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## Internal Audit Report

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### Facilities Projects Costs

Report No. SC-14-09  
May 2014

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Principal Auditor

**Approved**  
Barry Long, Director  
Internal Audit & Advisory Services

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## I. EXECUTIVE SUMMARY

Internal Audit & Advisory Services (IAS) has completed an audit of costs incurred on construction and maintenance facilities projects and charged to campus units to determine if those costs were reasonable and properly allocated, and if the associated projects were conducted within project budgets and schedules; and to gain an understanding of campus concerns that facility projects were too expensive.

In general, costs charged to campus units on PPC and Physical Plant completed facility projects we tested appeared to be reasonable as applicable to the project using the facilities management system for charging project costs. For larger facility construction, most projects reviewed were completed within project budget and schedule, which was a measure established and used by PPC to determine cost effectiveness.

However, labor rates for Physical Plant project managers were disproportionately lower than for their PPC equivalents, and an inaccurate upload of labor hours from the FAMIS system resulted in a miscalculation and inaccurate initial recharge rate submission that has subsequently been resubmitted. This error with FAMIS has exposed a potential reliability issue with the system.

There continued to be concerns expressed by clients that costs for PPC projects were too high and there was little incentive for PPC to contain costs of a proposed facility project because they operated as a recharge unit. In two cases tested, project requests did not move forward because cost estimates greatly exceeded available funding, further compounding this frustration. Unrealized expectations of clients and complexities associated with recharge costing practices and structure continue to lead to questions about the campus process for administering, managing, and costing campus plant and construction projects, and alternative ways to minimize costs.

The following observations requiring management corrective action were identified:

### **A. Independent Review of Facility Project Administration and Management Practices**

Opportunities exist for obtaining a subject area expert to lead a peer review or conduct an examination of campus structure for delivering cost effective and client engaged facility administration and project management services.

### **B. Communicating Expectations Facility Project Costs**

Opportunities exist for helping prepare clients for the cost of projects by including this information on PPC and Physical Plant websites.

### **C. Consultant and Project Management Costs**

Opportunities were identified for possibly reducing the costs of consultants.

### **D. Work Management Project Manager Recharge Rates**

The Work Management project manager recharge rate has been disproportionately lower than their PPC equivalents for the past several years. Physical Plant's information system, FAMIS, did not upload recharge hours correctly for project managers, resulting in a miscalculation of recharge expenses and an inaccurate balance of revenue and expenses on its request for a new recharge rate.

We observed that PPC took seriously their stewardship role for ensuring that requirements surrounding campus construction projects were identified and integrated into the projects.

Management agreed to all corrective actions recommended to address risks identified in these areas. Observations and related management corrective actions are described in greater detail in section III of this report.

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## II. INTRODUCTION

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### Purpose

The purpose of this audit was to examine costs of construction and maintenance facilities projects that have been charged to campus units and determine if costs are reasonable, have been properly allocated; and to determine if the associated project was cost effective.

### Background

Facilities projects at UCSC are of two broad types: construction and maintenance. Physical Planning & Construction (PPC) oversees planning, design, and construction required to construct or alter facilities for the UCSC campus as well as for the Marine Science Campus, Mount Hamilton, Big Creek Reserve, and Monterey Bay Education Science and Technology Center, and 2300 Delaware Avenue. Any alterations to these facilities must be with the approval of the associate vice chancellor for PPC (campus architect) and must be accomplished under the supervision of PPC personnel. Physical Plant is responsible for providing services for the safe and efficient operation, maintenance and repair of the campus infrastructure and physical assets.

PPC and Physical Plant are separate organizational units within the Business and Administrative Services Division. There are points of similarity and differences between these two units. For example, Physical Plant has a Work Management department that provides project management services for repair and replacement projects, and uses PPC contracting services and its archive of construction documents. PPC provides project management for major maintenance work for Colleges, Housing and Educational Services.

Although the majority of Work Management project managers' time is recharged, their largest customer is Physical Plant, for which they manage OMP-funded projects, as well as deferred maintenance projects, and the Strategic Energy Partnership Program projects. Further, approximately 20 percent of its maintenance projects are recharged to other campus units.

Aside from general services provided to the campus, for which PPC is allocated general funds, PPC does not fund any of its projects. PPC project funding comes from various sources depending on the type of project. For example, major and minor capital projects are funded with multiple fund sources, such as state funds, external financing, campus funds, university funds, or gift funds. PPC recharges these projects for its project management.

Capital project costs are categorized in different ways. The UCOP Budget Office provides the following categories for project costs in its Capital Improvement Budget form:

0. Site Clearance
1. Building Construction
2. Exterior Utilities
4. Site Development
5. External Fees e.g. external architect and engineering firm

6. PPC Internal Fees e.g. PPC project management, inspection, bidding services, contract administration, etc.
7. Surveys, Test, Plans, Specifications
8. Special Items, e.g. fire marshal review or geological review
9. Construction Contingency
3. Equipment

Costs 0, 1, 2, & 4 are the costs of construction; the remaining costs, aside from contingency and equipment costs, are referred to as soft costs.

There are soft costs that the campus has little control over, such as the cost of state and local permits, surveys, tests, fire marshal review, inspection, etc. The UC Facilities Manual provides policy and procedures for hiring outside architecture and engineering firms, which include advertising or selecting from a pool, and a screening process depending on the amount of the anticipated contract sum. Fees for consultant design services on major capital improvement projects follow guidelines set by UCOP.

