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Alexander Bustamante
SENIOR VICE PRESIDENT
CHIEF COMPLIANCE AND AUDIT OFFICER

February 14, 2024

ASSOCIATE VICE PRESIDENT PHILLIPS

RE: Final Report Project No. P24A003: Capital Programs Audit

Attached is a copy of the final report for: Audit Services Project No. P24A003 Capital Programs Audit. With the issuance of this final report, please destroy any previous draft versions. We very much appreciate the assistance provided to us by you and members of your staff during our review. If you should have any questions please feel free to contact me at 510-987-9646 (email: matthew.hicks@ucop.edu).

A handwritten signature in blue ink, appearing to read "Matt Hicks".

Matt Hicks
Systemwide Deputy Audit Officer

Attachment

cc: Senior Vice President Bustamante
Executive Vice President Brostrom
Chief of Staff Werdick
Executive Director Friedman
Director Kalich
Director Owens
Director Santa Cruz
Systemwide Associate Audit Director Bishin

UNIVERSITY OF CALIFORNIA
ETHICS, COMPLIANCE AND AUDIT SERVICES
OFFICE OF THE PRESIDENT
INTERNAL AUDIT SERVICES

CAPITAL PROGRAMS AUDIT
No. P24A003
February 2024

Work Performed by:
Deloitte & Touche LLP, Contract Auditor

Executive Summary

Introduction

In accordance with the University of California (“UC”) 2023-24 Internal Audit Plan, Ethics, Compliance and Audit Services (“ECAS”)¹ collaborated with Deloitte & Touche LLP (“Deloitte”) to conduct an internal audit of the University of California Office of the President’s (“UCOP”) Capital Programs group (“Capital Programs”).

Background

Based in UCOP’s UC Finance Division, Capital Programs works systemwide to support and advise campuses on a number of topics, including, but not limited to (i) capital budgeting, (ii) policy recommendations to the Board of Regents (“Regents”), (iii) policy and contract development and training, (iv) capital project design and delivery strategies, (v) design professional selections, (vi) building/safety code and regulatory issues, (vii) land use and site planning, (viii) long-range development plans, (ix) California Environmental Quality Act (“CEQA”) compliance, (x) sustainability, and (xi) real estate transactions. Capital Programs is not responsible for project management of campus projects.

Objective and Scope

The primary objectives of our audit were to:

- Assess the scope of Capital Programs’ advisory activities for design and construction across campuses to identify opportunities to modify or expand the scope of its advisory activities to improve cost efficiency on construction projects; and
- Review the UC Facilities Manual (“FM”) and standard contract templates for policies and language that could contribute to additional construction costs.

Particular emphasis was given to assessing certain procurement practices for capital projects to identify impacts of sharing budget estimates as part of bid advertisements on projects.

Scope of Work/Procedures Performed

After a period of preliminary review and discussions with UCOP and Capital Programs leadership, the following areas were assessed:

- Budget Development
- Contingency Development
- Budget Approval
- Delivery/Compensation Model Selection
- Program Management
- Legal Requirements
- Campus Recharge Policies
- Campus-UCOP Relationship
- Reviews and Approvals
- Construction Contracts
- Standard Contract Templates

¹ See Glossary of Acronyms in Appendix E

- Non-Standard Contract Development Process
- Project Reporting and Performance Indicators
- Insurance and Bonding Requirements
- Bidding and Procurement Oversight
- Campus Data Collection
- Budget Advertising
- Change Order Review Process
- Closeout Requirements

As part of these procedures, we:

- Reviewed the FM and its associated templates to understand processes, thresholds, and controls, for the purposes of comparing these processes to industry standards;
- Interviewed various campus-specific Capital Projects and Design & Construction personnel and reviewed sample documentation from five campuses – UC Davis, UC Irvine, UC San Francisco, UC Berkeley, and UC Los Angeles – to assess consistency of select campus processes against UCOP policies;
- Interviewed UCOP personnel, including those involved in the compilation and maintenance of Capital Programs’ capital projects Oracle database as it relates to program management, project reporting and performance indicators, campus data collection, and closeout requirements; and
- Reviewed other comparable public higher education institutions, including the California State University System, State University of New York, University System of Arizona, University System of Texas, University System of Tennessee, and University of Illinois, to collect information related to procurement practices, bid advertising, and bonding and insurance requirements.

Opportunities for Improvement and Action Plans

We identified opportunities for improvement and separated them into two sections: **Priority Opportunities for Improvement** based on observations on issues that could be impacting project costs, and **Additional Opportunities for Improvement** for minor enhancements or observations that do not impact costs.

Priority Opportunities for Improvement are noted below:

#	Relevant Scope Area(s)	Priority Opportunities for Improvement
1	<ul style="list-style-type: none"> • Campus Data Collection • Systems and Tools • Budget Development • Campus Recharge Policies • Project Reporting and Performance Indicators 	<p>Observation: Constraints on data collection and gaps in data quality limit Capital Programs’ ability to advise campuses on their project budgets</p>
		<p>Potential Impact: UC may be missing opportunities to capture historical cost data in ways that can be used to enhance the value that UCOP can provide advising campuses on the reasonableness of their project budgets, benchmarking activities, and as a predictor of future costs. Improvements to cost data may allow UCOP to enhance the value it provides in supporting Regent approvals of project costs.</p>
2	<ul style="list-style-type: none"> • Contingency Development • Reviews and Approvals 	<p>Observation: Historical data is not collected and leveraged to inform risk management and contingency budgets</p>
		<p>Potential Impact: Excessive amounts of contingency available in budgets could lead to less discipline with cost controls and reporting of additional costs</p>

3	<ul style="list-style-type: none"> Bidding and Procurement Oversight Budget Advertising 	Observation: Results of assessment of the impact of inclusion of engineers' estimates in bid advertisements on bids inconclusive due to gaps in data; the practice of sharing point cost estimates as part of bid advertisements is not common in the industry
		Potential Impact: The impact of providing engineers' estimates as part of bid advertisements is inconclusive
4	<ul style="list-style-type: none"> Budget Development Budget Approval 	Observation: Project comps may not be reliable due to data availability and quality
		Potential Impact: Project comps may not add value for the campus estimating process and campuses are forced to justify cost estimates against poorly-fit comps

Additional Opportunities for Improvement are noted below:

#	Relevant Scope Area(s)	Additional Opportunities for Improvement
5	<ul style="list-style-type: none"> Standard Contract Templates 	Observation: UC may be able to reduce risk by updating certain contract terms
		Potential Impact of Not Acting: Costs may increase due to additional claims, inflated contractor change orders, and other factors
6	<ul style="list-style-type: none"> Delivery/Compensation Model Selection Construction Contracts 	Observation: UC may be able to reduce risk by updating FM guidance for contracts and delivery methods, and enhancing supporting training materials
		Potential Impact of Not Acting: Costs and risk may increase due to misalignment of project objectives and selected delivery and compensation model
7	<ul style="list-style-type: none"> Budget Approval 	Observation: Including estimated total project costs as part of preliminary project funding requests will help the Regents make more informed funding decisions
		Potential Impact of Not Acting: Commitments may be made based on incomplete financial information for projects that may ultimately turn out to be financially inviable for UC
8	<ul style="list-style-type: none"> Insurance and Bonding Requirements Program Management 	Observation: UC's procurement and bonding/insurance practices are in line with peers; however, the bonding and insurance requirements can be difficult for small businesses to comply with, impeding their ability to qualify to serve UC
		Potential Impact of Not Acting: UC may be missing opportunities to further its objectives to invest in local communities

Based on the scope of our engagement, the underlying procedures performed, and samples reviewed, we did not identify practices from Capital Programs or the campuses we engaged that appeared to systemically lead to inefficiencies or increase cost. However, where improvement opportunities do exist, Capital Programs is well positioned to drive these as described in detail within this report, particularly those related to the capture, interpretation, and dissemination of data and the implementation of an enhanced risk management process.

Further details of the observations noted above are provided within the **Priority Opportunities for Improvement and Action Plans** and **Additional Opportunities for Improvement and Action Plans**

sections of this report. Appendix A includes a list of the campus projects and other sample data assembled and referred to in our analysis and Appendix B contains an additional chart supporting our bid advertisement impact analysis. Appendix C provides a table of factors which influence UC construction costs. Appendix D provides the scope of controls and testing we performed as part of our assessment.

