

TO: Board of Directors, Massachusetts School Building Authority
FROM: Maureen G. Valente, Chief Executive Officer
John K. McCarthy, Executive Director, Deputy Chief Executive Officer
SUBJECT: Model School Program
Summary Level Information and Comparative Data
DATE: March 9, 2016

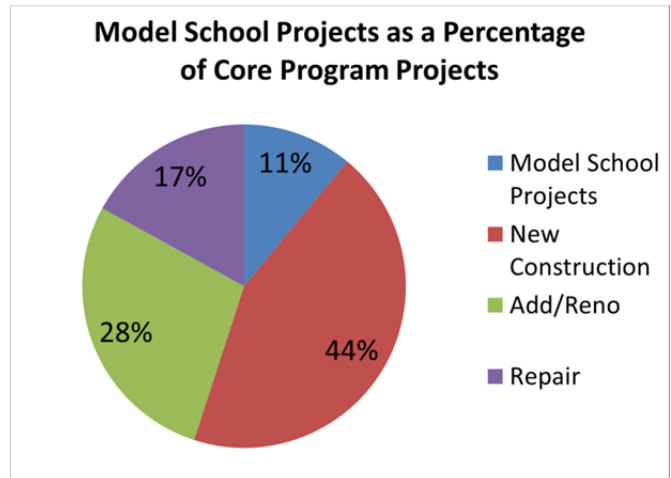
At the January 30, 2016 Board of Directors meeting, staff presented a recommendation to remove the incentive points for the Model School Program (the "Program"). As part of that discussion, staff were requested to provide additional information regarding district participation in the Program.

Included with this memorandum is the following information:

- 1) Model School Program summary level information;
- 2) Model School Program comparative cost and schedule information; and
- 3) January Board memorandum regarding Model School Program incentive points.

Summary Level Information on the Model School Program

The Model School Program, introduced in 2008, seeks to effectively adapt and re-use the design of successful, recently constructed elementary, middle and high schools. Model schools are efficient in design and easy to maintain, contain optimal classroom and science lab space, can easily accommodate higher or lower enrollments, incorporate sustainable design elements when possible, and are flexible in educational programming spaces. Of the 170 Core Program grants issued since 2008, 18 districts, or 11% have participated in the Program.



Sixteen (16) Model Schools Authorized by the MSBA Board of Directors (Attachment A)

The MSBA initially approved two high schools to be used as model schools, but since then has conducted a rolling selection process so that model schools of various sizes, enrollments and grade configurations could be identified. With over five phases of model school selection completed, the MSBA has accepted 16 schools into its model school program: nine elementary schools, one middle school, two middle/high schools and four high schools. The model schools and their grade configuration and design enrollments are shown on Attachment A.

Eighteen (18) Districts Authorized by the MSBA Board of Directors (Attachment B)

The MSBA has collaborated with 18 districts in its Model School Program, resulting in the adaptation of three of the high school model schools, one middle school model school, and three of the elementary school models. As shown on Attachment B, four of the seven adaptations have been adapted for different districts from two to eight times. Seventeen districts have now successfully completed the construction of their new model school facilities.

Model School Task Force (Attachment C)

In November 2011, the MSBA, together with representatives from the Boston Society of Architects, convened a joint task force to review the Program and to make recommendations for modifications to the existing Program that may be required to meet the MSBA's goals. The MSBA has provided a listing of the benefits and challenges of the Program and the Program's incentive points in Attachment C.

Current status of the Request for Qualifications ("RFQ") for the Program (Attachment D)

As originally envisioned, the MSBA would refresh the schools approved for the Program from time to time. With two building code updates since the original selections and a third update

pending, staff have reviewed the recommendations from the Task Force to inform an RFQ for new model schools and to understand potential revisions to the administration of the Program.

As noted in the memorandum provided for the February 24, 2016 Facilities Assessment Subcommittee (“FAS”) meeting, twenty responses, listed in Attachment D, were received in response to the RFQ for the Program. Based on the initial review of the twenty responses, staff have preliminarily identified the potential assets and issues associated with each response and have presented this information at the March 9, 2016 FAS meeting. To complete the MSBA’s due diligence process, staff are recommending a site visit to each of the schools and anticipate site visits will occur between now and mid-June 2016. Staff anticipate recommending schools for the Program at the May or July 2016 Board of Directors meeting.

Model Schools: Project Status and Comparative Data

Project Status:

Seventeen of the eighteen districts invited into the Program have completed their facilities. Of the eighteen districts invited, seventeen districts utilized the Design Bid Build construction method and one used the CM at Risk methodology. The last model school project was bid in March 2013.

Invitations Issued	Project Type	Project Methodology	Bid Year	Project Phase
2 in 2008	4 Elementary Schools	17 Design-Bid-Build	1 in 2009	5 in building completion
5 in 2009	2 Middle Schools	1 CM at Risk	4 in 2010	6 in project closeout
7 in 2010	2 Middle/High Schools		2 in 2011	6 approved for final audit
4 in 2011	10 High Schools		8 in 2012	1 activity suspended
			2 in 2013	

Additional information including total project cost, construction cost, change order percentage, design basic services fee at schematic design, OPM, Designer and contractor is provided in Attachment E.

Comparative Data

Staff have compared the model school projects to each other and to other Design Bid Build projects for new construction that bid during the same period. There are many factors that affect the cost, schedule and change orders for a project. The comparisons below should be interpreted with caution. It is challenging to compare projects to each other as there are a number of factors that affect the effective comparison of projects. These factors include, but are not limited to:

- Site conditions – Some sites have adverse conditions, which may substantially increase the cost per square foot. Even if site costs are removed, the site conditions can affect the foundation costs and/or require a multi-story facility and thereby increase the building cost;
- Project type – There is variation associated with larger spaces (auditorium and gym) and more specialized spaces (science labs, technology labs, vocational spaces) in high schools versus elementary schools;
- Bid Year – There is variation associated with the year the project is bid. To mitigate this impact, comparisons have been provided by year. However, this results in a smaller pool of data for each review;
- Selection of interior finishes;
- Designer;

- District’s choices for HVAC system and percentage of building air conditioned;
- Schedules;
- District’s readiness factor and its ability to make the necessary decisions in an expedited manner; and
- District’s ability to obtain local appropriations in an expedited manner.

For purposes of this review, staff have compiled data using the following parameters:

- Projects that bid between May 2009 and May 2014 – approximately 37 projects;
- Projects that used the Design Bid Build construction method – 1 model school utilized the CMR process and therefore was not included;
- Project comparisons are organized based on their bid year;
- Some comparisons are based on building costs and some are based on total construction costs; and
- Not all projects have attained final audit and therefore some of the numbers may be adjusted accordingly.

Comparison of schedules for development of construction documents (Attachment F)

Staff have compared the average amount of time that districts and their consultants took to complete the construction documents for model and non-model schools. The duration is measured from the time the Board authorized the Project Funding Agreement to the date of the construction bid. On average, model school projects were able to complete the construction documents within 9.3 months or 85 days sooner than a non-model project. Of note, ten of the 17 model schools completed the construction documents within five to nine months.