Initially, the method for minimizing construction costs is by competitively bidding the contract. Formal competitive bidding is required for contracts estimated to be worth more than \$100,000; informal bidding is required for contracts between \$50,000 and \$100,000; and negotiated contracting for contracts less than \$50,000. Once construction begins, changes in the contract sum are controlled by change order procedures specified in the contract, which includes verification by campus inspectors and the project manager.

We reviewed bidding, change order and funding requirements during a system-wide construction audit in FY12 and concluded that PPC maintained effective internal controls over these procedures and was in compliance with applicable UC construction policies and procedures.

The cost of PPC and Physical Plant personnel involved in facilities projects is controlled by hourly rates reviewed and recommended by the campus Direct Costing Committee and project budgets agreed to with the user/requestor. The Direct Costing Committee has procedures for the annual review of recharge rates, which requires justification of each rate and includes comparisons with hourly rates of local outside vendors and UC campuses. See Appendix E for further information on recharge rates.

Ultimately, the cost-effectiveness of a project is determined by whether or not the project was completed within the time and budget agreed on, and fulfilled all the programs contracted or agreed to.

Major capital projects<sup>1</sup> require standard planning steps that involve different campus units, such as Capital Planning & Space Management (CPSM), UCOP and the Regents; smaller projects do not have as many requirements. Consultations with CPSM and the campus client to clarify the

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<sup>1</sup> Major capital projects have cost estimates exceeding \$750,000; minor capital projects are between \$35,000 and \$750,000; smaller projects are up to \$35,000.

project definition and get a sense of the project scope precede agreement to go forward with a project. At this early stage, a requesting unit may learn that the project will exceed its budget and decide not to go forward. As PPC and Physical Plant are responsible to ensure personnel time is funded, potential customers can expect to be recharged for time spent on consultations and estimates. PPC has a policy of providing two hours for consulting free of charge to potential customers. Different UC campuses have different practices regarding this. See Appendix C for more information.

## Scope

We assessed the costs of UCSC facilities projects by means of the following approach:

- We decided to restrict our review of PPC projects to current construction and facilities requests (CFR) with budgets ranging from \$10K to \$300K, and current Physical Plant projects. There were exceptions when we examined why larger proposed projects did not go forward.
- We surveyed campus units who are customers of PPC and Physical Plant to obtain feedback on projects they had done.
- We contacted management and staff of PPC and Physical Plant to understand their practices and procedures and obtain current project lists to select samples for testing.
- We reviewed information systems used by these units, such as FAMIS for billing project costs, and unit spreadsheets to assist with managing projects.
- We tested FAMIS cost data to ensure data accurately entered the campus financial information system, and to look for unreasonable costs.
- We surveyed UC campuses to understand how they organized for facilities projects and how they charged for costs, especially if they provided any services gratis to help reduce the burden of requesting units with limited budgets.
- We reviewed PPC and Physical Plant submissions to the campus Direct Costing Committee for FY14 and FY15 recharge rates, and reviewed the Committee's recommendations to the VC for Planning & Budget, for approval of recommended FY14 rates.
- We reviewed examples of project requests that did not move forward due to insufficient funds.

**III. OBSERVATIONS REQUIRING MANAGEMENT CORRECTIVE ACTION**

<b>A. Independent Review of Facility Project Administration and Management Practices</b>		
Opportunities exist for obtaining a subject area expert to lead a peer review or conduct an examination of campus structure for delivering cost effective and client engaged facility administration and project management services.		
<b>Risk Statement/Effect</b>		
Frustration develops and disharmony results when campus units believe that the campus unit entrusted with the construction of campus facilities is not cost effective or striving to assist them in projects in support of their programs.		
<b>Agreement</b>		
<b>A.1</b>	VC BAS will consider engaging with a UC or higher education peer group or subject area experts in leading a self-assessment evaluation of PPC facility project administration and project management activities including funding, structure, and customer engagement.	<b>Implementation Date</b>
		7/15/2015
		<b>Responsible Manager</b>
		VC BAS

**A. Independent Review of Facility Project Administration and Management Practices – Detailed Description**

During our review, we heard about differences existing between the costs of campus facilities projects and construction or renovation projects done privately off-campus. We heard from campus PPC and from other UC campuses facility groups that it was not uncommon throughout the UC system and campuses across the country for there to be complaints that the cost of construction and renovation at campuses was exorbitant.

We were told that campus costs are affected by requirements to meet more stringent codes, UC policies, efforts to reduce future operating costs, aesthetic requirements, and programmatic needs. We were informed that these include:

- Identifying compliance with applicable building codes, fire/life safety regulations, accessibility requirements, campus building and design standards, and University of California policies
- Assessing existing building conditions and utilities
- Adhering to all Environmental Health and Safety requirements
- Vendor compliance with high cost insurance requirements, bond requirements, and prevailing wage requirements

- Maintaining and contributing to the aesthetic integrity of the campus
- Designing for cost effective maintenance
- Coordinating with campus committees, including the Design Advisory Board and the Campus Planning and Stewardship Committee
- Integrating exemplary energy efficiency
- Leveraging project opportunities, challenges and constraints

Further, we were informed that each campus has its own constraints and opportunities depending on its location. In particular, we were told that at UCSC there are geographic challenges that require additional testing, such as testing for sink holes; the effect of which can require the need for additional foundation reinforcement or even moving the building site to a different location.

We were told that local contractors do not have the insurance coverage adequate for large capital projects, forcing us to draw contractors from the Bay Area, and that typically involved additional costs to transport and store equipment, materials and labor. We were told that with so much construction work in the Bay Area, big contractors have little incentive to bid for jobs at UCSC, and that the cost of construction in the Bay Area is escalating at 10%-12% annually. In addition, we were informed the escalation rate in Los Angeles and San Diego was approximately 3%. We confirmed this information by reviewing a report developed by a construction consultant.

