Understanding and Improving Cornell Construction Cost Structure

Project Management Professional Development Series

May 14, 2019

Buildings & Properties Committee

March 21, 2019

Understanding and Improving Construction Cost Structure

Background

- As new VP, requested an analysis of construction cost structure
- Listened to feedback around areas of cost concern
- Utilized national and peer benchmark data

Actions/Recommendations

- Design to appropriate quality standard and hold the line on scope
- Improve bundling of projects
- Implement streamlined contracting vehicles
- Adjust capital budget process to improve bid timing
- Implement pooled contingency for maintenance projects

Review Cost Drivers

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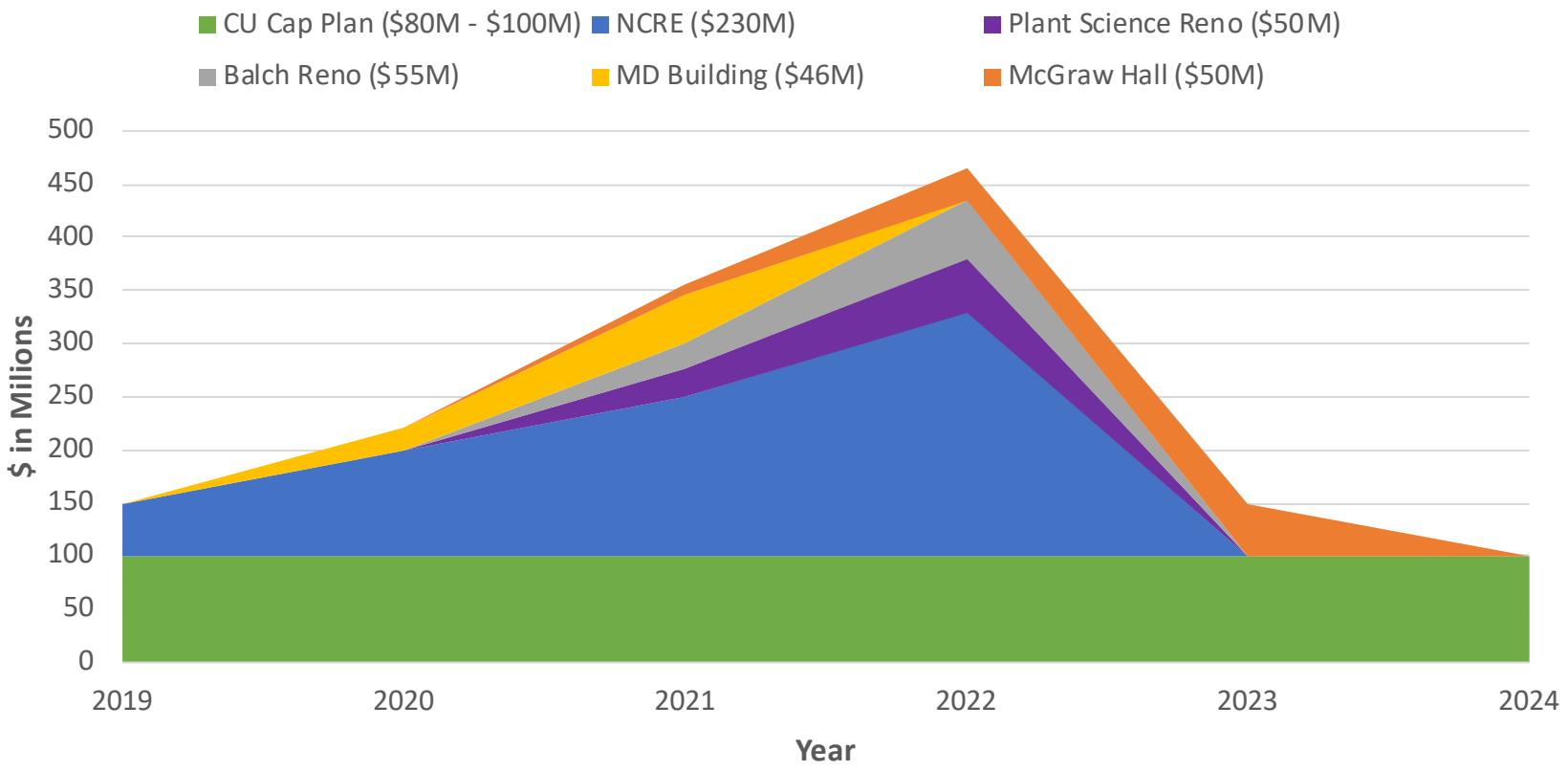
- Geographic Location
- Regional Construction Market
- Quality Standards & Expectations
- Timing Constraints
- Project Phasing
- Risk Tolerance
- Reputation and Community Impact

