

MEMORANDUM

TO: Board of Directors, Massachusetts School Building Authority
FROM: John K. McCarthy, Executive Director
DATE: September 25, 2013
RE: Recommended Change Order Funding Allowance Policy

Pursuant to discussions at the June Board of Directors (“Board”) meeting, the MSBA has completed a review of its Construction Cost Cap Policy as well as a review of the number and dollar value of change orders and average eligibility determinations by project type. These two separate reviews allowed the MSBA to compare the actual bid amounts versus estimated construction costs and further understand the change order experience across 52 projects. The findings of these reviews were then used to assess the viability and appropriateness of the MSBA’s funding levels.

Staff’s recommendation to maintain the Cost Cap Policy of \$275 per square foot for new construction was accepted at the June Board meeting.¹ Since the June Board meeting, this cost analysis as well as the findings of the change order analysis have been presented and discussions held with stakeholders at multiple meetings including the:

- Facilities Assessment Subcommittee meetings: May 15, 2013 and June 26, 2013
- Owner’s Project Manager (“OPM”) Review Panel meeting: June 10, 2013
- OPM, Designer, Contractor Roundtable meeting: June 19, 2013
- Designer Selection Panel meeting: July 9, 2013
- Massachusetts Superintendents’ Executive Institute Conference: July 19, 2013

Discussions and feedback received have been positive. There was much support for the MSBA’s efforts to further define the potentially eligible grants to enhance the district’s ability to manage expectations and cash flow throughout the life of a project.

The complete change order review and presentation has been included as Attachment A to this memo. The review and findings include all project types: new construction, model schools, addition/renovations, and repairs. The MSBA’s review of executed changes orders include:

- 52 construction projects with physical progress of 75% or higher;
- \$1.66 billion in awarded construction value;
- 828 change orders comprised of almost 6300 individual changes; and
- \$52.4 million in total change orders.

¹ As reported previously at Board subcommittees and at the June Board meeting, results of cost analysis indicate that the \$275 cap for new construction should remain in place. Staff recommended that this analysis be updated annually with the next update to be presented late Spring of 2014.

The highlights of the review are as indicated below.

- Of the \$1.66 billion in awarded construction contracts, \$52.4 million in change orders were reviewed and approximately \$18.9 million, or about 1.1% of the 1.66 billion, were found to be eligible.
- For the 27 new construction projects reviewed:
 - The average change order percentage is 3.17%.
 - The average MSBA eligibility determination is 0.92%.
- For the 17 addition and renovation projects reviewed:
 - The average change order percentage is 3.96%.
 - The average MSBA eligibility determination is 1.77%.
- For the 8 repair projects reviewed:
 - The number of data points was more limited and therefore did not provide a trend.
 - The average MSBA eligibility determination is 3.76% although there was a range among projects from a low of .52% to a high of 8.23%.

Present Policy

The Total Project Budgets presented by districts and their consultants include a line item, separate from the construction budget, for potentially eligible construction contingency. This line item is intended for change orders to fund unanticipated construction cost increases. The amount included in the budget is project specific and is an amount recommended by the district and its consultants.

Typically, the budgets for MSBA-funded projects include a potentially eligible construction contingency of about 5% of the construction budget for new and model schools and about 5% to 8% of the construction budget for renovation/addition projects. This line item is in addition to and exclusive of other contingencies included in the Total Project Budget such as a design and pricing contingency, Owner's contingency, and Construction Manager at Risk Guaranteed Maximum Price contingencies. To date, the grants for Core Program projects approved by the Board have included an estimated, not to exceed, grant amount ("Maximum Total Facilities Grant") calculated on the full value of this line item with payment subject to MSBA review of the expenditure and subject to audit.² However, as indicated in the Project Funding Agreements and as noted above in the findings, the MSBA has never found the entire amount of the line item contingency eligible.

Districts and their consultants are responsible for the evaluation of contractor change order requests and are required, in accordance with applicable laws, to determine the validity of such requests regardless of potential MSBA participation in any additional costs. The district's OPM is responsible for tracking both pending and executed change orders and for providing the MSBA with a summary and the documentation of executed change orders that includes who initiated the change and the reason for the change.

² This is true for Core Program projects including new construction, addition/renovation, and major repairs. Since the start of the Green Repair Program, all Accelerated Repair Program projects have contained an eligibility cap of 5% for construction contingency and 2% for Owner's contingency no matter what level of contingency is established by the district and its consultants.

Over the last several years, the MSBA has been reviewing district submitted change orders and issuing its eligibility determinations on a quarterly basis. In general, MSBA eligibility reviews find routine design issues and unforeseen conditions eligible provided that they are not in excess of the MSBA's site cost allowance. Categorically ineligible items such as scope not included in the original Project Funding Agreement (PFA) and work directed by local authorities are typically found ineligible. If a district incurs change order costs in excess of its contingency budget, subsequent change orders are found to be ineligible because the agreed-upon contingency budget, as determined in the PFA, is no longer available.

MSBA reimbursement for change orders only occurs after change orders have been approved by the district and submitted to the MSBA for its review, eligibility determinations have been issued by the MSBA, and the MSBA has approved a budget revision request filed by the district to transfer a budgeted amount from its construction contingency line item to the change order line item. The number of reimbursements issued for change orders varies based on the districts' submittal rates.

Staff recommendation

Based on the findings of this review, staff recommends that an allowance to fund construction change orders be established that correlates with the representative experience of \$52 million in executed change orders for projects in the MSBA's Capital Pipeline reviewed as part of the May 2013 analysis. Staff recommends that for all districts seeking the MSBA's Board approval for a Project Scope and Budget Agreement for an Approved Project at the January 29, 2014 Board meeting, the Maximum Total Facilities Grant will include a maximum change order eligibility level of 1% of the construction budget for new construction and 2% of the construction budget for addition/renovation projects.³

This recommendation would still maintain the current change order review process as outlined in items 1 through 4 and notes two additional changes as noted in items 5 and 6 below.

- 1) Districts and the consultants would continue to develop and set appropriate, project specific, construction contingency levels for each project irrespective of the MSBA funding level.
- 2) Districts, through the assistance of its OPM, would still be required to report on and submit all change orders and costs to the MSBA for review and audit.
- 3) The evaluation criteria currently in place for determining change order eligibility would remain in place (e.g., routine design issues and unforeseen conditions not in excess of the MSBA's site cost allowance would generally be considered eligible).
- 4) The MSBA would still review and issue its quarterly eligibility determinations and notifications to the district to allow the district to understand and manage its cash flow throughout the project.
- 5) The MSBA would still continue to review all change orders issued on the construction contract. The MSBA will fund eligible change orders up to the recommended maximum change order eligibility level of 1% or 2%, based on project

³ Staff will continue to monitor and analyze major repair change order data. Upon receipt of more data, staff may be able to recommend a maximum change order eligibility level for major repair projects.