Comparison of construction cost per square foot at bid – (Attachment G)

Staff have provided four attachments that compare construction bid costs for the period between February 2009 and May 2014 comparing DBB model and non-model projects.

- Attachment G-1 compares the total construction costs for model and non-model school projects;
- Attachment G-2 compares the building costs for model and non-model school projects;
- Attachment G-3 compares the total construction costs for model and non-model schools for **high school projects only**; and
- Attachment G-4 compares the building costs for model and non-model for **high school projects only**.

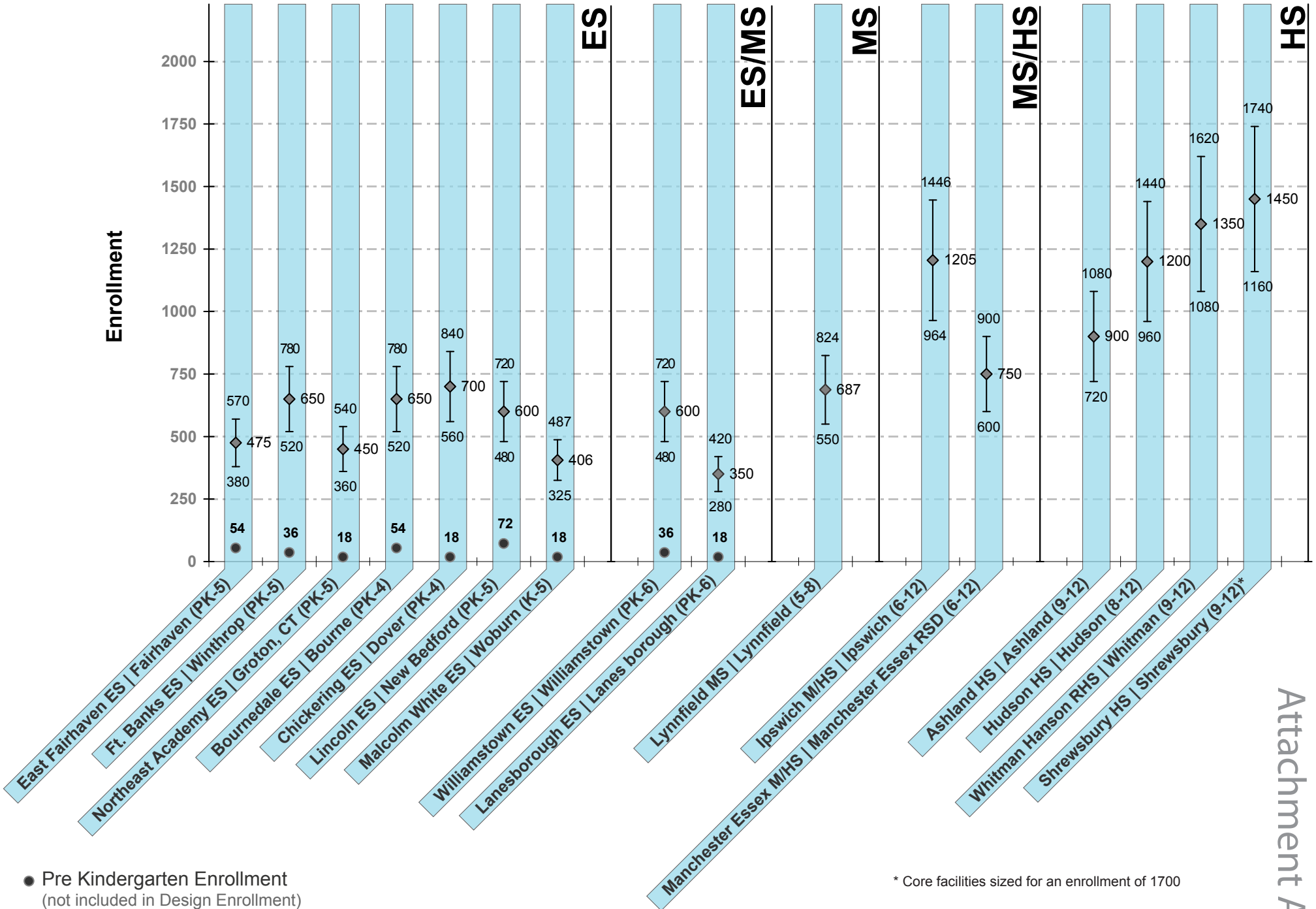
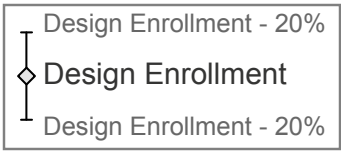
In general, on average model school projects have bid at or under non-model schools.

Comparison of Change Order Data (Attachment H)

Staff have provided a list of change order data for 17 model and 21 non-model schools bid during the period of May 2009 to May 2014 in Attachment H. In summary, the average for models and non-model schools for change orders as a total percentage of construction and for change orders for design issues is shown below:

Projects	Total % of construction	Design Issues
17 model schools	3.0%	.9%
21 non-model schools	4.45%	1.31%