Complexity and mission requirements add costs

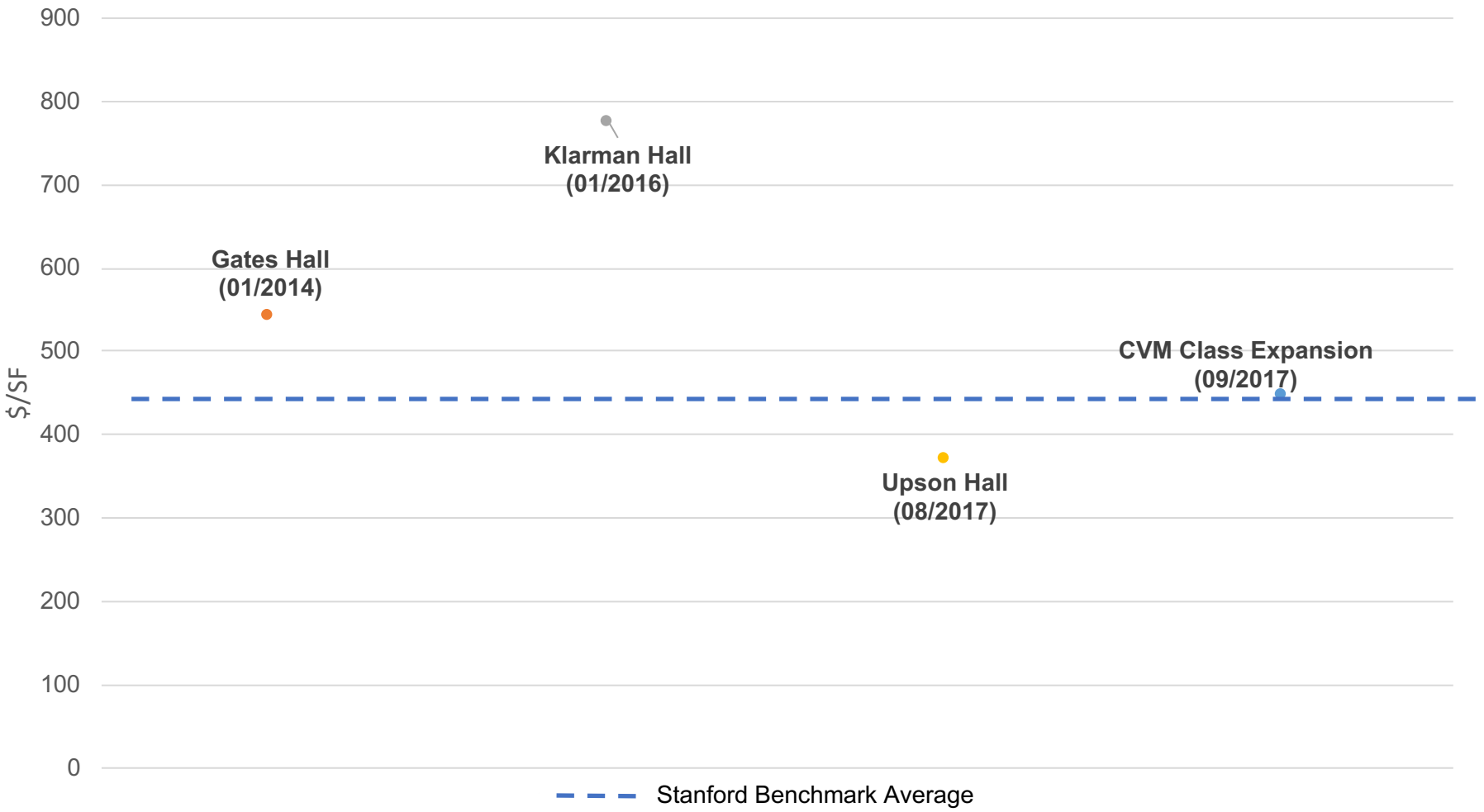
Regional Construction Volume Forecast

Volume of planned projects peaks in 2022; may drive prices up