- type, until the total budgeted amount established in the PFA budget for the construction contingency is reached.
- 6) To streamline the billing and payment process for the district and the MSBA, staff suggests that a single reimbursement request be processed by the district as part of the project close-out process rather than periodic payments.

Staff believes that the recommended Change Order Funding Allowance Policy offers the following advantages over the current policy:

- 1) Allowances that reflect actual average values for eligible change order expenses will provide a more equitable distribution of MSBA grant funding across districts.
- 2) A standard allowance would provide districts with an increased understanding of the potentially eligible Maximum Total Facilities Grant and enhance the district's ability to manage its own cash flow.
- 3) A standard allowance would be an additional tool within the MSBA process that assists the districts in understanding the impact of scope and cost changes on its Maximum Total Facilities Grant. Other tools include the MSBA's monthly review of district reimbursement requests including the identification of ineligible costs submitted; the MSBA review and approval of submitted budget revision requests; the MSBA review of the actual construction bids and the reconciliation of the grant amount that occurs with the PFA Bid Amendment; and the quarterly MSBA review of change order reviews including the eligibility determinations. All of these tools assist the district in managing expectations and making decisions throughout the life of the project.
- 4) The recommended change will improve the MSBA's ability to forecast its estimate of committed funds and utilize this information to assess future capacity for projects.



Building Construction Costs

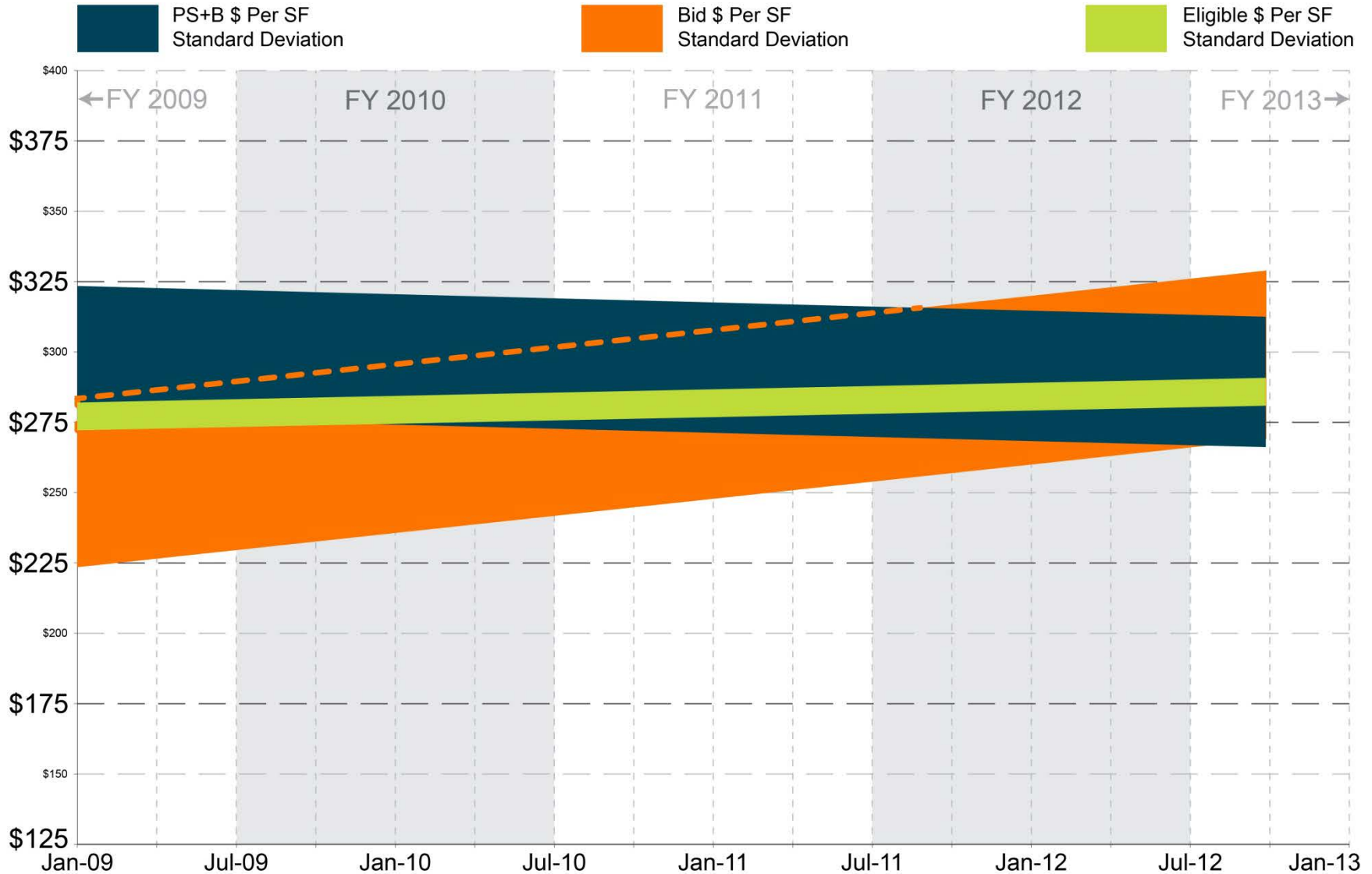
Marked Up Building Only Construction Cost		2009 (9)*	2010 (12)*	2011 (5)*	2012 (12)
Schematic Design	Average	\$250	\$243	\$240	\$270
	Range	\$229 - \$271	\$218 - \$268	\$231 - \$249	\$245 - \$295
Bid Results	Average	\$209	\$231	\$236	TBD
	Range	\$181 - \$236	\$205 - \$257	\$228 - \$244	TBD