Priority Opportunities for Improvement and Action Plans

1. Constraints on data collection and gaps in data quality limit Capital Programs' ability to advise campuses on their project budgets

There is an opportunity for UC (led by Capital Programs) to improve its capture, utilization, and the quality of the available internal data to deliver capital projects with more cost and schedule confidence.

Data Collection

Discussions with Capital Programs and campuses indicate that UC is generally operating under a hybrid data governance model, whereby policies are defined by Capital Programs with respect to the campus project data, which is centralized in the capital projects database, while campuses are mostly autonomous with regard to establishing the policies, procedures, and systems used in managing their program's data. This autonomy has led to differences in tools and practices across campuses and Capital Programs, making it difficult to collect, normalize, and interpret program data at the portfolio level. Campus-by-campus variation also hinders Capital Programs and campus efforts to gain insights from reviewing systemwide data and implement changes to improve predictability in project delivery.

UCOP leverages an Oracle application to host the centralized capital projects database, which among other uses, serves as the basis for assembling the Annual Report on Major Capital Projects Implementation ("MCR"). This system has been recently launched as the replacement for a previous IBM TM1 database. The data included in the database is intended to match the data included in the various source systems maintained by the campuses and depends upon manual import of this data by the campuses. There is no automated integration between source systems and the capital projects database, and there is no standardization of systems between campuses.

Campuses expressed various challenges related to the Oracle application and the process of inputting project information. One example reported was the time required to enter information into the database, estimated by some campuses to have increased nearly threefold since the switch to Oracle. Additionally, campus representatives noted that the system is challenging to navigate and provides limited ability for both campuses and Capital Programs to generate reports or curate data for reporting purposes. Making it easier for users to input data will encourage broader adoption and promote the development of enhanced use cases.

The database has the potential to benefit both Capital Programs and the campuses to a greater extent. UC's Information Technology Services ("ITS") group is responsible for managing requests and enhancements to the Oracle application; however there does not appear to be a centralized role or committee to define the strategy and vision for enhancing the platform, and to collaborate with Capital Programs and campuses to identify opportunities to support their programs. Current and planned uses of this database are primarily limited to UCOP's functions, including preparation of the MCR, capital financial planning, and for future sustainability reporting and benchmarking, and do not include functions that may likely also directly benefit the campuses. Campus project data is captured to meet these existing or planned use cases; however, limited engagement with campuses and omission of a committee for strategic planning for future enhancements means that potential campus data requirements are not currently identified which may increase UC's level of effort in the future to resolve gaps in historical data.

Data Quality

An additional limitation to leveraging the capital projects database for analysis is the quality of the data, which is dependent upon the campuses as the upstream source and the manual input of data into the database. There is limited stewardship or traceability of the data submitted to Capital Programs, and there is no current capability or planned initiative to review historical data and reconcile inaccuracies. This is of specific relevance during the MCR reporting process, as the disparate campus processes, as noted above, vary depending upon their campus-specific systems and availability of resources. Some campuses indicated that they enter data to the Oracle database on a rolling basis, while others perform updates less frequently and face time constraints at the approach of the year-end deadline. Throughout the process, there are multiple instances in which inaccurate information may be introduced, such as through manual data entry, delays in updating source system data, and insufficient review before reporting.

The following specific issues were noted:

1.1 Disparate Campus Project Management Information Systems (“PMIS”)

Campuses have autonomy over which tools they implement for their capital programs. Below are the PMISs used by select campuses for day-to-day project management and the tracking of budgets, estimates, and costs incurred:

PMIS or Spreadsheet	Campus
eBuilder	San Francisco San Diego ²
Oracle Primavera Unifier	Berkeley Davis
Internal Spreadsheet	Irvine* <i>*Currently exploring introduction of eBuilder</i>

Capital Programs does not perform day-to-day project management activities so a degree of autonomy in campus decisions to utilize preferred PMISs is expected. However, these campus-specific PMISs and internal spreadsheets are the sources of the data that feed into UCOP’s Oracle database and used for the MCR. Consistency in PMISs may drive efficiencies and accuracy when incorporating data into the capital projects database.

PMISs have the potential for future integration with UCOP’s master Oracle database, yet no tools appear to be currently integrated and the data from each campus tool requires a manual upload process. The feasibility of integration varies widely on a tool-by-tool basis. UC’s current organizational structure also may prohibit the implementation of a single unified PMIS, as (i) there may be campus processes which depend upon a respective campus’s existing tool, (ii) there is variability in the size and staff of the various campuses which may impact the cost or benefit associated with a particular tool, and (iii) the campuses prefer autonomy when executing their projects.

² UC San Diego was not interviewed as part of this assessment; however we are aware it is using eBuilder from previous experience working with the campus.

1.2 Inefficient Tracking of Final Cost Incurred

Projects over \$1 million require incorporation into the Oracle database for the purposes of the MCR. However, campuses indicated that only the final budgets (often augmented) at substantial completion are documented in the Oracle database and not the final cost incurred at closeout. Discussions with Capital Programs representatives indicate the cost incurred at final completion is intended to be captured within the Oracle database, but that there is often a significant time lag before this process takes place. The final project cost is not used for UCOP reporting so it may not be captured for each project.

1.3 Disparate Recharge Rate Approaches

Methodologies to calculate recharge rates vary by campus. Some campuses apply a flat percentage to project budgets for recharge while others calculate recharge based on employee hours. As such, when comparing costs for otherwise similar projects on different campuses, one factor one should consider is the contribution of staffing models to the recharge rates for each campus.

1.4 Threshold for Capital Project Reporting

The budgetary threshold above which projects are required to be entered into the capital projects database is \$1 million and has not changed recently. Campuses expressed that the general cost escalation and inflation of recent years has increased the number of projects qualifying for inclusion and that the \$1 million threshold should be revisited and potentially revised to a higher threshold.

1.5 Applicability of Project Comps for Benchmarking

Campuses expressed that comps provided by Capital Programs often lack detail and data which are needed to assess the relevance of comps to projects being budgeted. It was also reported that the applicability of comps in general varies by the type of project and whether the scope was new construction or renovation. See **Priority Opportunities for Improvement and Action Plans No. 4** for more details.

1.6 Annual Frequency on Capital Project Status Reporting

UCOP requires campuses to report high-level data for active projects annually in line with the MCR compilation process. There does not appear to be a consistent channel for reporting or oversight over the course of the year.

Action Plan:

a. Define Campus PMIS Policy

Capital Programs will review existing PMISs wherever possible in an effort to consolidate and integrate data exchange for the various tools across campuses. Campuses that do not yet have a formal PMIS will be encouraged to select tools like Oracle Unifier, which is utilized on other campuses. As part of regular discussions, Capital Programs will discuss changes that campuses plan around their PMISs. For example, Capital Programs will work with UCI, which is currently considering eBuilder, to present PMIS options that align with systems used across UC.

Target Date: June 30, 2024

b. Require Capture of Final Project Cost

Capital Programs will allow an additional MCR cycle to be completed to allow campus personnel more time to develop internal reporting procedures related to the Oracle database. For the following cycle, Capital Programs will implement new procedures so that the database captures final project cost at both substantial completion and final completion and that the campuses are required to provide this data.

Target Date: June 30, 2025

c. Understand Cost Impact of Differences in Recharge Calculation Methodologies

As part of a larger effort to be able to compare costs for similar projects across campuses, Capital Programs will further review campus recharge approaches and understand the rationale for each campus's methodology for incorporating recharge rates into project budgets and how staffing models and project loads drive differences in costs. With this further understanding, Capital Programs will look for opportunities to drive consistency in the various campus methodologies.

Target Date: June 30, 2024

d. Develop Formal, Long-Term UCOP Data/System Roadmap

Capital Programs will establish a committee to oversee and manage platform enhancements at both the UCOP and campus levels. Capital Programs will identify and integrate opportunities for automation to facilitate data entry and reporting from campuses to UCOP.

Target Date: April 30, 2024

e. Revisit thresholds for MCR report

Capital Programs will assess whether the project cost threshold for project reporting associated with the Major Capital Projects Implementation Report continues to be reasonable to capture relevant and necessary projects for MCR reporting or other use cases.

Target Date: September 30, 2024

2. *Historical data is not collected and leveraged to inform risk management and contingency budgets*

Building on enhanced detail and data collection as noted in **Opportunities for Improvement and Action Plans No. 1**, Capital Programs has the opportunity to leverage project data to take a more formalized and analytical approach to risk management and the estimation of contingency for projects. Capital Programs is well-positioned to leverage the portfolio of campus projects to capture risks encountered on projects and develop a detailed approach to risk management.