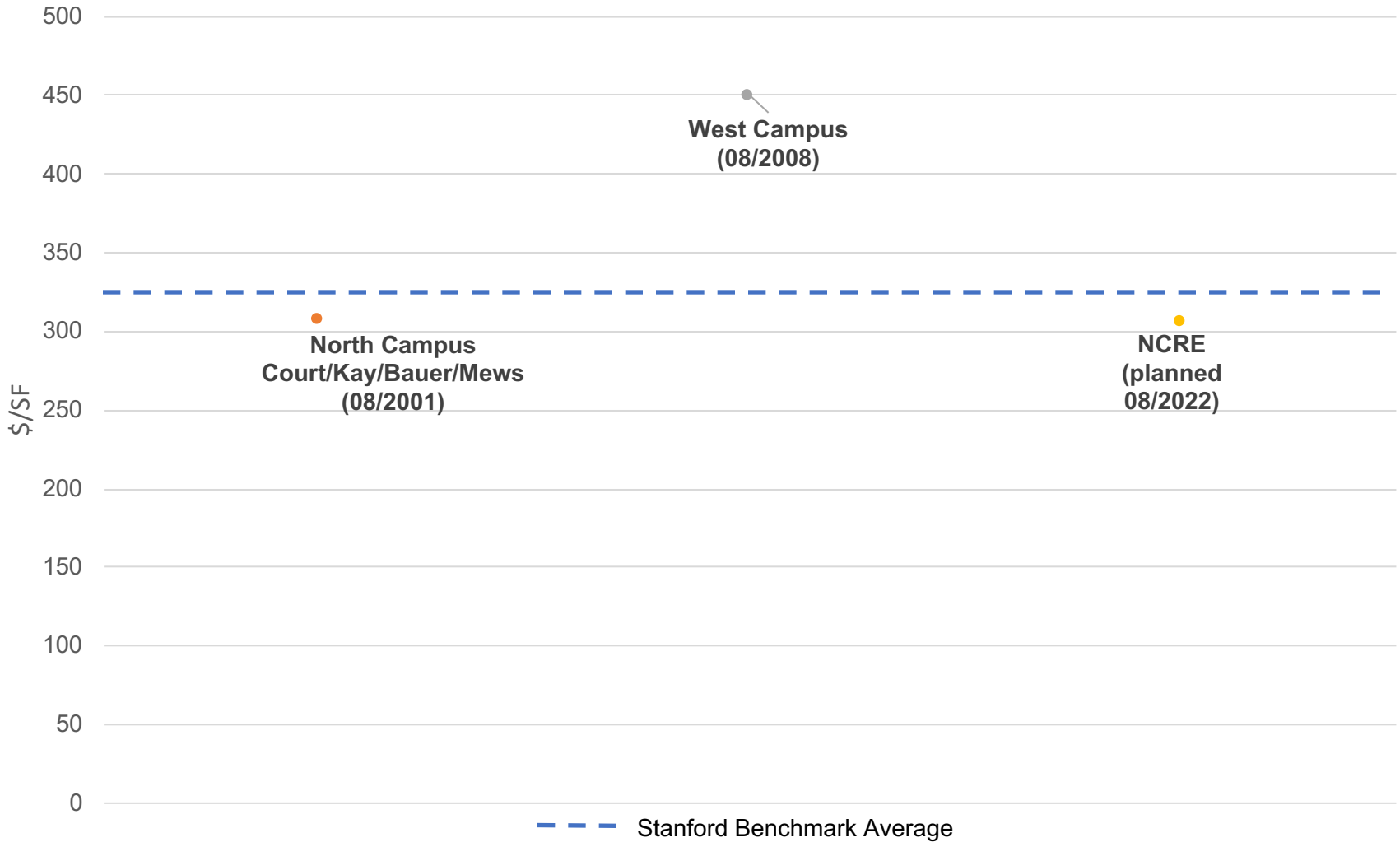
Hard Cost Benchmarking

Office/Classroom



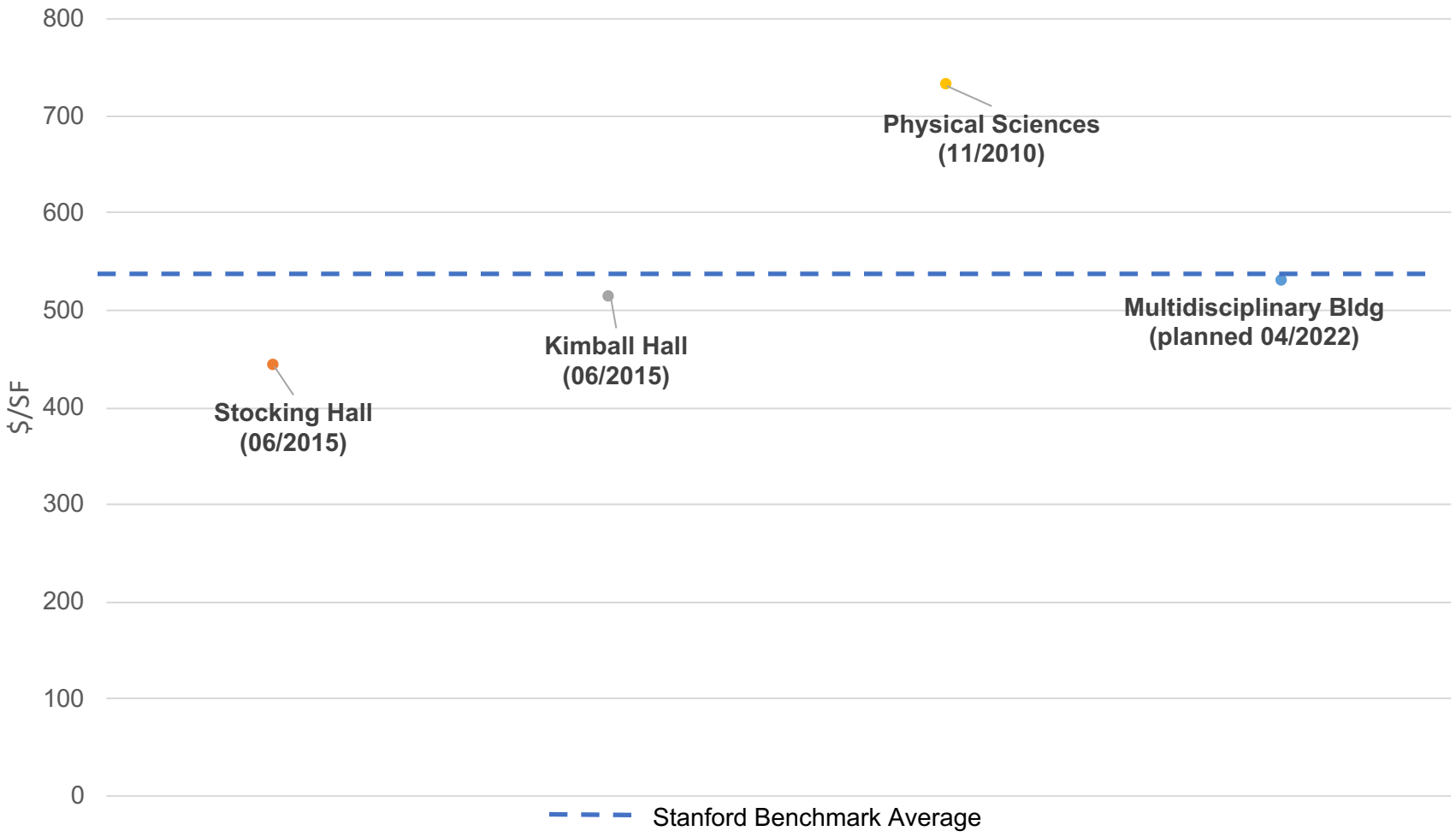
Cornell projects - construction $/SF escalated to Q4 2018 Turner Index