These were all conditions that PPC would share with campus clients when they were alarmed by the high costs of facility construction projects on campus.

Our review of facility projects costs, including information obtained from other UC campuses, provided us with the following understanding:

- All UC campuses are dealing with the same problem of paying for facility projects, whether construction or maintenance, with significant reductions in state funds.
- Consequently, UC campuses charge project costs to the project that benefits from those costs. Project budgets are funded variously, such as by state funds, university funds, campus funds, divisional or unit funds, gift funds, borrowed funds, etc. Campus funding is used for services that serve the campus as a whole, such as time spent on developing the Long Term Development Plan.
- Campuses attempt to reduce the cost of facility projects through strategic use of resources, e.g.
  - Different organization structures
  - Greater use of in-house personnel for cost estimates and design work.
    - There are limits to in-house service as the complexity of projects may require outside consultants and the volume of projects may not justify having dedicated cost estimators or design teams.
    - Requirements for obtaining qualified outside consultants economically are provided in the UC Facilities Manual.

- Use project managers with credentials sufficient for the project but not greater and therefore more expensive than necessary.
- Construction costs are held down mainly by competitive bidding and campus scrutiny of change orders. Procedures for such bidding are included in the UC Facilities Manual.
  - Competitive bidding does not guarantee the best price, but it is generally considered the best method to do so, and it is the law for projects over \$100,000.
- Campuses help project requestors through customer relations, e.g.
  - Provide information on the difference in costs between campus facility projects and home or other non-campus construction projects.
  - Provide some service gratis, such as time for initial consultations.

We understand that there are limits to what a campus can do to reduce facility project costs. Costs are affected by standards encoded in law and standards that have been adopted by the University and its campuses to achieve desirable goals. Applying these standards may not be the most cost effective building method in the short term, but would be expected to result in safer facilities with longer life expectancy, lower maintenance costs, and fit campus aesthetics and values. Campus architects and project managers have the responsibility for considering these elements and using their experience and expertise in interpreting and applying these factors when advising and overseeing campus construction projects.

There was a lot of information available to describe why facility projects costs were so high system-wide and on this campus. While we were able to test the costs of a selected number of projects to see that costing practices were generally appropriate and reasonable, we did not have a basis or expertise on which to evaluate the methods used by this campus to deliver the most cost effective project administration and management services. Responses from other campuses to our survey were not sufficient in describing alternative facility project delivery models that could be shared on this campus. As a result, it may be beneficial for the campus to have a peer review or evaluation of its facility project administration, project management, and costing practices and added engagement with its clients to see if there are areas of improvement that could be realized.

<b>B. Communicating Expectations Facility Project Costs</b>		
Opportunities exist for helping prepare clients for the cost of projects by including this information on PPC and Physical Plant websites.		
<b>Risk Statement/Effect</b>		
Project requesters may be unnecessarily surprised by the cost of a potential project, leading to distrust and avoidance of the campus procedures for carrying out facility projects.		
<b>Agreement</b>		
<b>B.1</b>	PPC in cooperation with Physical Plant will develop information on their websites that prepare potential customers for what they can expect regarding facility project costs.	Implementation Date
		12/31/2014
		Responsible Manager
		Campus Architect
<b>B.2</b>	Physical Plant in cooperation with PPC should/will develop information on their websites that prepare potential customers for what they can expect regarding facility project costs.	Implementation Date
		03/01/2015
		Responsible Manager
		Director, Physical Plant

**B. Communicating Expectations Facility Project Costs – Detailed Description**

During our survey of customers of campus facilities projects, we heard complaints that projects cost too much. We learned through our survey of the costs of facilities projects system-wide, that such complaints are not uncommon. We saw how PPC provided two hours of consultation gratis to help customers with potential projects to define their projects and gain an understanding of what to expect. Similar efforts were made by other campuses, although some campuses made no excuses for charging all time spent on projects or potential projects. We found only two campuses within the UC system that provided explanations on their websites of what makes building and renovation projects at the university so expensive to prepare their customers for what they can expect.

(See <http://www.fm.uci.edu/TradesEstimateGuide.pdf> and <http://campus-care.ucdavis.edu/renovations/>)

We believe our campus has an opportunity to take those two campuses' example to attempt to inform campus clients of the costs involved in facilities projects.

<b>C. Consultant and Project Management Costs</b>		
Opportunities were identified for possibly reducing the costs of consultants.		
<b>Risk Statement/Effect</b>		
Employing consultants for cost estimates and design work when this could be done internally unnecessarily increases the cost of a project.		
<b>Agreement</b>		
<b>C.1</b>	PPC will evaluate the use of in-house staff for cost estimates and design work.	Implementation Date
		12/31/2014
		Responsible Manager
		Campus Architect

**C. Consultant and Project Management Costs – Detailed Description**

Project studies, cost estimates, and design work provided by campus personnel are potentially less expensive than provided by external consultants. Therefore, this provides an opportunity to reduce costs for minor construction projects, provided PPC has sufficient staff time for its licensed architects and engineers.

The extent to which project costs could be reduced by adopting a practice that takes advantage of this opportunity would depend upon the individual projects themselves. Some projects may involve problems that would require specialized input from consultants. It may even be that the cost reductions available by utilizing internal designers would not bring project costs within the range of a requester’s budget, and the project would have to be dropped anyway. These are variables that would have to be considered before making any significant changes to current practice. Nevertheless, the campus architect and his team may want to evaluate this opportunity.