There are no specific requirements or limitations for project contingency budgets for non-State funded projects. Instead, there are recommended contingency guidelines that are built within the FM's budgetary templates. For example, the FM's Guidelines for Preparation of the Project Capital Improvement Budget ("CIB") for non-State projects specifies that construction contingency "should not exceed 5% of the total construction cost ... for new construction",³ although it appears that campuses are free to adjust this value. Campuses (UC Berkeley in particular) indicated that they sporadically request contingency that is higher than these recommended values, which typically and rightfully prompts a discussion and deeper review from high-level approvers.

The current approach contemplated by the FM does not connect the contingency amount to the identification, impact, and likelihood of specific risks for projects, nor is there guidance on the amount of contingency based on project characteristics such as scope or current phase (e.g., schematic design). In reviewing CIBs within budget approval packages, there is no explanation provided for the amount of contingency included in CIBs. Furthermore, there was no mention of having performed a risk assessment or identification of potential risks throughout the documents we reviewed. Without a risk assessment that ties risks to contingency on projects, there may be too much contingency in budgets, which could lead to less discipline around cost controls and inclusion of additional scopes of work. Conversely, there may not be enough contingency which could delay projects, force campuses to reduce programming included in projects, and impact the return on capital investments if additional funding is not available.

Action Plan:

a. Develop, Pilot, and Launch Formal Risk Management Process Across University System

Capital Programs will develop a master risk management process, initiate and maintain a risk register, and require campuses to populate risks and quantitatively assess impact and likelihood of risk occurring for projects with certain risk profiles based on project value, location, scope and complexity, or contracting partner and submit risk registers for risk review. Capital Programs will collect data for projects across campuses and develop guidance on common risks and recommended contingency amounts for different scopes.

For the broader set of projects in the program, Capital Programs will leverage historical data to develop recommended contingency percentages based on risk and project profiles. Risks can be thought of in terms of (i) foundational risks that apply on most projects; (ii) category risks that are associated with the level scoping/project definition, the project scope, or project location; and (iii) project-specific risks that reflect the unique project conditions or requirements (e.g., subsurface conditions, hazardous materials, California Environmental Quality Act ("CEQA") requirements, development in a congested area, equipment lead times). Capital Programs will leverage historical data to develop recommended contingency percentages for foundational risks (e.g., 2% applied to projects) and additional contingency for category risks (e.g., an additional 1% for work in a

³ https://www.ucop.edu/capital-planning/_files/documents/Guidelines_CIB%20-%20non-State.pdf.

congested area, an additional 4% for a project in a market with labor constraints). Campuses can assess additional contingency required for project-specific requests.

Target Date (Development of Risk Register Template): June 30, 2024

Target Date (Development of Recommended Contingency Amounts): January 31, 2025

b. Define the appropriate uses of contingency funds

Capital Programs will implement systemwide guidelines in the FM which specify appropriate uses for contingency.

Target Date: June 30, 2024

3. *Results of assessment of the impact of inclusion of engineers' estimates in bid advertisements on bids inconclusive due to gaps in data; the practice of sharing point cost estimates as part of bid advertisements is not common in the industry*

We conducted an analysis to assess how the inclusion of an engineer's estimate as part of campus construction bid advertisements impacts the amounts of contractor proposals. This included assessing project bid results and analyzing variances between bid results and the advertised engineer's estimate.

The results of the analysis, however, were inconclusive due to limitations in access to and the availability of UC bid results. Bid outcome data was publicly available, but not in an organized repository that made it possible to make sample selections based on project characteristics. Campuses indicated that engineers' estimates are regularly included in bid advertisements so there are limited or no advertisements that (i) included the engineer's estimate as a range, or (ii) did not include an engineer's estimate. Thus, there is no reliable control sample through which to measure the potential impact of including or not including an engineer's estimate as part of a bid advertisement. A representative control group of projects is needed to assess if the inclusion of such an estimate impacts contractor bids.

Separately, we qualitatively assessed practices related to sharing cost estimates as part of bid advertisements among a sample of peer university systems and from entities across various segments of the public sector. Among peer university systems, we did not find an institution whose policies require a point estimate, though there was one system in which point estimates are typically used. Including our sample of public sector entities, it appears more common to provide a range for estimated cost or to not provide an estimate at all. Based on our experience with owners in the private sector, it is not a common practice to share cost estimates with contractors as part of a competitive request for proposal.

3.1 UC Survey of Bid Advertising Practices

According to a survey of UC campus personnel on the impact of advertising cost estimates commissioned by Capital Programs earlier this year, and consistent with feedback from discussions with campus representatives, it is standard across the UC campuses to publish an engineer's estimate when advertising bids. While this practice is not required by federal or state contracting regulations, nor is it explicitly stated in the FM, UC's standard templates, such as the standard "Advertisement for Bids" long-form template, prompt the user to publish an estimated construction cost when advertising bids. Our assessment of this practice explores both the potential benefits and risks associated with this practice.

Campuses that participated in the survey generally support the existing practice of including an engineer's estimate as part of the bid advertisement and do not feel the practice results in the receipt of higher bids. The justifications mentioned in support of the practice include:

- Assisting contractors and architects to assess whether they want to or are qualified to participate;
- Providing transparency and establishing expectations for bid amounts; and
- Contributing to proposals which are close to the estimated cost, thus reducing instances in which projects are re-bid.

Notably, as reported by Lawrence-Berkeley National Laboratory in the survey, providing an estimated range complies with the Federal Acquisition Regulation ("FAR"), which explicitly prohibits the sharing of exact estimates of contract values with potential suppliers. The Lawrence-

Berkeley National Laboratory group appears to be the only entity that consistently utilizes estimated ranges, yet we are unable to utilize its data as a control group given that the Lawrence-Berkeley National Laboratory group’s unique projects would not provide an appropriate comparison to the other project types in the UC portfolio.

3.1.1 Assessment of Bids Versus Estimates for UC Projects

To measure the impact of UC’s approach on bids, we assessed whether a sample of UC bid results showed trends or indications that advertising cost estimates affected bid amounts. Our sample⁴ was selected from publicly available bid results listed on UC campus websites. Our testing methodology focused on analyzing the variance between advertised contract value (derived from a third-party estimate) and the contractor bid amounts.

Our results are summarized in the tables below:

Table 3-1: Summary of Sample Data

Sample Information				Contract Range (\$)	Average Contract (\$)	Period ⁵
Campuses	Projects	Bids	Avg. Bids Per Project			
7	28	89	3.2	\$375,000 - \$23,000,000	\$3,568,789	2016-2023

Table 3-2: Bid Amounts Relative to the Estimated Contract Value

Total Bids Received (89 Reviewed Bids)		Bid Range Relative to Estimated Value (28 Reviewed Projects)		
Above Estimate	Below Estimate	All Bids Above Estimate	All Bids Below Estimate	Mixed ⁶
55 (59%)	34 (41%)	14 (50%)	10 (36%)	4 (14%)

Table 3-3: Value of Bids Received Relative to the Advertised Contract Value

Average Contract Value (28 Reviewed Projects)	Average Variance from Estimated Value (28 Reviewed Projects)	
	Lowest Bid Amount	Average Bid Amount
\$3,568,789	\$31,946 (1% above)	\$395,857 (11% above)

We observed that while bids are typically higher on average than the advertised contract value, it is unclear if advertising the value of the engineer’s estimate correlates to higher bids.⁷ We noted the relatively similar distribution in the number of cases when received bids were either all higher or all lower than the estimated contract value (**Table 3-2**) suggesting that contractor bid values are based on their own estimates. The sample includes mostly projects bid in 2023 to limit variations due to market conditions, and the mix of outcomes is observed across several campuses. Furthermore, although the lowest bid amounts varied from project to project, sometimes by a

⁴ See Appendix A – Table A-2 for a list of projects included in our sample.

⁵ We attempted to establish a sample of projects bid within the same timeframe to normalize for market variability, however data limitations resulted in our sample being expanded to include multiple years. Our sample is mostly concentrated in 2023 (20 projects), with the remaining projects (8) spread across 2016-2022.

⁶ Mixed includes bid results that came in both above and below the advertised contract value.