Housing



Cornell projects - construction $/SF escalated to Q4 2018 Turner Index

Wet Laboratories



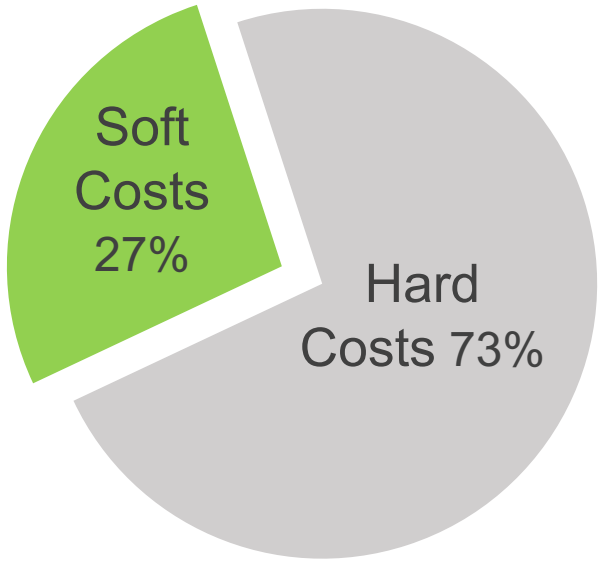
Cornell projects - construction $/SF escalated to Q4 2018 Turner Index

Soft Cost Benchmarking

Soft Cost Benchmarking

Cornell soft costs are on par with peer institutions.

- Design Fees
- FF&E
- Management
- Contingency



Cornell Soft Cost Average: 27%

Peer Institution Soft Cost Average: 28% *

** Comparing Higher Education Construction Costs, Northwestern University*

Recommendations / Actions

Immediate actions being taken / Initiatives

- Design to appropriate quality standard and hold the line on scope
- Improve Bundling of Projects
- Implement streamlined contracting vehicles
- Adjust capital budget process to improve bid timing
- Implement pooled contingency for maintenance projects

Quality Standards and Expectations

Higher quality construction leads to higher first costs

Actions (underway):

- Calibrate aesthetic and quality standards based on project type & location – not every building must be iconic and monumental
- Hold the line on scope – clear understanding of design-to amount at milestone approval with leadership oversight to maintain

First cost savings range: $10 - $30 per GSF construction.

Bundle Projects to Increase Buying Power

Funding sources, PAR process, eBuilder and financial accounting all encourage segmentation of project scope.

Recommendations -- Pilot in FY20

- Combine projects in the same building
- Combine infrastructure projects of similar scope
- Bundle adjacent projects with larger projects

Projected savings 5% - 10% in combined cost of work.

Implement Streamlined Contracting Vehicles

Employ additional contract types to simplify and streamline project delivery.

Recommendations:

- Term Contracts for faculty hire lab projects – FY20
- Indefinite Delivery Indefinite Quantity (IDIQ) contracts – FY21

Reduced complexity leads to potential cost savings.

Improve Bid Timing

Academic calendar, approvals and funding timing create bidding and construction milestones that are out of sync with local construction market timing.

Recommendations – FY21

- Transition to a two-year capital plan to allow more projects to take advantage of off-peak pricing (bid Dec - Jan)
- Schedule "non-critical" work to take advantage of off-peak pricing

Projected savings: 5% - 15% on cost of work.

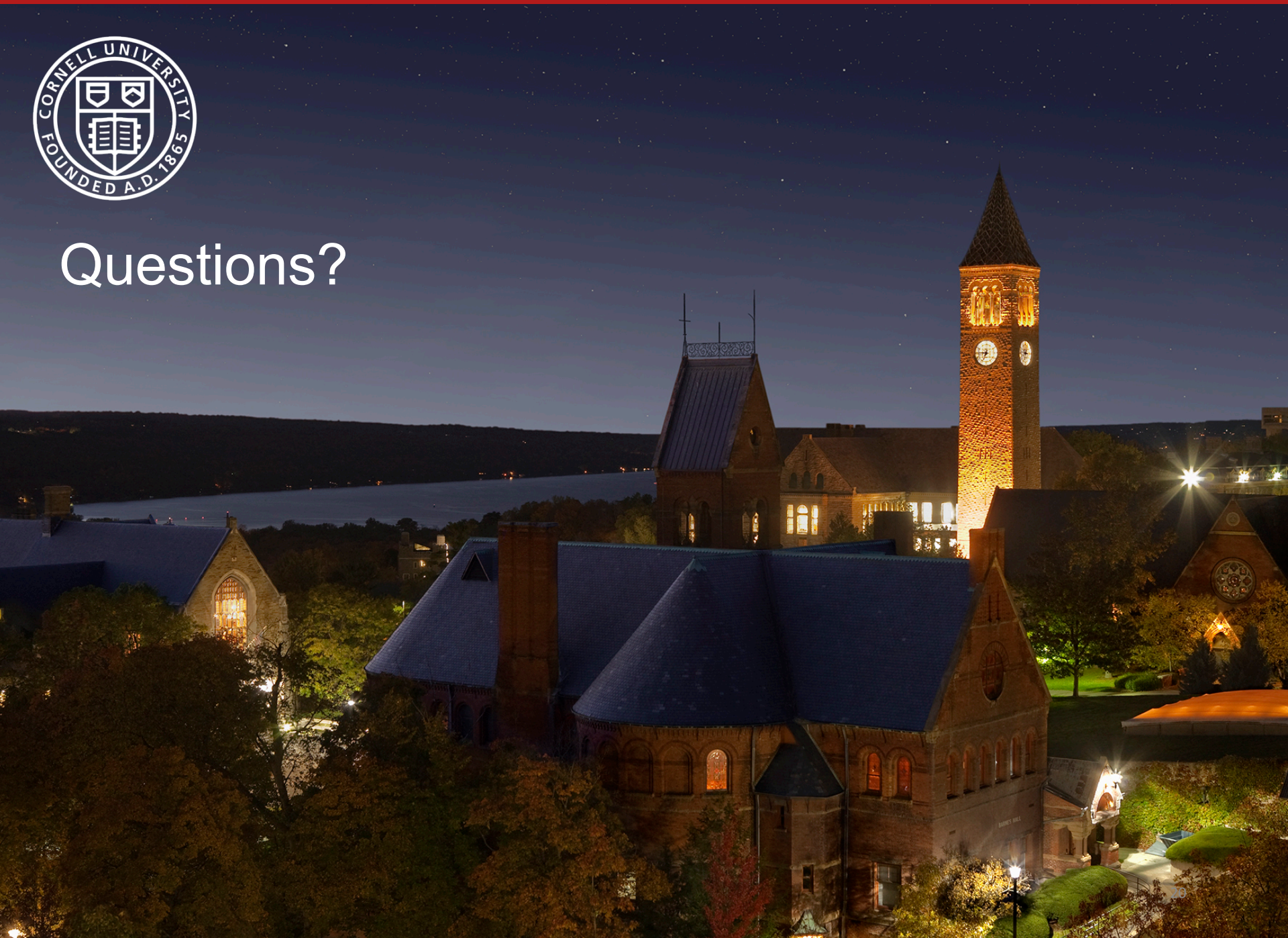
Pooled Contingency for Maintenance Projects