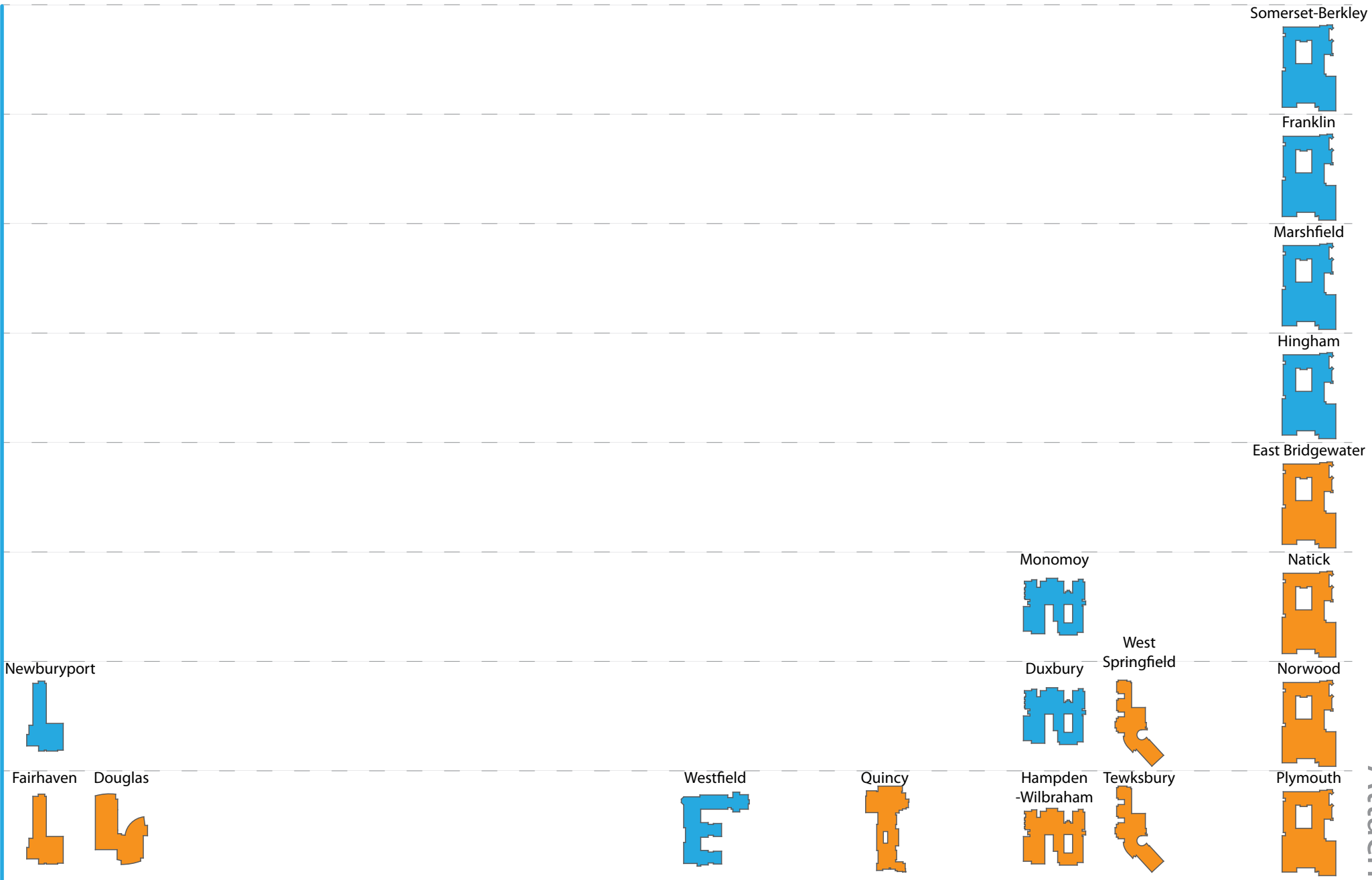
Model Schools Enrollment Chart



● Pre Kindergarten Enrollment
(not included in Design Enrollment)

* Core facilities sized for an enrollment of 1700

Model School Selections 3.27.14



Attachment C

Model School Program

Benefits	Challenges
<ul style="list-style-type: none">• Proven designs meeting certain criteria will contain many best practices that should be perpetuated in school design.• Adaptation of an existing design, versus development of a completely new design will streamline the design process and result in reduced consultant fees.• Design and bid schedule will be compressed and will accelerate the start of construction and thus reduce the impact and uncertainty of inflation in construction costs on the overall cost of the project.• Re-use of the design should limit construction change orders.	<ul style="list-style-type: none">• Not all districts are eligible due to site conditions.• Not all designers have a model school, this affects the competition and selection process.• Designer staff and consultants change over time and could weaken the effectiveness of the program.• Could limit creativity.• Model school becomes obsolete over time.• Design is not directly based on the district's educational program.

Incentive Points

Benefits	Challenges
<ul style="list-style-type: none">• May assist districts with local support.• Incentivizes districts to try a new approach or consider regionalization.	<ul style="list-style-type: none">• Increases the MSBA grant at the expense of other districts and projects.• May distort the process by placing an undue emphasis on district share.• May minimize the importance of district specific educational programming.• May encourage new construction when it may not be the most appropriate solution.

Attachment D

Model School Program Request for Qualifications, Responses Received

Twenty responses to the Request for Qualifications for the Model School Program were received on February 4, 2016 as noted below. Review is currently underway and staff anticipate presenting recommendations for site visits at the March 9, 2016 Facilities Assessment Subcommittee.

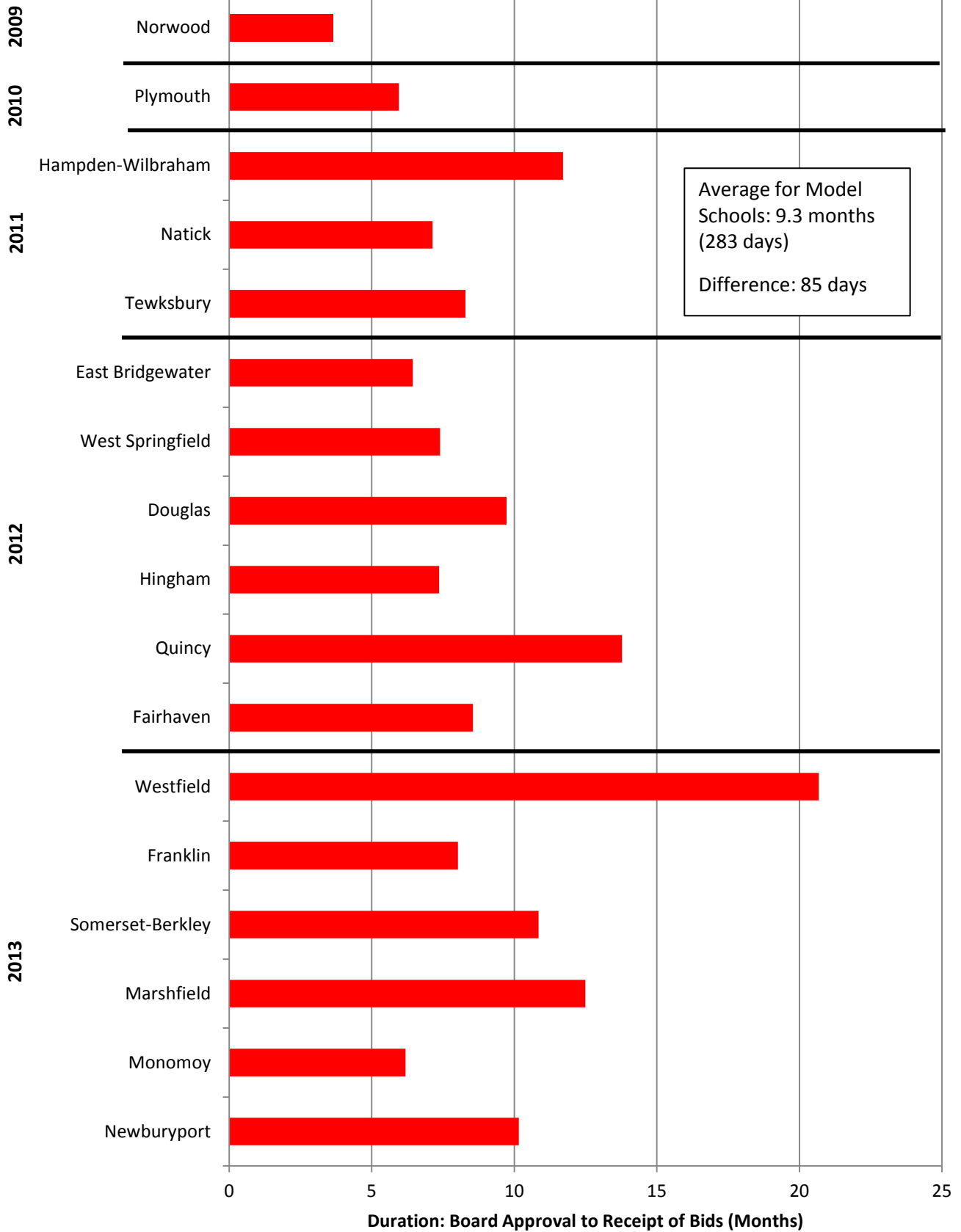
Firm	School Name	District
DiNisco Design Partnership	Douglas Elementary School	Douglas
DiNisco Design Partnership	Estabrook Elementary School	Lexington
Flansburgh Architects	Freeman-Kennedy School	Norfolk
HMFH	Tahanto Regional Middle/High School	Berlin-Boylston RSD
HMFH	Hanover High School	Hanover
Jonathan Levi Architects	Roger Wellington Elementary School	Belmont
KBA	Memorial Elementary School	Burlington
Lamoureux Pagano	J.R. Briggs Elementary School	Ashburnham-Westminster RSD
Lamoureux Pagano	Sherwood Middle School	Shrewsbury
Mount Vernon Group	Abraham Lincoln Elementary School	New Bedford
Mount Vernon Group	Duxbury Middle High School	Duxbury
Mount Vernon Group	Minnechaug Regional High School	Hampden-Wilbraham RSD
Mount Vernon Group	Monomoy Regional High School	Monomoy RSD
OMR Architects	Longmeadow High School	Longmeadow
OMR Architects	Quinn Middle School	Hudson
RDA	Uxbridge High School	Uxbridge
SMMA	Wellesley High School	Wellesley
SMMA	Grafton High School	Grafton
SMMA	Parker Elementary School	Billerica
SMMA	Bancroft Elementary School	Andover