* Costs exclude Site, Demolition and Abatement

* Averages and Ranges are based on projects with SD and Bid Data only

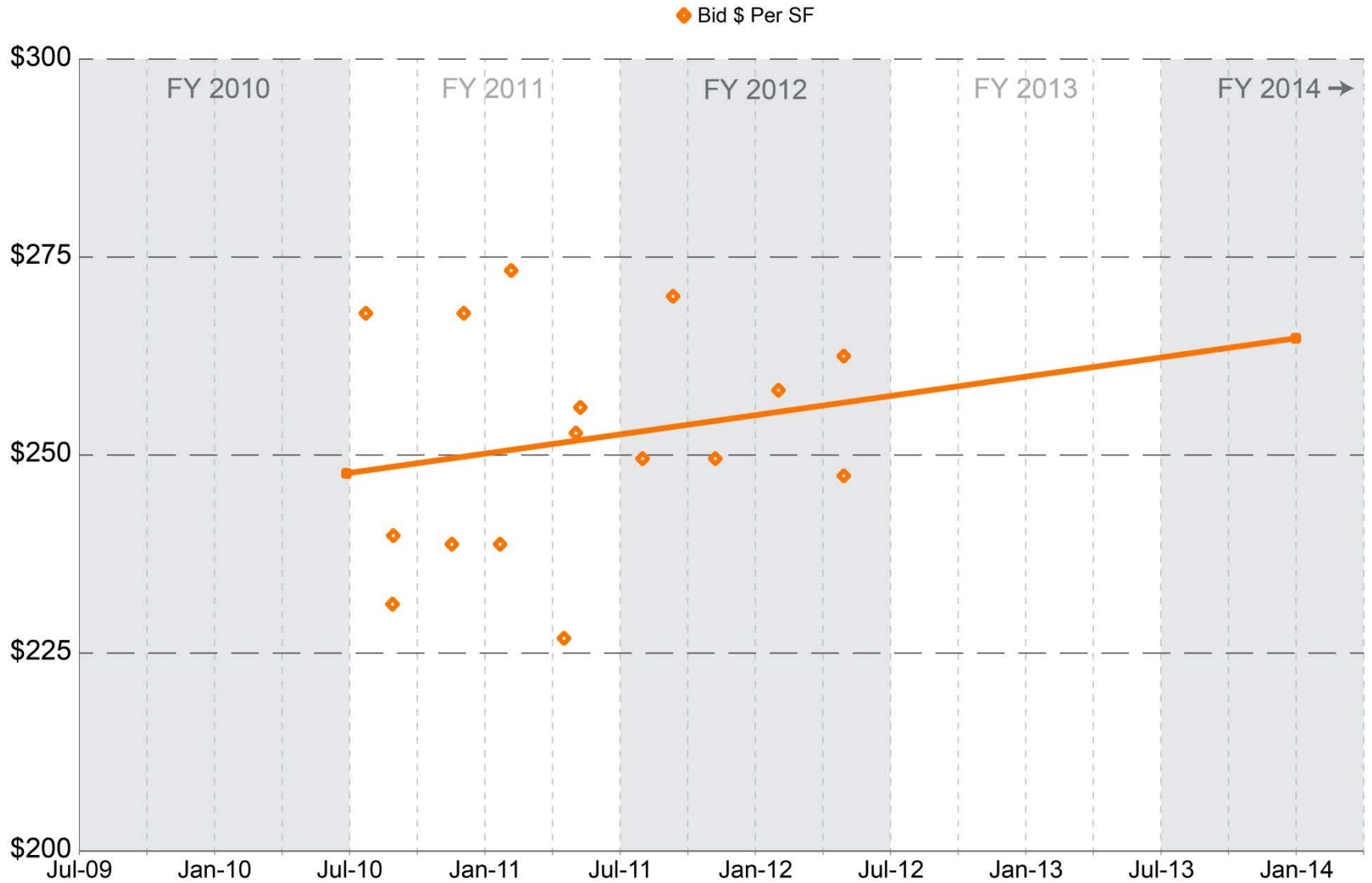


Construction Cost Trends





Construction Cost Trends





Policy and Practices

- Continue current policy of funding up to \$275/sf plus eligible demolition and abatement
- Conduct similar analysis with most recent available data and report findings in the Spring of 2014
- Annually conduct construction funding level analysis based on bid/GMP data from the two previous fiscal years

Massachusetts School Building Authority

Steven Grossman
Chairman, State Treasurer

John K. McCarthy
Executive Director



Change Order Analysis

July 19, 2013

Massachusetts School Building Authority

Steven Grossman
Chairman, State Treasurer

John K. McCarthy
Executive Director



Procedure Review

July 19, 2013



MSBA Change Order Reviews

CONSTRUCTION CONTINGENCY BUDGET

All Districts, All Core Program Model, New & Add/Reno Projects

MSBA POLICY	
New & Models	5%
Add/Reno	5-8%
Repairs	up to 10%



MSBA Change Order Reviews

OPM INPUT
Provides Copies of Change Orders to MSBA
Completes MSBA Standard Change Order Review Sheet
Reviews Data with MSBA Project Manager

MSBA Change Order Reviews

CHANGE ORDER REVIEW SHEET

OPM:
Designer:
Contractor:

DISTRICT
School

Construction Type: new/add/reno/repair
Reimbursement Rate: %
Approx. % Complete & SC Date
Delivery Method: DBB or CMR

PCO #	Description	Requested By	Net Added	Net Deducted	MSBA USE ONLY		Approximate Cost by Trade*						Reason for Change**					Comment		
					Ineligible for Grant Participation	Eligible for Grant Participation	Structural	Site	Utilities	Plumbing	Electrical	HVAC	Misc	Design Issue	New Scope Directed by Owner	Differing Conditions	New Scope Directed by 3rd Party		Misc.	
Change Order #001																				
Change Order #002																				
			50			50								50						
			50	(2)	48				(2)	50	50					50			(2)	
0	Base Construction Contract Amount	1000	100	(2)	48	50			(2)	50	50			50				50	(2)	
			10.00%	-0.20%	4.80%	5.00%	0.00%	0.00%	-0.20%	5.00%	5.00%	0.00%	0.00%	5.00%	0.00%	5.00%	0.00%	5.00%	-0.20%	0.00%
					98	98								98				98		98
					9.80%	9.80%								9.80%				9.80%		9.80%

Original Construction Cost	1,000
Change Order Total	98
Adjusted Construction Cost	1,098
Total Change Orders as % of Original Cost	9.80%
<hr/>	
Total Construction Contingency	70
Change Orders Eligible for Reimbursement, Subject to Reimbursement Rate and Audit	50
Change Orders Eligible for Reimbursement as % of Total Change Orders	51.02%
Change Orders Eligible for Reimbursement as % of Construction Contract	5.00%
Change Orders Eligible for Reimbursement as % of Construction Contingency	71.43%

SITE CAP	
Base Building Cost	800
Less Sitework & Demo	(20)
	780
	8%
SITE CAP MAXIMUM	62
PFA - Budget Site Costs	72
Budget Amt. Under/(Over) Cap	(10)
Proposed Eligible Site Change Orders	-

FF&E CAP	
Furnishings	25,000
Equipment	25,000
Computer Equipment	25,000
Other F&E	
	75,000
Agreed Enrollment	100
FFE \$/student	750

Change Orders Pending	
CO #	\$0
CO #	\$0
<hr/>	
Total	\$0

* "Approximate Cost by Trade" is based on the general description of the work and/or primary subtrade(s) or subcontractor(s) involved in the change and does not necessarily reflect all trades included in or impacted by the change(s).