Most projects do not use the full contingency and funds are typically held-up for a year or more after project completion.

Recommendations – FY20

- Develop pooled contingency strategy for FCS maintenance projects
- Early contingency release when feasible for College & Unit funded projects

$500K in additional maintenance work executed per year.



Questions?

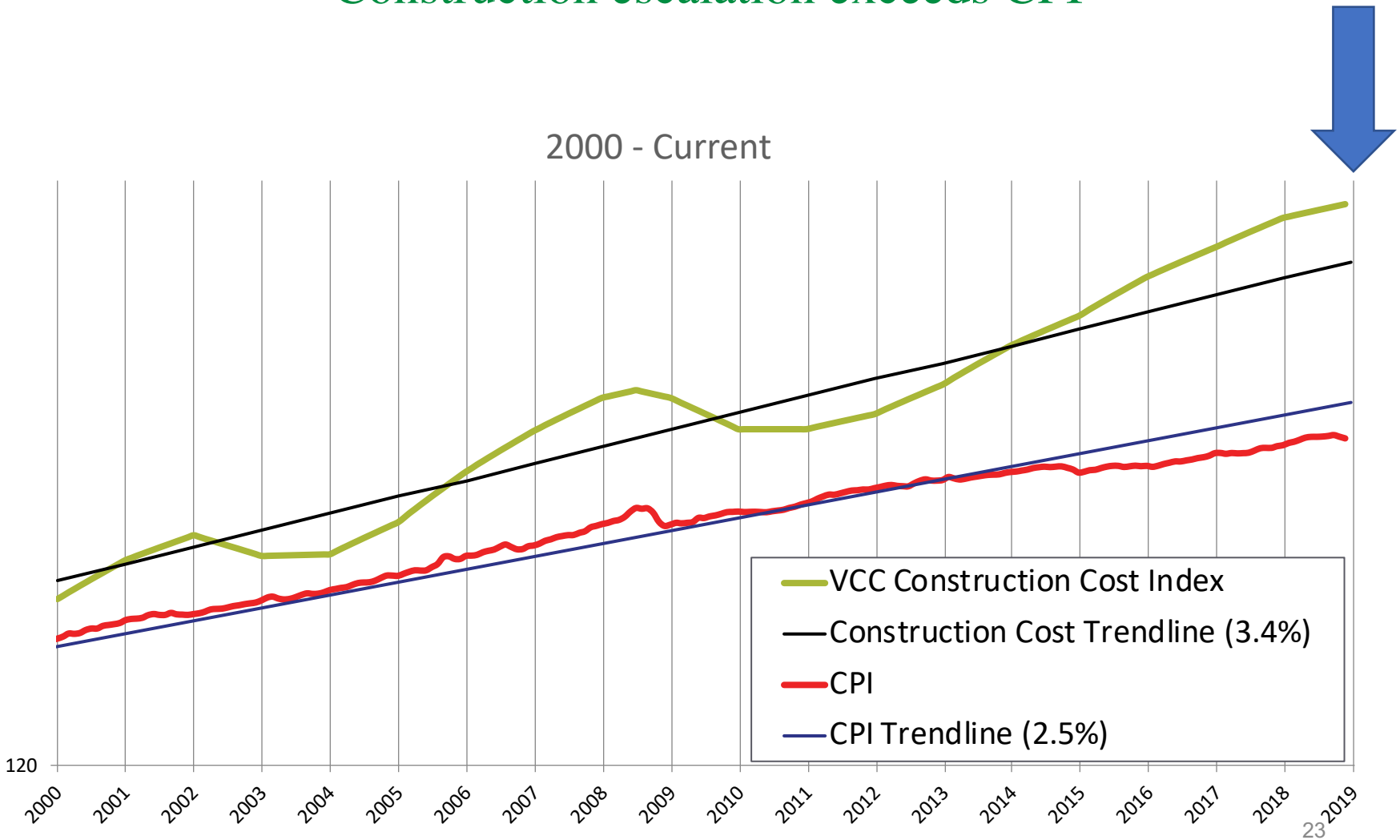
Appendix

References

- Contractor Forum & Consultant Discussions
- eBuilder Data Analysis, Ivy + database
- Cost consultants
- Past Exercises, Skanska Study 2003