Attachment E

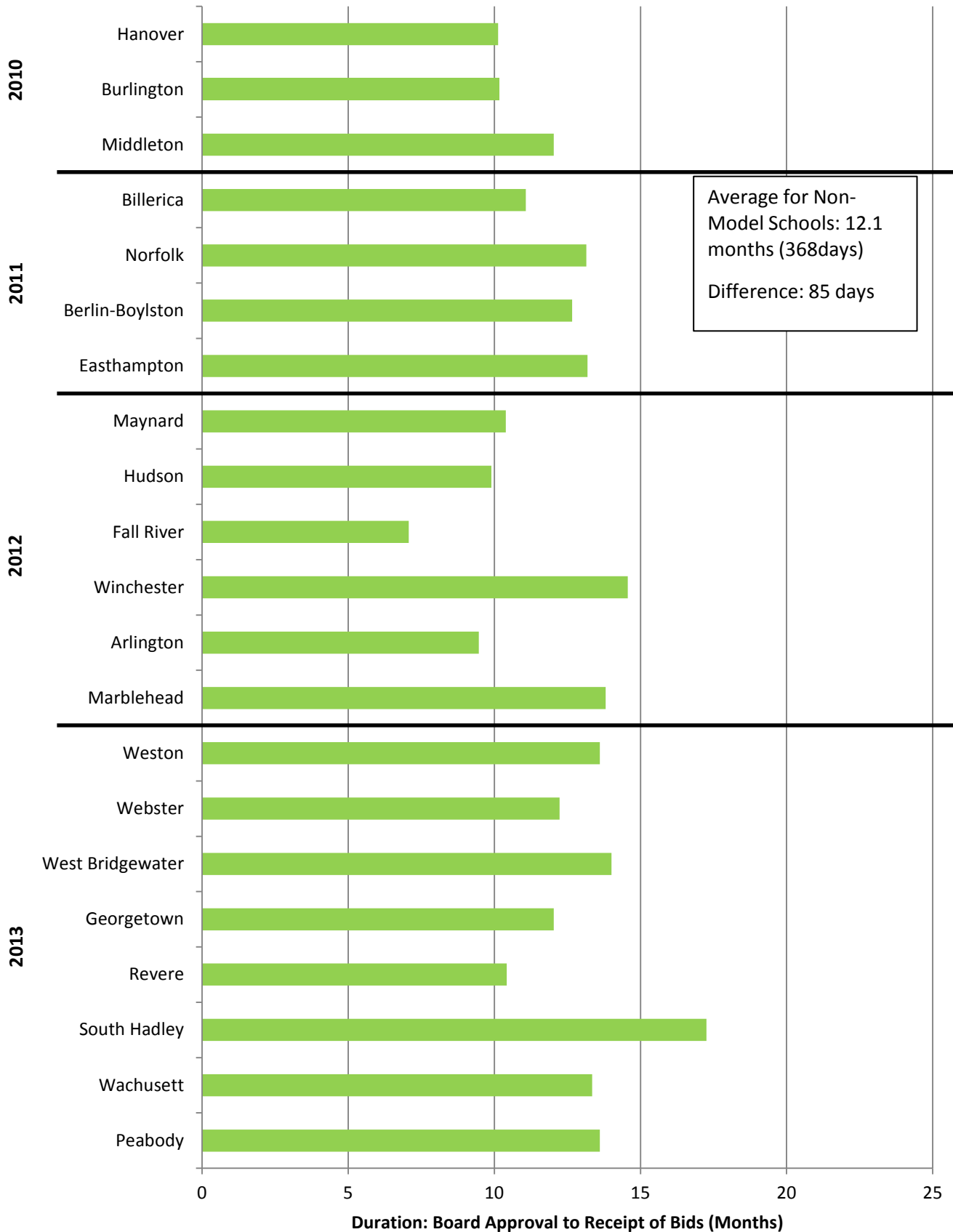
Model School Summary Chart

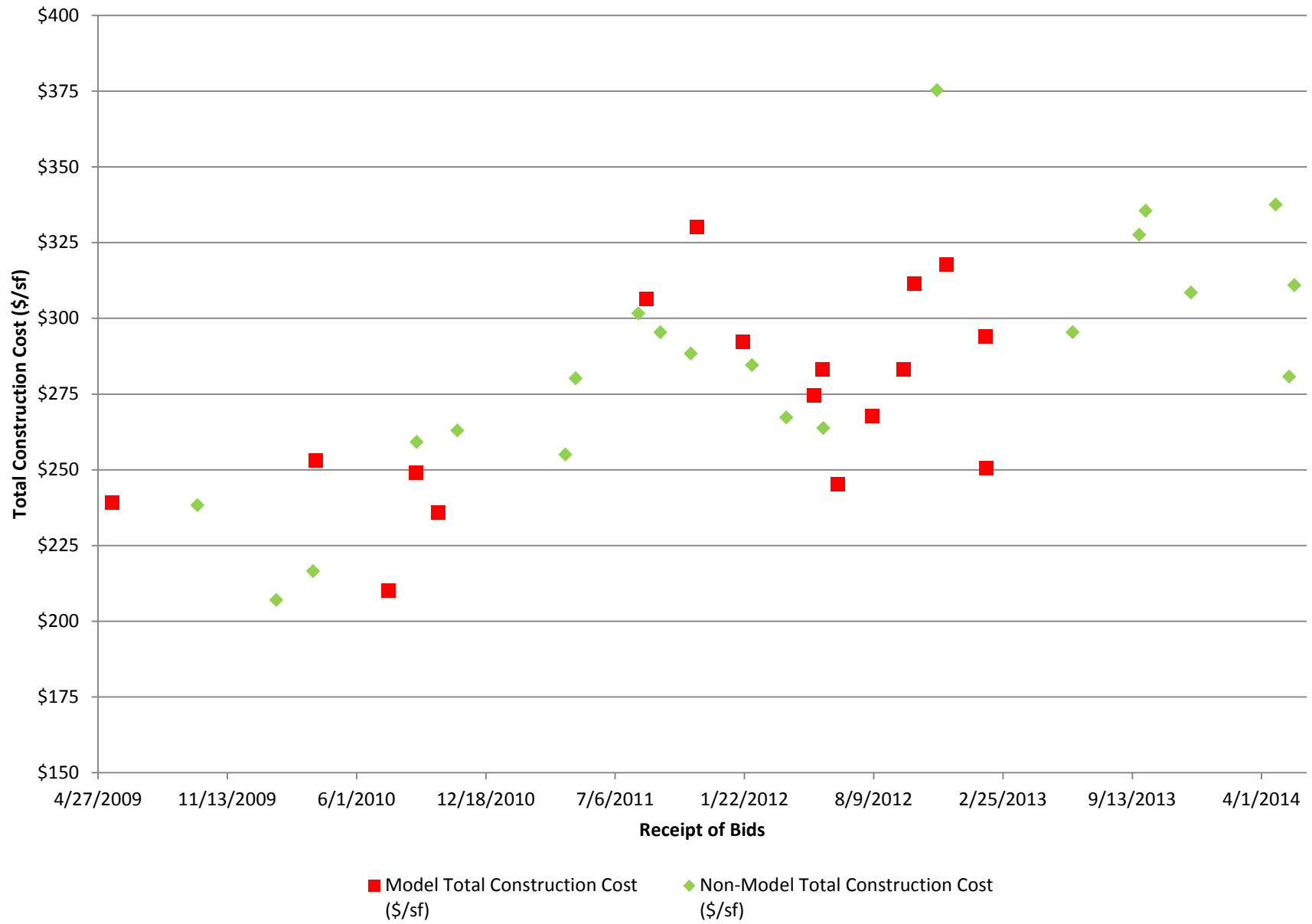
District	Model School Invitation	Total Project Cost	Construction Cost @ SD	Change Orders (Total %)	Designer Basic Services Fee	OPM	Designer	Contractor
Hampden-Wilbraham Minnechaug Reg. High	8/8/2008	\$151,182,891	\$66,493,091	3.27%	3.7%	Pinnacle One, Inc.	Mount Vernon Group Architects, Inc.	Fontaine Brothers, Inc.
Norwood High School	8/8/2008	\$68,655,476	\$65,477,189	0.75%	4.9%	Compass Project Management, Inc.	Ai3 Architects LLC	Agostini Construction Co., Inc.
Tewksbury Memorial High	1/28/2009	\$67,710,158	\$65,946,517	5.28%	6.1%	HEERY	Symmes Maini & McKee Associates, Inc.	CTA Ventures
Plymouth North High	3/25/2009	\$84,294,824	\$75,250,428	8.84%	3.9%	Ted Gentry Associates, Inc	Ai3 Architects LLC	J & J Contractors, Inc.
Somerset-Berkley Reg. High	3/25/2009	\$82,383,618	\$66,840,822	1.19%	4.5%	Skanska USA Building, Inc	Ai3 Architects LLC	Bacon-Agostini Construction Joint Venture
Natick High	6/3/2009	\$78,780,366	\$70,825,000	3.42%	4.3%	Hill International Company	Ai3 Architects LLC	Brait Builders Corp.
West Springfield High	11/18/2009	\$104,767,085	\$73,295,000	4.33%	5.6%	Strategic Building Solutions, LLC	Symmes Maini & McKee Associates, Inc.	Fontaine Brothers, Inc.
East Bridgewater High	5/26/2010	\$77,012,539	\$60,320,137	3.93%	4.5%	Hill International Company	Ai3 Architects LLC	Fontaine Brothers, Inc.
