s project budget is \$73 million, and the MSBA reimbursement rate for this project is 75.34%, which would result in a \$55 million grant.

However, MSBA excluded \$22 million in total project costs largely as a result of the gap between Boston’s estimated construction costs (\$470 sq/ft) and the MSBA’s construction cap at the time (\$275 sq/ft). The project received a maximum project grant totaling \$37.3 million, an effective actual reimbursement rate of 50.8%.

Given the costs associated with school construction in Boston, BuildBPS provides critical data and a framework for prioritizing projects that will strategically guide the \$1 billion investment to best meet students’ needs.

Meeting the Challenge—Investment from Within

To achieve a \$1 billion investment in BuildBPS projects over the next ten years, the City of Boston and BPS have devised new ways to increase funding amounts from existing sources. To ensure long-term financial stability, the City of Boston maintains a debt affordability policy that limits the City's borrowing and provides for stable and manageable debt service payments from the City's operating budget. This policy along with other fiscally prudent debt policies has contributed to Boston's Triple A credit rating with a stable outlook, which has kept Boston's cost of borrowing low. The policy requires debt service to remain at or below 7% of total General Fund expenditures each year. With Boston's debt service currently at 5.8% of General Fund expenditures, the City plans to increase its borrowing to the 7% limit. This additional borrowing within its debt affordability policy will allow the City to commit \$730 million to BPS projects over the next ten years.



In over 75% of cases, repair costs are high enough to trigger the need to do more extensive renovations.

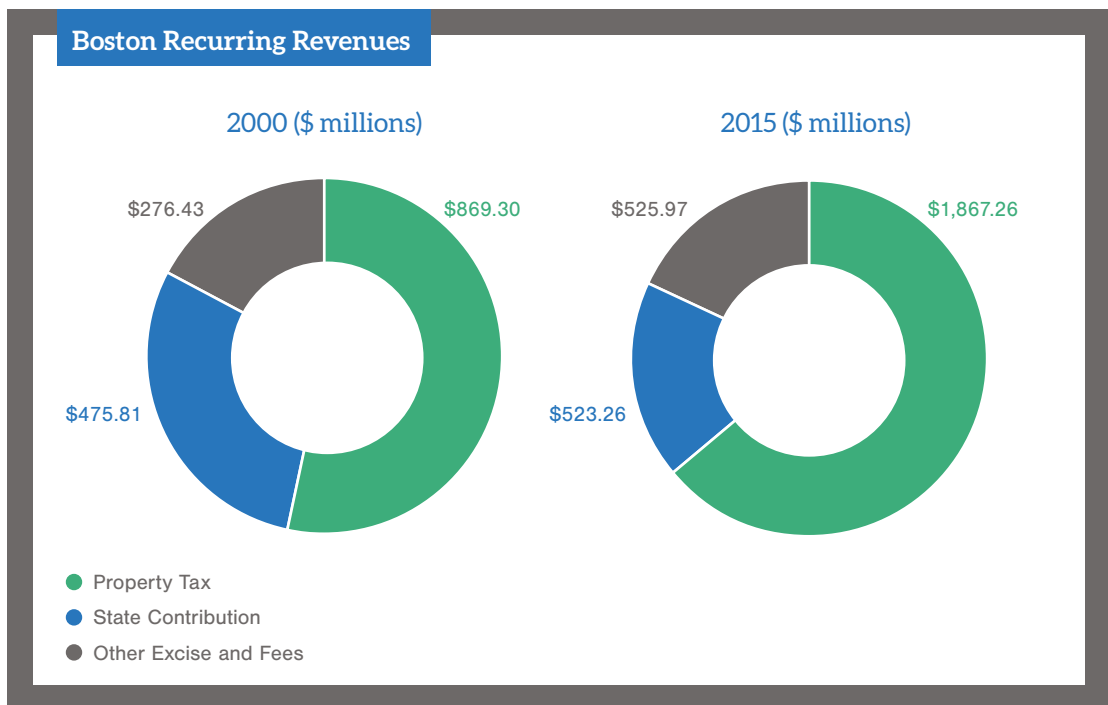
The City of Boston and BPS plan to improve their approach to gaining MSBA support for projects. For a successful implementation, BPS will need to receive a much greater portion of MSBA funding than it has in the past, particularly given the unique challenges and costs of building within the City. The MSBA is funded by a one cent carve-out of sales taxes in Massachusetts. Boston has contributed almost \$1 billion to the MSBA over the past decade; apart from annual payments it receives from the MSBA for projects approved under the old school building assistance program managed by the Department of Education, the City has only been reimbursed roughly \$60 million on \$105 million in capital spending on collaborative work with the MSBA. This carve-out in Boston accounts for about 10% of the annual funding received by MSBA, or about \$86 million in 2016. The funding contributed in Boston and not returned to Boston has effectively supplemented school building projects in other Massachusetts cities and towns.

Until recently, the City and BPS have been ineffective in accessing funds from the MSBA. However, they plan to continue to strengthen their work with the MSBA to streamline processes to facilitate faster project approvals, increasing the overall flow of funding to BPS projects. Currently, the MSBA's approval process takes several years (see attached MSBA process overview). By developing a pipeline of projects matched to MSBA programs, the City and BPS will strive to reduce planning and approval time.

Developing the Plan

Capital improvement projects that will be part of the BuildBPS plan will be evaluated over the next few months. The planning, design, permitting, and approval process is lengthy, and although Boston is working to streamline it, the procedural and organizational changes that must accommodate a major capital plan like BuildPBS cannot occur overnight. Therefore, the flow of program delivery envisioned involves project planning and design happening in the early years and construction ramping up in the middle to later years.

For a successful implementation of BuildBPS, Boston will need to receive a much greater portion of MSBA funding than it has in the past.



Source: 2008 Boston CAFR (pg.112-113), 2015 CAFR (pg.122-123)

Finance Advisory Committee Members

- David Sweeney, City of Boston Chief Financial Officer, Convener
- John Hanlon, City of Boston Office of Budget Management
- Katie Hammer, City of Boston Office of Budget Management
- Mary McCoy, City of Boston Office of Budget Management
- Ben Vainer, Mayor's Office
- Rahn Dorsey, Chief of Education
- John Hanlon, BPS Chief of Operations
- Donna Muncey, BPS Deputy Superintendent of Strategy
- Eleanor Laurans, BPS Finance Department
- Nate Kuder, BPS Finance Department
- Carleton Jones, BPS Facilities Management Department
- Michael Christopher, Boston Planning & Development Agency
- Austin Blackmon, City of Boston Environment, Energy and Open Space Cabinet
- Brian McLaughlin, City of Boston Public Facilities Department

Design Team Participants:

- Lorraine Finnegan, SMMA
- Alex Pitkin, SMMA
- Nickolas Amrhein, WSPPB

Owner's Project Manager

- Margaret Wood, Pinck & Co.



9

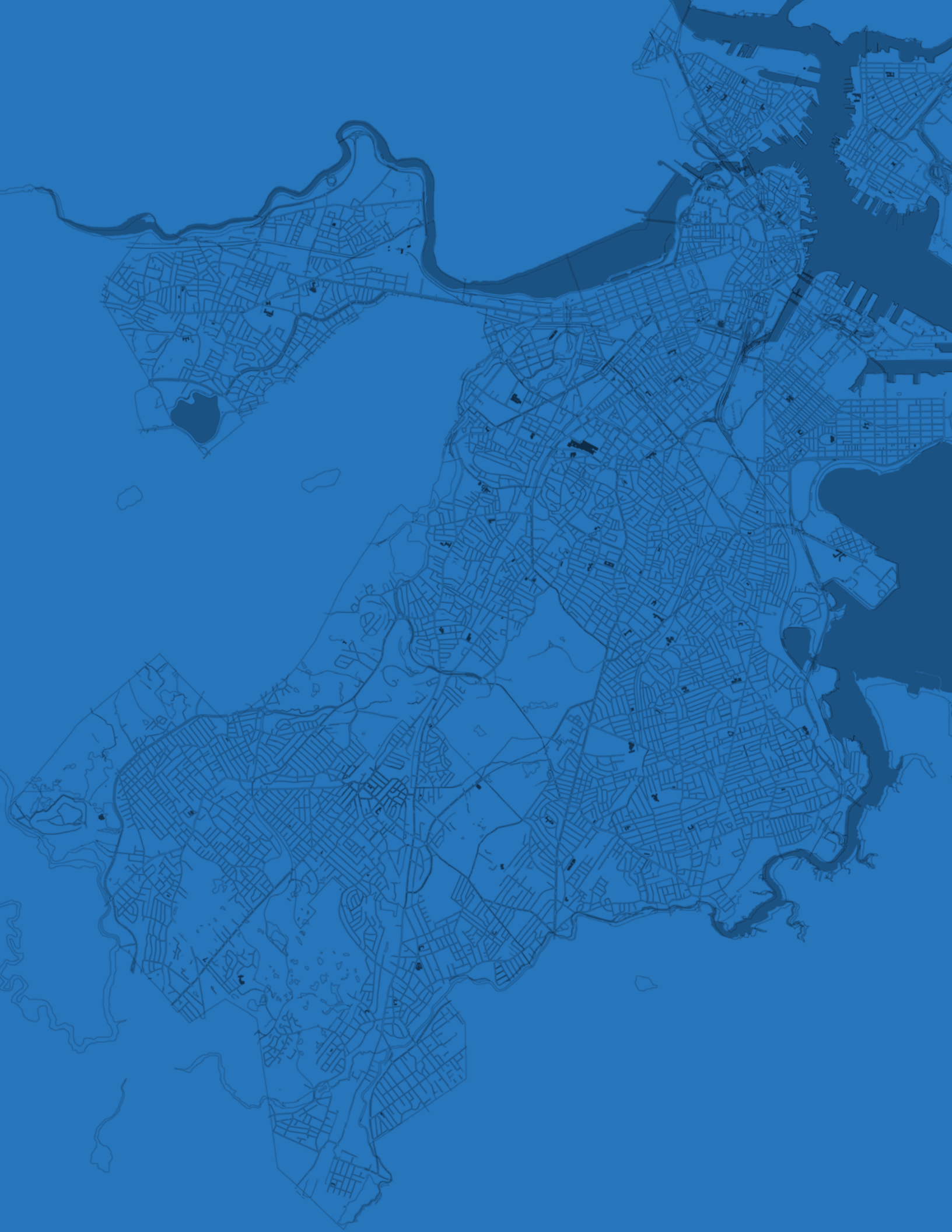


Participating Firms:
SMMA



Planning Principles

Build **BPS**



Planning Principles

Taking into consideration BPS's educational vision, and conclusions drawn from the analyses of population trends, district capacity, building conditions, and community feedback, the following principles have been identified to guide engagement, planning and capital spending over the next decade.

Nearly every building in the BPS portfolio is in need of some repair or renovation; therefore, to prioritize, every potential project needs to be considered through the lens of these planning principles.

BPS Planning Principles

1

Leverage real-time facility assessment data to prompt and validate investment choices.

4

Improve the match between educational programs and their facilities.

2

Create school environments that promote student and staff safety and well-being.

5

Maximize the energy efficiency of BPS facilities.

3

Align building capacity to enrollment and demographic trends citywide.

6

Focus new school construction primarily in high-growth neighborhoods with limited options for site expansion.

A Foundation of Engagement

7

Focus initial school renovation and expansion projects primarily in neighborhoods where school building sites can be expanded and where swing space is available.

9

Develop program and building utilization plans in neighborhoods that are not projected for high-growth among youth populations and have excess building capacity.

8

Expand K1 seats in neighborhoods where the estimated supply of high-quality seats does not meet demand, in accordance with analysis from the Universal PreK policy development process.

10

Optimize the geographic distribution of BPS high schools.

BuildBPS will embark on a new chapter of engagement in which the planning principles outlined above will build on the knowledge, creativity and dedication in our school communities to re-imagine and renew Boston's public school infrastructure.

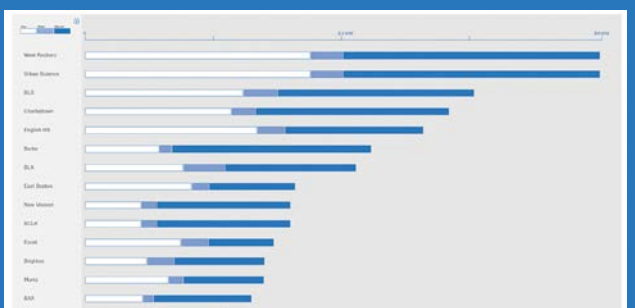
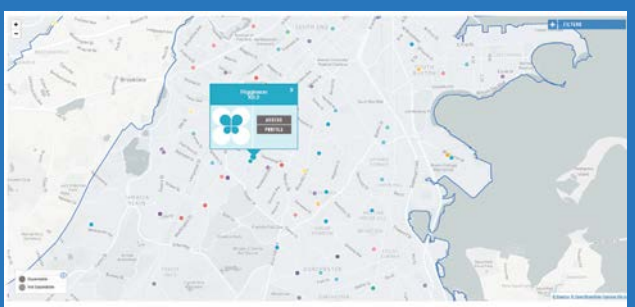
1

Leverage real-time facility assessment data to prompt and validate investment choices.

In line with Mayor Walsh’s commitment to open data, and data-driven decision making, facility assessment data must be used to help prioritize investments. The BuildBPS Dashboard offers a transparent means for all to engage with this data, and to use it to solve problems and make smart decisions. All engagement should incorporate this data and its analysis into discussions, to complement the many other pieces of information that need to be included.

BuildBPS Dashboard

The BuildBPS Dashboard is a searchable and sortable repository of BuildBPS data. It is expandable, but just like any other database, it requires maintenance to remain useful. The new school planning and construction office should standardize the software platforms its consultants, as well as its own professionals, utilize, and ensure that the data remains useful over the long term. The BuildBPS Dashboard is organized to allow for adaptation and data storage, and can be cross-linked to future building information modeling (BIM) programs and serve as an effective property management tool.





2

Create school environments that promote student and staff safety and well-being.

All of Boston's school buildings must provide clean, healthy, and safe environments for their staff and students. Excellent educational spaces are suffused with daylight and fresh ventilation, with excellent acoustical properties and proper temperature controls. Boston must identify and plan accordingly to adapt its buildings, as this will require multiple years of planning and renovations to achieve.

In many instances, providing healthy learning environments simply means adhering to updated building code requirements. Prioritizing, planning, and managing the complexities of the master plan implementation will require buy-in and long-term cooperation from numerous stakeholders, to ensure that high standards necessary for healthy learning environments are set and followed.

The BuildBPS process has highlighted the need for the following in all school buildings:

- Proper kitchen/food service facilities, to promote healthy and delicious food options, which are necessary to power Boston's children's brains throughout the day
- Fresh air ventilation, which is lacking in many older facilities
- Safe, secure, monitorable entrances
- Fire protection and updated alarm systems
- Full accessibility compliance
- Improved quantity and quality of natural and artificial lighting
- Proper toilet/bathroom facilities
- Improved outdoor landscaping and learning environments

Presently, 59% of all BPS students live in East Boston, Dorchester, Mattapan, and Roxbury.