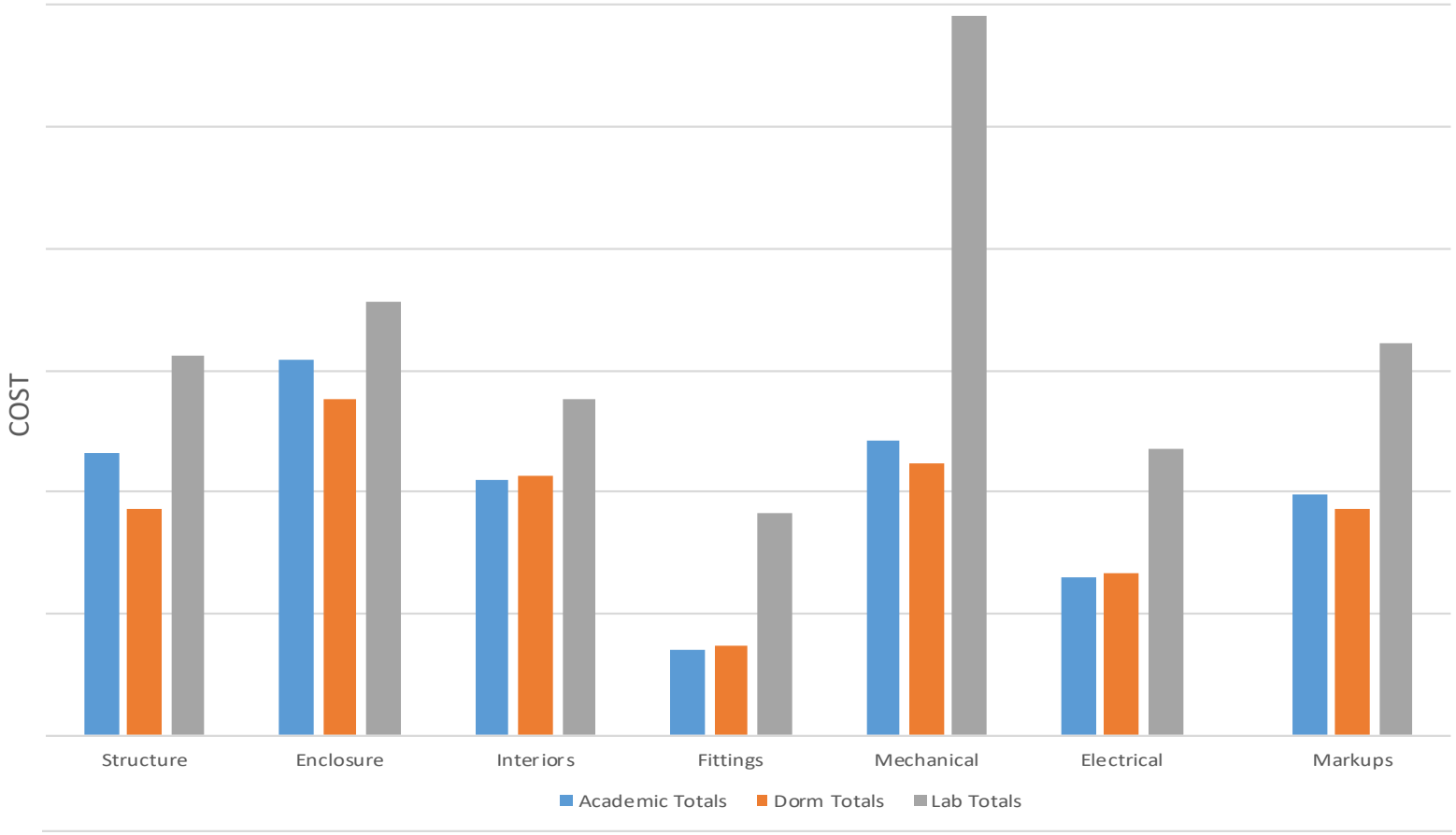
Construction Cost Escalation

Construction escalation exceeds CPI



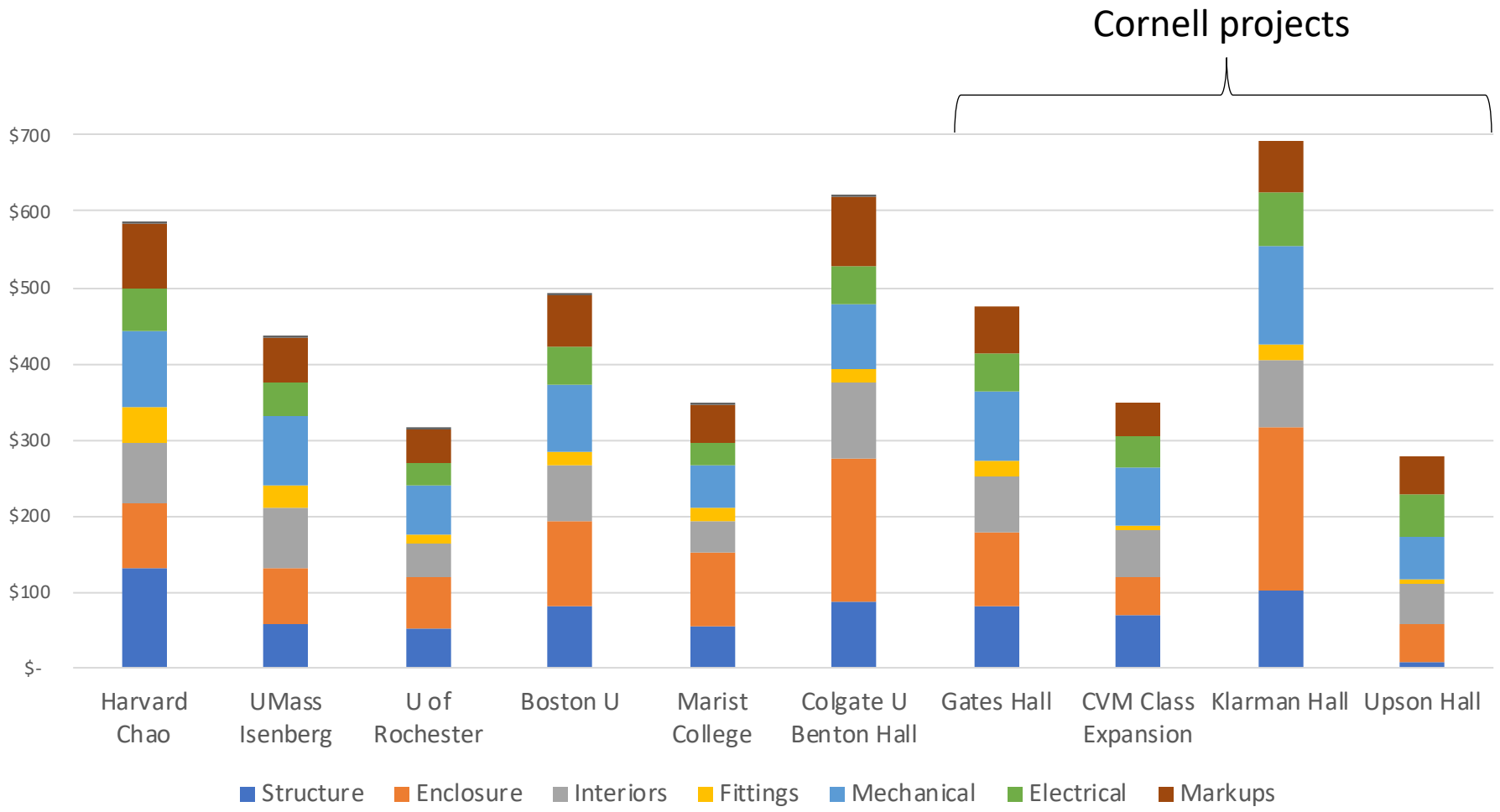
Cost Ratio for University Buildings

The higher cost ratio for science