Douglas Elementary	11/17/2010	\$32,231,824	\$24,832,888	1.25%	9.8%	HEERY	DiNisco Design Partnership, Limited	CTA Construction Co., Inc.
Duxbury Middle-High	11/17/2010	\$126,807,932	\$99,196,234	5.70%	7.2%	KV Associates, Inc.	Mount Vernon Group Architects, Inc.	Dimeo Construction Company
Hingham Middle	11/17/2010	\$58,414,481	\$50,432,439	1.93%	5.3%	Knight, Bagge & Anderson Inc.	Ai3 Architects LLC	Brait Builders Corp.
Monomoy Reg. Middle-High	11/17/2010	\$59,451,080	\$52,962,105	2.20%	5.7%	Skanska USA Building, Inc	Mount Vernon Group Architects, Inc.	Fontaine Brothers, Inc.
Quincy Central Middle	11/17/2010	\$49,933,876	\$32,607,101	3.93%	8.3%	Tishman Construction Corporation of MA	Ai3 Architects LLC	H.V. Collins Co., Inc.
Westfield Abner Gibbs Elementary	11/17/2010	\$32,954,423	\$28,154,971	N/A	6.3%	Skanska USA Building, Inc	Jones Whitsett Architects, Inc.	Fontaine Brothers, Inc.
Marshfield High	2/9/2011	\$101,630,087	\$80,848,464	2.30%	3.9%	Compass Project Management, Inc.	Ai3 Architects LLC	Brait Builders Ventures
Newburyport Francis T Bresnahan Elementary	2/9/2011	\$37,118,204	\$31,117,441	3.50%	6.6%	HEERY	HMFH Architects, Inc.	CTA Construction Co., Inc.
Franklin High	7/27/2011	\$103,513,848	\$87,914,728	1.28%	4.4%	Daedalus Projects Inc	Ai3 Architects LLC	Bacon-Agostini Construction Joint Venture
Fairhaven Rogers Elementary	9/28/2011	\$23,577,607	\$20,177,238	1.31%	7.7%	Daedalus Projects Inc	HMFH Architects, Inc.	CTA Construction Co., Inc.