⁷ Table 3-2 shows that 59% of the sampled bids came in higher than estimates which does not support the feeling from campus representatives that including an estimate does not result in higher bids.

significant margin relative to the estimate,⁸ the average lowest bid was only 1% above the advertised engineer’s estimate overall (*Table 3-3*), suggesting that fluctuations in bid results balance out.

An assessment of the standard deviation of bid results comparing scenarios where the engineer’s estimate is provided in the bid advertisement to those when no estimate is provided would help illustrate the impact that providing the engineer’s estimate has on bids. However, we faced multiple limitations in both the availability of data and our ability to control for other relevant factors, including:

- There is no control sample of UC contracts bid without an engineer’s estimate, or estimate range, to measure against the results;
- The sample was selected based on the available data, and is not representative of potential factors, including but not limited to variations in project scopes, contract values, delivery methods, time periods, and the quality of estimates;
- The analysis does not factor in other variables, such as contractor strategy in discounting costs for the base contract scope and back-loading costs for alternates, where applicable; and
- There is no control for the accuracy of estimated contract values, or the duration of time between when the project was estimated versus when the project was bid.

3.2 Peer University Survey of Bid Advertising Practices

We contacted several large state university systems to survey^{9, 10} their bid advertising practices. The entities were asked whether they have policies and guidelines specific to advertising bids, and whether they include project cost estimates as part of bid advertisements.

The responses, shown in **Table 3-4**, indicate that there is variability across higher education with respect to incorporating a cost estimate in a bid advertisement. For those peer systems which did specify that they provide cost estimates, there was also variability as to whether a range or point estimate was provided, and whether the practice was standard or conditional upon other factors, such as the inclusion of alternates in the RFP. However, providing a range was the most reported practice when estimates were included.

Table 3-4: Responses from Peer Survey on Bid Advertising Practices

Entity	Entity Information	Response
Organizations that do not typically include a cost estimate in bid advertisements		
The University of Illinois	State University System Three main campuses, additional satellite campuses	<ul style="list-style-type: none"> • For construction bid advertisements, the campuses do not typically include a cost estimate and it is not required by the system office.

⁸ See Appendix B, Figure B-1 for a scatterplot showing the distribution of results from each bid process relative to the estimated contract value.

⁹ Peer survey also included questions regarding both bid advertising and program procurement practices. The responses related to program procurement are identified under **Additional Opportunities for Improvement No. 8**.

¹⁰ We surveyed five different university systems. Additionally, we reached out to the University of Michigan and University of Arizona, neither of who responded to our requests to participate. For the University of Michigan and University of Arizona, we reviewed publicly available bid advertisements.

Entity	Entity Information	Response
The University System of Tennessee	State University System Four main campuses, additional satellite campuses	<ul style="list-style-type: none"> • Only disclose the bid target at the bid opening when a project has alternates. Otherwise, the system does not disclose the bid target.
Arizona Board of Regents	State University System Three main campuses, additional satellite campuses	<ul style="list-style-type: none"> • None of the bid advertisements reviewed included a cost estimate.
University of Michigan	Three campuses	<ul style="list-style-type: none"> • None of the bid advertisements reviewed included a cost estimate.
Organizations that do not have a standard practice		
The State University of New York (“SUNY”)	State University System 60+ campuses (universities, colleges, and community colleges)	<ul style="list-style-type: none"> • Policies do not address if bid advertisements should or should not incorporate formal cost estimates. • Practices are mixed; some projects may include an estimate; when included, typically a range, although some projects may provide exact estimates.
Organizations that typically include a cost estimate as a range		
Pennsylvania’s State System of Higher Education	State University System Fourteen main campuses	<ul style="list-style-type: none"> • Bid advertisements typically included a range estimate
Organizations that typically include a cost estimate as a point estimate		
The University System of Texas	State University System Fourteen campuses, some of which are healthcare related	<ul style="list-style-type: none"> • Bid advertisements typically include a fixed value estimate

From the respondents to the peer survey, and also from industry subject matter advisors we canvassed as part of our research, those who did not include or support the practice of including cost estimates in bid advertisements provided the following justifications:

- There is a reduced incentive for contractors to be precise in their estimates;
- Contractors may become accustomed to bids coming within a certain percentage of the estimate and will not look for creative ways of being more competitive;
- When design documents are close to complete at the time of bidding, contractors may not look to identify value engineering options and reflect these as alternates in their bids; and
- Market factors can change between the time of the original estimate and when the RFP is released; when the market is “hot” and the engineer’s independent estimate is biased low, this can be disadvantageous for the owner during the bidding process.

3.3 Bid Advertising Practices of Other Public Sector Entities

We reviewed publicly available bid advertisements for five public sector entities to assess practices around incorporating cost estimates as part of bid advertisements.¹¹ These reviewed entities

¹¹ We referenced six to seven bid advertisements per entity.

represent discrete segments of the public sector, including a transit authority, a port, an airport, a municipality, and a municipality-specific department of environmental protection.

Of the bid advertisements that we reviewed for the entities, bid advertisements for four of the five entities included cost estimates. However, we only observed point estimate use from one entity, and that entity also incorporated estimate ranges on some of its bid advertisements.

Table 3-5: Observed Bid Advertising Practices of Other Public Sector Entities

Entity	Observed Bid Advertisement Practice
Organizations that did not include a cost estimate in bid advertisements	
Houston Airports ¹²	<ul style="list-style-type: none"> No estimate included on publicly available bid summaries or on other publicly available and reviewed bid supporting documentation
Organizations that included a cost estimate as a range	
New York City Department of Environmental Protection ¹³	<ul style="list-style-type: none"> Current bids include estimate ranges, such as “<i>Job Order Contract for East Region General Construction</i>” with an estimated range of \$22,950,000 to \$31,050,000
Port of Los Angeles ¹⁴	<ul style="list-style-type: none"> Current bids include estimate ranges, such as “<i>Terminal Island Facilities Demolition and Improvements</i>” with an estimated range of \$17,000,000 - \$23,000,000
Metropolitan Transit Authority (“MTA”) ¹⁵	<ul style="list-style-type: none"> Current bids include estimate ranges, such as “<i>Jerome/Pelham - Harlem River Pumping System Improvements</i>” with an estimated range of \$10,000,000 - \$50,000,000
Organizations that included a cost estimate that varies between a range and a point estimate	
City of Seattle ¹⁶	<ul style="list-style-type: none"> Current bids include an estimate, yet these estimates vary as either a range or a point estimate. For example: <ul style="list-style-type: none"> “<i>South Park Community Center Stabilization & Site Redevelopment</i>” includes an estimate of \$11,800,000 “<i>McGraw St Bridge Seismic Retrofit</i>” includes an estimate of \$5,200,000 to \$5,600,000

Based on our industry peer study and sampling from broader public sector bidding practices, UC’s incorporation of a point estimate of construction cost when soliciting bids appears to be a less common practice than providing an estimate in a range or not providing one. We could not assess whether including a construction cost estimate in bid advertisements influences bid results. More information is necessary to evaluate a potential impact. However, analysis of sampled projects showed that 50% of UC projects received bids in excess of the advertised bid price, suggesting that providing the estimate does not prevent bids from coming in higher than estimates. There may be circumstances, such as complex projects or where confidence in the internal estimates is low, where UC should consider advertising an estimated range based on the engineer’s estimate rather than

¹² <https://www.fly2houston.com/biz/opportunities/solicitations>.

¹³ <https://www.nyc.gov/site/dep/about/current-bids.page>.

¹⁴ <https://pbsystem.planetbids.com/portal/42217/bo/bo-search>.

¹⁵ <https://new.mta.info/agency/construction-and-development/contracting/current-opportunities>.

¹⁶ <https://seattle.procurement.com/Bids>.

providing a point estimate. This approach may provide balance between the benefits of supporting contractor decisions to participate and setting a baseline expectation for bid amounts in line with project budgets, while incentivizing and promoting precision, creativity, and competitiveness in the proposals of prospective bidders.

Action Plan:

- a. UC will consider conducting a 12-month pilot study of the impacts of advertising exact cost estimates by selectively identifying projects to be bid without advertising a cost estimate and comparing outcomes to projects which are similar in scope and for which a point estimate or range was provided. The pilot should be limited to projects which are approved under the delegated authority process and for which the approved capital improvement budgets have not been published prior to the bid process. UC will explore opportunities to redact or delay the release of approved budget amounts prior to contracting for projects that are approved directly by the Regents.