buildings is mostly due to added complexity of mechanical systems and infrastructure.



Academic Buildings: Construction Cost *

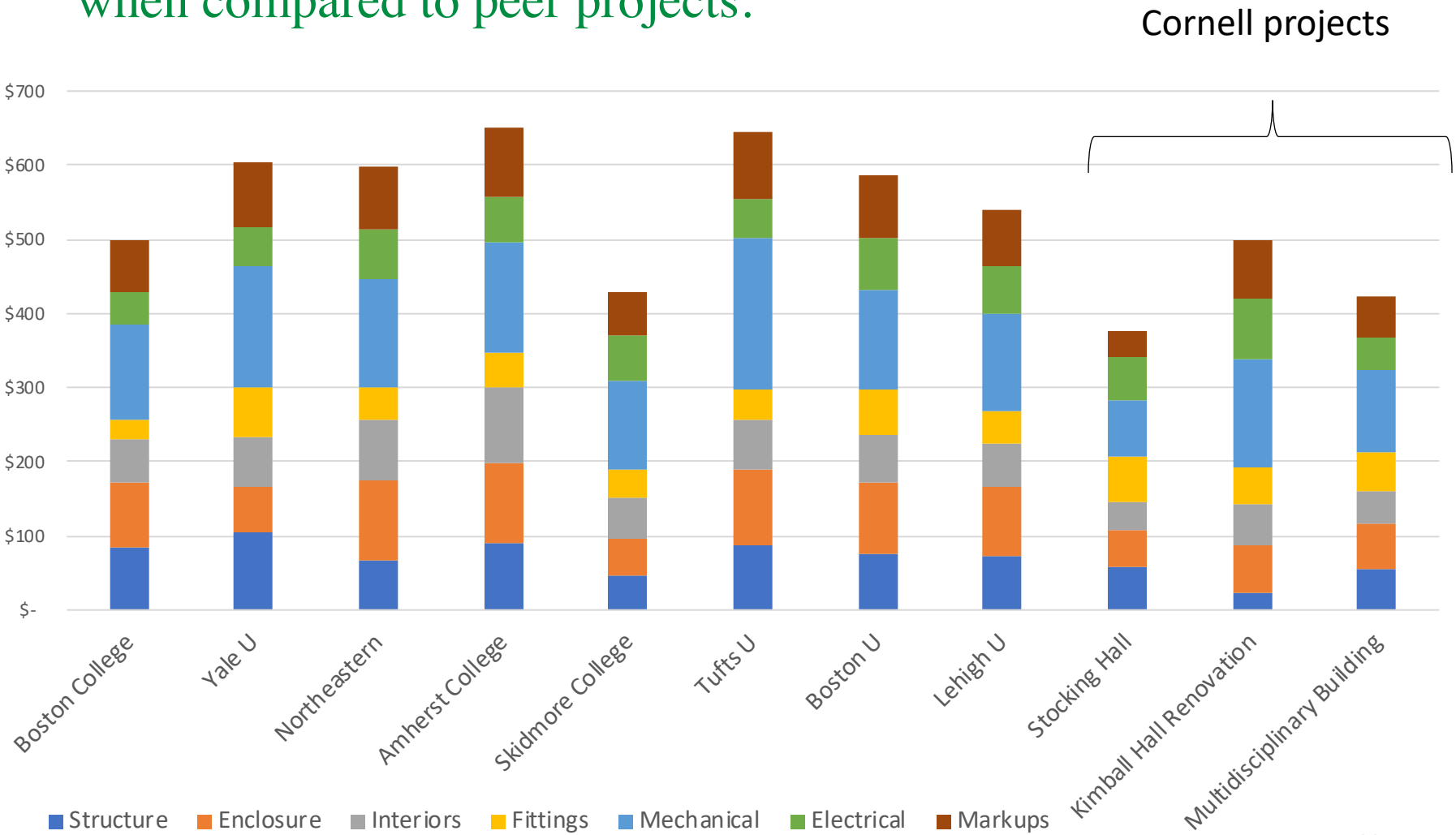
Building envelope, energy performance drive higher costs.