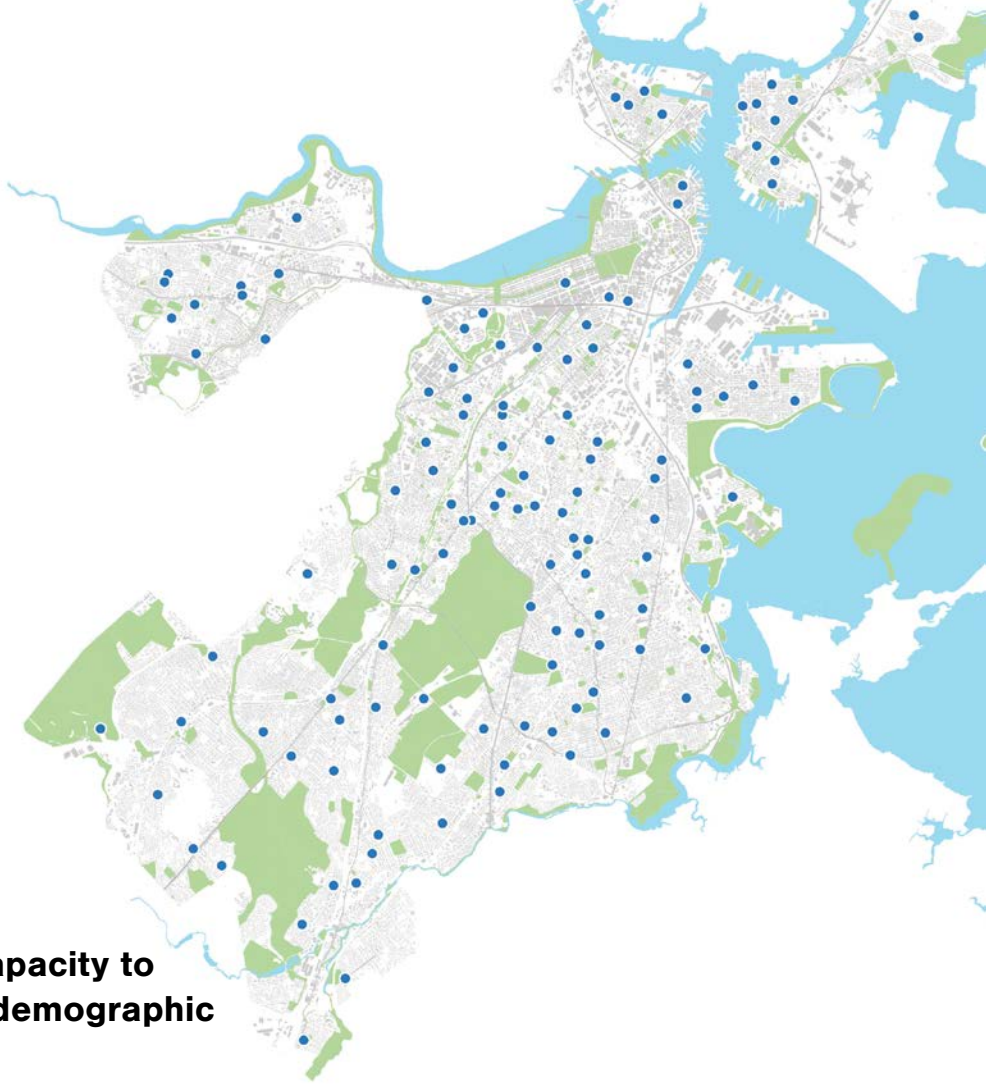
3

Align building capacity to enrollment and demographic data citywide.

The BuildBPS demographics study reveals that the district’s building portfolio does not align with where its children live today, nor with where they are expected to live in the coming decade (see workshop models in Section 10). Presently, 59% of all BPS students live in East Boston, Dorchester, Mattapan, and Roxbury. Each new school development must be carefully considered, to ensure that it responds to local demand and is being built in an area that will accommodate the greatest number of children, both now and in the future. This will help ease transportation costs, as well as create neighborhood learning environments and community resources.

Recommendations for aligning school siting with demographic shifts include:

- Focusing new school builds and expansions in neighborhoods where current or projected demand exceeds capacity, particularly in elementary grades.
- Ensuring that local demographic trends are not only addressed in specific grade bands, but are considered throughout the educational pipeline, clarifying the K0–12 pathways for all students, especially in underserved neighborhoods.
- Explore options for expanding district-wide schools serving students with disabilities. These buildings should be relatively centrally located, if possible, and must have the capacity to meet the needs of BPS’s most vulnerable students, including those who may currently attend out-of-district schools. For example, the Carter School, which is an individualized intensive special education program housed in a small, single-story building would benefit from more capacity for therapeutic spaces and equipment.



4

Improve the match between educational programs and their facilities.

Some schools are limited by the buildings that house them. For example, many schools do not have certain enrichment programs because they lack the appropriate spaces to offer them. To remedy this, BPS must:

- Match schools to buildings that best serve each school's programs.
- Create spaces for programs that serve a broad array of students with special needs, both in inclusionary and dedicated (i.e., substantially separate) environments, and that are connected to the general education population in a meaningful manner.
- Identify teaching and learning spaces for enrichment and specialized programs (e.g., art and music rooms, science classrooms, and media centers).
- Enable schools to accommodate Universal Design for Learning (UDL), a set of principles for curriculum development that gives all students opportunities to learn. UDL provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone—not a single, one-size-fits-all solution, but rather flexible approaches that can be customized and adjusted for individual needs (per the National Center on Universal Design for Learning).
- Create spaces that serve the specific population's needs (e.g., English Learners, special education students, etc.).



If these spaces cannot be achieved within the footprint of the existing buildings BPS should strategically locate new shared spaces that can be accessed and utilized by multiple schools. These could include large maker-spaces, technology centers, and media labs, and many could be funded, in part, by public and private partners committed to helping the BPS community. As part of the first round of major investments, the following types of spaces should be included, and made available to students across the district:

- Art Studios
- Performance Spaces
- Maker Spaces
- STEAM Labs
- Kitchens
- Administrative Offices

5

Maximize the energy efficiency of BPS facilities.

For BPS, one of the greatest challenges of the 21st century will be ensuring that students are prepared for the realities of a changing global climate. BPS and the City of Boston can demonstrate their collective commitment to long-term stewardship of the planet by creating healthy, energy-efficient facilities and learning environments. Improvements to energy efficiency have the dual benefit of creating school environments that promote student and staff well-being and reducing overall energy costs. To deliver on this commitment to sustainability, BPS should:

- **Participate in the City’s self-funded Renew Boston Trust energy-performance contracting program**, which will deliver greater levels of investment in energy efficiency and clean-energy technology across BPS facilities. Given that BPS accounts for more than 11 million square feet of the City of Boston’s approximately 16 million-square-foot building stock, BPS facilities will be one of the primary focuses of the Renew Boston Trust program.
- Provide energy education opportunities for students, to function in concert with the Renew Boston Trust Program. Since a building is only as energy efficient as the people who occupy and work in it, **the Renew Boston Trust program should be delivered in concert with energy education opportunities for BPS students**. Energy efficiency and smart technologies offer a number of STEAM learning opportunities, whereby students can learn about the cutting-edge technologies installed in their own school buildings.
- **Focus on “whole school sustainability”** by bringing together departments, community organizations, and school leaders to make meaningful impacts in saving energy, recycling, promoting health and wellness, and connecting students to environmental, and community learning opportunities. This approach will build on the existing actions outlined in the City’s Greenovate Boston 2014 Climate Action Plan to empower and educate youth to take action on climate change in their schools.



6

Focus new school construction primarily in high-growth neighborhoods with limited options for site expansion.

Generally speaking, it makes sense to focus new school construction and school site expansion in Boston neighborhoods that are projected for high growth among youth populations. If the neighborhood does not have expandable buildings or sites, or the excess capacity needed for swing space while expansions and renovations are undertaken, then new school construction may be the best strategy for increasing school capacity.

East Boston is a good example of this. Demographic analyses indicate that East Boston will be one of four high-growth neighborhoods for populations less than 18 years old over the next 10 years, in addition to Roxbury, Mattapan, and Dorchester. When comparing current demographics and school enrollment data with school building capacity estimates, it is evident that East Boston has a significant capacity deficit. Looking at the facilities assessment data presented in Section 6, it is also clear that current East Boston schools have few options to expand their sites, due to the dense surrounding urban fabric and their proximity to at-risk coastal boundaries.

Current demographics and BPS enrollment data show that both the number of children living in East Boston (6,507) and the number of children attending school in East Boston (5,244) exceed the number of school seats determined by 21st century educational capacity estimates (4,308). The difference between the number of children living in East Boston and current 21st century educational capacity estimates is 2,199 seats. The difference between the number of children attending East Boston schools and current 21st century educational capacity estimates is 936 seats. This data suggests that BPS should add more school capacity in the neighborhood.

East Boston Capacity

	Enrollment SY15/16	21st Century Educational Capacity			Current Use Capacity		
		# of Seats	+/-	% at Capacity	# of Seats	+/-	% at Capacity
Early Learning	184	182	-2	101%	210	26	88%
Elementary	2,038	1,185	-853	172%	2,193	155	93%
K-8	1,527	1,480	-47	103%	1,883	356	81%
Middle	0	0	0	0%	0	0	0%
High	1,495	1,461	-34	102%	1,507	12	99%
Exam	0	0	0	0%	0	0	0%
Special	0	0	0	0%	0	0	0%
Vocational	0	0	0	0%	0	0	0%
Total	5,244	4,308	-936	122%	5,793	549	91%
Total Students Residing in Neighborhood	6,507						
Difference	-1,263						

Notes on East Boston

- Umana K-8 has an attached community center so the capacity value reflects space that cannot be used educationally

In addition to East Boston, Hyde Park, Mattapan, and Roslindale, may also be candidate neighborhoods for building new schools. Mattapan is a high-growth neighborhood where the current population of children exceeds the number of school seats determined by 21st century educational capacity estimates. While Hyde Park is not projected to be among Boston's high-growth neighborhoods for youth, both current youth population (3,444) and current BPS enrollment in Hyde Park schools (2,147) exceed the number of school seats in Hyde Park determined by 21st century educational capacity estimates (1,753). Similarly, Roslindale is estimated to have a shortage of seats. The current population of children in Roslindale (3,605) exceeds the number of school seats determined by 21st century educational capacity estimates (1,744) by 1,861 seats. Current enrollment in Roslindale schools (2,556) exceeds the number of school

seats determined by 21st century educational capacity estimates (1,744) by 812 seats, suggesting that improved school environments and capacity might also improve the capture rate.

Unlike East Boston, though, there may be site-expansion options in Mattapan, Hyde Park, and Roslindale at current BPS schools.

Note: While the data points to examples of neighborhoods where new school construction should be considered, unique investment and construction opportunities, that this report cannot anticipate, may come forward in other neighborhoods. Such opportunities should be considered and further examined.



Focus initial school renovation and expansion projects primarily in neighborhoods where school building sites can be expanded and where swing space is available.

Several of the analyses presented in this report point to Roxbury, Mattapan and Dorchester as primary candidates for school site expansion and major school building renovation. As noted in Building Block #6, Roxbury, Mattapan and Dorchester—along with East Boston—are projected to be high-growth neighborhoods over the next decade. Each of these densely populated neighborhoods has the distinction of having more students residing in the neighborhoods than school capacity—this is particularly true in the elementary school grades. It would be most strategic to ensure that near-term efforts focus on providing access to next-generation school spaces in these neighborhoods.

Notes on Roxbury:

- Boston Latin Academy has estimated 100,000 GSF of non-educational space that would require significant renovation to be usable.
- Dearborn STEM Academy will add capacity in grades 6-12 but is still under construction so is excluded from in the table.

Roxbury Capacity							
	Enrollment SY15/16	21st Century Educational Capacity			Current Use Capacity		
		# of Seats	+/-	% at Capacity	# of Seats	+/-	% at Capacity
Early Learning	175	178	3	99%	220	45	80%
Elementary	1,903	1,239	-664	154%	2,124	221	90%
K-8	3,071	2,628	-443	117%	3,495	424	88%
Middle	904	1,227	323	74%	1,433	529	63%
High	976	855	-121	114%	1,204	228	81%
Exam	3,146	2,842	-304	111%	3,089	-57	102%
Special	400	246	-154	163%	390	-10	103%
Vocational	903	2,804	1,901	32%	1,698	795	53%
Total	11,478	12,019	541	95%	13,653	2,175	84%
Total Students Residing in Neighborhood	9,870						
Difference	1,608						

While not immediately apparent, it is also true that Roxbury has more students than 21st century educational capacity when you exclude the Madison Park Complex from capacity estimates. It makes sense to think about Madison Park separately from the rest of Roxbury’s school capacity because the building is poorly suited

to uses other than its original purpose for the vocational programs currently in use. The difference between children living in Roxbury and school capacity will only be exacerbated as the school age population in Roxbury grows.

Notes on Dorchester:

- Buildings that are leased to others do not provide capacity and are excluded.
- Up Holland and Murphy K-8s have community center space (pool, community room, dedicated ancillary spaces) excluded from the capacity calculation.

Dorchester Capacity							
	Enrollment SY15/16	21st Century Educational Capacity			Current Use Capacity		
		# of Seats	+/-	% at Capacity	# of Seats	+/-	% at Capacity
Early Learning	196	158	-38	124%	255	59	77%
Elementary	3,583	3,266	-317	110%	4,042	459	89%
K-8	2,217	2,321	104	96%	2,454	237	90%
Middle	519	641	122	81%	921	402	56%
High	1,896	2,109	213	90%	2,743	846	69%
Exam	0	0	0	0%	0	0	0%
Special	0	0	0	0%	0	0	0%
Vocational	0	0	0	0%	0	0	0%
Total	8,411	8,484	83	99%	10,415	2,004	81%
Total Students Residing in Neighborhood	11,821						
Difference	-3,410						

In Dorchester, the number of available school seats determined by 21st century educational capacity estimates exceeds the number of children attending BPS schools in Dorchester but is less than the number of children living there. In addition, Dorchester has been identified as an area of high growth over the next 10+ years,

so, the number of children living there is only expected to grow. Using school enrollment data, there are more school seats than students attending Dorchester schools. Most of the available seats are at the middle school (upper K-8 grades) or high schools.

Mattapan Capacity							
	Enrollment SY15/16	21st Century Educational Capacity			Current Use Capacity		
		# of Seats	+/-	% at Capacity	# of Seats	+/-	% at Capacity
Early Learning	189	184	-5	103%	220	31	86%
Elementary	1,284	1,434	150	90%	1,727	443	74%
K-8	963	1,460	497	66%	1,608	645	60%
Middle	0	0	0	0%	0	0	0%
High	375	459	84	82%	592	217	63%
Exam	0	0	0	0%	0	0	0%
Special	0	0	0	0%	0	0	0%
Vocational	0	0	0	0%	0	0	0%
Total	2,811	3,536	725	79%	4,147	1,366	68%
Total Students Residing in Neighborhood	5,282						
Difference	-2,471						

Notes on Mattapan:

- Mattahunt is included as an elementary school but will serve as an Early Elementary School in the 2017-2018 SY which will reduce elementary capacity.
- Mattahunt Elementary has an attached community center, but some of that space is excluded from the total GSF.

Mattapan is a different case, with fewer schools than the other neighborhoods listed here, and a current population of children that exceeds the number of school seats determined by

21st century educational capacity estimates. However, current enrollment in Mattapan schools does not exceed capacity, suggesting the capture rate can improve.

Leveraging the limited excess capacity within Boston’s high-growth neighborhoods is an opportunity from a planning perspective. This means that Roxbury, Mattapan, and Dorchester, through careful planning, may be able to create the “swing space” needed to temporarily house students while major expansions and renovations are done on building sites in these neighborhoods. The City of Boston and BPS should identify school sites in these neighborhoods that could be upgraded to meet BPS’s educational vision and MSBA standards, and/or sites that have excess capacity to temporarily house impacted school communities. The City and district must, however, take neighborhood-wide building conditions, missing programmatic spaces, and available sites for expansion into account before drawing final conclusions. Strategic expansion of EEC/ELC and elementary sites in these neighborhoods could also help to close high-quality pre-K seat gaps identified via the City’s Universal Pre-Kindergarten policy,

which looks to fill those gaps through inverting in both BPS and community based stats. As investments are made in site expansion and building upgrades, the City and district should aim to align programs with the right spaces (e.g., high schools in high school spaces, special education programs in appropriate buildings) and to strike a sustainable balance between large, multi-strand schools and smaller school settings. Decisions regarding school building upgrades, relocations, and program alignment in any neighborhood should be informed by the community collaboration process

Note: While the data points to examples of neighborhoods where school renovation and expansion projects should be considered, unique investment and construction opportunities, that this report cannot anticipate, may come forward in other neighborhoods. Such opportunities should be considered and further examined.