<b>D.</b>	<b>Work Management Project Manager Recharge Rates</b>					
<p>The Work Management project manager recharge rate has been disproportionately lower than their PPC equivalents for the past several years. Physical Plant’s information system, FAMIS, did not upload recharge hours correctly for project managers, resulting in a miscalculation of recharge expenses and an inaccurate balance of revenue and expenses on its request for a new recharge rate.</p>						
<b>Risk Statement/Effect</b>						
<p>A lack of consistency in recharge rates charged for similar campus activities can lead to questions about PPC and Physical Plant costing practices and influence the behavior of which unit is used to provide services. The reliability of Physical Plant costing practices and charges to campus users is dependent on the ability of its systems like FAMIS to provide accurate data uploads.</p>						
<b>Agreements</b>						
<b>D.1</b>	Physical Plant will correct the error in FAMIS and verify hours are uploaded correctly to the data warehouse.	<table border="1"> <tr> <td data-bbox="1162 795 1471 852">Implementation Date</td> </tr> <tr> <td data-bbox="1162 852 1471 909">07/01/2014</td> </tr> <tr> <td data-bbox="1162 909 1471 966">Responsible Manager</td> </tr> <tr> <td data-bbox="1162 966 1471 1077">Business Manager, Physical Plant</td> </tr> </table>	Implementation Date	07/01/2014	Responsible Manager	Business Manager, Physical Plant
Implementation Date						
07/01/2014						
Responsible Manager						
Business Manager, Physical Plant						
<b>D.2</b>	Physical Plant will search for similar transaction types and instances where FAMIS could have incorrectly uploaded information to the data warehouse.	<table border="1"> <tr> <td data-bbox="1162 1083 1471 1140">Implementation Date</td> </tr> <tr> <td data-bbox="1162 1140 1471 1197">07/01/2014</td> </tr> <tr> <td data-bbox="1162 1197 1471 1253">Responsible Manager</td> </tr> <tr> <td data-bbox="1162 1253 1471 1365">Business Manager, Physical Plant</td> </tr> </table>	Implementation Date	07/01/2014	Responsible Manager	Business Manager, Physical Plant
Implementation Date						
07/01/2014						
Responsible Manager						
Business Manager, Physical Plant						
<b>D.3</b>	VC BAS will consider engaging a review of the Physical Plant recharge system including the recording and collection of labor hours, recharge methodology, and accuracy of the FAMIS upload to the data warehouse.	<table border="1"> <tr> <td data-bbox="1162 1371 1471 1428">Implementation Date</td> </tr> <tr> <td data-bbox="1162 1428 1471 1484">12/31/2014</td> </tr> <tr> <td data-bbox="1162 1484 1471 1541">Responsible Manager</td> </tr> <tr> <td data-bbox="1162 1541 1471 1629">VC BAS</td> </tr> </table>	Implementation Date	12/31/2014	Responsible Manager	VC BAS
Implementation Date						
12/31/2014						
Responsible Manager						
VC BAS						

**D. Work management Project Manager Recharge Rates – Detailed Description**

Recharge rates for Physical Plant project managers (\$60/hr.) were considerably lower than equivalent project managers at PPC (\$90/hr.) Between FY08 and FY14, the rate for project managers within Work Management remained constant at \$60/hour, according to a Planning & Budget report.

During each of the past annual recharge reviews by the Direct Costing Committee, projected operating balance of revenues and expenses did not appear to require a rate change. Campus clients who were aware of this difference were able to recognize significant cost savings by using Physical Plant personnel instead of PPC personnel for project management services, when available.

However, the need for a rate increase became apparent when Physical Plant's initial recharge rate submission for FY15 indicated a FY13 actual deficit balance of \$128,056. The previous year's submission had a projected positive balance of \$32,739; this is a difference of \$160,795. The FY15 submission's projected deficit for FY14 was \$171,245 and the projected deficit for FY15 was \$147,806.

We examined the large discrepancies between the projected and actual balances for FY13 and the projected deficit balances for FY14 and FY15. Our conclusion was that either the recharge hours reported for Work Management were inaccurate or that Physical Plant had not collected all the income it was due. Physical Plant reviewed Work Management's time cards and discovered that the hours recorded in FAMIS did not upload into the data warehouse correctly. This occurred on a large project that only Work Management was engaged in, namely the Wash Bay Project. That project was split funded, contributing to the problem FAMIS had in uploading the recharge hours.

Once the error was discovered, Physical Plant corrected the recharge rate package and resubmitted it to the Direct Costing Committee. The percentage of recharge hours to total hours for FY13 was corrected from 67% to 52%. This change did not affect the revenue section of the comparative income statement (Template 2), but did change total expenses from \$580,370 to \$454,786. Consequently, the net of revenue vs expenses was changed from -\$128,056 to -\$2,472, or a change of cumulative deficit as a percentage of expenditures from -22.06% to -0.54%.

Projections of total revenue and expenses for FY14 and FY15 were unchanged. However, as a result of the FY13 reduced deficit, the total operating balances for FY14 and FY15 which included the previous year's surplus or deficit, as well as their percent of expenditures, were changed accordingly. For example, the projected percent of expenditures for FY14 changed from -38.87% to -10.37%; and FY15's changed from -22.43% to 4.73%. The projected balance for FY14 was based on a recharge rate of \$60/hr., while the projected balance for FY15 was based on a recharge rate of \$75/hr.

As changes in expenses also included a change in employee benefits from \$148,713 to \$115,419, Physical Plant is in discussions with Planning & Budget to reimburse Physical Plant for the portion of benefits payback for FY13 that were overpaid.

Physical Plant has requested an increase in its project managers' recharge rate from \$60/hr. to \$75/hr. Refer to Appendix E. PPC and Physical Plant Recharge Process for a detailed discussion on the recharge structure.