Target Date: June 30, 2025

4. *Project comps may not be reliable due to data availability and quality*

Campuses reported concerns regarding the applicability and relevance of benchmarking resources provided by Capital Programs. Campus personnel indicated that they can be put in the position of justifying their cost estimates against unrealistic expectations set by comps. The perceptions of campuses also vary according to the type of project being benchmarked. The common themes reported by the campuses include:

- There is limited detailed breakdown of scope and programming information to assess projects included in the comps database, and whether the projects are relevant comparisons for subject projects;
- Meaningful and granular comparisons can be difficult due to the lack of detailed information being captured for historical projects;
- There is concern over historical project data contained within the benchmarking database, and there have been errors identified which skew the value of historical projects (see the Data Quality section below);
- For new construction projects with limited complexity and variations, such as housing, the comps may provide more value than for renovation projects, where the scope of renovation can vary substantially;
- External projects from outside of the UC system, and more so the State, may not be comparable to both the standards of UC facilities, and the costs of work in California even after adjusting for location;¹⁷ and
- There are multiple scope factors which influence cost that are not being considered, such as site conditions and the installed equipment involved.

Data Quality

The cost data included in the benchmarking worksheets may not comprise consistent elements of scope across projects. It is a common practice to separate project elements such as housing, commons, or sitework into multiple columns in the CIB. However, this is not a defined standard and practices may vary by campus and project.

For example, in the CIBs of two projects we reviewed, the Le Conte Apartments project has separate columns for housing, commons, and site costs; in contrast, the CIB for the Margan Apartments Redevelopment project combines housing and commons into one column, and only separates site costs.

To address these variations, the benchmarking worksheets may identify the scope elements included in a project's data under the 'Project Description' section of the worksheet. However, this is not commonly documented, particularly for older or non-UC projects. For the Le Conte Apartments project, the description specifies, "Data is for housing only and not commons," while the Margan Apartments Redevelopment project does not specify the scope elements despite combining housing and commons in the CIB.

Furthermore, we compared the cost data for 'Building Construction Costs' and 'Total Project Costs' and found errors and inconsistencies for both projects. The 'Building Construction Cost' field specifies that costs represent line 1 of CIB (construction only), however the Margan Apartments Redevelopment project includes the cost of site scope in addition to the combined housing/commons scope. As noted above, the Le Conte Apartments project should have only

¹⁷ See Appendix C, Table C-1: Cost Factors for UC Construction Projects.

included costs for the housing scope; however we were not able to reconcile what data was captured for either construction or the total project costs due to erroneous data in the benchmarking worksheet.

Based on our review of the benchmarking data, the following variances were identified:

Project	Data Source	Data Element	
		Building Construction Cost (CIB Line 1)	Total Project Cost (Total CIB incl. PWC, ¹⁸ IDC, ¹⁹ Group 2&3 Equipment)
Le Conte Apartments	Benchmarking Data ²⁰	\$152,388,000	\$188,374,000*
	Final CIB	\$143,898,000 ²¹	\$169,585,000 ²²
Margan Apartments Redevelopment	Benchmarking Data	\$43,086,000	\$49,300,000
	Final CIB	\$36,416,000 ²³	\$42,520,294 ²⁴

*The actual 'Total All Sources' final cost for Le Conte Apartments was \$183,397,284.

It is important to note that these are the only two projects in the benchmarking population for which we have closeout CIBs to compare against the comps data.

Applicability of Comps

We assessed the suitability and relevance of existing comps by performing an exercise in Capital Programs' housing benchmarking worksheet using a composite of project data from the Margan Apartments Redevelopment project.

The *Instructions and Methodology* tab of UC benchmarking worksheets indicates that, "The worksheet will auto populate projects (to select projects within +/- 60% your project GSF) on the 'Item Format' and 'scatterplot graph' tabs." This methodology selects the base sample population of comps based on whether they are within +/- 60% of the benchmarked project's gross square footage (GSF). UC's process allows for campuses to request modification of the sample population based on their judgement of the applicability of projects returned as comps. For the exercise that we performed, we did not modify the sample population of projects to control for projects which may not be applicable due to scope, location, or other factors. The comps that were provided showed significant variation in costs between the other projects of similar size.

The results of this exercise are depicted in the following scatterplot:

¹⁸ PWC refers to all costs from the preliminary phase, working drawings, and construction except Groups 2 & 3 Equipment.

¹⁹ Interest During Construction ("IDC").

²⁰ Source: Q2 2023 UCOP Comps worksheet – Housing.xlsx.

²¹ 10995 Le Conte Apartments Final CIB, Line 1 Construction of the Housing portion only.

²² 10995 Le Conte Apartments Final CIB, Grand Total (lines 1-9) of the Housing portion only.

²³ Margan Apartments Redevelopment Final CIB, Line 1 Construction of Housing & Commons Portion.

²⁴ Margan Apartments Redevelopment Final CIB, Grand Total (lines 1-9) of the Housing & Commons Portion.

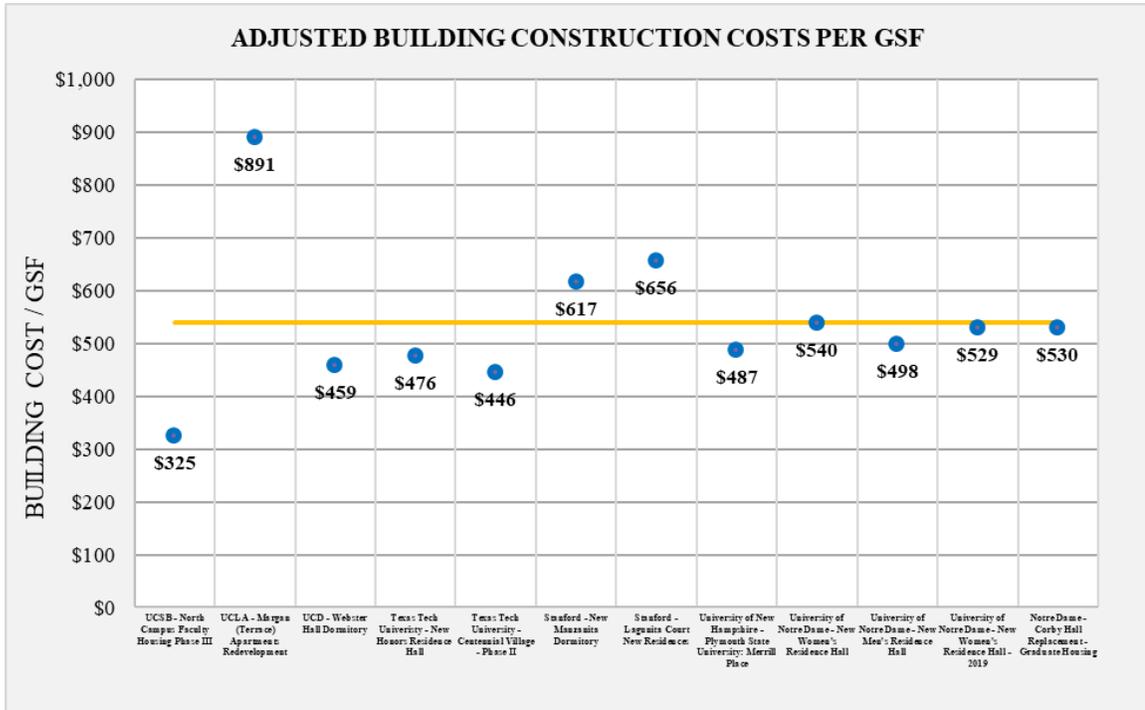


Figure 4-1. Scatterplot results from a composite project based on the Margan Apartments Redevelopment project with construction mid-point set in 2023.

The metrics for the Margan Apartments Redevelopment project show the highest construction costs per GSF among not only those within +/- 60% GSF shown above, but among all projects in the benchmarking database. While unique project factors cause this project to be an outlier in terms of metrics, there does not appear to be a general correlation between construction costs per GSF and the overall GSF of existing projects within the database.

Our observation of this variance across housing project comps suggests that the methodology for querying comparable projects based on +/- 60% of the planned GSF may not generate a relevant sample of projects from the total population. Comparisons made between projects based on summary level project and cost metrics may not be reliable as they lack the required detail of scope and other project factors which ultimately drive the costs for projects. This further applies to projects outside of California, which, even with modifiers to account for location, do not provide the level of detail to determine what is included in the costs, or account for unique local and UC-specific factors that influence costs.