8

Expand K1 seats in neighborhoods where the estimated supply of high-quality seats does not meet demand, in accordance with analyses from the Universal Pre-Kindergarten policy-development process.

For the past two years, two task forces appointed by Mayor Walsh have worked to develop a policy framework that will guarantee free, full-day, high-quality pre-K education for every four-year-old in Boston. Analyses conducted during the policy-development process revealed that Boston has more pre-K seats (approximately 7,900) than four-year olds needing pre-K seats (approximately 5,350). However, the number of high-quality pre-K seats—those with teachers who have attained a bachelors degree or higher, using formal curricula and meeting state quality standards—falls short of demand. The quality pre-K seat gap is estimated to be 1,350 seats.

Analyses also show that quality seat gaps differ in Boston by neighborhood, and that not all neighborhoods have quality seat gaps. Quality seat gaps are greatest in Dorchester, Hyde Park, West Roxbury, Roxbury, East Boston, and Roslindale. Neighborhoods like South Boston, Brighton, Charlestown, Allston, and Jamaica Plain either have negligible gaps or quality seat surpluses.

The only way to fill gaps in a way that meets the needs of parents is through mixed-delivery expansion; that is, by increasing the number of high-quality seats in strategic neighborhoods, investing in both BPS seats and seats in community-provider settings. In most neighborhoods with quality seat gaps, investing in both will be required to close the deficit. Going forward, BPS planning for new EECs, ELCs, elementary schools, or for expansions of these school types, should be guided by the Universal Pre-Kindergarten Policy development findings. Specifically:

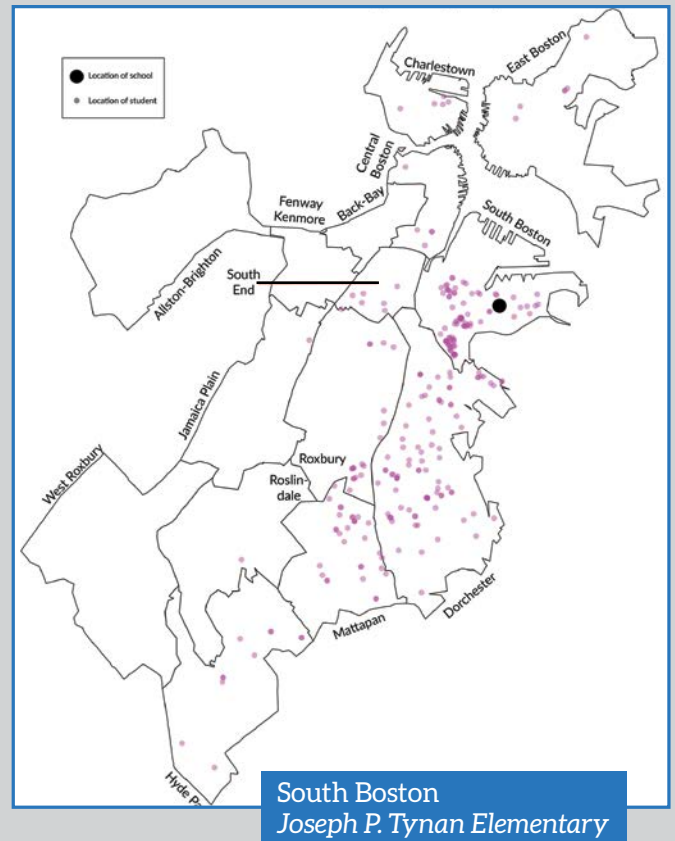
- New early grade builds or expansions might focus on neighborhoods where pre-K quality gaps were identified. Again, these neighborhoods include Dorchester, Hyde Park, West Roxbury, Roxbury, East Boston, and Roslindale. Among these, Roxbury and East Boston might be prioritized, as they are also projected to be high-growth neighborhoods for youth populations over the next decade.
- The number of new BPS seats created should be tempered by the number of community-based seats needed to close quality seat gaps. Accurate estimates of seats needed by neighborhood and by provider type should inform future planning.

9

Develop program and building utilization plans in neighborhoods that are not projected for high growth among youth populations, and have excess building capacity.

Aligning capacity with student population— particularly by school typology is complicated by Boston’s geography. Three neighborhoods—Allston-Brighton, Charlestown, and South Boston—stand out as having excess capacity as well as having roughly 60–75% of their schools’ capacity filled by neighborhood students.

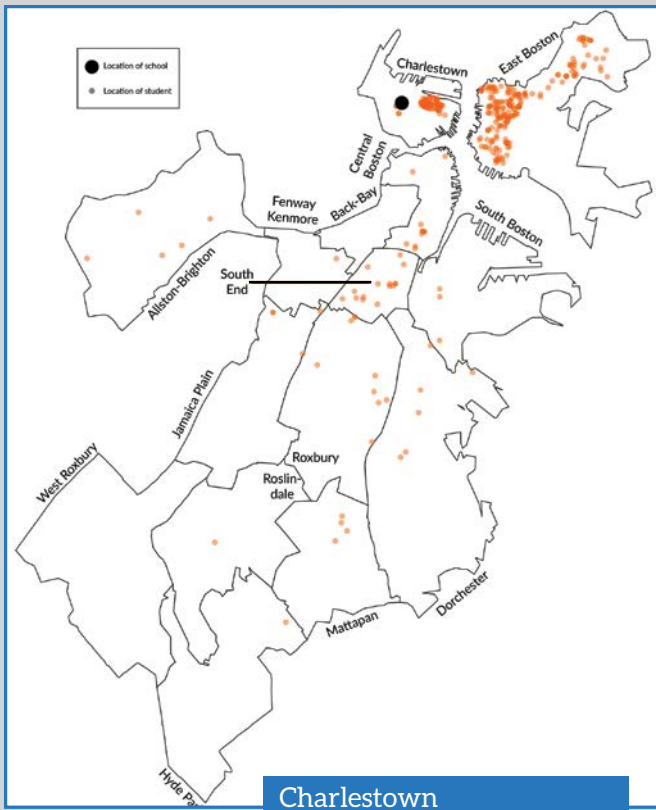
In South Boston, 2,632 students attend six schools in the neighborhood, but only 1,997 children (76%) actually live in South Boston. In addition, there appears to be excess seats at various grade levels with a 81% 21st Century educational utilization factor overall.



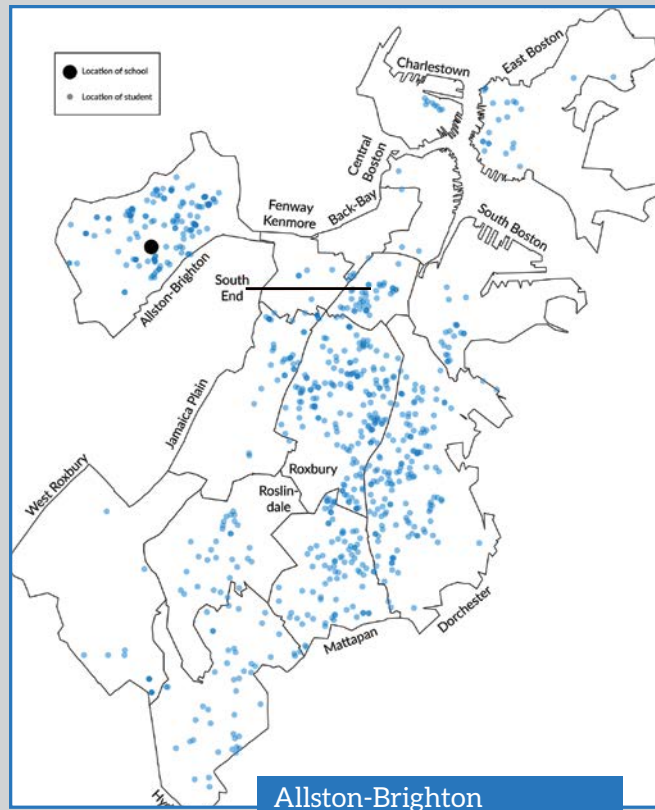
Dots represent where students reside who attend each school

Similarly, Allston-Brighton has 2,548 children, but 4,282 students attending school there (59%) and Charlestown has 1,592 of 2,389 (67%). Charlestown schools overall enroll many students from overcrowded East Boston schools.

None of these neighborhoods is projected for high growth among youth populations. As such, they may not grow into current excess capacity. It is recommended that the City and BPS work with community stakeholders to develop explicit program and building utilization plans in these communities that will help to determine how to optimize building capacity and identify spaces to upgrade over time.



Charlestown
Clarence R. Edwards Middle



Allston-Brighton
Brighton High

10

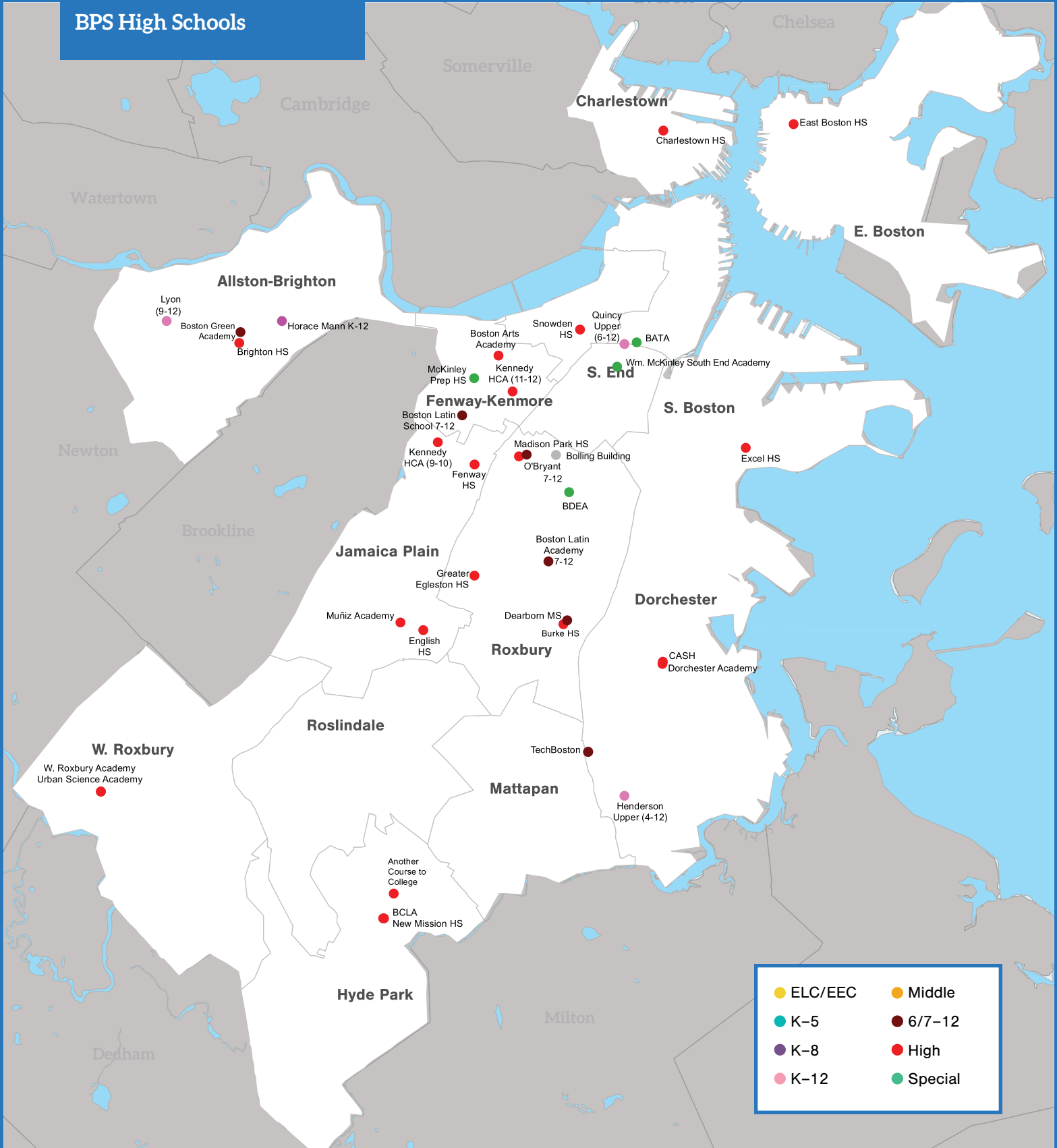
Optimize the geographic distribution of BPS high schools.

High schools differ from elementary and middle schools in fundamental ways that dictate how their locations around the City should be considered. Unlike elementary and middle schools, enrollment in high schools is determined by citywide lottery, not the home-based system that governs K-8 enrollment. As such, students are less likely to attend high schools close to home. Additionally, the district does not provide transportation for general education students in high school, but it does provide public transit passes if they live more than two miles from their school. High school students, by and large, use public transportation (e.g., buses and trains) to get to and from school.

Given these circumstances, the City and BPS should optimize their distribution of high schools across the City, to improve access, and should specifically consider:

- **Increasing and/or more effectively utilizing high school capacity in areas closer to the center of the City.** Today, several high schools sit on the far edges of the City. Centralizing more of the high school capacity could reduce the distance traveled to school for many students by making high schools more equidistant to neighborhoods.
- **Better locating high schools near transit nodes.** Given students' dependence on public transportation, it makes sense to locate high schools as close as possible to transit hubs. Currently, many high schools are in far-flung parts of Boston that are not easily accessible by the MBTA, especially in the southern and western parts of the City, where the subway does not extend.
- **Adding more high school capacity in the southern half of the City, to increase accessibility where warranted.** Excluding Hyde Park where there are three high schools within a quarter-mile, the concentration of high schools in Boston diminishes the farther south one travels. Mattapan and Roslindale seem to be particularly impacted by the absence of more high school options. The City and BPS could add new high schools, relocate schools, or expand existing sites to more strategically serve students and families in these neighborhoods.

BPS High Schools



Another important reason to consider re-distributing high schools is to maximize the opportunity to bring Next-Generation Learning to life for Boston's high school students. BPS's educational vision calls for approaches to learning that are cross-disciplinary, expansive, and inclusive of a wide variety of learning opportunities beyond the classroom. High school learning—as has been highlighted by BPS's High School Redesign initiative—is particularly well suited to learning approaches that call for students to build knowledge and skill, and apply what they know in real world settings. A powerful way for the City and BPS to actualize these aspects of the educational vision is to locate Boston high schools closer to the City's higher education, industry, and commerce centers. Doing so could facilitate:

- **The formation of school-to-career pathways.** One of the City's and BPS's primary ambitions is to better guarantee post-secondary completion and career attainment by creating school-to-career pathways. This requires BPS and higher education and industry partners to co-design course sequences and credentials that lead from high school through college to a young person's first job. Pathways focus learning, provide relevant career experience, often reduce the cost associated with post-secondary completion, and can shorten the time between high school graduation and career attainment. Examples of pathways already exist at schools like Madison Park Technical Vocational High School and Charlestown High School among others.
- **The creation of "learning campuses" throughout the City.** Locating high schools closer to Boston's centers of higher education, industry, and commerce may help to form learning campuses in the City – clusters of schools, nonprofits, and private institutions coordinating learning opportunities with and for students. Such campuses would allow BPS to achieve its vision of using the City as a classroom, and could provide a strong foundation for school-to-career pathways.
- **Ease of connection to after-school jobs and out-of-school time learning opportunities for students.** Many high school students do not simply return home at the end of the school day. Many have jobs after school, participate in sports and other extracurricular activities, or enlist in enrichment programs with local nonprofits, colleges and universities, and cultural institutions. The combination of locating high schools closer to these institutions and nearer to transit hubs would help Boston's young people better connect to the activities that they participate in outside of school.