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**APPENDIX A – Summary of Work Performed and Results**

<b>Preliminary Survey</b>	
<b>Work Performed</b>	<b>Results</b>
<ul style="list-style-type: none"> <li>• We obtained the following:                             <ul style="list-style-type: none"> <li>• Org charts of Physical Planning and Construction (PPC) and Physical Plant.</li> <li>• Operating budgets for PPC and Physical Plant (with interest mainly in Work Management).</li> <li>• Staffing reports for these two units.</li> </ul> </li> <li>• We interviewed personnel of these units to understand how the costs of facilities projects were defined, accumulated, recorded and charged.</li> <li>• We learned how information systems were used for recording facilities project costs and obtained an account on the facilities management system used for billing, viz. FAMIS.</li> <li>• We interviewed a senior educational facilities planner from Capital Planning and Space Management, to understand how costs are defined and managed for major capital projects, and the step-by-step process by which capital projects are managed.</li> <li>• We interviewed campus requesters of facility projects to obtain feedback on their experiences working with PPC and Physical Plant.</li> </ul>	<p>PPC employees are paid from recharge funds charged to facilities projects, except for 2.44 FTE that is paid from 19900 funds for general services not charged to facilities projects. This appeared to be a common practice at other UC campuses.</p> <p>Physical Plant project managers are paid from 19900 funds even for work done on non-state funded facilities, through an approved but unusual recharge rate process.</p> <p>The costs of facilities projects are entered into the facilities management system, FAMIS. Actual time employees spend on projects is recorded on time sheets and entered into FAMIS. Other costs, such as invoices from contracts are also entered into FAMIS. FAMIS interfaces with the campus financial information system, FIS Banner. At the beginning of each month cost data is uploaded from FAMIS into Banner to charge the relevant accounts and obtain corresponding revenue.</p> <p>The current version of FAMIS does not provide reports in which project managers can see all project costs in one easy to access report. Consequently, the PPC Business Operations creates such reports in the form of a spreadsheet for PPC project managers. Different spreadsheets are created by Physical Plant administration to show project budgets and costs; project managers may also create their own spreadsheets according to their needs. The Physical Plant business manager is working with the FAMIS vendor and related report vendor to develop more user-friendly reports.</p> <p>The CPSM senior education facilities planner has developed a Project Budget Workbook (Excel), in cooperation with PPC personnel, to help project managers manage their capital projects consistently and uniformly. Further, we found the process by which capital projects are managed from the start with involvement of Capital Planning &amp; Space Management and budget approvals different from a simpler process for smaller projects.</p> <p>Our survey of campus requesters of facility projects revealed concerns for the costs of PPC managed projects at UCSC. Those concerns were of two types: 1) frustration that estimated project costs exceeded budgets and killed potential projects; and 2) that unreasonable costs have occurred during construction.</p>

Survey of UC Campuses	
Work Performed	Results
<ul style="list-style-type: none"> <li>We reviewed the facilities units' websites of all 10 UC campuses to identify their organizations, how they charged for projects, and what measures they took to reduce initial costs, such as for consultations, and if they attempted to prepare project requesters for the cost of campus facilities projects.</li> <li>We wrote campus architects or other management personnel within facilities units and asked if and how they attempted to reduce such costs.</li> </ul>	<p>See Appendix C (Survey of Project Cost Estimate Funding Provided at other UC Campuses) &amp; D (Construction and Maintenance Organizations at UC Campuses).</p>
Charge Rates	
Work Performed	Results
<ul style="list-style-type: none"> <li>We obtained recharge rate submissions for FY14 and FY15.</li> <li>We obtained the Direct Costing Committee's recommendations to the VC of Planning &amp; Budget for FY14</li> </ul> <p>We analyzed this information to attempt to determine if the approved recharge rates for facilities project managers were reasonable.</p>	<p>See Appendix E (PPC and Physical Plant Recharge Process)</p>
Testing of Project Costs	
Work Performed	Results
<ul style="list-style-type: none"> <li>We reviewed samples of current smaller facilities projects that were charged to units. For Physical Plant, this excluded projects paid for by its own general funds budget.</li> <li>We looked to see if information entered into FAMIS uploaded accurately into FIS Banner.</li> <li>We assessed the reasonableness of costs</li> </ul>	<ul style="list-style-type: none"> <li>Based on our review of Physical Plant projects, we gained confidence that cost data accurately uploads into campus ledgers (FIS Banner).</li> <li>We received adequate explanations for every cost we questioned.</li> <li>Unlike state-funded capital projects where soft costs are required to stay within a standard percentage of construction costs, smaller projects do not have this requirement or expectation. The main factor for determining the satisfactoriness of the cost of project management on a project is if the project is completed on time and within budget.</li> <li>We found that the smaller projects managed by PPC were mainly Housing-related maintenance projects. Those projects that were over budget were projects that required work immediately and could not wait for detailed estimates.</li> </ul>

**APPENDIX B – Examples of Two Recent Projects – Expectation Gap of Costs**

**Request Example No. 1 - Project Request and Expectation**

A project requester got a local contractor to visit a site and provide an estimate to build three rooms there. The contractor estimated that to build a few walls and provide basic cosmetic upgrades would be \$50,000. This was the amount the requester believed would be the budget for this project. The requester contacted PPC to initiate discussions on going forward with this project.