** Does not include sitework costs*

Research Buildings: Construction Cost *

Cornell research buildings are at the medium to low cost range when compared to peer projects.



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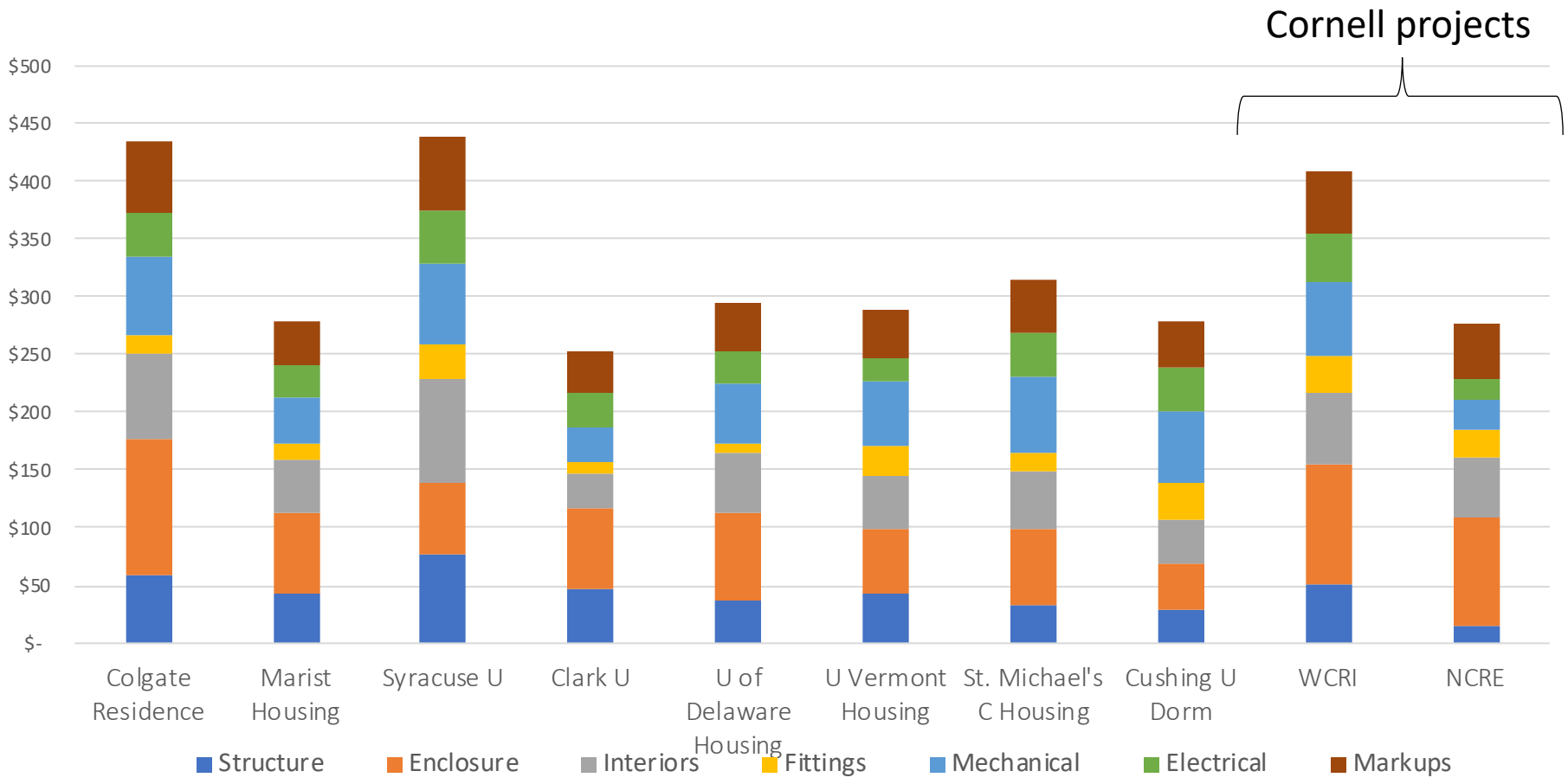
Housing: Construction Cost

NCRE costs are in line with peer housing projects.



** Does not include sitework costs*