Example in context: One or more thematic comprehensive high schools could be formed in conjunction with the following industries and partners:

Health and life sciences

- Harvard Life Sciences
- St. Elizabeth's Medical Center

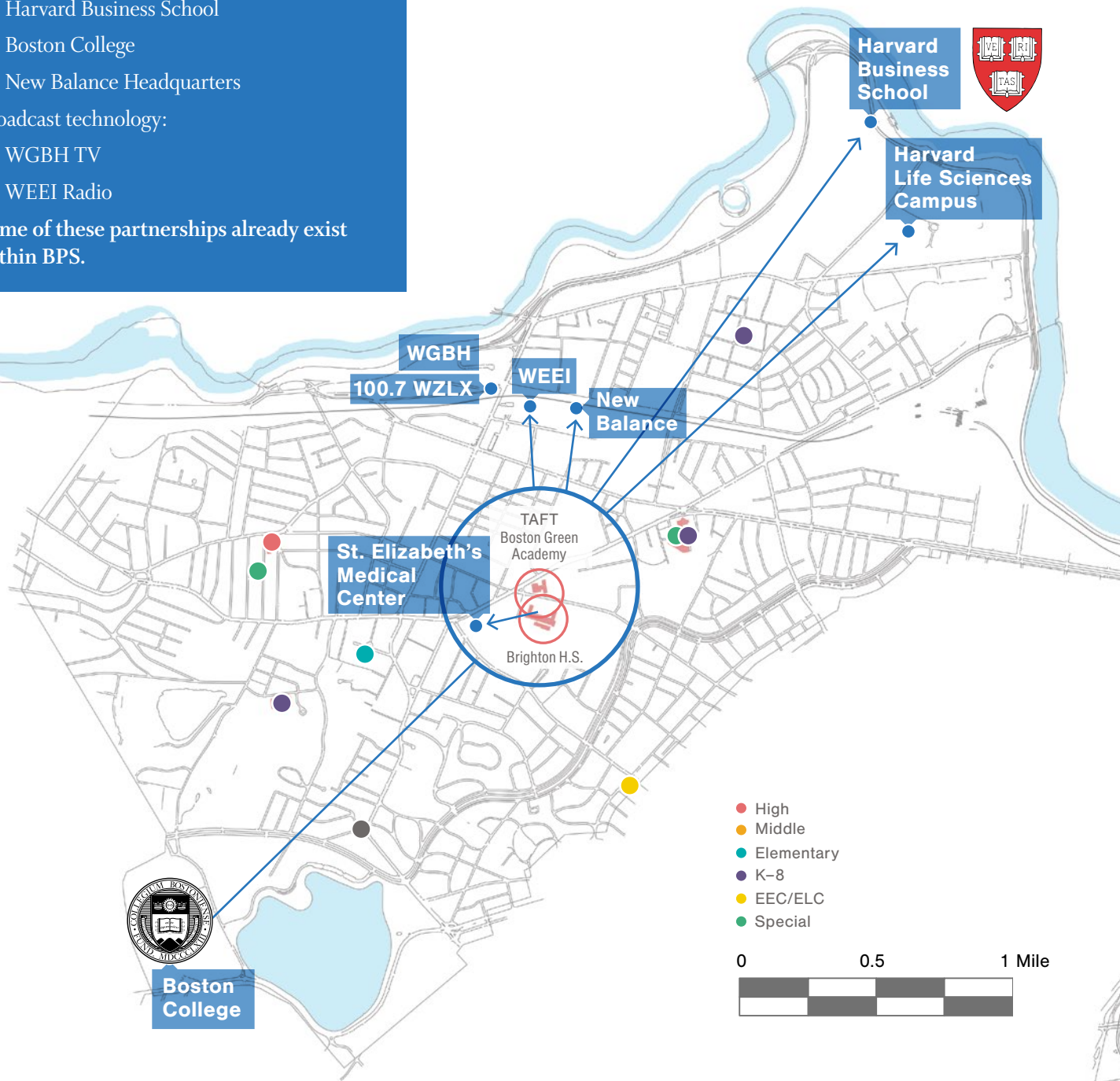
Business, math and entrepreneurship:

- Harvard Business School
- Boston College
- New Balance Headquarters

Broadcast technology:

- WGBH TV
- WEEI Radio

Some of these partnerships already exist within BPS.





10



Participating Firms:

SMMA
WSP | PB



Taking Action

Immediate Action

Engagement

Building and Maintaining
Momentum

Build **BPS**



Taking Action

BuildBPS is designed so that investments will take place across neighborhoods simultaneously. Different types of projects will need to occur in every neighborhood, and new and major renovation projects will need to be prioritized in a way that has the largest impact on the most students

BuildBPS provides compelling evidence that prioritizing projects based on the planning principles in Chapter 9, and moving forward with these immediate actions, will bring—as Superintendent Chang has charged—equity, coherence, and innovation to Boston’s school facility portfolio. This section details the building blocks on which BuildBPS will stand.

Immediate Action

Over the next 10 years, many steps will be taken and much work done in the effort to move BuildBPS forward and rebuild Boston's school building portfolio. The following are actions that can be taken immediately to pave the way for future investments:

1

Commit \$1 billion to Boston's school buildings to catalyze long-term investment.

2

Establish an office dedicated to managing BuildBPS investments and projects.

3

Implement a robust community collaboration process to guide ongoing and long-term decision making.

4

Invest in new school furniture and technology, to promote 21st century learning and teaching methodologies.

5

Undertake several "prototype" projects, to model standards from the BPS educational vision.

1

Commit \$1 billion to Boston's school buildings to catalyze long-term investment.

Given the age of the BPS facility portfolio, extensive work will be required to modernize the district's schools. In January 2017, Mayor Walsh announced a \$1 billion investment in Boston's school buildings. The BuildBPS Finance Advisory Committee explored a range of strategies to fund major repair, renovation, and construction projects. The two primary funding mechanisms include:

- **Building on Boston's existing relationship with the MSBA.**
Despite being Massachusetts' largest school district, Boston has not taken full advantage of opportunities to partner with the MSBA since the authority's creation in 2004. More collaboration has occurred over the past three years, as evidenced by the construction of the City's next flagship school building, the Dearborn 6–12 STEM Academy in Roxbury, as well as other major renovations and accelerated repair projects. The City plans to strengthen its relationship with the MSBA and become more effective in accessing their funding.
- **Increasing financial support from General Obligation Funds:**
The City of Boston will be committing an unprecedented increase in general obligation bond funding to support BPS's school facilities.

Please refer to Section 8: Finance for a more detailed look at the financing for BuildBPS.



2

Establish an office dedicated to managing BuildBPS investments and projects.

Presently, there are two different offices working on BPS capital projects: the City of Boston's Public Facilities Department (PFD) and the Facilities Management Division of the Boston Public Schools. Merging these two offices into one entity within the City's Operations Cabinet will achieve structural and organizational efficiencies imperative to Boston meeting its major capital investments and its facilities improvement goals.

Why Is a New Organizational Framework Needed?

The challenges associated with transforming a school district as large as Boston are numerous and significant. Capital building projects undertaken in partnership with the MSBA can take as many as seven years to complete. New construction and major renovation projects, particularly those emerging from an educational and facilities master plan, must be standardized. Currently, different teams, using slightly different approaches, are executing these projects for BPS. To achieve consistency and efficiency, BuildBPS suggests streamlining these operations and creating a dedicated team of professionals that combines the skills and institutional knowledge of the PFD and the Facilities Management Division of BPS to develop a systemic commitment to building and maintaining Boston's school building portfolio. Additionally, creating such an office, would allow for a central entity to have as its sole responsibility the execution of educational and facilities master planning projects for the next 10 years or more.

What Will Its Core Functions Be?

The to-be-established school planning and construction office will need to take the lead on coordinating a working group of relevant City and BPS departments, and ensure that the following functions—which parallel BuildBPS's core work areas—are performed:

- **Educational Visioning:** Maintain fidelity to the BuildBPS educational vision. The vision must continue to be used to help shape planning and decision making.
- **Community Engagement:** Clear two way communication with BPS stakeholders, at both the district and neighborhood levels, will be critical in ensuring successful planning and implementation as BuildBPS continues into the future.
- **Financial Planning:** Connecting the City's financial planning team to BuildBPS goals will ensure that projects are appropriately staffed, planned and funded, keeping them on schedule through effective management that appropriates capital and operating dollars most effectively. In addition, partnerships and new funding strategies will need to be continuously explored.

- **Demographics:** The City remains in a dynamic period of transition. The development of a demography team that connects the staffs of the BPDA and BPS—one that uses powerful GIS mapping and census data—will ensure that BuildBPS is a “living document,” with the long-term insight required to inform the placement of school facilities.
- **Facility Assessments:** The BPS portfolio is as complex as it is extensive. Maintaining the BuildBPS Dashboard data and developing high-quality, current and up-to-date building and systems information can become a model for citywide facilities management.

The office will also be responsible for record keeping, and quality control of all data and research relative to educational planning and implementation in the built environment. This will free up BPS to concentrate on what it does best: educational excellence and innovation.





3

Implement a robust community collaboration process to guide ongoing and long-term decision making.

BuildBPS has collected vast amounts of data, all of which are integral to making decisions and prioritizing investments over the next 10 years and beyond. BPS must continue to analyze and learn from this data, but it also must learn from the knowledge and experience of local students, parents, teachers, and residents who use our school buildings.

As the district begins the process of moving forward with BuildBPS, the BPS community needs to have time to understand this report and the data it contains. After providing for this time, a yearly engagement, planning and implementation schedule should be developed to ensure continuous community and to produce guidance for decision making and maintain the collective urgency needed to make progress toward the goals of this plan.

4

Invest in new school furniture and technology, to promote 21st century learning and teaching methodologies.

New technology and comfortable, movable furniture promote learner-centric programs, benefit professional development, and provide greater flexibility in current and future learning spaces. Relative to larger-scale building renovations and repairs, furniture and technology upgrades can be done at lower cost and on an accelerated timeline. A designated per-school amount could be set immediately, and schools could be allowed their choice of upgrades out of a range of options, depending on their needs, beginning in year one of BuildBPS’s implementation. Following are recommended furniture and technology investments that would immediately enhance the teaching and learning experience in BPS schools.

- Lightweight/ergonomic furniture can significantly improve learning environments and can facilitate collaboration, alternative teaching and learning methodologies, and increased student engagement. If a school undergoes a capital project at a later date, the furniture can travel with the school to swing space and, ultimately, to its final location.
- An infusion of **student and teacher technology**, like the kind needed to create environments with 1:1 device to student ratios, can provide enhanced opportunities for engaging educational-delivery models, including project-based, blended, and distance learning; flipped classrooms; and STEM and STEAM integration, among others. This is a foundational pillar of the “anytime, anywhere” learning approach. Technology can move with schools and students as buildings are renovated or otherwise improved. Curriculum integration and professional development must accompany hardware and software upgrades to be effective





- **Interactive classroom technology** is currently unevenly distributed around the district, and should be provided in all BPS schools.
- **Additional markerboards** in classrooms and other teaching spaces can provide more opportunities for peer-to-peer learning.
- **Additional student display opportunities** within schools can reinforce student accomplishments.



5

Undertake several “prototype” projects, to model standards from the BPS educational vision.

BPS should consider developing prototype classrooms immediately. They should be built within existing schools to provide all stakeholders—students, teachers, and community members with a sense of what to expect in the future. This initiative should include the low-cost investments mentioned in Immediate Action #4. With new technology and furniture, these model classrooms will be the “laboratories” in which the district develops model space standards. They will allow the district to begin bringing its vision for next-generation learning spaces to life, and also to experiment with and demonstrate the utility of more modern classroom settings.

Prototype Classrooms

Schools of various typologies must have classrooms that are either acceptable in size or capable of accommodating expansion, with the ability to be modified to include all or most of the classroom characteristics described in this section.

These prototypes will go beyond basic cosmetics, allowing teachers/classes the opportunity to rotate in and out for curriculum and professional development, so that as many users as possible are afforded the chance to experience them.

Prototype Classroom Characteristics

- Handicapped accessibility
- Appropriate levels of lighting
- Sound absorbing material
- Acoustical separation from other spaces
- Appropriate mechanical ventilation
- Built-in storage cabinets
- New marker boards in at least three locations
- Educational technology, including:
 - Interactive technology
 - Laptops, Tablets, or similar devices for every student
 - Technology - integrated curriculum, coupled with training for teachers.
 - Upgraded access points, wiring, and switch infrastructure
 - Voice-enhancement technology
- Lightweight, ergonomic furniture, including sit-to-stand desks
- Improved cosmetics

This prototyping should take place in sync with engagement efforts (Immediate Action #3). All future repair, renovation, and new building projects should also allow for the district and community to experience, evaluate, and assess those projects throughout the process. Important findings from the design and build process, or feedback from teachers and students to the prototype, should influence the next round of community discussions and future projects in real time.



Engagement

Led by the Planning Principles, the City of Boston and BPS have worked to identify clearly defined first steps along the path ahead. BuildBPS is designed to be a living document, adapting and growing with the City and its neighborhoods. To be successful, the process will rely on continuous, meaningful input from and engagement with the community on a yearly basis. Participation from parents, staff, students, and other stakeholders was a crucial component in the development of the master plan. It is equally important to sustain and deepen that engagement moving forward.

The following schedule will serve as a template for the first year of community engagement. Based on lessons learned in the first year, the city and BPS officials may adapt the community process to ensure successful engagement, essentially repeating the cycle to prioritize projects for year two and beyond. These steps are designed to help BPS move ever closer to its educational vision and ensure that every student attends school in a safe, clean, modernized facility equipped for innovative teaching and learning.



Future BuildBPS Community Engagement Outline

2017

March	BuildBPS Information Sessions	<p>BPS and the City will host open sessions in which residents can learn more about BuildBPS, and what the future holds. These will be opportunities to ask questions and share initial feedback and ideas about BuildBPS. BuildBPS office hours will also be held during this time for the community to inquire about the project or to offer one-on-one feedback. The sessions also will feature tutorials on using the data dashboard.</p>	Individual School Community Meetings <p>Every school site council and school governing board will review and discuss their school's assessment, as well as BuildBPS as a whole. These meetings will take place as part of an existing site council meeting, or as a separate meeting unto itself. Each school will be able to compile ideas and feedback, and submit them to BPS. The district will provide tools and resources to guide the discussions.</p>
April		<p>BPS and the City will host open sessions in which residents can learn more about BuildBPS, and what the future holds. These will be opportunities to ask questions and share initial feedback and ideas about BuildBPS. BuildBPS office hours will also be held during this time for the community to inquire about the project or to offer one-on-one feedback. The sessions also will feature tutorials on using the data dashboard.</p>	
May	Neighborhood Workshops	<p>A series of neighborhood workshops will bring each section of the City together to promote a deeper understanding of the schools and facilities in each neighborhood. These forums will enable students, parents, staff, and residents to share their experiences, ideas, and concerns. Most importantly, the workshops will include facilitated problem-solving sessions to engage stakeholders and help prioritize investments and propose solutions.</p>	
June		<p>A series of neighborhood workshops will bring each section of the City together to promote a deeper understanding of the schools and facilities in each neighborhood. These forums will enable students, parents, staff, and residents to share their experiences, ideas, and concerns. Most importantly, the workshops will include facilitated problem-solving sessions to engage stakeholders and help prioritize investments and propose solutions.</p>	
July		<p>A series of neighborhood workshops will bring each section of the City together to promote a deeper understanding of the schools and facilities in each neighborhood. These forums will enable students, parents, staff, and residents to share their experiences, ideas, and concerns. Most importantly, the workshops will include facilitated problem-solving sessions to engage stakeholders and help prioritize investments and propose solutions.</p>	
August	School Building Office Review	<p>The new school building office will collect all ideas generated by the community at site council meetings and neighborhood workshops. The ideas will be reviewed, and further analysis will be conducted to determine what their implementation would involve, logistically and financially. During this time, the school building office will update the facilities and demographic data, and the BuildBPS Dashboard will also be updated.</p>	
September		<p>The new school building office will collect all ideas generated by the community at site council meetings and neighborhood workshops. The ideas will be reviewed, and further analysis will be conducted to determine what their implementation would involve, logistically and financially. During this time, the school building office will update the facilities and demographic data, and the BuildBPS Dashboard will also be updated.</p>	
October		<p>The new school building office will collect all ideas generated by the community at site council meetings and neighborhood workshops. The ideas will be reviewed, and further analysis will be conducted to determine what their implementation would involve, logistically and financially. During this time, the school building office will update the facilities and demographic data, and the BuildBPS Dashboard will also be updated.</p>	
November	Neighborhood Prioritization Meeting	<p>Community members will learn more about the feasibility of the ideas generated in the workshops and provide input on proposed projects for the year ahead.</p>	
December		<p>Community members will learn more about the feasibility of the ideas generated in the workshops and provide input on proposed projects for the year ahead.</p>	
2018 January	Funding and Implementation	<p>Based on the work conducted over the previous nine months, the City and BPS will include priority projects in Boston's capital budget proposal.</p>	
		<p>Based on the work conducted over the previous nine months, the City and BPS will include priority projects in Boston's capital budget proposal.</p>	

Year Two and Beyond

Based on lessons learned in year one, the City and BPS officials may adapt the process to ensure successful community engagement, essentially repeating the cycle to prioritize projects for year two and beyond.