** MSBA characterization of the reason for any change order is based on information provided by the district and/or its consultant(s) and is intended to reflect the proximate rationale for issuance of the change order and consequent eligibility for grant funding and is not intended to be determinative of the root causes of the change or serve as an assessment of ultimate responsibility for the change.



MSBA Change Order Reviews

Approximate Cost by Trade*							Reason for Change**				
Structural	Site	Utilities	Plumbing	Electrical	HVAC	Misc	Design Issue	New Scope Directed by Owner	Differing Conditions	New Scope Directed by 3rd Party	Misc.



MSBA Change Order Reviews

MSBA DETERMINATIONS
MSBA Eligibility Determinations and Completed Review Sheets Mailed to Districts
Copy to OPM
Copy to Designer



MSBA Change Order Reviews

ELIGIBILITY CRITERIA
Typically Eligible Design Issues Differing Conditions
Typically Ineligible New Scope Owner Directed Third-Party Site Work > 8% Cap Significant Design Issues Schedule Related



MSBA Change Order Reviews

MSBA PROCESS

Reviews Performed Quarterly

COs Reviewed Sequentially

Eligibility Ends Once Entire
Contingency Budget is Committed
– Regardless of Prior Eligibility



MSBA Change Order Reviews

REIMBURSEMENTS

Make Reimbursements Upon
Issuance of Determinations and
District Submission of BRR

All Change Order Reimbursement
Documentation Subject to MSBA
Audit

Massachusetts School Building Authority

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Executive Director



Data

July 19, 2013



Data Review– Basis of Analysis

- **52 Projects over 75% Complete Reviewed**
 - 22 New, 17 Add/Reno, 8 Repairs, 5 Models
 - 31 DBB and 21 CM-R

- **828 Change Orders comprised of 6,297 PCOs**

- **\$1.66 B in Awarded Value**
 - Total COs = \$52.4 M or 3.2%
 - Ineligible COs = \$33.5 M or 2.1%
 - Eligible COs = \$18.9 M or 1.1%



New Projects and Model Projects Change Order Summary

New (22) and Model (5) Projects Change Order Summary

Total Projects: 27 (Over 75% complete)

Of the 27, 8 Projects are between 75% and 95%, 19 Projects are over 95%

		Total CO %			% Eligible CO's			Design Related CO's	Differing Conditions (Unforeseen)	Owner Directed	3rd Party
Total	Total	Low	High	Avg.	Low	High	Avg.	Avg.	Avg.	Avg.	Avg.
		27	0.66%	6.93%	3.17%	-0.15%	2.18%	0.92%	0.95%	0.53%	1.21%

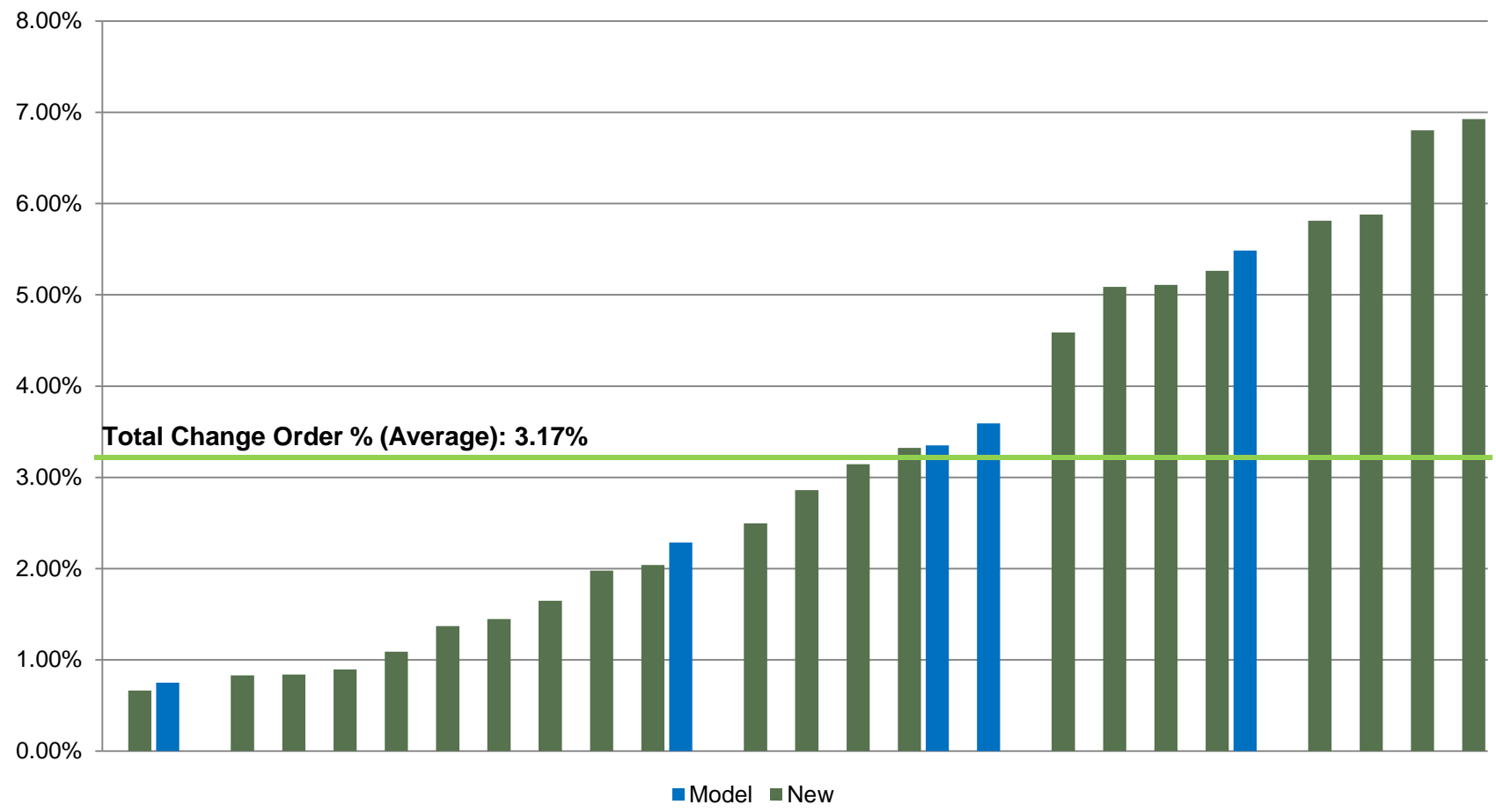
Design Related Change Orders:

Model: 0.62%

New: 1.02%

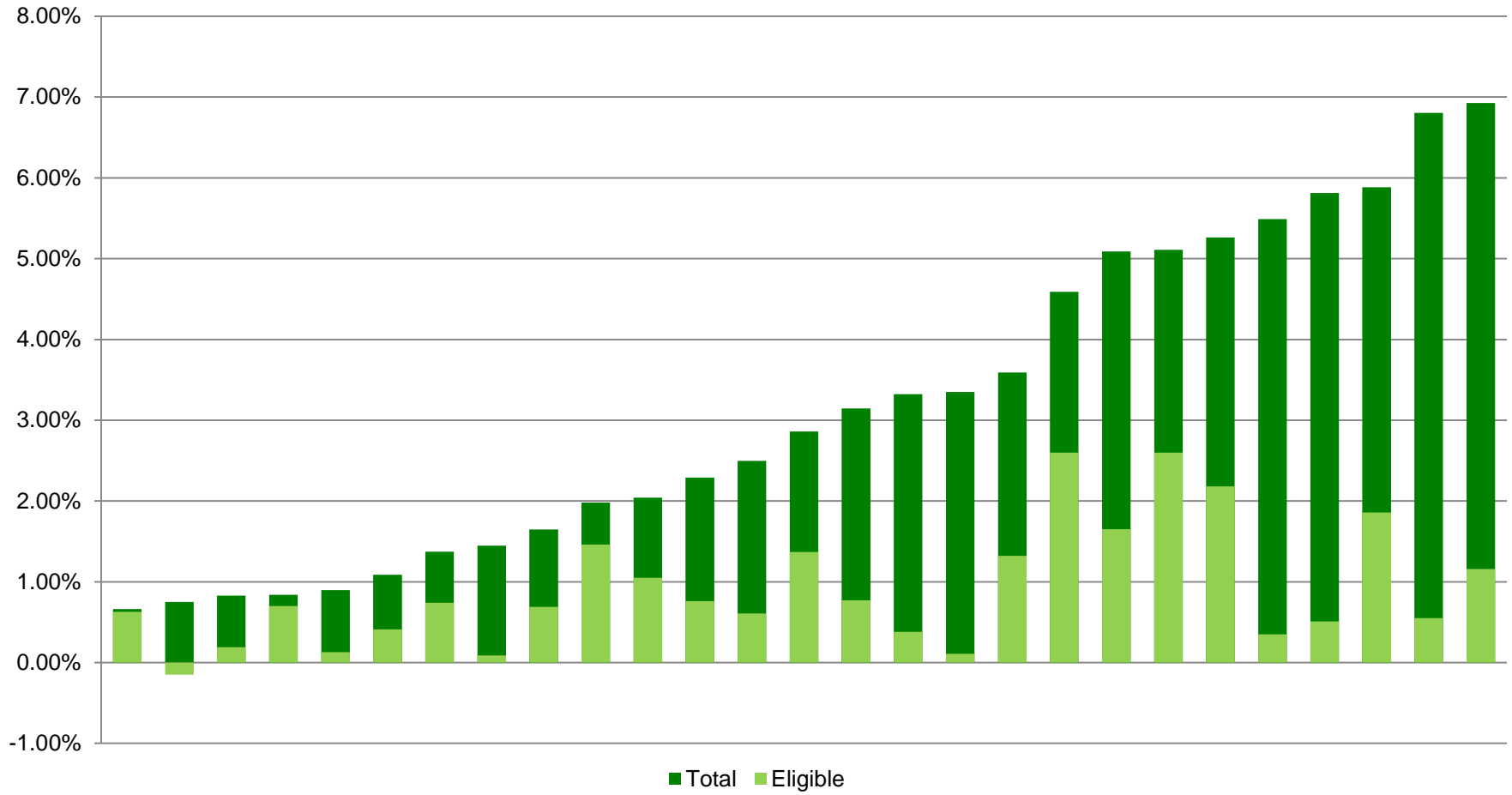


New Projects and Model Projects: Total Change Orders (Average)