**PPC Action and Response**

The PPC project manager reviewed the request for project and provided a list of the issues needing resolution before PPC could proceed with the project to set up the rooms requested:

- Research and determine the area (fire) separation upgrades required by code. Potentially a significant cost, probably not included in requester’s contractor’s estimate.
- Required modifications to the fire sprinkler and fire alarm systems. Modifications to the existing sprinkler system (as required by the UC Facilities Manual) will involve demolition of the abandoned air plenums; another unforeseen cost.
- Required heating and ventilation modifications (i.e., boiler capacity calculations and upgrades, building management system controls modifications, ductwork modifications including smoke/fire damper and balancing damper modifications, heating hot water line and coil modifications and wet and dry side balancing.)
- Electrical upgrades (lighting, equipment, stand-by and emergency power needs)
- Data needs (wireless, jack density and required ITS closets)
- Security needs (cctv, access controls, lighting and access restriction to hazardous areas in the building)
- Architectural improvements including accessibility issues (furnishings, signage, doors, outlets and existing hazards)
- Landscaping modifications and traffic impact fees required by CEQA.
- Before design work can begin, confirmation is needed from the requester of the intended use of the space, e.g. chemical use with quantities, power tools, hot work, special electrical or data needs, etc. This information impacts the ventilation and fire/life safety code requirements for the space.

*“It is not possible to provide an accurate opinion of the probable cost until we determine what improvements are needed for occupancy and for the requester’s operation.” - Project Manager*

PPC obtained a professional services proposal for an architectural and engineering study and cost estimates for this project. The fee for this service would be \$35,000. Design and construction costs would be in addition to this and could result in project costs being many times more than the requestor’s original idea for the budget.

### Request Example No. 2 - Project Request and Expectation

A division proposed a conference center at the UC Santa Cruz 2300 Delaware Avenue site/location. The full project included conference space for up to 200 people, with audio-visual improvements to the room and three projection screens, a catering kitchen, a multipurpose break/reception area, and a breakout room for 20 (in addition to one existing breakout room).

A donor was willing to provide funds of up to \$2M for construction and up to \$1M for an endowment (approximate yield, \$42K/year) to fund some of the ongoing operations. The donor and requestor preferred a design-build project delivery mode.

### PPC Action and Response

The EVC authorized the allocation of \$50K of campus funds to begin a fast-tracked, two-month initial programming and feasibility study to identify issues that needed resolution and provide information that would inform the campus decision of whether or not to proceed with the proposed project.

Contributors to the study included personnel from the requesting division; PPC; Planning & Budget/Capital Planning & Space Management; Colleges, Housing, and Educational Services; Physical Plant; Police Department; Real Estate Office; Transportation and Parking Services; Fire Department; Information Technology Services; construction consultants (5); and conference center consultants (2).

The study concluded that the full project as described in the conceptual program plan would have a total cost of \$5,323,000 (construction, \$4,659,000; other one-time costs, \$664,000). This clearly exceeded the donor's target.

The study investigated potential advantages and estimated savings of design-build delivery. Concerns about program viability remained even in this scenario based on the physical configuration of the existing space

Modifying space in this building for public assembly use (>50 people) resulted in significant and unavoidable costs, and these costs were quantified for the first time during this study.

The study used these unavoidable costs to explore the minimum possible project, focusing only on the required code compliant upgrades and seven essential program elements. This would prepare the site for eventual construction of a conference center, but would not deliver a functional conference center. The total cost of the minimum project was \$3,520,000 (construction, \$3,268,000; other one-time costs, \$252,000). This also exceeded the donor's target.

The total operating costs in Year 1 were estimated to be \$438,000 (fixed costs, \$265,000; variable costs, \$173,000), with increases in Year 2 to \$560,000 and Year 3 to \$776,000 (fixed costs with inflationary increases; variable costs reflecting higher use). The estimated yield from the \$1M endowment at \$42,000/year would only cover a portion of the operating costs. It was assumed that paid usage of the conference center would be sufficient to meet these costs; otherwise they would be the responsibility of the requesting division.

If the project were to move forward, further studies would have to be done, and these could reveal additional costs. A formal business case analysis was not included within the limited scope of this study. Consequently, the study did not confirm or modify its assumptions about the conference center's financial viability. The campus decided to not move forward with this project.

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## **APPENDIX C – Survey of Project Cost Estimate Funding Provided at other UC Campuses**

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Costs of construction project estimates and who pays these costs differs between UC campuses as demonstrated in the following survey. Costs of estimates, if charged to the client, might make it prohibitive in initiating a project. This survey was performed to determine any differences in the way campuses were funding cost estimates.

### **UC BERKELEY**

Information was sparse. We could not determine what estimating services were provided by campus or charged to a project client.

### **UC DAVIS**

Building Maintenance Services and Design & Construction Management (DCM) are no longer charging up-front for project estimates on recharge work. Estimating costs will only be billed after a project is approved. If the project is not approved, there will be no charge for the estimate. These costs are covered by the vice chancellor's discretionary funds.

The primary goal of this policy is to remove a significant barrier that has prevented many campus customers from consulting with Facilities Management or DCM on project plans and budgets.

For major capital projects, a small amount of initial consulting is provided for free. Free billable hours are limited to about eight or less, and are charged to a temporary account and written off as non-billable if the project does not proceed or transferred to a requisition if the project moves forward.

For minor capital projects, free estimates are provided up to \$1,500 worth, but are rare, perhaps one per month.

Facilities Management has a free online paint job estimator application.

### **UC IRVINE**

The construction unit (Design & Construction Services) did not provide information on costs. It is responsible for the implementation and management of the Capital Improvement Program, which has a standard procedure managing capital projects. Facilities Management, in addition to maintenance, accomplishes alterations, improvements, and renovations of physical facilities.