Neighborhood Workshop Modeling

The following examples outline the process that will be used to engage discussions around the information gathered through BuildBPS and working together to develop options. Therefore, we have identified three example neighborhoods for discussion in this study—East Boston, Roxbury, and Mattapan. They are merely illustrative, but show the challenges and complexities that lie ahead.

Example Models:

Using the BuildBPS Dashboard tool to complement planning for projects:

Step 1:

Compare student population and demographics to current enrollment and capacity figures.

Step 2:

Review facilities assessments for all schools within that neighborhood—here, we are using elementary/K–8 schools

Step 3:

Identify buildings at which the 21st century capacity is not aligned with current programs and students population.

Step 4:

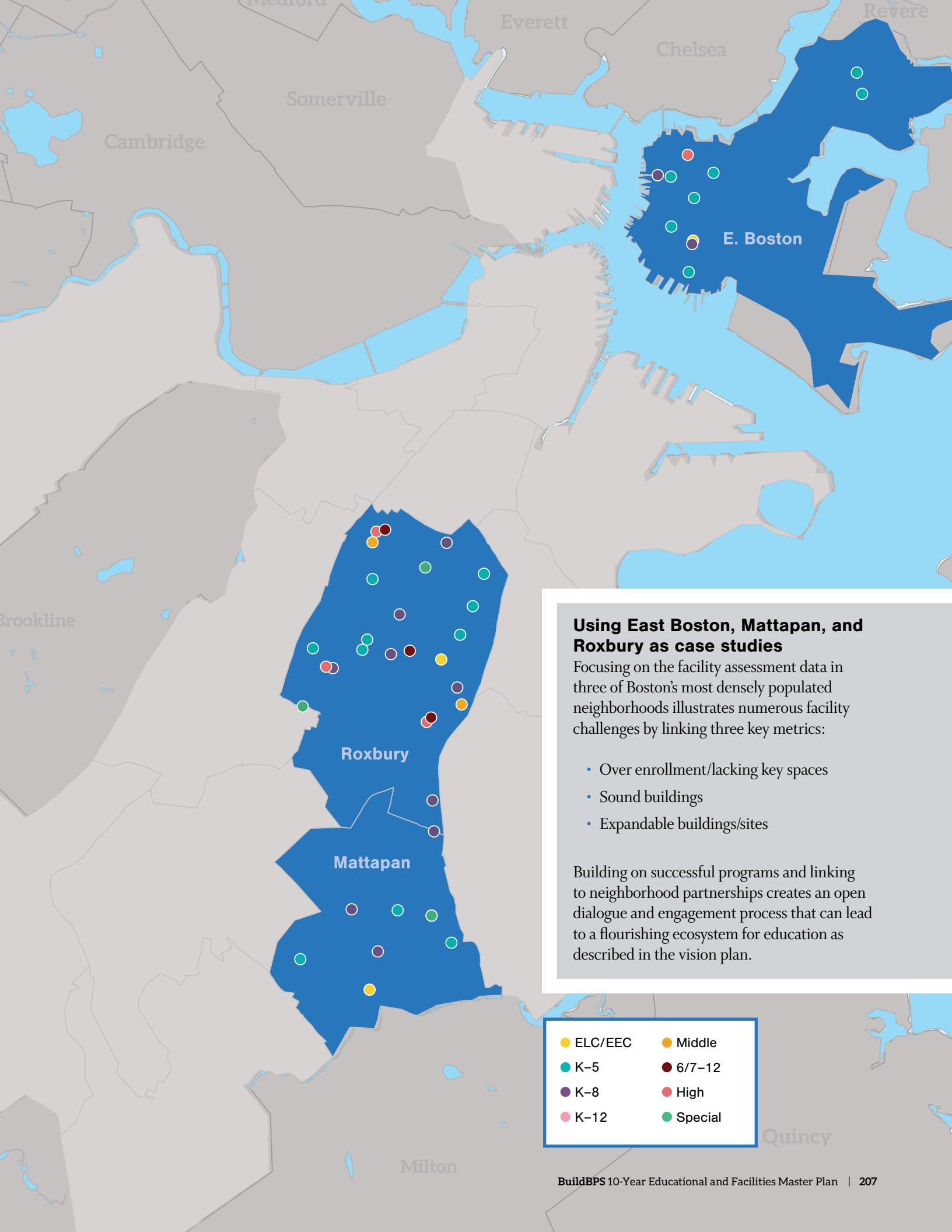
Establish criteria and a “pros and cons” list based on the BPS’s educational vision:

- Is the building condition adequate and does it match program’s needs?
- Is the building capable of being expanded?
- Is the building able to be transformed to meet 21st century educational planning?
- Do repairs trigger major renovations?
- Can the building increase capacity under a major renovation? Or will it lose capacity with upgrades?

- Engage neighborhood as described in Immediate Action #3, discuss opportunities and potential issues, both on a districtwide and neighborhood level.

	K0	K1	K2	1	2	3	4	5	6	7	8	9	10	11	12	Total
Allston-Brighton	42	128	179	214	182	186	165	150	165	196	151	251	191	163	185	2,548
Back Bay/Beacon Hill	2	10	19	17	14	18	13	11	9	14	14	10	8	13	8	180
Central Boston	10	35	94	101	85	79	61	65	58	64	51	56	56	65	57	937
Charlestown	7	51	144	152	149	141	118	101	114	108	106	110	99	95	97	1,592
Dorchester	86	504	803	887	922	894	894	742	740	772	782	947	917	911	1,020	11,821
East Boston	59	252	511	548	552	587	491	420	396	379	365	587	484	450	426	6,507
Fenway/Kenmore	5	13	30	45	42	43	27	23	23	19	28	28	31	27	16	400
Hyde Park	31	163	221	267	244	240	253	191	195	202	217	284	281	308	347	3,444
Jamaica Plain	20	140	223	254	221	228	218	186	179	179	188	198	201	212	235	2,882
Mattapan	51	197	347	419	405	396	350	335	328	345	336	469	413	415	476	5,282
Roslindale	32	178	252	295	294	292	258	207	204	247	214	275	260	289	308	3,605
Roxbury	77	431	745	784	867	799	774	591	595	639	620	772	719	688	769	9,870
South Boston	11	104	122	173	168	169	144	130	126	136	133	154	154	128	145	1,997
South End	22	77	189	172	214	223	193	169	161	197	160	208	192	182	207	2,566
West Roxbury	16	169	240	202	226	209	170	174	130	177	157	215	180	186	199	2,650
Other	3	3	3	9	17	21	18	14	14	16	14	20	30	24	33	239
In-District Total	474	2,455	4,122	4,539	4,602	4,525	4,147	3,509	3,437	3,690	3,536	4,584	4,216	4,156	4,528	56,520





Using East Boston, Mattapan, and Roxbury as case studies

Focusing on the facility assessment data in three of Boston's most densely populated neighborhoods illustrates numerous facility challenges by linking three key metrics:

- Over enrollment/lacking key spaces
- Sound buildings
- Expandable buildings/sites

Building on successful programs and linking to neighborhood partnerships creates an open dialogue and engagement process that can lead to a flourishing ecosystem for education as described in the vision plan.

- | | |
|-----------|-----------|
| ● ELC/EEC | ● Middle |
| ● K-5 | ● 6/7-12 |
| ● K-8 | ● High |
| ● K-12 | ● Special |

East Boston

Step 1:

As identified in Planning Principle—#6, East Boston is a neighborhood with high student population and birthrates and is underserved by local facilities at all grade levels (See section 5: Demographics).

Step 2:

Many schools in East Boston require repairs and lack programmatic spaces, choosing where to begin in the neighborhood may require other criteria as well.

Step 3:

Perhaps the most critical observation in East Boston is that only two schools have reasonably expandable sites/buildings; the Umana and the McKay. The McKay building is a solid pre-WWII structure but well over capacity—particularly when considering its K–8 grade structure.

Step 4:

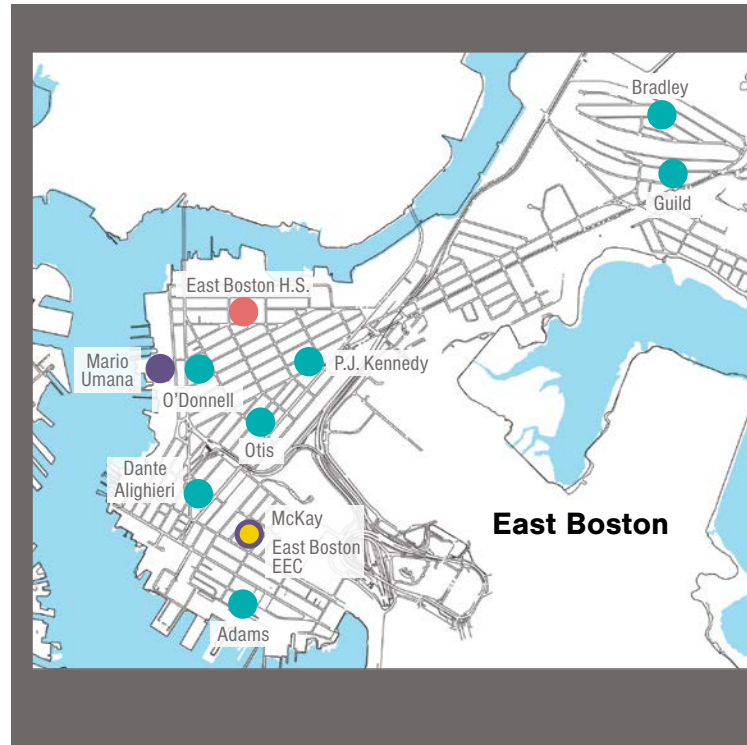
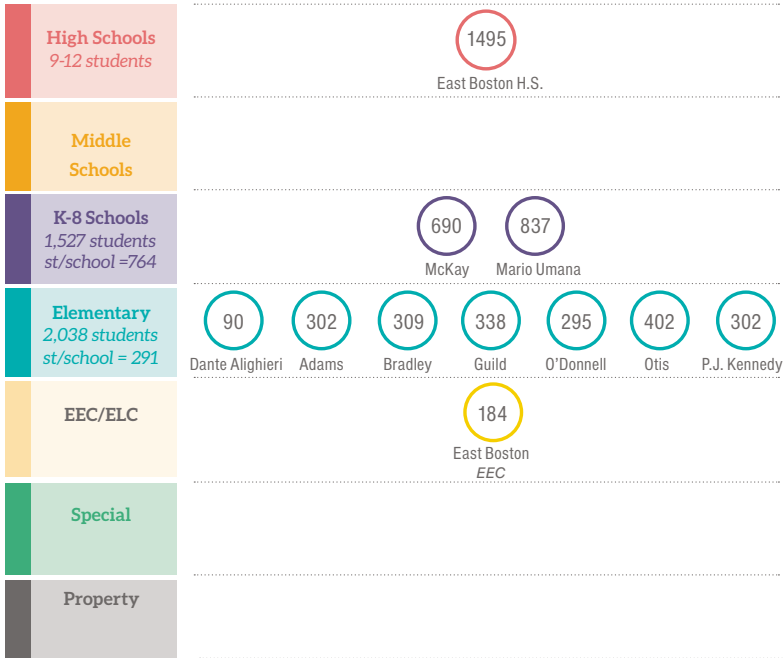
Establishing a “Pros and Cons” or criteria list for the McKay list might include:

- The Building condition is fair to poor but has a simple organizing plan.
- Repairs will trigger major renovations work
- The building and site are expandable
- The building is capable of being transformed for 21st century education
- The building will lose capacity through Repairs or Renovation only projects, additions will allow for maintaining or increasing capacity and improving the upper grade level’s experience.

	Enrollment SY15/16	21st Century Educational Capacity			Current Use Capacity		
		# of Seats	+/-	% at Capacity	# of Seats	+/-	% at Capacity
Early Learning	184	182	-2	101%	210	26	88%
Elementary	2,038	1,185	-853	172%	2,193	155	93%
K-8	1,527	1,480	-47	103%	1,883	356	81%
Middle	0	0	0	0%	0	0	0%
High	1,495	1,461	-34	102%	1,507	12	99%
Exam	0	0	0	0%	0	0	0%
Special	0	0	0	0%	0	0	0%
Vocational	0	0	0	0%	0	0	0%
Total	5,244	4,308	-936	122%	5,793	549	91%
Total Students Residing in Neighborhood	6,507						
Difference	-1,263						

Facility Assessment: Elementary Schools, EEC, K-8, and Middle Schools										
East Boston										
	Adams, Samuel Elementary	Alghieri, Dante Montessori School	Bradley, Manassah E. Elementary	Guild, Curtis Elementary	Kennedy, Patrick Elementary	O'Donnell, Hugh R. Elementary	Ots, James Elementary	McKay, Donald K-8	Umana Academy, Mario K-8	
Overall Scores										
Overall Building Condition	2	4	3	4	3	3	3	3	4	
Overall Site Condition	3	3	3	4	3	3	3	3	3	
Building										
Accessibility	1	2	1	2	2	2	1	3	4	
Heating Distribution Systems	3	3	4	4	3	3	3	4	2	
Life Safety	4	3	4	4	2	5	5	4	5	
Means Egress	1	3	4	2	3	3	3	3	4	
Plumbing Distribution Systems	2	3	3	4	3	2	3	3	3	
Security Entry	3	4	4	3	4	3	3	3	4	
Ventilation Distribution Systems	2	3	1	4	2	2	2	4	2	
Boilers	2	3	3	4	2	2	3	4	4	
Electrical Service	4	4	4	3	4	3	3	3	2	
Facade	3	3	3	3	3	3	3	4	4	
FP Sprinklers	1	3	1	1	1	1	1	1	2	
Lighting Quantity Control	4	3	4	4	4	2	4	3	2	
Roof Membrane	3	4	3	3	4	3	3	3	3	
Toilets Fixtures	2	3	3	4	2	2	2	4	4	
Windows	2	3	3	2	2	3	2	4	4	
Site										
MAABADA Accessibility	1	1	1	3	1	2	2	1	4	
Drainage	4	3	3	3	3	3	4	4	4	
Parking Quality	3	3	1	4	2	1	1	3	2	
Site Lighting	4	4	3	4	3	4	4	3	3	
Walkways Curbs Sidewalks	4	4	3	3	3	4	4	3	3	
DropOff PickUp	4	4	4	4	3	4	4	3	3	
Fencing	3	4	4	4	2	4	4	4	4	
Neighborhood Streets	3	4	4	4	4	4	4	4	4	
Play Areas	4	3	3	3	3	4	3	4	3	
Walls Slopes	4	3	3	4	2	4	1	1	3	