New Construction DBB Model Schools

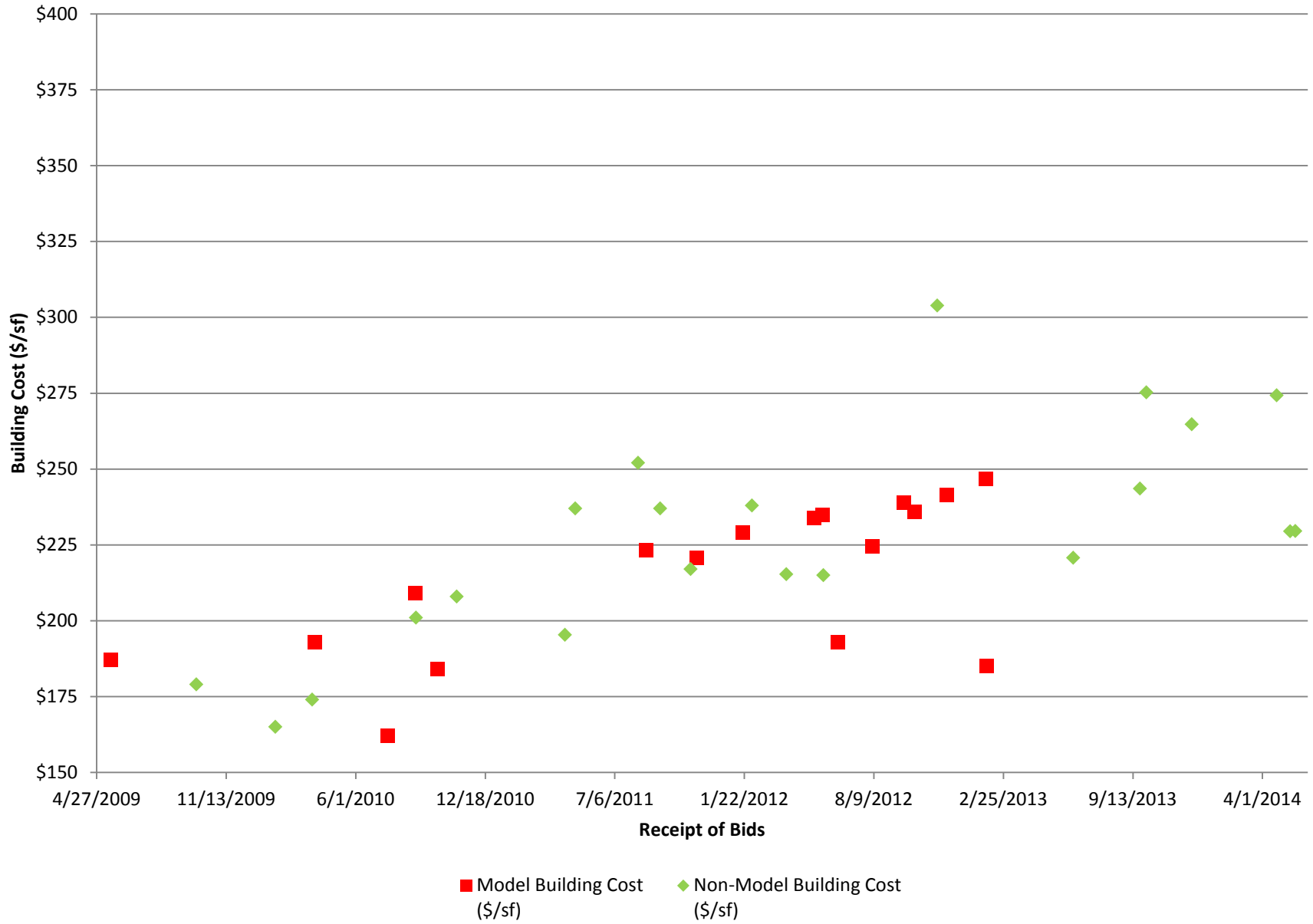


New Construction DBB Non-Model Schools

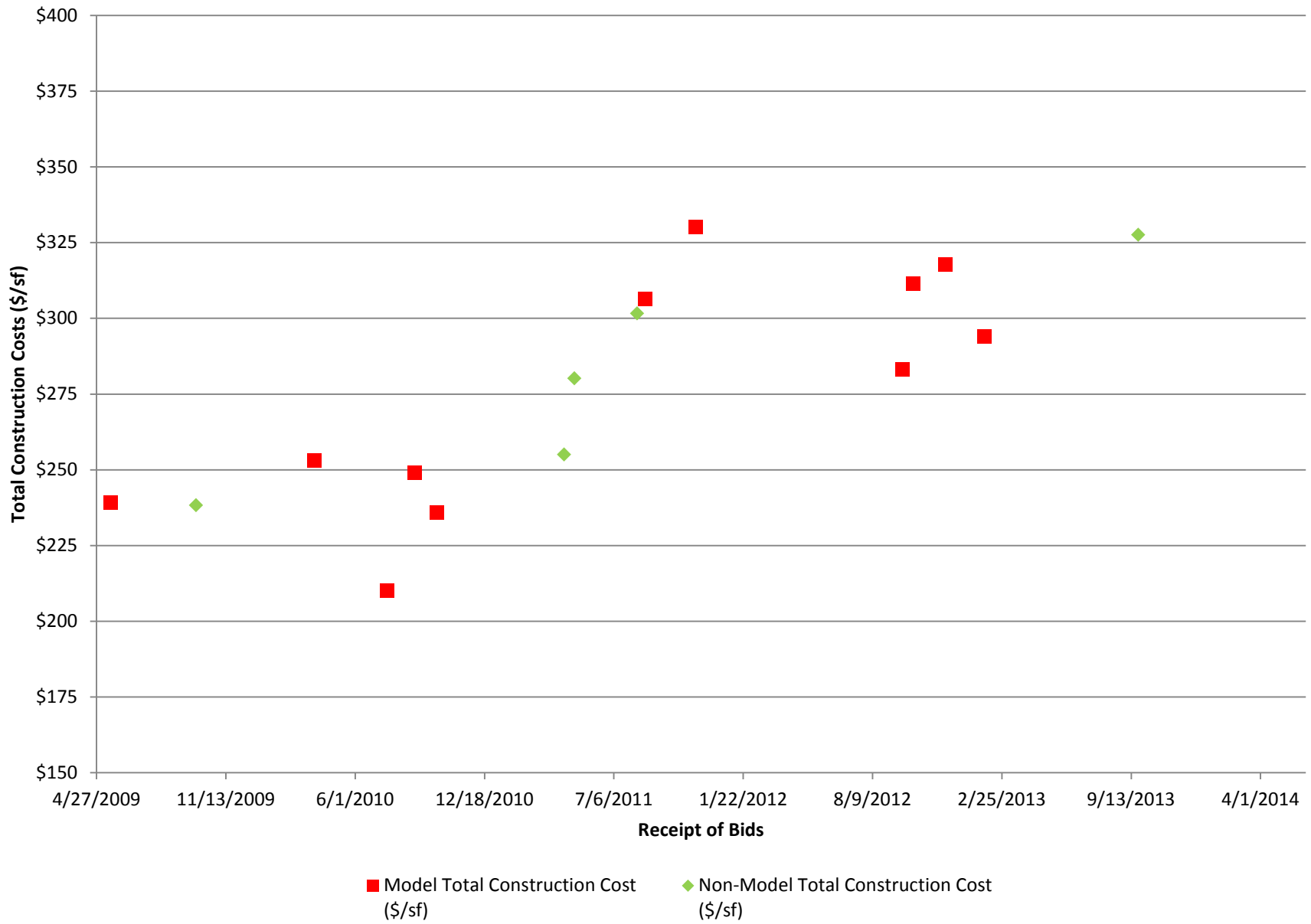


Model and Non-Model Total Construction Costs

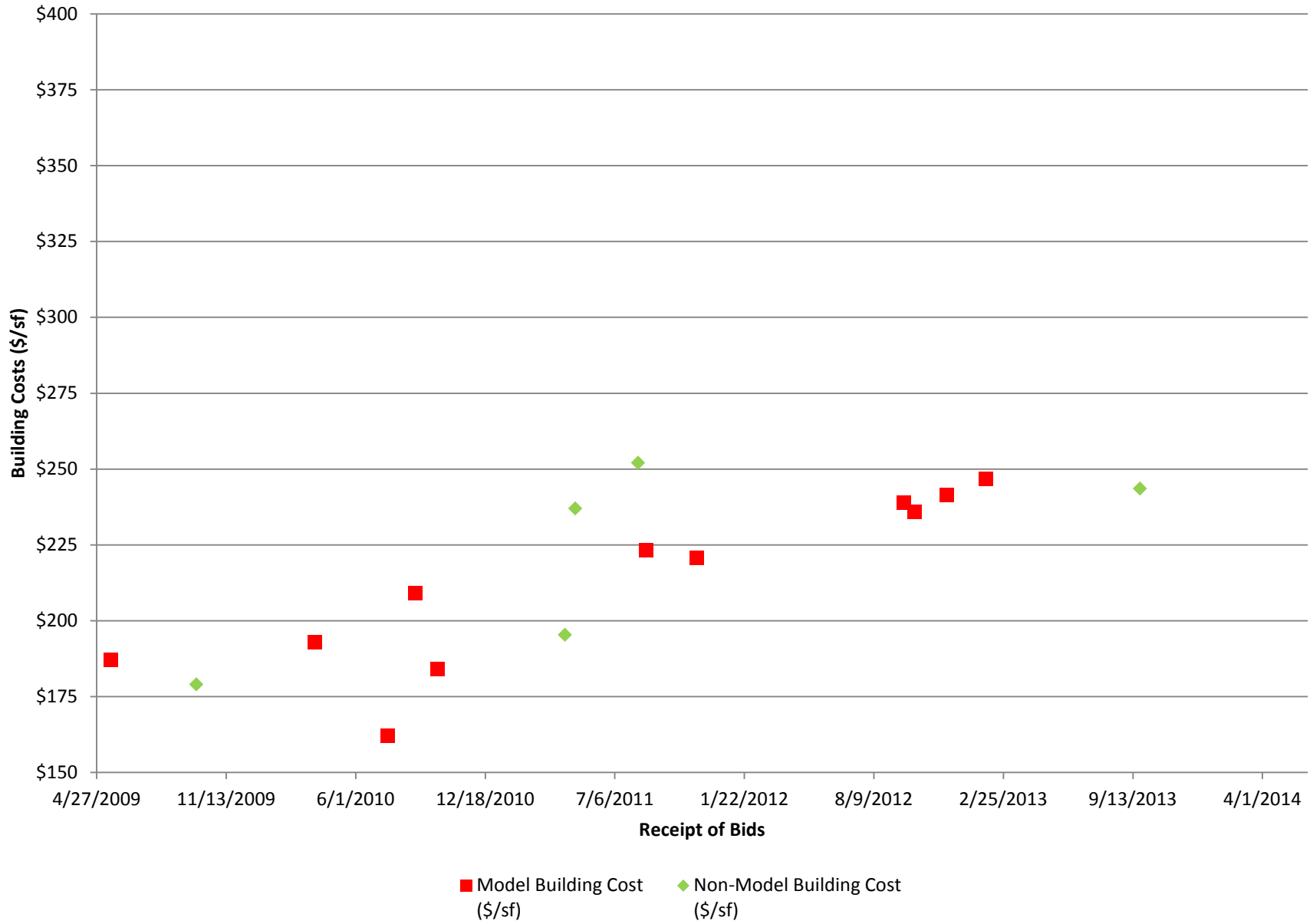
Model and Non-Model School Building Costs



Model and Non-Model High School Total Construction Costs



Model and Non-Model High School Building Costs



Attachment H

Model School Change Order Data

	Total % of Construction	Design Issues	New Scope Directed by Owner	Differing Conditions	New Scope Directed by Third Party	Misc.
Norwood High School	0.8%	0.5%	0.4%	-0.3%	0.2%	0.0%
Plymouth North High	8.8%	0.7%	6.8%	1.2%	0.2%	0.0%
Hampden-Wilbraham Minnechaug Reg. High	3.3%	0.6%	0.3%	0.9%	0.1%	1.3%