Facilities Management provided the following information:

- Estimates are not done for standard jobs < \$1K.
- Estimate requests for jobs over \$1K are free, except in the rare case when extensive investigative work is needed to prepare an estimate.
- There is a dedicated estimator (estimator/trades construction coordinator) who responds to requests for estimates within 72 hrs.
- From the time of the scheduled project walk, it will take 2-3 weeks to provide an estimate.

**UC LOS ANGELES**

Capital Projects works with large projects and these tend to require input from consultants early in the planning study; time is charged to the customer/project except for initial meetings to discuss the project definition.

Facilities Management:

Estimates completed by Crafts & Alterations or the Utilities Department are at no cost to customers and are provided typically within two weeks of the request. Customers are encouraged to ask for an estimate whenever they are requesting Facilities services and are uncertain what the cost will be. Crafts & Alterations or the Utilities Department may work on estimated jobs costing up to \$50,000 including the cost of materials.

Estimates for jobs between \$50,000 and \$250,000 are done by Design and Project Management. Academic departments may receive several hours of gratis project management time to assist in obtaining an estimate. Non-state funded areas will be charged for the project management time spent preparing the estimate.

**UC MERCED**

The construction unit, Design and Construction, provided no information on free services, such as for consultations or estimates.

The maintenance unit, Facilities Management, in its Billing Q&A, described all material, supplies and time spent on a job request would be recharged.

**UC RIVERSIDE**

The construction unit did not provide information on consultations or estimates.

The Physical Plant unit provides free consultation and design services, and free estimates for renovation projects not exceeding \$50K in labor costs, and provides contracting services for projects not exceeding \$100K.

**UC SAN DIEGO**

Facilities Design & Construction had no information about its costs.

Facilities Management (FM):

- The first hour of consultation is free. If extensive pre-estimate work is require, the customer may be charged hourly. This implies that cost estimates are not free.
- FM adds 15% to project costs to cover any expenses involved in managing it. For example, it pays for work service center contract processing and for the project manager's time throughout the process. Cost estimating, which is a function of the project manager, is probably included in the 15%. Nothing was said about the cost of estimates for projects that do not move forward; however, I assume that time would be charged to the customer.

- A licensed professional architect or engineer must be involved in projects that require plans and specifications that present complicated issues, such as structural review or aesthetic appearance.
- Projects need to go to public bid when the cost exceeds \$100K, per university policy and procedures.
- Renovations and alterations projects are funded through the recharge process whereas minor capital improvement projects are funded through a plant account established prior to the bid/award process.

### **UC SAN FRANCISCO**

Capital Programs provided no information on costs for estimates.

Facilities Services provides estimates on a recharge basis, for a fee of \$55. This recharge is waived if the customer chooses to proceed with the work requested. Facilities Services provides up to one hour of craft time for providing an estimate to a customer. Beyond this threshold level, Facilities will recharge time and materials for estimates. Any costs beyond Facilities staff time such as consultant fees, professional service fees, and any operational costs related to obtaining the estimate are charged to the customer.

### **UC SANTA BARBARA**

No information was provided concerning free cost estimates, free design services, or free project management, except that 1 hour of feasibility studies for a project that does not move forward appears to be free. Aside from this, my impression based on available information on the relevant websites is that such costs are charged to the customer, whether the project moves forward or not – after one hour.

### **UC SANTA CRUZ**

PPC provides a free 2-hr. consultation to discuss a potential project. One purpose of the consultation is to determine the minimum funding needed for an estimate. Generally, \$2,000 is the minimum cost for an estimate, but it could go higher depending on project complexity.

Physical Plant charges for estimates. Most projects go forward due to the nature of work that Physical Plant is requested to do, such as repair or replace failed facilities.

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## **APPENDIX D - Construction and Maintenance Organizations at UC Campuses**

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There is little variation in the structure of construction and management organizations among campuses. Like UCSC, most campuses included these two units within a business administration division. However, we saw on one campus these two units formed a separate division, and in other campuses the construction unit was divided between services for major construction as one unit and smaller construction in a different unit.

### **UC BERKELEY**

Construction services (Capital Projects) and maintenance services (Physical Plant – Campus Services) are included in the Division of Facilities Services, under a vice chancellor who is a registered architect. Facilities Services also includes Real Estate Services.

### **UC DAVIS**

The UC Davis construction unit (Design & Construction Management) and maintenance unit (Facilities Management) are included in the Division of Administrative and Resource Management as part of that division's facilities and land management area of support.

### **UC IRVINE**

The construction unit (Design & Construction Services) and the maintenance unit (Facilities Management) are units within the Division of Administrative and Business Services.

### **UC LOS ANGELES**

UCLA has two construction units: one for capital projects and the other for projects that are not capital projects.

The capital projects construction unit, (UCLA Capital Programs Design & Construction), is included in the Capital Programs unit of the Office of the Chief Financial Officer. Capital Programs is responsible for the conceptualization, planning, design and construction of new building and major renovation projects at UCLA (i.e. capital projects \$750K and above).

Facilities Management, a unit within the Division of Administrative and Business Services includes a maintenance department, Maintenance & Alterations, and a smaller construction projects unit, Design & Construction Services, which provides project managers, architects, and engineers for construction projects that are not capital projects.

### **UC MERCED**

The construction unit, Design and Construction, and the maintenance unit, Facilities Management, are units included in the Division of Business and Administrative Services. Facilities Management services include the estimate, scheduling and management of minor alterations and repairs.

**UC RIVERSIDE**

The construction unit, Capital Projects, Architects, and Engineers<sup>2</sup>, and the maintenance unit, Physical Plant, a subunit of Facilities TAPS & EH&S; both are units of Business and Administrative Services. Physical Plant performs maintenance and repairs (preventive maintenance, deferred maintenance, trouble calls, etc.) on the state-funded facilities, utilities, and infrastructure and performs alterations requested by its customers on a recharge basis.