East Boston Facilities Diagram, 2015/2016 School Year



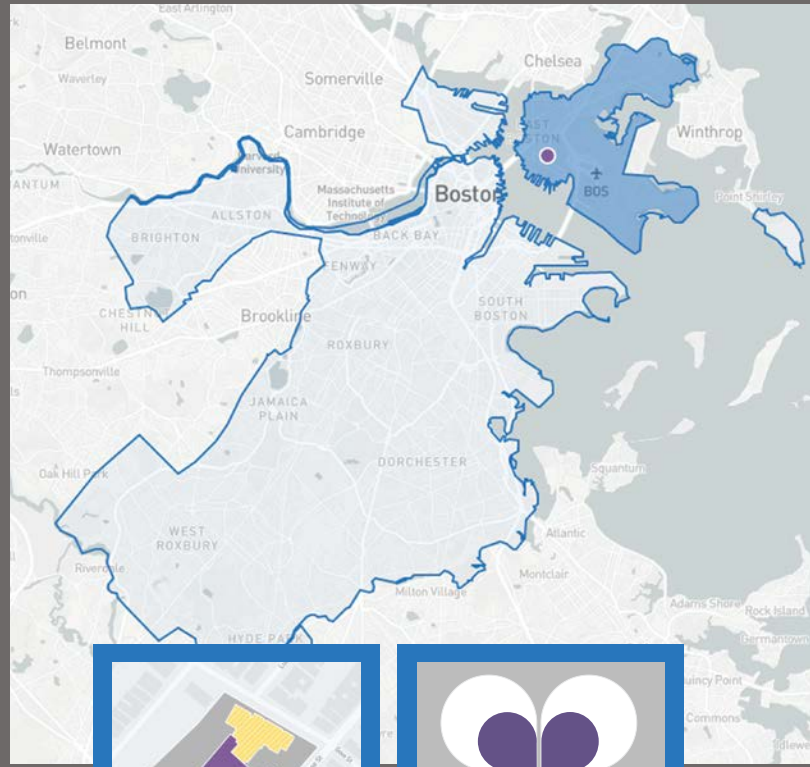
Educational Facility Effectiveness: Elementary Schools, EEC, K-8, and Middle Schools

East Boston

	Adams, Samuel Elementary	Alighieri, Dante Montessori School	Bradley, Manassah E. Elementary	Guild, Curtis Elementary	Kennedy, Patrick O'Donnell, Hugh R. Elementary	Otis, James Elementary	McKay, Donald K-8	Umama Academy, Mario K-8
Overall Scores								
Overall: Learning Environments	2	3	2	3	3	3	2	2
EL_Overall: Spaces	2	2	2	2	2	2	2	2
Learning Environments								
Acoustical	2	4	2	3	2	3	2	2
Air Quality	1	3	2	3	2	2	2	3
Building Ventilation	1	2	2	3	2	2	2	2
Environment (inviting, stimulating, comfortable)	2	4	2	3	2	2	2	3
Lighting Quality	3	4	2	4	3	4	4	3
Natural Daylighting	3	4	2	4	4	4	2	3
Adjacencies Learning Environments	2	3	3	3	3	3	2	3
Finishes	2	3	2	4	3	2	3	2
Furniture	3	4	3	3	3	3	3	2
Outdoor Classrooms	3	1	4	1	4	3	4	2
Technology: Interactive	3	4	2	3	3	1	4	2
Technology: Power	2	4	3	3	3	4	2	2
Technology: Wireless	4	4	2	3	4	4	5	2
Spaces								
EL_Pre-K (KG/K1)	2	2	2	2	2	2	4	2
EL_Kindergrarten (K2)	2	2	2	2	2	2	4	2
EL_Classroom (General)	2	2	3	3	2	4	3	2
EL_Special Education: Self Contained	2	1	2	2	2	1	1	2
EL_Special Education: Resource of Small Group	2	1	2	2	2	3	1	2
EL_Art Classroom	1	3	1	1	1	1	1	2
EL_Music Classroom	1	1	1	1	2	1	1	2
EL_Media Center	1	1	2	1	1	2	1	3
EL_Cafeteria	2	4	2	2	1	2	2	3
EL_Gymnasium	1	1	1	2	1	1	1	2
EL_Stage	2	1	1	2	1	1	1	2
EL_Medical	2	3	2	2	2	2	2	4
EL_Administration & Guidance	2	2	2	2	2	3	2	3
K8_Pre-K (KG/K1)	2	2	2	2	2	2	1	2
K8_Kindergrarten (K2)	2	2	2	2	2	2	2	2
K8_Classroom (General 1-5)	2	2	2	2	2	2	2	2
K8_Classroom (General 6-8)	2	2	2	2	2	2	2	2
K8_Science	2	2	2	2	2	2	3	1
K8_Special Education: Self Contained	2	2	2	2	2	2	1	2
K8_Special Education: Resource of Small Group	2	2	2	2	2	2	2	2
K8_Art Classroom (1-5)	2	2	2	2	2	2	2	2
K8_Art Classroom (6-8)	2	2	2	2	2	2	3	2
K8_Music	2	2	2	2	2	2	2	2
K8_Vocations and Technology	2	2	2	2	2	2	2	2
K8_Media Center	2	2	2	2	2	2	2	2
K8_Cafeteria	2	2	2	2	2	2	2	2
K8_Gymnasium	2	2	2	2	2	2	5	2
K8_Stage	2	2	2	2	2	2	1	2
K8_Medical	2	2	2	2	2	2	4	2
K8_Administration & Guidance	2	2	2	2	2	2	3	2



10: Taking Action



Donald McKay K-8 School

Year Built: 1926

Current School Metrics:

Current size: 79,082 GSF

Current enrollment: 690 students

Similar MSBA projects: 115,839 GSF for 690 students

Expandability

- Expandable
- ▨ Not Expandable

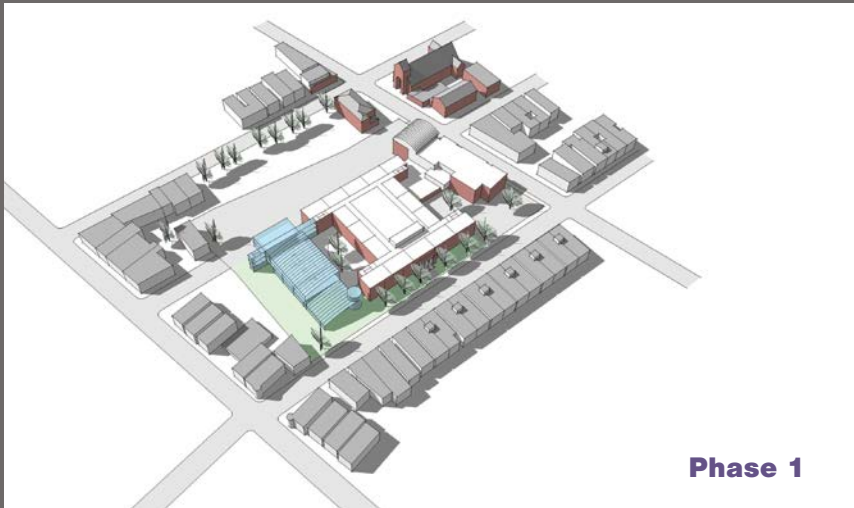
Clover Rating

Deficient Excellent

Working with the Office of School Buildings, projects identified through the workshop modeling will proceed into conceptual design providing more detail for more advanced community layouts.

Examples for conceptual design for the McKay follow.

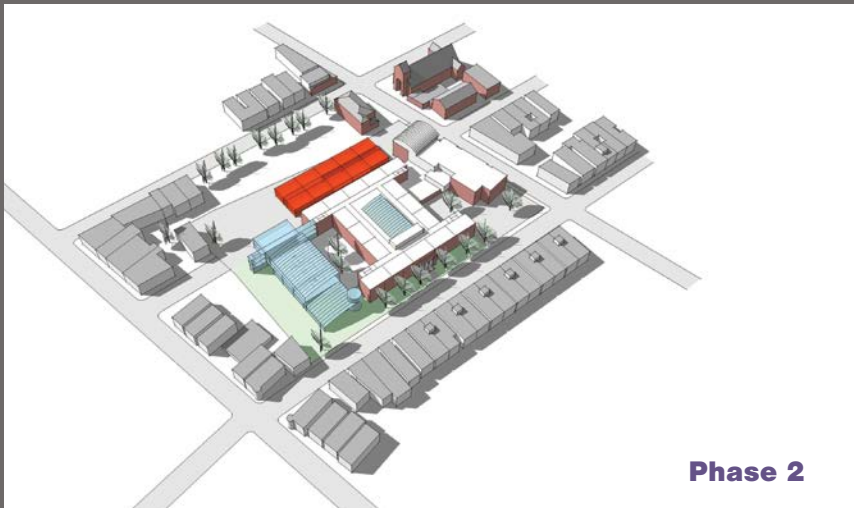




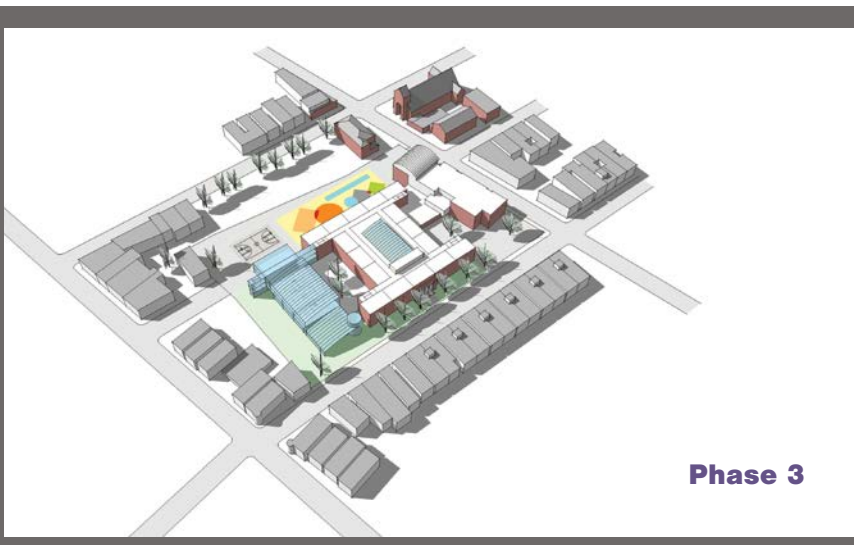
What might it take to transform a pre-WWII school?

Some schools are located in high-population neighborhoods, like East Boston, and notably lack program spaces—especially for older students in grades 7 and 8 of the K–8 models.

Where opportunity exists, capacity and 21st century programming can be expanded through phased construction. In this example, a new addition is built first, accommodating new team-teaching classrooms, science labs, and a gymnasium. Additionally, new mechanical and services are built, allowing for the school to remain occupied.



In Phase 2, modular classrooms are introduced, so that renovations can take place within the existing school structure.



In Phase 3, the modular classrooms are removed and site work is completed.



Phased Construction

It will always be best to locate students at separate swing spaces. In the case of BPS, that option may rarely be possible. Careful placing and design of phased construction is safe and effective.

10: Taking Action

The Donald McKay K–8 School is a common example of its type in BPS, with small cellular classrooms, lacking specialist spaces, and inadequate multi-functional spaces, such as the gymnasium.

Existing:

- Undersized by +/- 60%
- Lacking adequate classroom support and specialist spaces
- Inadequate basement cafeteria
- Lacking proper toilet facilities
- Limited accessibility throughout

Some 21st Century Concepts for Exploration:

In this example, the building addition allows for the creation of age-appropriate team-teaching space with science labs. By constructing a new gymnasium above, the existing gymnasium can be reinvented as a media center/maker space, and surrounding rooms expanded as art and music rooms. The school can be well-g geared to suit both younger and older learners, while accommodating as many as 210 additional students.

Transformational:

- Secure, accessible and welcoming main entrance
- True team-teaching environment
- Specialist spaces
- Gymnasium
- Academic outdoor environments
- Age-specific interior and exterior spaces
- Underground parking (if necessary)





Renovated Donald McKay K-8 School

900 students K2-8 (600 K2-5, 300 6-8)
79,082 SF existing full gut renovation, three floors
62,443 SF new on four floors
141,525 GSF +/- total

Roxbury

Step 1:

As identified in Planning Principle—#7, Roxbury is a neighborhood with high student population and birthrates and is underserved by local facilities particularly at the primary grade levels (See section 5: Demographics).

Step 2:

Many schools in Roxbury require repairs and lack programmatic spaces, choosing where to begin in the neighborhood may require other criteria as factors as well.

Step 3:

Perhaps the most critical observation in Roxbury is that few schools have reasonably expandable sites/buildings; the Ellis building is a solid, historically listed, pre-WWII structure but well over capacity with few spaces beyond small basic classrooms.

Step 4:

Establishing a “Pros and Cons” or criteria list for the Ellis list might include:

- The Building condition is poor but has a simple organizing plan.
- Repairs will trigger major renovations work
- The building and site are expandable
- The building is capable of being transformed for 21st century education through additions.
- The building will lose capacity through Repairs or Renovation only projects, additions will allow for maintaining or increasing capacity and improving specialty spaces as well as neighborhood uses.

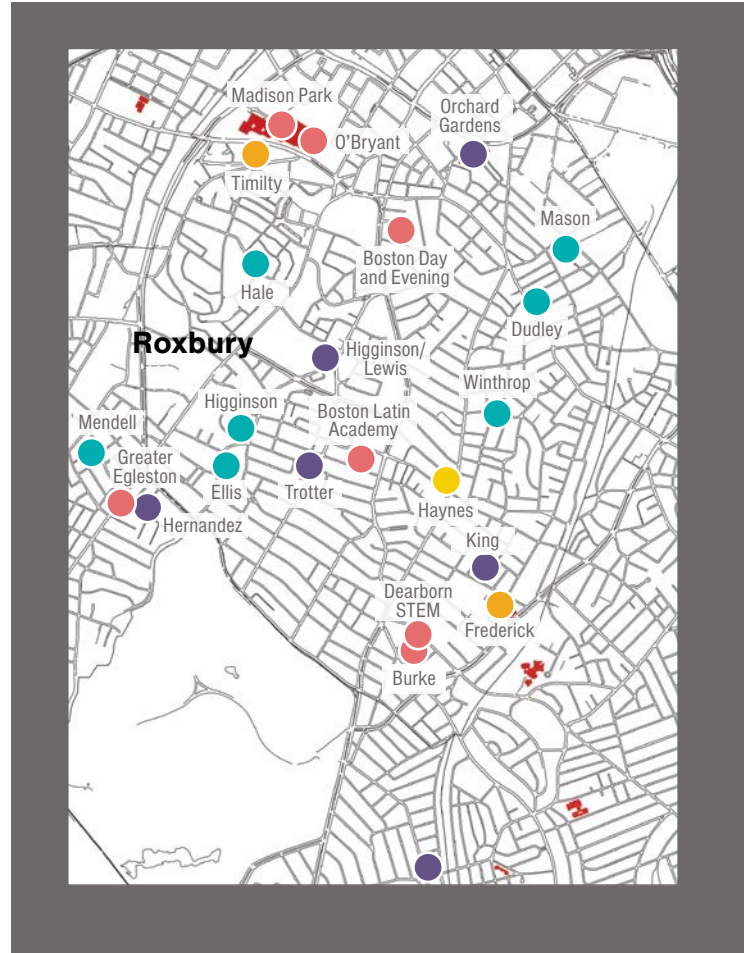
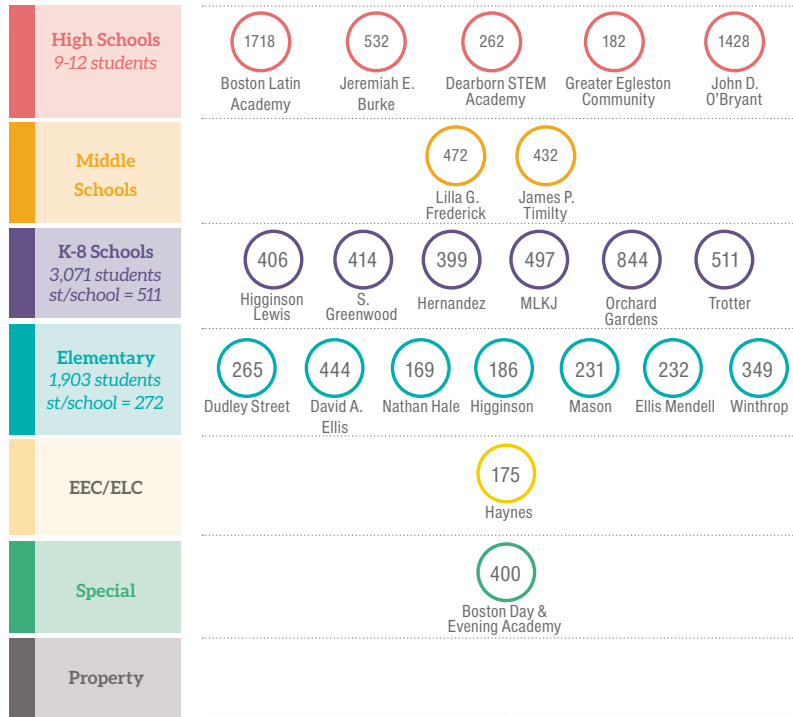
Roxbury Capacity