Action Plan:

Capital Programs is currently working with Leland Saylor Associates to factor in additional cost escalation factors. In addition to that effort:

- a. Review and Validate Existing Project and Cost Data in the Benchmarking Datasets

Capital Programs will review the existing data for accuracy and consistency in the cost and scope elements which are being used to develop benchmarks. *See observation #1, recommended action plan 1b. Require Capture of Final Project Cost.*

Target Date: May 31, 2024

b. Further Standardize A Cost Breakdown Structure (“CBS”) for UC Projects Over a Certain Threshold

Capital Programs will continue to incorporate the required standardized parent level CBS categories and will recommend standard lower-level CBS categories where desired to enhance the granularity of data collection across campuses.

Target Date: June 30, 2024

Additional Opportunities for Improvement and Action Plans

5. *UC may be able to reduce risk by updating certain contract terms*

There did not appear to be omissions or significantly “risky” contract clauses within the general conditions of the long-form, design build, and CM-at-risk templates. Contracts included typical risk mitigation and contract administration clauses around such topics as liquidated damages, key personnel requirements, payment and performance bonds, insurance, warranties, change order procedures, claims resolution, retention release, and audit rights.

Minor instances of ambiguous contract language were noted. There were also minor omissions of provisions which are common in the industry.

We noted the following from the long-form contract. Other contract templates have similar or identical language:

Order of Precedent Clarification

- Section 1.3.1 establishes an order of precedence between the various contract documents. However, for the avoidance of doubt UCOP may want to consider additional language which stresses how certain clauses *within* a contractual document take precedent over others, such as by clearly stating that clauses which occur first numerically take precedent over clauses that occur later.

Definition of Holidays

- “Holidays” is not further defined and is subject to interpretation.

Contractor’s Obligations to Secure Permits and Jurisdictional Approval

- Section 3.6.1 states that “Contractor shall secure and pay for all permits, approvals, government fees, licenses, and inspections necessary for the proper execution and performance of the Work.” This clause does not contain “for the avoidance of doubt” language which clarifies that jurisdictional delays for permits/approvals do not absolve the contractor of its obligation to achieve schedule deadlines.
- Section 3.9.10 states that “Contractor shall act as the expeditor of potential and actual delays, interruptions, hindrances, or disruptions for its own forces and those forces of Subcontractors, regardless of tier.” This clause does not also clarify that the contractor’s obligations include expediting jurisdictional approval.
- Section 8.4.2 provides an itemized list of reasons that cannot serve as justification for a delay. This list does not incorporate provisions related to a contractor’s responsibilities to secure permits and jurisdictional approvals.

Force Majeure Provisions

- Section 8.4.1 makes reference to “Acts of God” but does not further clarify certain items for which the template’s definition of “Acts of God” may or may not be applicable; it

remains ambiguous if the template’s definition of “Acts of War” includes war, pandemics, and other discrete events that are sometimes included in a contract’s definition of force majeure. UC should consider if the incorporation of a more detailed description of what constitutes “Acts of God” is desirable to reduce ambiguity and potential risk.

Cost of Extra Work Provisions

- Section 7.3.2 includes provisions for wages “at the Project site” and “at fabrication sites off the Project site” but does not address the suitability for wages incurred transporting materials to and from the Project site.
- Section 7.3.3 includes provisions for “Cost of Extra Work” but does not explicitly state that contingency is ineligible for inclusion within a contractor’s build-up for the cost of extra work.

Material Escalation Provisions

- The agreement does not directly indicate that the contractor is to bear the cost of fluctuation in the market for raw materials, nor does it illustrate if or how a contractor can or cannot seek a change order due to periods of significant inflation or raw material escalation.

Subcontractor Closeout Provisions

- Sections 9.7 and 9.8 (Substantial Completion and Final Completion) state that the contractor must submit “all guarantees and warranties procured by Contractor from Subcontractors.” However, detailed language is absent with respect to the subcontractor closeout process, including with respect to subcontractors liens and confirmation that subcontractors have been fully paid.

Project Reporting Provisions

- There did not appear to be detailed provisions which outline the contractors’ obligations related to the issuance of monthly status reports, or other project status documentation, which may be desired or required.

Action Plan:

Capital Programs will consult with UC Legal to consider whether contract templates should be updated. If so, Capital Programs will implement a formal roll out or training program so that campuses are alerted of the proposed changes.

Target Date: March 31, 2024

6. UC may be able to reduce risk by updating FM guidance for contracts and delivery methods, and enhancing supporting training materials

The FM provides a list of the approved contract types and general guidance on what factors into selecting a delivery method and Capital Programs provides training for campuses on different delivery method options and contract types. However, there is limited guidance regarding which delivery methods and contract types are suited for different project objectives. Furthermore, there does not appear to be detailed guidance regarding the responsibilities to administer the contract under a given contract type, and how this may impact internal staffing and budgeting for a project. Campus interviewees occasionally expressed comfort and familiarity with certain delivery methods and contracts so they may not consider alternatives, when appropriate.

Action Plan:

Capital Programs will revisit FM policies and supplementary training materials to provide enhanced guidance regarding the different delivery methods available, and the factors and conditions when one model may be more appropriate than another. Capital Programs will consider including case studies of UC projects where the selection of a certain delivery method and contract type resulted in additional costs and risks or helped UC avoid costs and risk.

Target Date: May 31, 2024

7. *Including estimated total project costs as part of preliminary project funding requests will help the Regents make more informed funding decisions*

Preliminary funding approval packages are submitted to the Regents in order to secure seed funding to perform various due diligence and preconstruction activities for new projects. These activities can vary depending on the delivery method, and may include site surveys, testing, CEQA documentation, developing preliminary designs, and procurement of design professionals, consultants, or general contractors. The approval packages typically contain a general description of the project, project site, delivery approach, project drivers, CEQA compliance requirements, phasing of future approval requests, and a budget for the preliminary plans. The budget categories include footnotes explaining the planned use of the funds, and the preliminary phase activities that will be performed.

However, we observed that the request for preliminary funding does not provide transparency to the rough order of magnitude (“ROM”) of the expected total project cost. ROM cost estimates may be provided for projects in the Capital Financial Plan. However, these estimates are developed for forecasting 10-year capital needs and are not necessarily ROMs that have been developed for the purpose of seeking project funding approvals. When reviewing funding approval requests from campuses, the ROM cost could be used to gauge the appropriateness of the requested funding amount and the level of preconstruction activity to be performed relative to the degree of uncertainty in design, CEQA compliance requirements, and overall trajectory of costs for the project. Omitting cost estimates from project funding approval requests may lead to seed funding being provided to perform preconstruction and design phase activities for a project that the Regents may later determine to be too costly.

Action Plan:

Capital Programs will review Regent package templates and content requirements for requesting funding approval and consider requiring a ROM estimate of expected project costs when submitting requests for preliminary funding approval to the Regents.

Target Date: March 31, 2024

8. *UC’s procurement and bonding/insurance practices are in line with peers however, the bonding and insurance requirements can be difficult for small businesses to comply with, impeding their ability to qualify to serve UC*

Procurement: UC conducts its procurement in a primarily decentralized fashion. Campuses are responsible for directly contracting with general contractors/construction managers rather than through a centralized body like Capital Programs.

These processes appear to be in line with those of similar university systems.²⁵ For example:

- *SUNY* conducts its procurement in a decentralized fashion, which is largely a function of the need to “tie back” to funding sources. Limited procurement does occur in a centralized fashion as a requirement of the State University Construction Fund.²⁶
- The *University System of Illinois* indicated that “*The universities (UIUC, UIC and UIS) lead their own procurement process (with reviews by Systems office and help with posting requirements on the Illinois Procurement Bulletin ...)*.”²⁷
- The *University of Tennessee System* indicated that the centralized body “*works with the approved project designer to get projects advertised.*”²⁸
- The *University System of Texas* has a central Office of Capital Projects which “manage[s] the procurement solicitation, review, and award” for capital projects greater than \$10M in value for six of the system’s campuses; smaller value projects and projects associated with the remaining eight campuses are managed by the campuses.²⁹

Action Plan: N/A

Target Date: N/A

Bonding: The *University of California Construction Contracting Requirements Summary*³⁰ indicates the following:

- **Payment Bond:** Required for contracts in excess of \$25,000. Penal sum is equal to the contract value.
- **Performance Bond:** Required for contracts in excess of \$50,000. Penal sum is equal to the contract value.
- **Bid Bond:** Required for contracts which are formally competitively bid, or in excess of \$640,000. A bid bond or deposit in the amount of 10% of the contract value is required to be provided by bidders.