Natick High	3.4%	0.3%	3.1%	-0.1%	0.2%	0.0%
Tewksbury Memorial High	5.3%	2.7%	0.6%	1.6%	0.2%	0.2%
East Bridgewater High	3.9%	0.7%	1.7%	0.9%	0.8%	-0.1%
West Springfield High	4.3%	2.7%	1.9%	0.4%	0.1%	-0.8%
Douglas Elementary	1.3%	-0.2%	1.1%	0.0%	0.1%	0.2%
Hingham Middle	1.9%	0.7%	1.2%	0.0%	0.0%	0.0%
Quincy Central Middle	3.9%	1.4%	0.7%	0.7%	0.1%	1.0%
Fairhaven Rogers Elementary	1.3%	0.5%	0.1%	0.2%	0.1%	0.3%
Westfield Abner Gibbs Elementary	No Change Orders Reviewed					
Franklin High	1.3%	0.6%	0.7%	0.6%	0.0%	-0.7%
Somerset-Berkley Reg. High	1.2%	0.8%	0.1%	0.3%	0.0%	0.0%
Marshfield High	2.3%	0.3%	0.7%	1.0%	0.1%	0.1%
Monomoy Reg. Middle-High	2.2%	1.0%	1.4%	-0.3%	0.1%	0.0%
Newburyport Francis T Bresnahan Elementary	3.5%	0.4%	4.0%	-0.9%	0.1%	0.0%
Average:	3.0%	0.9%	1.6%	0.4%	0.1%	0.1%