	21st Century Educational Capacity				Current Use Capacity		
	Enrollment SY15/16	# of Seats	+/-	% at Capacity	# of Seats	+/-	% at Capacity
Early Learning	175	178	3	99%	220	45	80%
Elementary	1,903	1,239	-664	154%	2,124	221	90%
K-8	3,071	2,628	-443	117%	3,495	424	88%
Middle	904	1,227	323	74%	1,433	529	63%
High	976	855	-121	114%	1,204	228	81%
Exam	3,146	2,842	-304	111%	3,089	-57	102%
Special	400	246	-154	163%	390	-10	103%
Vocational	903	2,804	1,901	32%	1,698	795	53%
Total	11,478	12,019	541	95%	13,653	2,175	84%
Total Students Residing in Neighborhood	9,870						
Difference	1,608						

Educational Facility Effectiveness: Elementary Schools, EEC, K-8, and Middle Schools

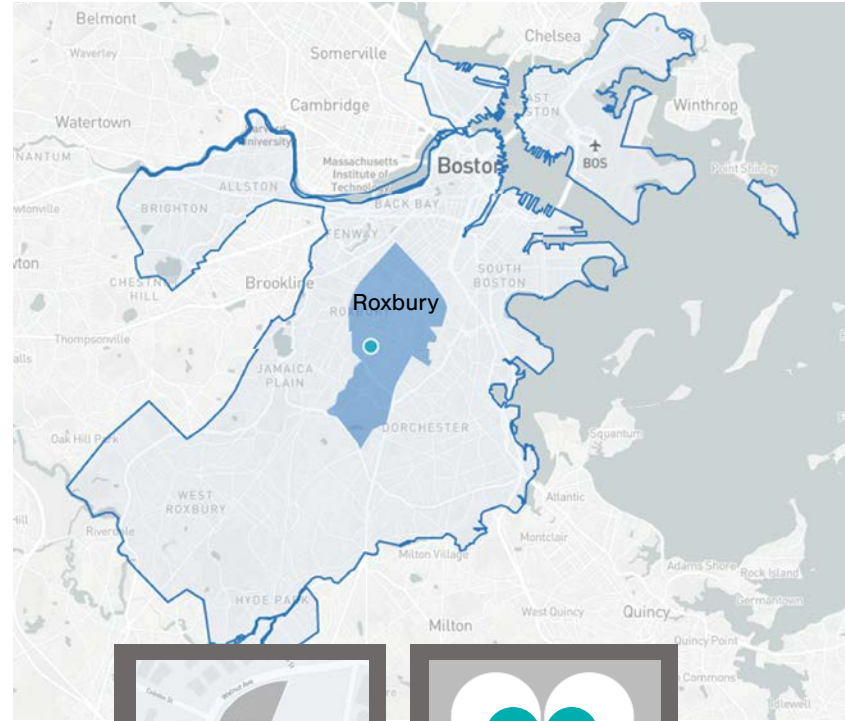
Roxbury	Elementary							EEC/ELC	K-8			Middle
	Dudley Street Neighborhood School	Ellis, David A. Elementary	Hale, Nathan Elementary	Higginson Elementary	Mason, Samuel W. Elementary	Perkins, Michael J. Elementary	Winthrop, John Elementary	Haynes Early Education Center	Higginson/Lewis K-8	Orchard Gardens K-8	Trotter, William Monroe K-8	Timilty, James P. Middle
Overall Scores												
Overall: Learning Environments	3	2	3	2	2	3	3	4	2	4	3	2
EL_Overall: Spaces	2	2	2	2	2	2	2	3	2	4	2	2
Learning Environments												
Acoustical	3	2	2	2	2	2	3	4	2	4	3	2
Air Quality	2	2	3	2	2	2	2	4	1	4	2	2
Building Ventilation	2	2	2	2	2	2	2	4	1	4	2	2
Environment (inviting, stimulating, comfortable)	4	3	3	2	2	2	2	4	2	4	2	2
Lighting Quality	3	3	3	2	2	3	3	4	2	4	2	2
Natural Daylighting	2	2	3	2	2	3	3	4	3	4	3	3
Adjacencies Learning Environments	4	2	3	2	2	2	2	4	2	4	3	3
Finishes	4	2	2	2	2	2	2	4	2	4	2	2
Furniture	4	2	3	2	3	3	3	4	2	4	2	2
Outdoor Classrooms	1	2	1	1	1	1	1	4	4	2	4	1
Technology: Interactive	3	2	4	2	3	3	3	4	3	4	2	2
Technology: Power	3	2	4	2	3	2	3	4	3	4	2	2
Technology: Wireless	3	2	4	2	3	3	4	4	3	4	4	2
Spaces												
EL_Pre-K (K0/K1)	4	2	2	2	2	2	2	3	1	4	2	2
EL_Kinderergarten (K2)	4	2	2	2	2	2	2	3	1	4	2	2
EL_Classroom (General)	2	2	2	2	2	2	2	4	2	4	3	2
EL_Special Education: Self Contained	1	2	2	2	2	3	2	4	2	4	3	2
EL_Special Education: Resource of Small Group	2	2	2	2	2	3	2	4	2	4	2	2
EL_Art Classroom	2	2	2	2	2	3	2	4	2	4	2	2
EL_Music Classroom	2	2	2	2	2	2	2	4	2	4	2	2
EL_Media Center	1	2	2	2	2	2	2	4	2	4	2	2
EL_Cafeteria	2	3	2	2	2	2	2	4	2	4	2	2
EL_Gymnasium	1	2	2	2	2	2	2	4	1	4	2	2
EL_Stage	1	2	2	2	2	2	2	4	1	4	2	2
EL_Medical	2	2	2	2	2	2	2	4	2	4	2	2
EL_Administration & Guidance	2	3	2	2	2	2	2	4	2	4	2	2
MS_Classroom General												2
MS_Science												2
MS_Special Education: Self Contained												2
MS_Special Education: Resource of Small Gro...												2
MS_Art Classroom												2
MS_Music Classroom												2
MS_Vocations and Technology												2
MS_Media Center												2
MS_Cafeteria												2
MS_Gymnasium												2
MS_Stage												2
MS_Medical												2
MS_Administration & Guidance												2

Roxbury Facilities Diagram, 2015/2016 School Year



Facility Assessment: Elementary Schools, EEC, K-8, and Middle Schools												
Roxbury	Elementary							ECC/ELC	K-8		Middle	
	Dudley Street Neighborhood School	Ellis, David A. Elementary	Hale, Nathan Elementary	Higginson Elementary	Mason, Samuel W. Elementary	Perkins, Michael J. Elementary	Winthrop, John Elementary	Haynes Early Education Center	Higginson/Lewis K-8	Orchard Gardens K-8	Trotter, William Monroe K-8	Timilty, James P. Middle
Overall Scores												
Overall Building Condition	3	3	3	3	3	3	3	4	3	3	3	3
Overall Site Condition	3	3	2	3	2	3	3	4	3	4	3	3
Building												
Accessibility	1	1	1	1	1	3	2	3	2	3	3	3
Heating Distribution Systems	3	1	3	3	3	3	2	3	3	3	3	3
Life Safety	4	5	3	3	3	3	4	3	3	3	4	3
Means Egress	3	3	3	3	4	3	3	3	2	3	4	3
Plumbing Distribution Systems	3	4	3	3	3	3	2	3	3	3	2	3
Security Entry	2	4	3	3	3	3	3	3	2	3	3	3
Ventilation Distribution Systems	3	1	2	3	3	3	2	3	2	3	4	2
Boilers	3	3	2	2	3	4	2	3	4	3	4	2
Electrical Service	4	2	4	4	4	3	3	3	4	3	4	2
Facade	3	4	3	3	3	3	3	3	3	3	3	3
FP Sprinklers	1	1	1	1	1	1	2	3	1	3	1	1
Lighting Quantity Control	4	4	3	4	3	4	4	4	4	4	4	4
Roof Membrane	3	4	1	4	1	4	4	3	4	3	3	3
Toilets Fixtures	3	3	4	2	2	2	2	3	3	3	2	3
Windows	2	2	3	3	2	4	3	3	2	3	3	3
Site												
MAABADA Accessibility	1	2	1	1	1	1	3	3	1	3	3	3
Drainage	3	4	3	3	3	3	4	3	3	3	3	3
Parking Quality	3	2	2	2	4	3	1	3	4	1	2	3
Site Lighting	1	2	3	2	1	4	1	3	3	4	3	3
Walkways Curbs Sidewalks	4	3	2	2	2	3	4	3	3	4	3	3
DropOff Pickup	3	3	4	4	4	3	3	3	2	3	2	3
Fencing	3	3	4	3	3	3	3	3	2	3	2	3
Neighborhood Streets	4	5	3	4	4	3	3	4	3	3	4	3
Play Areas	4	3	4	3	2	3	3	3	3	4	4	1
Walls Slopes	3	3	3	3	1	4	2	1	2	4	2	1

10: Taking Action



**David A. Ellis
Elementary School**

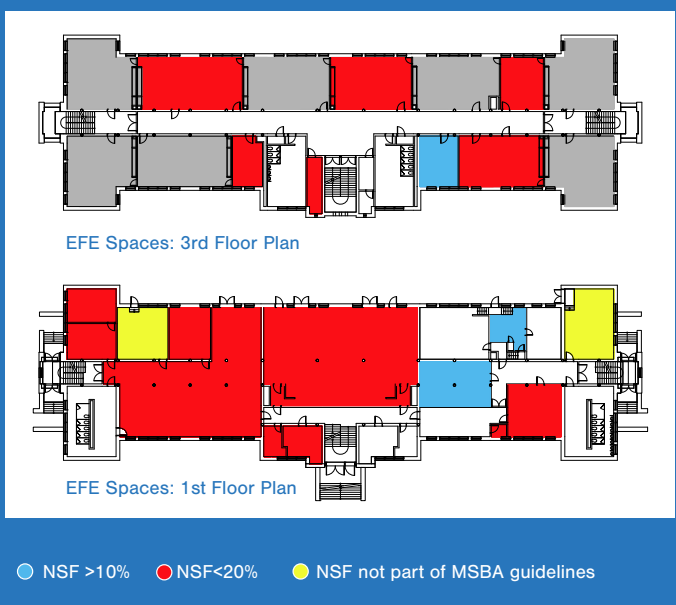
Year Built: 1932
 51,123 GSF
 Current enrollment: 444 K1-5 students
 Similar MSBA projects: 72,461 GSF for 444 students
 Mass Historic Status: Listed in inventory

Expandability

- Expandable
- ▨ Not Expandable

Clover Rating

Deficient Excellent



Working with the Office of School Buildings, projects identified through the workshop modeling will proceed into conceptual design providing more detail for more advanced community layouts.

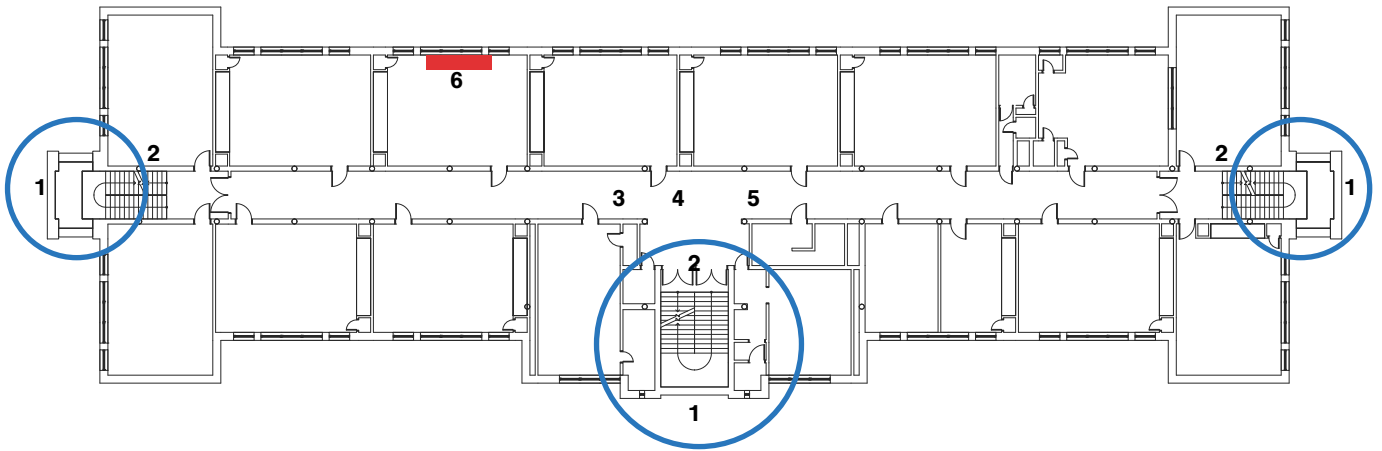
Examples for conceptual design for the Ellis follow.

Facility Assessment

1. No ADA Accessibility or compliance
2. No elevator or lifts
3. Fire code/life safety issues
4. No sprinkler system
5. No toilets on this floor
6. No fresh air exchange
7. Window glazing is not translucent

Educational Facility Effectiveness

- Undersized classrooms +/-30% (K0/K1/K2 > 50%)
- No library media center
- No defined music room
- No defined art room
- No gymnasium
- Inadequate SPED rooms
- Inadequate cafeteria and kitchen





David A. Ellis Elementary School

Current School Metrics

- 444 K1–5 students in 51,123 GSF

Discussion Points:

- Should Ellis remain a K–5
- Similar MSBA projects: 72,461 GSF
- Should Ellis expand capacity as a K2–6 model?
672 students K–6 is a four strand school
101,500 GSF +/- required
51,123 existing
50,377 SF new
- Should Ellis expand to a K–8 model?
432 students K–5
300 students 6–8 (assumes three science labs and team-teaching model)
103,123 GSF total required
51,123 SF existing
52,000 SF new

Conceptual Design Priorities

- Welcoming and secure entrance
- Engaged classrooms and support spaces
- Teacher collaboration rooms
- Fully ADA accessible facility
- Toilets and lavatories on each floor
- Student coat, boot and storage areas
- Dispersed technology throughout school
- Appropriate lighting and acoustical treatments
- Multi-use spaces
- Sustainable, energy efficient
- Casual dining and socialization areas with soft seating
- Gym / Fitness Center with secure after hour use
- Community access and use

Facility renovations and additions that support

- Art Studios
- Music and performance rooms
- Cafeteria / multi use space with stage
- Library / media center
- Gymnasium and fitness areas
- Science labs
- Technology / maker spaces
- Special education spaces
- Kitchen with culinary lab



Classroom Environments for Universal Learning

- Flexibility in the learning environment
- Room size appropriate to class size
- Multiple teaching walls and surfaces
- Adjacent learning commons and small group spaces
- Full spectrum adjustable lighting
- Ubiquitous technology
- Natural ventilation
- Suitable acoustics
- Inclusive special education
- SPED centers and resources on each floor
- Visual connectivity in interior spaces
- Student displays throughout school
- Collaborative areas with soft seating

Mattapan

Step 1:

As identified in Planning Principle—#7, Mattapan is a neighborhood with high student population and birthrates and is underserved by local facilities, there are very few schools in the Mattapan neighborhood relative to its population density. (See section 5: Demographics).