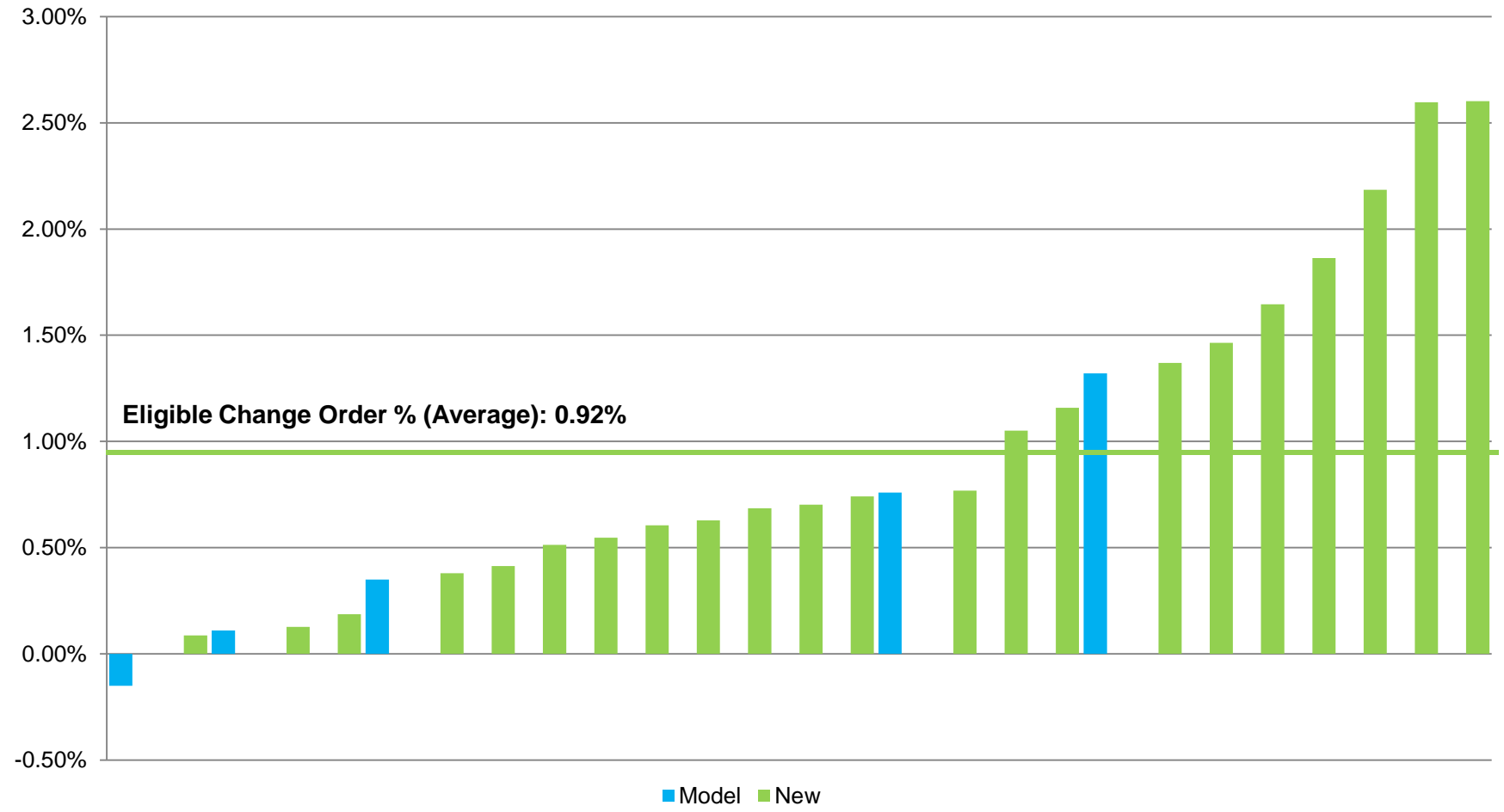


New Projects and Model Projects: Total and Eligible Change Orders (Average)





New Projects and Model Projects: Eligible Change Orders (Average)





Addition and Renovation Projects Change Order Summary

Addition and Renovation Projects Change Order Summary

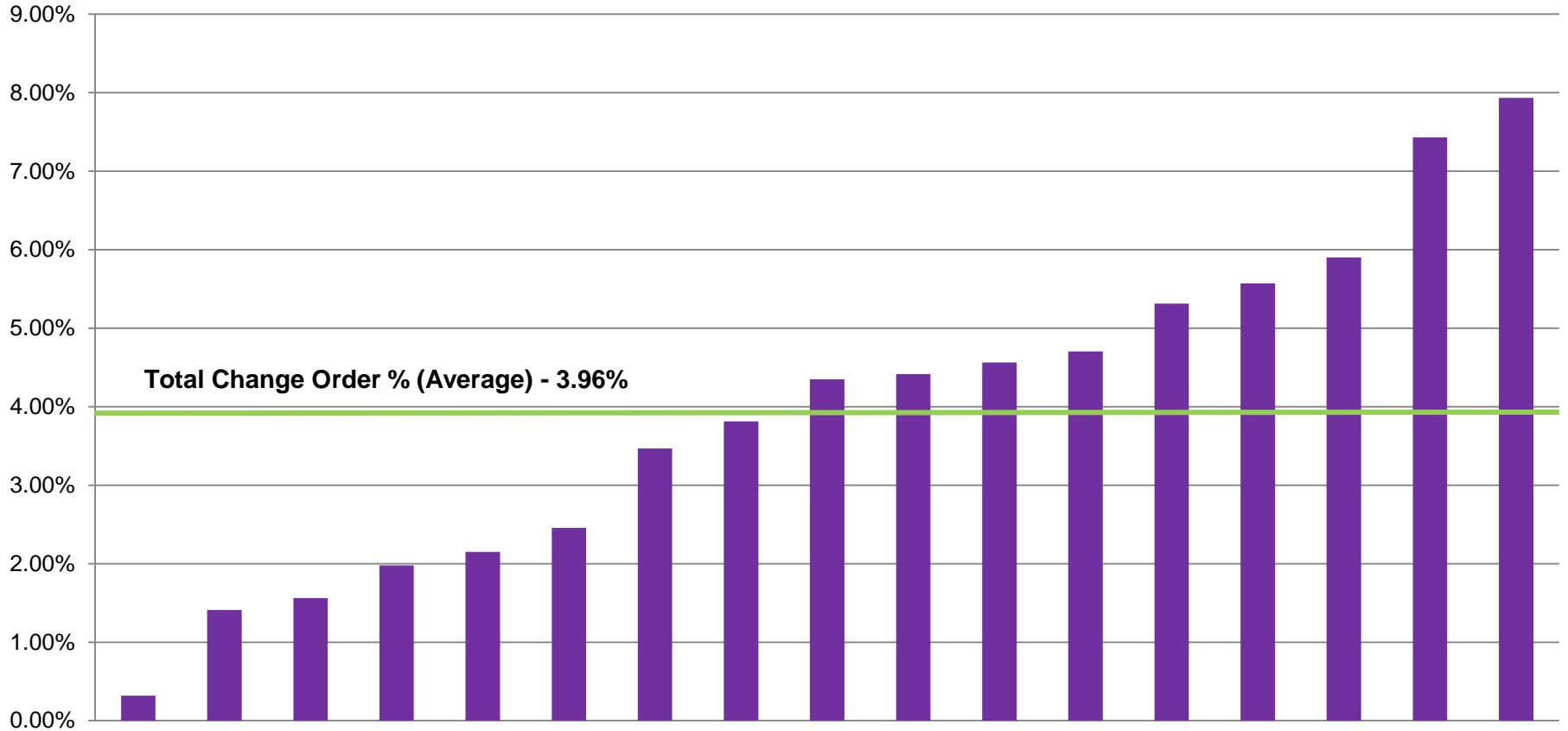
Total Projects: 17 (Over 75% complete)

Of the 17, 5 Projects are between 75% and 95%, 12 Projects are over 95%

		Total CO %			% Eligible CO's			Design Related CO's	Differing Conditions (Unforeseen)	Owner Directed	3rd Party
	Total	Low	High	Avg.	Low	High	Avg.	Avg.	Avg.	Avg.	Avg.
Add/Reno	17	0.32%	7.94%	3.96%	-0.02%	4.63%	1.77%	1.42%	1.41%	0.86%	0.17%