**UC SAN DIEGO**

Facilities Design & Construction is responsible for major construction projects. Facilities Management handles maintenance and renovation and alterations. Both are units of the Division of Resource Management and Planning, with Facilities Management being a sub-unit of Campus Strategic Planning Initiatives, which includes Capital Planning.

**UC SAN FRANCISCO**

The construction unit, Capital Programs, and the maintenance unit within Campus Life, Facilities and Administrative Services, are two units of the Division of Finance & Administration. Capital Programs manages the design and construction of new buildings and facilities, renovation of existing space, coordination of customer relations and upgrades to infrastructure systems.

Facilities Services became its own organization separate from Capital Programs in 2008 and as of November 1, 2012, Facilities Services (formerly Facilities Management) became a service line of Campus Life Services. Its services include project management of small- to mid-size projects, generally in the range of \$500 to \$50,000. Services may include development, design, planning, and scheduling. These projects include minor remodels and small projects designed to improve, repair, or enhance existing campus work environments or systems. It provides consulting services to assist in planning, schematic development, design development as well as diagnostic investigations. It provides in-house design services for mechanical and electrical systems engineering for small to medium sized projects, and third party design review for all construction projects.

**UC SANTA BARBARA**

Construction services and maintenance services are included in the same unit, Campus Design and Facilities (headed by the campus architect), which is included in the Division of Administrative Services.

**UC SANTA CRUZ**

The construction unit, Physical Planning & Construction, and the maintenance unit, Physical Plant, are included in the Division of Business Administrative Services.

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<sup>2</sup> UCR org charts on the web had different names for this unit and other dated information.

**APPENDIX E - PPC and Physical Plant Recharge Process**

Both PPC and Physical Plant use recharge rates approved by the VC for Planning & Budget as recommended by the campus Direct Costing Committee, and follow campus policy and procedures for recharge rates. Procedures require annual submissions for recharge rates whether changes in rates are requested or not. These submissions include comparisons with rates of local vendors and other UC campuses for similar positions.

**PPC**

The PPC submission for FY14 rates has the following comparisons (this also includes PPC’s FY14 rates):

	Principal or Sr. Architect or Engineer	Sr. Project Mgr.	Assoc. Project Mgr.	Inspector	Surcharge % for Consultant Project Mgr.
<b>LOCAL VENDORS:</b>					
1		\$120			
2		150			
3		150			
4	\$180				
5	175				
<b>UC CAMPUSES : (Available information)</b>					
UCB FY12	170	159	\$139	\$136	
UCR FY08		142		64	
UCSB FY12	139	113	95	73	
UCSF FY10		208	180	230	15.33
UCSC FY14		114	90	89	18.5

UCSC Recharge Rate Policies state:

***A SEPARATE BUDGET FOR THE RECHARGE IS NORMALLY REQUIRED:***

*All expenses and income associated with each recharge should be set up in a separate fund (generally a 6XXX fund) and normally a separate organization code. Recharge activities with anticipated revenues of \$5,000 or more per year should establish projected revenue projections within the campus’ permanent budget. Permanently budgeted recharge revenue projections need to be adjusted annually to reflect revised projections.*

PPC implements this policy with fund 66600 PPC Services and organization code 641050 PPC Recharge Operations. Further, in the Payroll and Personnel System (PPS), each employee’s time is predictably prorated according to fund source and org code. For example, most PPC employees are 100 percent recharge funded (66600), while only a few are split funded between general funds (19900) for effort spent for general campus services, and recharge funded for time spent on facilities projects.

**Physical Plant**

Physical Plant, on the other hand, has chosen not to use the same recharge approach as PPC. Physical Plant employees work on OMP (19900) facilities and non-OMP facilities, but not at fixed percentages. Consequently, if Physical Plant did provide fixed percentages for example between OMP work and non-OMP recharge work, but the employee's actual time differed from those percentages, transfers of payroll expense would be required after each pay cycle. As this situation applies to most Physical Plant departments (Custodial Services, Grounds Tier, Key Charges, Refuse/Recycling Services, Skilled Crafts Tiers, and Work Management), the number of transfers of payroll expense would be massive and burdensome.

An accommodation was made for Physical Plant in which all employee time expenses, whether for OMP or non-OMP facilities, are recharged to its own accounts for OMP-related work or other accounts for non-OMP work, and revenue credited to service-supplying Physical Plant organization accounts in the form of 19900 funds.

However, in doing so, the recharge related payroll is recorded as 19900 funds. Benefit expenses are automatically funded from the central benefit pool through the campus' auto benefit offset process. This results in excess payments from this pool, as benefits costs are already included in the recharge rates. On a quarterly basis, Physical Plant 'pays back' the recharge related benefits to the campus benefit pool. This requires that the benefits payback must be equal to the benefit amounts utilized in the recharge rate calculations. If the benefits pool payback is less than the amounts provided by the campus benefit pool, the pool would be providing an inadvertent and unrecognized subsidy to Physical Plant's recharge activities.

Within the last few years, Physical Plant requested Planning & Budget to analyze the payback to ensure it was being done accurately. Planning & Budget observed errors in how the payback was made; Physical Plant corrected the errors; and Planning & Budget is now assured the payback is reasonably accurate.

During our review of the Work Management's recharge rate request, we were told initially that the low revenue compared to expenses was due to the benefits payback. We examined this and concluded that the benefits payback only affected the budget subledger and not the financial transaction subledger. Consequently, the payback did not affect recharge revenue. Physical Plant agreed with this assessment.