UC’s bonding requirements are statutorily required by both state and federal regulation under California Public Contract Code Section 10221 and 10222, and FAR 40 U.S.C. Chapter 31.

These requirements are mostly in line with those of similar university systems. For example:

- *SUNY* appears to require “Bonds for Performance and Labor and Materials are required for contracts greater than \$50,000.”³¹

²⁵ As part of this study, the following universities/university systems were contacted via phone call and/or email: SUNY, University of Michigan, Pennsylvania System of Higher Education, University System of Arizona, University System of Illinois, University System of Texas, University of Tennessee System; given limited responses, all results are incorporated herein.

²⁶ Per telephone discussion with *SUNY Contract Specialist at the Campus Let Contracts Program* on October 11, 2023.

²⁷ Per October 17, 2023 email from University of Illinois System.

²⁸ Per October 17, 2023 email from the University of Tennessee System.

²⁹ Per October 23, 2023 email from the University of Texas System.

³⁰ <https://www.ucop.edu/construction-services/facilities-manual/volume-4/construction-contracting-table.pdf>.

³¹ https://www.suny.edu/sunypp/documents.cfm?doc_id=429.

- *University of Illinois System* appears to require performance and payment bonds for all contracts, as its “Risk Management for Capital Projects” guidelines state that “Required coverages include .. performance/payment bonds.”³²
- The *University of Tennessee System* appears to leave performance bond requirements to the discretion of its personnel as its policies state “*If the requisitioning department or the procurement department doubts the bidder’s ability to perform the contract, the procurement director may require a submission of a performance bond.*”³³
- *University System of Texas* appears to require “a performance bond if the contract is in excess of \$100,000; and (2) a payment bond if the contract is in excess of \$25,000.”³⁴

Insurance: UC's minimum insurance coverage requirements are consistent with industry standards and there were no examples identified of similar entities who have lesser coverage requirements. Exemptions from minimum requirements can be made by the campus in circumstances when deemed appropriate and are subject to review by campus risk department or counsel. Policy BFB-BUS-63: Insurance Requirements and Certificates of Insurance indicates that coverage levels can be increased and by what increments, should campuses desire. However, there are no prescriptive standards by which minimum coverage should be scaled for increasing project costs or high-risk scopes up to the \$25 million threshold for inclusion under the University Controlled Insurance Plan (“UCIP”). Furthermore, the requirements for inclusion under the existing UCIP may limit the pool of contractors who can meet the criteria, which may be a headwind for small business participation targets.

Action Plan: N/A

Target Date: N/A

³²https://www.uocpres.uillinois.edu/UserFiles/Servers/Server_7758/file/training/documents/RiskManagementforCapitalProjects.pdf.

³³ <https://policy.tennessee.edu/policy/fi0405-procurement/>.

³⁴[The University of Texas System Risk Mitigation and Monitoring Plan for Major Capital Projects](#).

Appendix A

Testing Data Tables

Table A-1: Campus Projects – Project Testing Sample

Campus	Project
UCLA	Lot 15 Residence Hall
	LA-10995 Le Conte Apartments
	Margan Apartments Redevelopment
UCD	Emerson Hall Replacement
	Aggie Square Phase I
UCI	Interdisciplinary Science & Engineering Building
	Irvine Campus Medical Complex
UCB	Northern Regional Library Facility Phase IV

Table A-2: Bid Advertising Analysis – Sample Data ³⁵

Campus	Project Name	Opening Date	Cost Estimate
UCB	DM FY20 Hildebrand Hall Building Management Systems Renewal	2/14/2023	\$2,500,000
UCB	12806A - DM FY20 Latimer Hall MEP Building System Upgrades	2/27/2023	\$3,630,000
UCB	12789A - DM FY20 Etcheverry Hall HVAC Mechanical Systems	3/10/2023	\$2,825,000
UCB	12858A - Unit 2 Renovation	2/28/2023	\$815,000
UCB	Greek Theatre Upper Bowl Safety and Lawn Restoration Project	4/5/2023	\$4,900,000
UCB	DM FY20 Weill Hall Building Systems Renewal	4/19/2023	\$10,400,000
UCB	Dwinelle Hall Annex Renovation for Disabled Students Program Center	7/5/2023	\$7,500,000
UCB	DM FY21 Campus HV Substation 5 Infrastructure	7/27/2023	\$4,500,000
UCSF	PRJ-000082 & PRJ-000086: MB BH AHUS UPGRADE & MB RH AHUS REPL	7/11/2023	\$4,000,000
UCSF	PRJ-000391: PH MSB S1390 LAB RENOVATION - Phase 1: Make Ready	9/15/2023	\$450,000
UCSF	Mission Bay Genentech Hall Heating Hot Water Line and Leaks Repairs	7/11/2023	\$900,000
UCLA	942401 - Life Sciences Building Salt Water Lab and Tank Relocation	10/5/2023	\$2,600,000
UCLA	7047736 - COGEN STORMWATER CAPTURE AND REUSE	5/3/2023	\$469,000
UCLA	SMUMC 3rd Floor MNP OR Storage Upgrades	9/13/2023	\$1,315,000
UCLA	945908 - SMUMC MNP Air Handling Unit 8 Replacement	9/6/2023	\$3,600,000
UCM	Classroom and Office Building 1 Renovation	4/16/2020	\$3,000,286
UCM	COB 1&2 (Classroom and Office Building 1 & 2)	8/15/2019	\$3,000,000
UCM	Kolligian Library 3rd FL Reconfiguration	7/26/2018	\$375,000
UCM	North Bowl Parking Phase 2 (NBP2)	4/28/2016	\$3,500,000
UCI	CRAWFORD HALL GYM FLOOR REPLACEMENT	4/13/2023	\$650,000
UCI	EG 2118 Fumehood	2/16/2023	\$175,000
UCI	AIR HANDLER REPLACEMENTS 2023	8/10/2023	\$7,846,812
UCR	Batchelor Hall	11/9/2021	\$23,000,000
UCR	Falkirk Apartments Site and Seismic Upgrades	7/11/2019	\$2,000,000
UCR	SOM ED1 Data Center Renovation	2/10/2022	\$800,000
UCR	Spieth Hall Roof Replacement and Mechanical Upgrade	5/16/2022	\$1,800,000
UCSD	5611 - NATIONAL PAN-HELLENIC COUNCIL PLAZA	6/14/2023	\$875,000
UCSD	5626 - UCSD HEALTH HR SUITE 200 TI	3/13/2023	\$2,500,000

³⁵ UC Berkeley data was provided by a campus-maintained bid results spreadsheet; other source data comes from primary sources, including bid advertisements and bid summaries published on UC campus websites.