Step 2:

Fewer schools in Mattapan require the repairs and lack programmatic spaces compared to others, so the Young Achievers stands out from similar facilities in the neighborhood.

Step 3:

Perhaps the most critical observation in Mattapan is that few schools have reasonably expandable sites/buildings; the Young Achievers’ building is a solid, historically listed, pre-WWII structure but well over capacity with few spaces beyond small basic classrooms when considering its upper school program. The school has a well-used gymnasium building, illustrating the benefits of that space in the K–8 model schools.

Step 4:

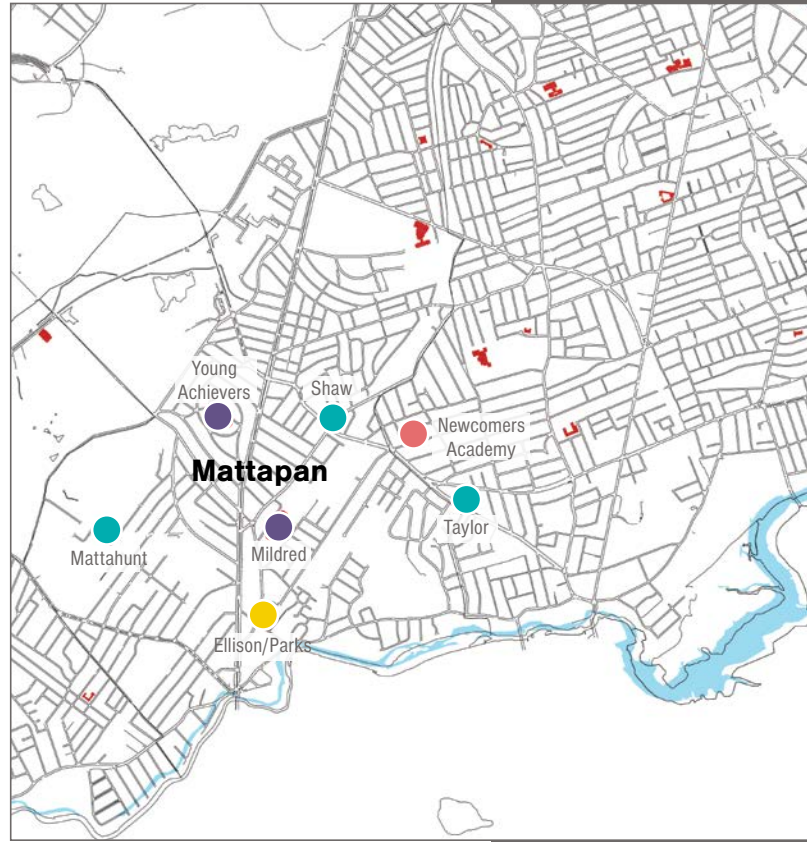
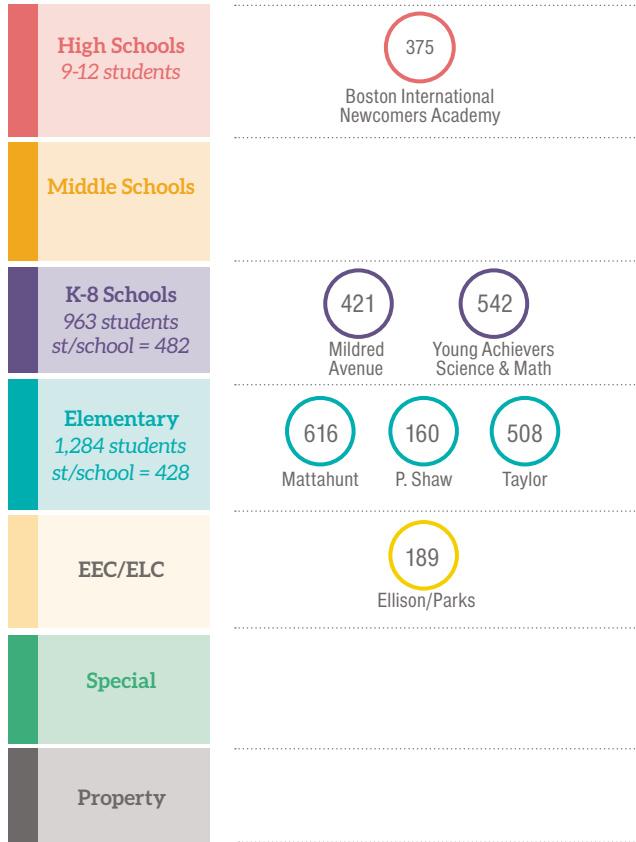
Establishing a “Pros and Cons” or criteria list for the Young Achievers list might include:

- The Building condition is fair but has a simple organizing plan and a number of elements in good condition.
- Repairs will trigger major renovations work
- The building and site are expandable
- The building is capable of being transformed for 21st century education through additions.
- The building will lose capacity through Repairs or Renovation only projects, additions will allow for maintaining or increasing capacity and improving specialty spaces as well as neighborhood uses.

Mattapan Capacity

	Enrollment SY15/16	21st Century Educational Capacity			Current Use Capacity		
		# of Seats	+/-	% at Capacity	# of Seats	+/-	% at Capacity
Early Learning	189	184	-5	103%	220	31	86%
Elementary	1,284	1,434	150	90%	1,727	443	74%
K-8	963	1,460	497	66%	1,608	645	60%
Middle	0	0	0	0%	0	0	0%
High	375	459	84	82%	592	217	63%
Exam	0	0	0	0%	0	0	0%
Special	0	0	0	0%	0	0	0%
Vocational	0	0	0	0%	0	0	0%
Total	2,811	3,536	725	79%	4,147	1,366	68%
Total Students Residing in Neighborhood	5,282						
Difference	-2,471						

Mattapan Facilities Diagram, 2015/2016 School Year



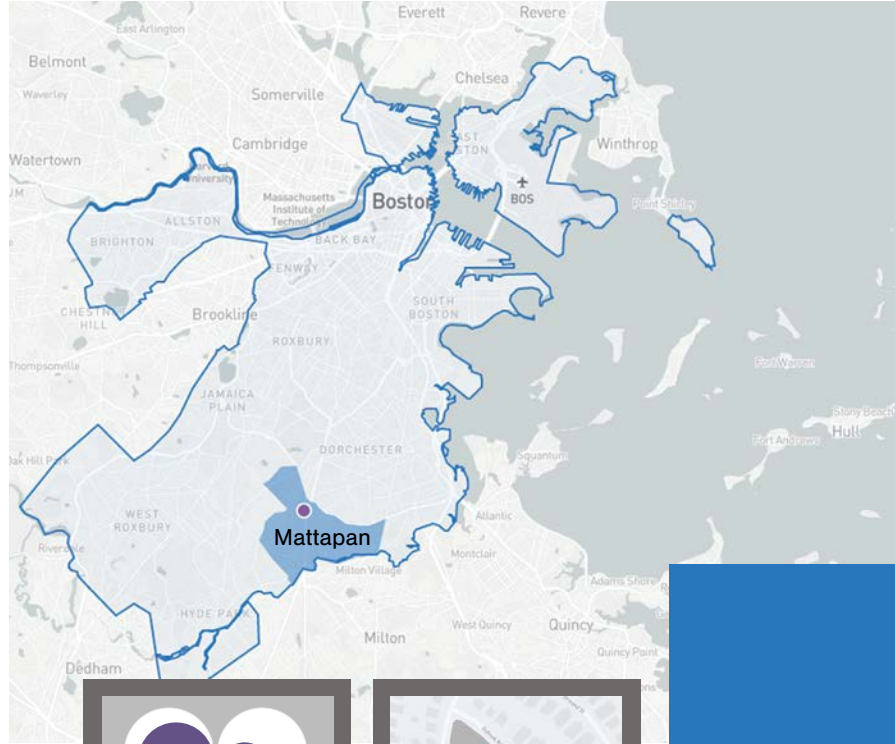
Facility Assessment: Elementary Schools, EEC, K-8, and Middle Schools

Mattapan	Elementary		EEC	K-8	
	Mattahunt Elementary	Taylor, Charles H. Elementary	Ellison/Parks Early Education School	Mildred Avenue K-8	Young Achievers Science & Math K-8
Overall Scores					
Overall Building Condition	5	3	5	5	4
Overall Site Condition	3	3	4	5	3
Building					
Accessibility	5	5	5	5	3
Heating Distribution Systems	5	4	5	5	3
Life Safety	5	4	5	5	5
Means Egress	5	4	5	5	5
Plumbing Distribution Systems	5	3	5	5	3
Security Entry	5	3	5	5	3
Ventilation Distribution Systems	3	2	5	5	3
Boilers	5	3	5	5	4
Electrical Service	5	3	5	5	4
Facade	5	5	5	5	5
FP Sprinklers	1	1	5	5	1
Lighting Quantity Control	4	3	5	5	4
Roof Membrane	5	4	5	5	4
Toilets Fixtures	5	2	5	5	4
Windows	4	4	5	5	4
Site					
MAABADA Accessibility	4	1	5	5	1
Drainage	2	4	3	5	2
Parking Quality	3	3	5	5	3
Site Lighting	4	1	4	5	3
Walkways Curbs Sidewalks	3	5	4	5	2
DropOff Pickup	5	3	5	5	4
Fencing	3	5	5	5	2
Neighborhood Streets	4	5	5	4	4
Play Areas	4	3	4	1	5
Walls Slopes	5	5	5	5	3



Educational Facility Effectiveness: Elementary Schools, EEC, K-8, and Middle Schools

Mattapan	Elementary		EEC	K-8	
	Mattahunt Elementary	Taylor, Charles H. Elementary	Ellison/Parks Early Education School	Mildred Avenue K-8	Young Achievers Science & Math K-8
Overall Scores					
Overall: Learning Environments	3	3	5	5	3
EL_Overall: Spaces	3	2	3	4	2
Learning Environments					
Acoustical	3	2	5	5	2
Air Quality	3	2	5	5	2
Building Ventilation	3	2	5	5	2
Environment (inviting, stimulating, comfortable)	2	3	5	5	2
Lighting Quality	3	3	5	5	3
Natural Daylighting	4	4	4	5	4
Adjacencies Learning Environments	3	3	5	5	3
Finishes	2	3	5	5	3
Furniture	2	3	4	4	3
Outdoor Classrooms	2	1	5	1	5
Technology: Interactive	2	5	4	4	4
Technology: Power	3	2	4	4	2
Technology: Wireless	3	5	4	4	2
Spaces					
EL_Pre-K (K0/K1)	2	1	3	4	2
EL_Kindergarten (K2)	3	2	3	4	2
EL_Classroom (General)	3	2	3	4	3
EL_Special Education: Self Contained	2	1	2	3	2
EL_Special Education: Resource of Small Group	3	1	2	3	2
EL_Art Classroom	3	1	1	2	2
EL_Music Classroom	2	1	1	3	2
EL_Media Center	2	2	2	3	2
EL_Cafeteria	2	2	2	3	2
EL_Gymnasium	3	2	2	4	2
EL_Stage	1	1	2	3	1
EL_Medical	2	2	2	5	2
EL_Administration & Guidance	3	2	4	5	2
K8_Pre-K (K0/K1)				4	2
K8_Kindergarten (K2)				4	2
K8_Classroom (General 1-5)				4	3
K8_Classroom (General 6-8)				3	2
K8_Science				2	2
K8_Special Education: Self Contained				2	2
K8_Special Education: Resource of Small Group				3	2
K8_Art Classroom (1-5)				3	2
K8_Art Classroom (6-8)				3	2
K8_Music				4	2
K8_Vocations and Technology				3	1
K8_Media Center				5	2
K8_Cafeteria				5	2
K8_Gymnasium				5	2
K8_Stage				3	1
K8_Medical				5	2
K8_Administration & Guidance				5	2



Young Achievers Science and Math Pilot K-8 School

Year Built: 1930
(Lewenberg Junior High)

Mass Historic: Listed on inventory

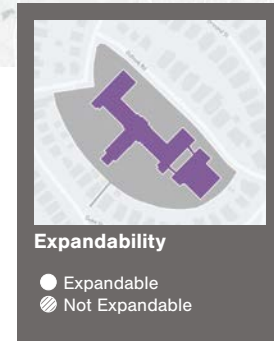
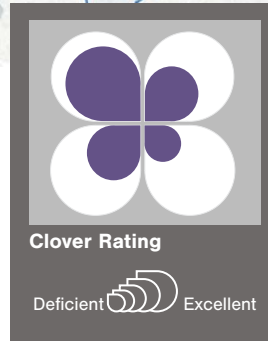
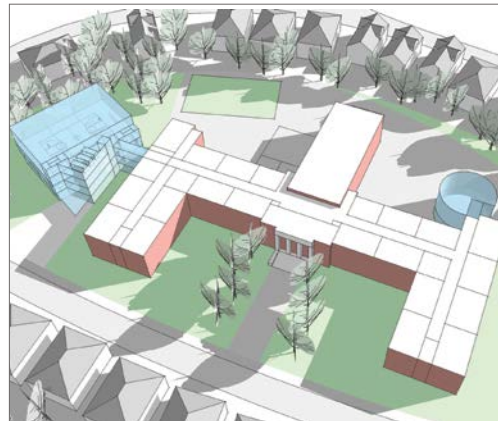
Current School Metrics:

120,944 GSF

542 K1-8 Students

Working with the Office of School Buildings, projects identified through the workshop modeling will proceed into conceptual design providing more detail for more advanced community layouts.

Examples for conceptual design for the Young Achievers follow.



Opportunities

- Replace “inefficient” single-story addition
- Provide proper team-teaching spaces for upper grades
- Create 21st century classrooms throughout
- Replace mechanical distribution and ventilation throughout
- Expand successful program by adding up to 360 students
- Improve building energy efficiency



Existing Building:

Typical of many pre-WWII schools, YAA has small cellular classrooms, lacks specialized spaces and areas for middle school education, poses accessibility challenges, etc.

Capacity challenges:

At 120,944 GSF, the YAA would appear to have too much GSF for a school of 542 students, 99,285 GSF < 120,944 GSF per MSBA 2016 guidelines. Yet, YAA is a full program. Analysis shows that the auditorium and large gymnasium (wonderful resources) diminish overall capacity.



Intermediate Options:

YAA is fortunate to have a full-sized gymnasium addition especially for a K–8 school. There may be an opportunity to repurpose some of the gym's support spaces as academic space. Rarely used locker rooms could be gutted and transformed into a media center/maker spaces, or spaces for art and music.

Discussion Points:

- Should the YAA expand to 900 students K–8?
 - By pairing with another lower school can constant strands through grade 8 be created? (600 SF K2–5, 300 6–8)
- Should the YAA building serve as a 600 student K2–6 school?



Full Transformation:

Land is at a premium across the City, and the gymnasium, as a single-story addition, can be seen as an inefficient use. By building a new multi-story addition in its place—including a new gym on the upper floors—and adding new academic spaces appropriate for a K–8 facility, successful programs like the YAA can be expanded in place.

88,944 SF existing, to remain

32,000 SF demolished

52,581 SF new addition

141,525 GSF total

Building and Maintaining Momentum

Any master plan must first have broad community support for its conceptual vision, and also be agile and flexible enough to allow for the complexities and changes inherent in long-range, multi-phase, citywide planning efforts. The BuildBPS educational and facilities master plan sets an ambitious goal for the district’s future. Many facility challenges and opportunities have come to light over the last 18 months of study.

Getting started and subsequently maintaining momentum are major hurdles in and of themselves, and must be overcome in tackling the complexities of the BPS portfolio of schools, demography and Boston’s unique geography.

BuildBPS has the potential to be a defining moment in the history of public education in Boston. The plan casts a hopeful vision for the future—one in which ALL of the City’s children have access to the best education possible, regardless of geographic location or income level; in which the City’s school facilities are in the vanguard of modern learning environments; and in which all Bostonians can take pride in the City’s commitment to the educational development of its youth. As Mayor Walsh said, “Better buildings means changing the status quo.” And that change begins here, with BuildBPS.