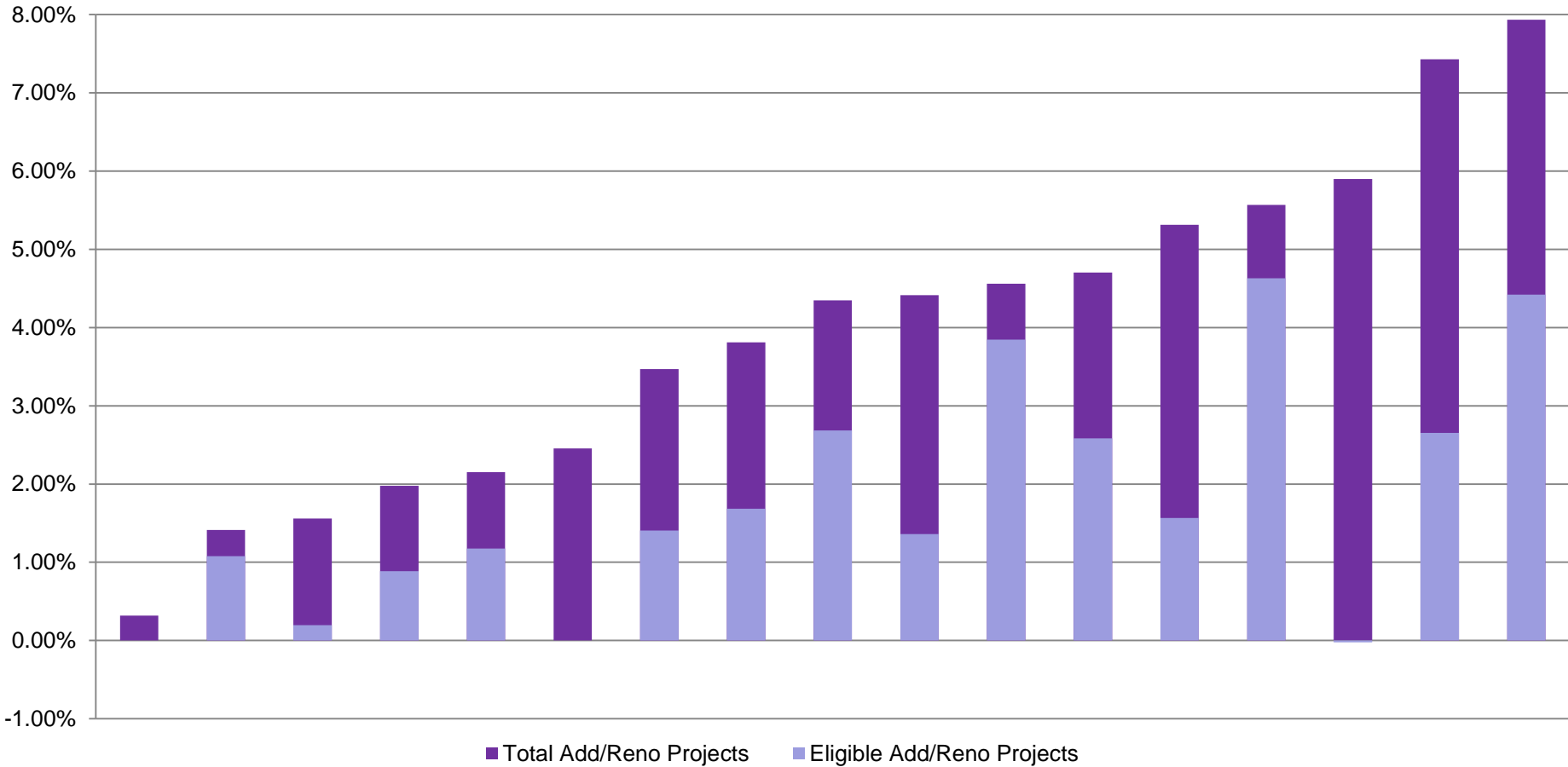


Addition and Renovation Projects: Total Change Orders (Average)





Addition and Renovation Projects: Total and Eligible Change Orders (Average)





Addition and Renovation Projects: Eligible Change Orders (Average)





Repair Projects Change Order Summary

- This Category only includes Major Repair Projects. Accelerated Repair Projects and Green Repair Projects are not included in the data.
- All Green Repair Projects and Accelerated Repair Projects are capped at 5% Construction Contingency and 2% Owner's Contingency.