Appendix B

Figure B-1: Difference of Average Bid Amount from the Advertised Contract Value

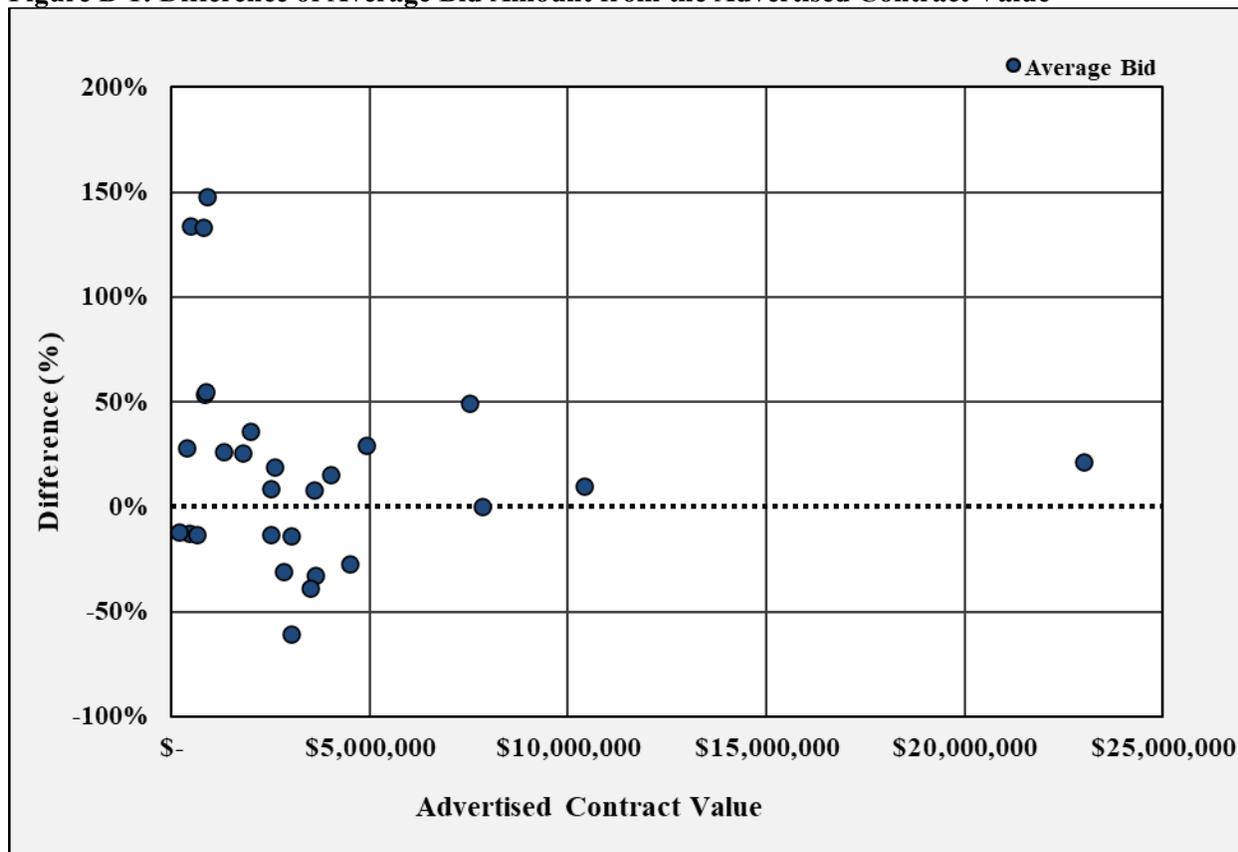


Figure B-1 Description: Figure represents the distribution of the average bid result according to **advertised contract value** (x), and the **difference (%) of the average bid result relative to the contract value** (y). The advertised contract value is represented by the **x-axis** ($y = 0$), shown as a dashed line.

The scatterplot reflects the range of variance in bid results relative to the contract value, and while significant variability exists for some projects, there is a relatively even distribution of bid results both above and below the advertised contract value.

Appendix C

Table C-1: Cost Factors for UC Construction Projects

Cost Factor	Estimated / Potential Impact
Higher Cost of Professional, Skilled, and Unskilled Labor <ul style="list-style-type: none"> • Cost of living • Prevailing wages 	<ul style="list-style-type: none"> • Labor costs are 38% above national averages at UC locations³⁶ • Material costs are 1.5% below national average,³⁷ however requirements to use sustainable building materials may increase costs overall
LEED Certification <ul style="list-style-type: none"> • Materials, Supplies, Transportation • Certification 	<ul style="list-style-type: none"> • Green building premiums run from 0%-9.5% of construction costs, but average around 2%^{38, 39}
Seismic Requirements <ul style="list-style-type: none"> • Seismic zones and code requirements are an impact at all campuses, and a significant risk to UCB, UCSC, UCR, UCLA, UCSF, UCSD 	<ul style="list-style-type: none"> • Seismic premiums run from 4%-5% related to enhanced design effort and material costs
CEQA Compliance	<ul style="list-style-type: none"> • CEQA compliance costs (study, CEQA documentation, EIR consultants, monitoring, impact mitigation) not high • CEQA lawsuits can lead to significant delay, allowing construction costs to escalate • Legal fees for litigation are excluded from direct project costs • Added cost varies by project; can exceed \$2M⁴⁰
Legislative and Regulatory <ul style="list-style-type: none"> • Small Business participation targets 	<ul style="list-style-type: none"> • Costs are externalities; reduced competition in subcontractor bid processes, increased internal management costs to onboard and support new contractors
Permitting	<ul style="list-style-type: none"> • Costs can vary by location • In Berkeley, permitting costs can be as high as 5% of the total project construction cost⁴¹ • Permitting delays can result in schedule extension and result in additional engineering, project management, and general and administrative costs

³⁶ RS Means City Cost Indexes – Year 2023 Quarter 4.

³⁷ Ibid.

³⁸ Uğur, Latif & Leblebici, Neşe. (2017). An examination of the LEED green building certification system in terms of construction costs. *Renewable and Sustainable Energy Reviews*. 81. 10.1016/j.rser.2017.05.210.

³⁹ Chad Mapp, MaryEllen Nobe & Brian Dunbar (2011) The Cost of LEED—An Analysis of the Construction Costs of LEED and Non-LEED Banks, *Journal of Sustainable Real Estate*, 3:1, 254-273, DOI: 10.1080/10835547.2011.12091824.

⁴⁰ Irvine Campus Medical Center project, Approved CIB.

⁴¹ <https://berkeleyca.gov/construction-development/permits-design-parameters/permit-process/estimate-permit-fees>.

Appendix D

Table D-1: Process Review Summary – Testing Scope

Control Title	Testing Scope
Planning	
Budget Development	Assess how Capital Programs assesses whether the budget is complete and developed based on valid local competitive market rates and properly adjusted historical data
Contingency Development	Assess processes to review contingency amounts in budgets and how contingency is estimated
Budget Approval	Assess whether cost estimates and budgets are contextualized with the state of design completion
Delivery/Compensation Model Selection	Assess level of engagement to advise campuses regarding project delivery and compensation model selection
Program Management	Assess how the Capital Programs leverages its role to apply a programmatic approach across campuses e.g., through strategic sourcing, bundling of like projects to drive scale in bidding and why past attempts at taking a programmatic approach have been unsuccessful
Legal Requirements (CEQA)	Assess processes Capital Programs uses in an oversight role to review for the inclusion of time and cost required to comply with requirements of the CEQA
Campus Recharge Policies	Assess how the campuses calculate and include campus recharge in project budgets, and the impact of variations in recharge policies on project costs across campuses
Governance	
Campus-UCOP Relationship	Assess roles and responsibilities between campus project teams and Capital Programs
Reviews and Approvals	Assess reviews and approvals performed by Capital Programs pertaining to campus projects and visibility to real-time project statuses
Contracting	
Construction Contracts	Assess how Capital Programs advises campuses about the applicability of different contract compensation structures for projects (e.g., lump sum, cost plus fee, unit prices)
Standard Contract Templates	Review standard contract language in common contract types employed to identify gaps or other weaknesses that limit UCOP's ability to control costs; review terms that address risk, scope, delivery of work, availability, and quality of resources, and assess alignment with FM
Non-Standard Contract Development Process	Assess Capital Projects' oversight of deviation from contract templates
Bidding and Construction	
Project Reporting and Performance Indicators	Assess the KPIs and frequency of reporting to UCOP and whether existing processes allow for effective oversight
Insurance and Bonding Requirements	Assess policies governing insurance and bonding requirements and whether requirements are appropriate from a risk perspective
Bidding and Procurement Oversight	Assess oversight of procurement for contractors and services within the scope of UCOP (e.g. executive architect)

Campus Data Collection	Review processes employed by Capital Programs to capture data for completed projects across the system, vet the accuracy and completeness of such data, and collect and curate such data in a database for future use
Budget Advertising	Assess whether advertising the estimated project costs in bid solicitation documents results in higher bids through a review of sample project procurement documentation
Change Order Review Process	Assess field order and change order review procedures
Closeout Requirements	Assess project contract and financial closeout procedures for completeness

Appendix E

Glossary of Acronyms

CBS	Cost Breakdown Structure
CEQA	California Environmental Quality Act
CIB	Capital Improvement Budget
ECAS	Ethics, Compliance and Audit Services
FAR	Federal Acquisition Regulation
FM	UC Facilities Manual
GSF	Gross Square Feet
IDC	Interest During Construction
ITS	Information Technology Services
MCR	Annual Report on Major Capital Projects
PMIS	Project Management Information System
ROM	Rough Order of Magnitude
SUNY	The State University of New York
UCIP	University Controlled Insurance Plan
UCOP	University of California Office of the President