Non-Model School Change Order Data

	Total % of Construction	Design Issues	New Scope Directed by Owner	Differing Conditions	New Scope Directed by Third Party	Misc.
Hanover High	5.26%	2.57%	2.20%	0.37%	0.12%	0.00%
Burlington Memorial	5.26%	1.41%	2.79%	0.98%	0.11%	-0.03%
Middleton Howe-Manning	6.93%	1.42%	3.51%	1.57%	0.42%	0.00%
Billerica Parker	3.37%	1.70%	1.28%	0.26%	0.53%	-0.40%
Norfolk Freeman-Kennedy ES	5.98%	1.26%	1.63%	2.10%	0.89%	0.09%
Berlin-Boylston Tahanto Reg High	3.19%	0.84%	1.69%	0.29%	0.08%	0.29%
Easthampton Easthampton High	3.32%	1.27%	1.20%	0.18%	0.06%	0.61%
Maynard Maynard High	1.48%	0.97%	0.36%	-0.36%	0.34%	0.18%
Hudson John F Kennedy	3.74%	1.89%	1.11%	0.52%	0.15%	0.07%
Fall River Morton Middle	13.85%	1.45%	0.56%	13.57%	0.25%	-1.98%
Winchester Vinson-Owen	3.17%	1.00%	0.23%	2.04%	0.10%	-0.20%
Arlington Thompson	3.08%	1.43%	0.28%	0.02%	0.07%	1.28%
Marblehead Glover	3.80%	1.97%	0.16%	0.96%	0.47%	0.24%
Weston Field Elem School	8.22%	2.15%	1.19%	2.59%	0.19%	0.03%
Webster Park Avenue Elementary	2.93%	0.54%	0.87%	1.08%	0.04%	0.39%
West Bridgewater West Bridgewater Jr-Sr	0.67%	0.13%	0.18%	0.05%	0.30%	0.00%
Georgetown Penn Brook	11.25%	0.83%	3.06%	6.22%	0.02%	1.12%
Revere Sgt Hill ES	2.03%	0.27%	0.54%	1.13%	0.07%	0.02%
South Hadley Plains Elementary	5.28%	3.69%	0.49%	0.00%	0.40%	0.59%
Wachusett Mountview MS	1.22%	0.35%	0.33%	0.81%	0.00%	0.08%
Peabody J Henry Higgins Middle	-0.55%	0.29%	0.15%	-1.02%	0.03%	0.03%
Average:	4.45%	1.31%	1.13%	1.59%	0.22%	0.11%

MEMORANDUM

TO: Board of Directors, Massachusetts School Building Authority
FROM: Maureen G. Valente, Chief Executive Officer
John K. McCarthy, Executive Director, Deputy Chief Executive Officer
DATE: January 20, 2016
RE: Staff Recommendation to Remove Incentive Points for Model School Program

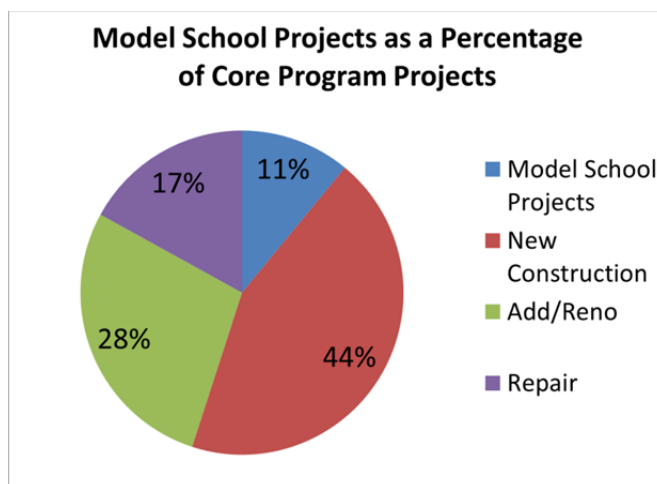
Introduction

The Massachusetts School Building Authority (the “MSBA”) initially developed the Model School Program (the “Program”) in 2008 to effectively adapt and re-use the design of successful, recently constructed high schools, and has since expanded the Program to include elementary, middle and other combinations of grade configurations. To raise awareness of the Program, the MSBA Board of Directors authorized up to an additional five incentive points for school districts that participate in the Program. Model Schools are efficient in design and easy to maintain, contain optimal classroom and science lab space, can easily accommodate higher or lower enrollments, incorporate sustainable "green" design elements when possible, and are flexible in educational programming spaces.

To maximize the benefits of the program, the amount of design changes to the model school must be minimized. A potential candidate for the Program would need an available site that is free of constraints or other adverse conditions. Many of our districts are challenged by site availability, site size, and adverse site conditions; therefore, the Program is not a good fit for every district. In considering district requests for an invitation into the Program, the MSBA must not only review the available site but also understand the enrollment and educational program of potential districts, compared to the available model schools, to ensure that it invites districts that could benefit from and use a model school with minimum design changes.

Of the 170 Core Program grants issued since 2008, only 18 districts or 11% have participated in the Program. Seventeen districts have now successfully completed the construction of their new facilities and have benefitted from the Program and its stated objectives, which are to:

- Maximize the value of existing, proven school designs and best practices;
- Encourage schools that reflect enduring and educationally sound designs;
- Allow for compressed project schedules and accelerated construction start times, thus reducing uncertainty of inflation in construction and project costs;
- Shorten and streamline the design process to reduce design fees;



- Enhance predictability of project costs and performance resulting in improved quality control and reduced change orders; and
- Provide an opportunity for districts to experience the model before selecting a design.

Although not suitable for all districts, MSBA staff considers the Program to be one of several types of programs that the MSBA offers to benefit the varied needs of districts. For instance, districts that have a large inventory of schools requiring updating or that are experiencing overcrowding and/or increasing enrollment may benefit from the compressed project schedule offered by the Program. To keep the model schools in the Program up to date, MSBA staff has issued a Request for Qualifications, and are expecting responses by February 4, 2016.

Recommendation

In November 2011, the MSBA, together with representatives from the Boston Society of Architects, convened a joint Model School Task Force (the “Task Force”). The Task Force set out to review the Program and to make recommendations for modifications to the existing Program that may be needed to better meet the MSBA’s stated goals. The Task Force considered the benefits and challenges of the Program and noted the following regarding the incentive points:

Benefits	Challenges
<ul style="list-style-type: none"> • May assist districts with local support • Incentivizes districts to try a new approach or consider regionalization 	<ul style="list-style-type: none"> • Increases the MSBA grant at the expense of other districts and projects • May distort the process by placing an undue emphasis on district share • May minimize the importance of district specific educational programming • May encourage new construction when it may not be the most appropriate solution

Of note, not all districts that have requested to be invited into the Program have received an invitation, and not all grants for districts in the Program have included the full value of the five additional incentive points. For example, pursuant to M.G.L. c. 70B, § 10, the MSBA’s statute, 80% is the maximum reimbursement rate for any district participating in the MSBA’s Grant Program. Consequently, districts that already have a reimbursement rate close to the 80% maximum rate, absent any Model School points, will likely not realize the full value of some or all of the Model School incentive points.

MSBA staff has reviewed the advantages and challenges associated with incentive points for the Program, along with the recommendations of the Model School Task Force. Based on this review, MSBA staff recommends that, effective for all districts receiving an invitation into Eligibility Period January 1, 2016 or later, the MSBA will no longer offer Model School Program incentive points for the following reasons:

- The Program is not available to all districts and, therefore, the incentive points are not available to all districts;

- The incentive points have served the MSBA's original intended purpose of raising awareness of the possibility of using a model school design; and
- The reallocation of MSBA funding from the current Model School incentive point structure may offer the MSBA opportunities to allow for additional project invitations into the Core Program and the Accelerated Repair Program, or may allow the MSBA to offer a new program.