Repair Projects Change Order Summary

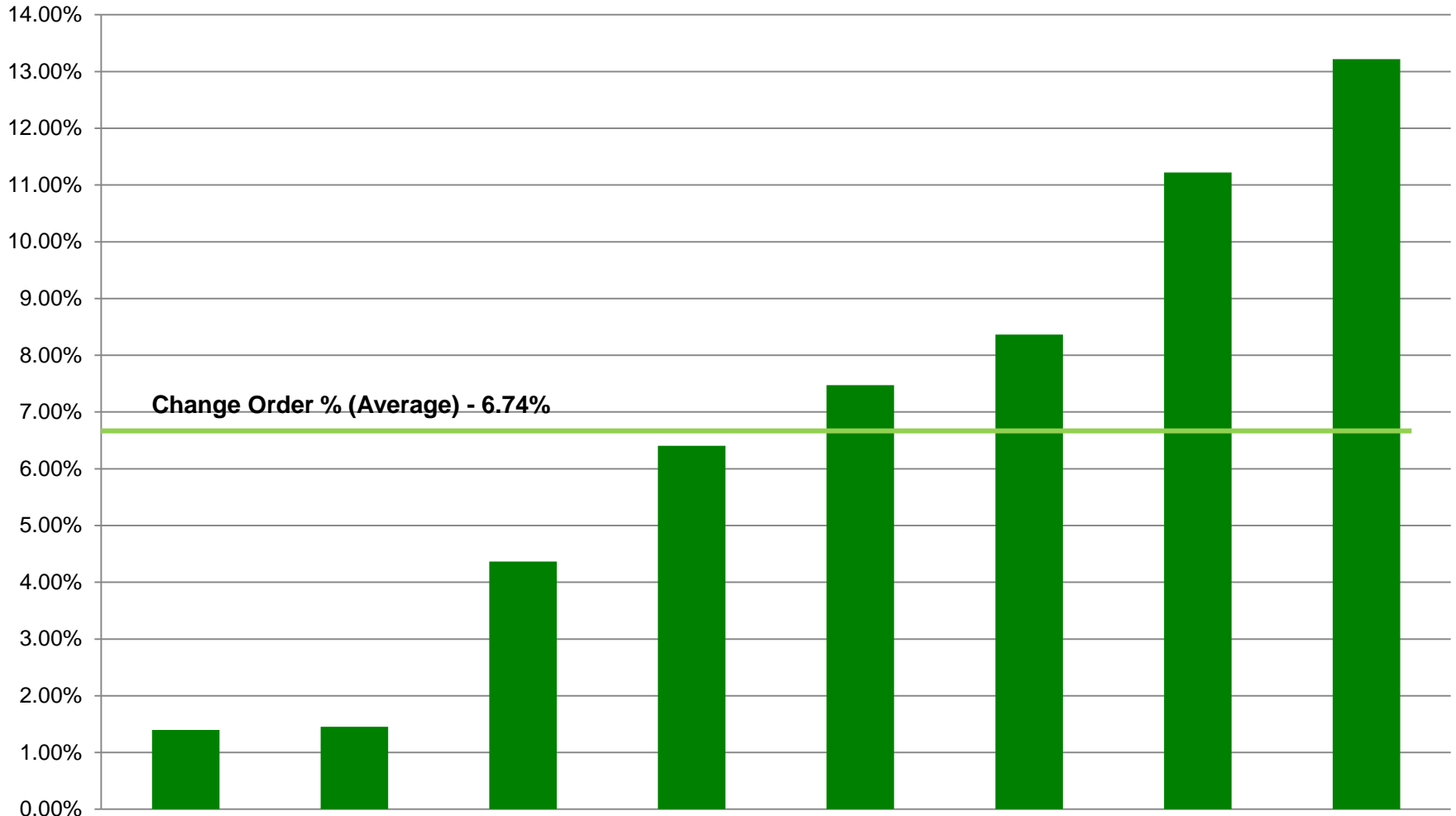
Total Projects: 8 (Over 75% complete)

Of the 8, 1 Projects are between 75% and 95%, 7 Projects are over 95%

		Total CO %			% Eligible CO's			Design Related CO's	Differing Conditions (Unforeseen)	Owner Directed	3rd Party
Repair	Total	Low	High	Avg	Low	High	Avg	Avg	Avg	Avg	Avg
		8	1.40%	13.22%	6.74%	.52%	8.23%	3.76%	2.13%	2.13%	2.18%

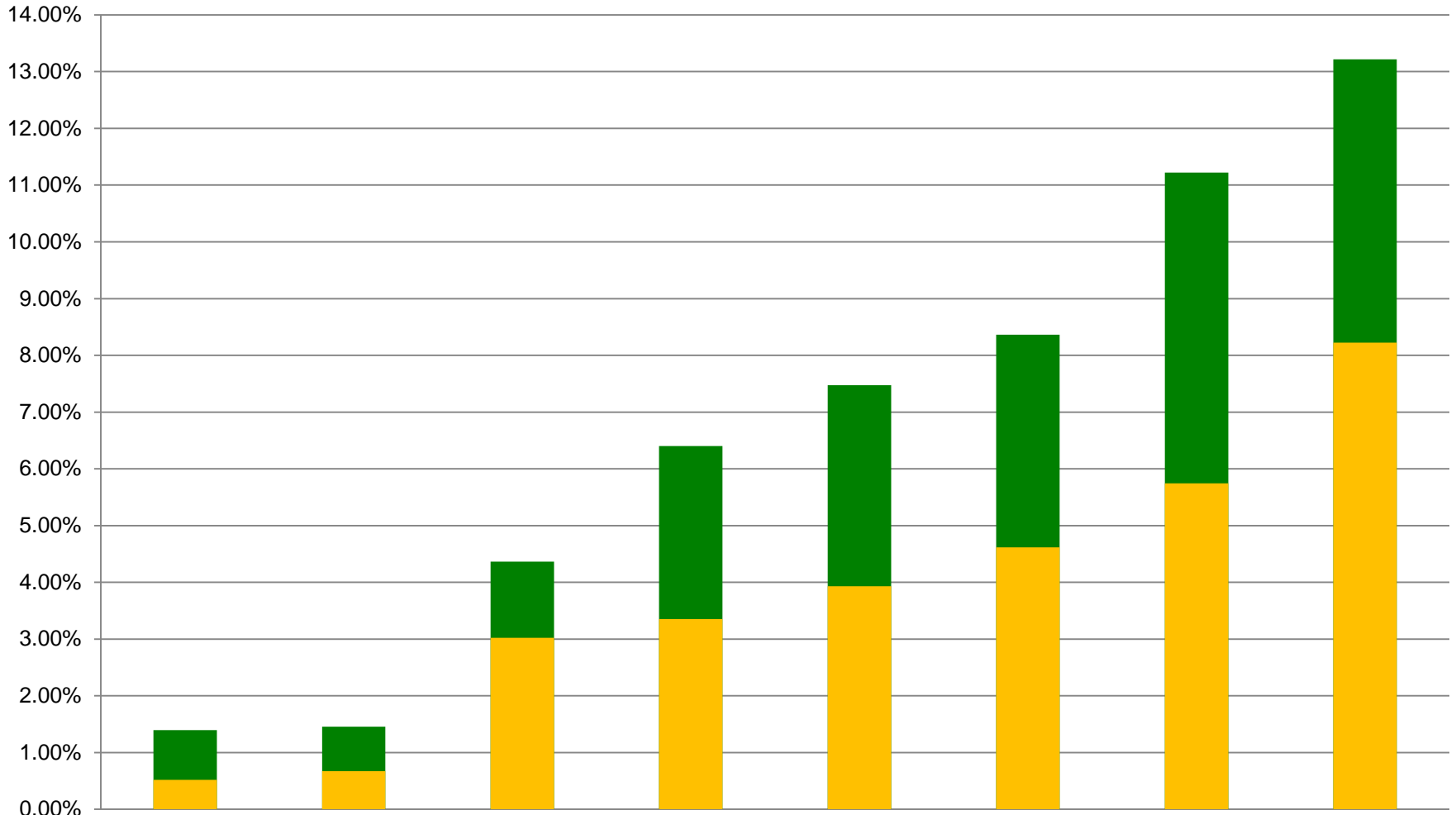


Repair Projects: Total Change Orders (Average)





Repair Projects: Total and Eligible Change Orders (Average)





Repair Projects: Eligible Change Orders (Average)

