



# **Public-Private Partnerships: Alternative Procurement Methods for Campus Development in the University of California System**

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# Contents

- Acknowledgements .....3
- The Bay Area Council Economic Institute .....3
- Part I
- Public-Private Partnerships in Perspective .....4
- USCF Neuroscience Building.....6
- UC Davis West Village Project .....7
- Issues & Considerations.....8
- Part II
- UC Merced Case Study..... 10
- Table 1: UC Merced Case Study Plan ..... 11
- Part III
- UC Procurement Process..... 12
- Appendix
- UC Merced Case Study..... 16
- Table 2: UC Merced Construction Inputs ..... 16
- Table 3: University Community North Assumptions ..... 19
- Table 4: Merced Model Case Sensitivities .....21
- Table 5: Merced Model Sources & Uses of Funds  
        P3 Case with 15% Life Cycle Cost Savings .....22
- Table 6: Key Assumptions.....24



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## The Bay Area Council Economic Institute

The Bay Area Council Economic Institute is a public-private partnership of business, labor, government and higher education that works to support the vitality and competitiveness of California and the Bay Area economies. The Association of Bay Area Governments (ABAG) is a founder and key institutional partner.

Through its economic and policy research and partnerships, the Economic Institute addresses major issues impacting the economic development and quality of life of the region and the state, including infrastructure, globalization, science and technology, and governance. By providing fact-based economic analysis, and by convening leaders from diverse communities and sectors, the Institute provides the intellectual infrastructure for policy initiatives that address the competitiveness of the state and regional economies. Its Board of Trustees, which oversees the development of its products and initiatives, is composed of leaders representing business, labor, government, higher education, science and philanthropy.

## Part I

# Public-Private Partnerships in Perspective

This paper has been prepared as a resource for the University of California and other university systems by the Bay Area Council Economic Institute. A previous analysis by the Economic Institute in 2006 (*Investing in California Infrastructure: How to Ensure Value for Money and Protect California's Competitive Position in the National and Global Economy*, available at <http://www.bayareaeconomy.org/keypub.html>) documented the need and opportunity for California to use alternative procurement methods to secure additional capital for infrastructure development and improve related service delivery. This public-private partnership model is now being used in a variety of settings in California, from courthouses to schools and roadways.

This paper explores its potential application in a university setting, and the University of California in particular. It should be noted that the UC system has substantial debt capacity and generally enjoys cost-effective public (bond) financing options; its principal constraint is the capacity to make payments required to support that debt or to support similar commitments to private partners. Nevertheless, with new facilities needed

and resources limited, alternative ways to finance projects and improve service delivery merit consideration, especially when they are tied to innovative revenue models.

What follows is an assessment of the potential merits of Alternative Procurement (AP) or Public-Private Partnership (PPP or P3) methods for long-term projects within the University of California (UC) system, with UC Merced offered as a case study. The case study focuses on the application of global best practices relating to lease/concession-based procurement and financing methods. Overall, the analysis considers current P3 projects within the UC system at several scales: individual structures, sub-campus projects, and larger-scale developments. The ideas offered are not prescriptions, but are intended to stimulate innovative thinking about alternative methods of finance and service delivery. The Economic Institute believes that expanded use of these methods, customized to fit the needs of individual campuses and the UC system, is timely, as P3s are attracting increased attention due to California's financial difficulties, and recent progress has been made in considering P3 methods for important non-campus capital projects within the state, including:

- **LA Measure R**  
In November 2008, Measure R was approved by two-thirds majority in Los Angeles County, committing a projected

\$40 billion to traffic relief and transportation upgrades throughout the county over the next 30 years. Measure R is one of a number of “self-help” county initiatives in the state that generate sales tax revenue to support local transportation projects, which may include public-private partnerships. LA Metro is systematically evaluating P3 solutions as a means to better leverage Measure R funds, stretching \$40 billion in sales tax revenue to address a much larger project scope.<sup>1</sup>

- **California High Speed Rail**

The most current estimated cost to build the 800-mile system is about \$45 billion. Ten billion dollars in state financing was approved by voters in 2008, and \$2.5 billion in federal stimulus funds have subsequently been awarded to the project. The Authority’s finance team anticipates that the commitment of both state and federal dollars will attract private sector funding totaling approximately one third of total project cost and has identified a broad array of public-private partnership opportunities, including project debt financing, vendor financing, system operations and private ownership.<sup>2</sup>

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<sup>1</sup> LA Measure R, Los Angeles Metropolitan Transit Authority

<sup>2</sup> California High Speed Rail Authority

- **Long Beach Court House**

California’s Administrative Office of the Courts (AOC) has short-listed three teams for the DBFOM (Design-Build-Operate-Finance-Maintain) development of the Long Beach Courthouse, a project expected to cost ~\$400 million. The AOC has over 800 California court houses in its jurisdiction, many of which are in need of some form of upgrade or improvement. The total cost of the upgrade program is expected to be in the range of \$10 billion. The AOC expects to use the Long Beach project as a model for many of the projects that it will undertake in the coming years.<sup>3</sup> The new court building will be procured through California’s Performance-Based Infrastructure (PBI) approach and will have a 35-year service agreement.

- **Public Infrastructure Advisory Commission (PIAC)**

The PIAC is getting started on series of state level transportation projects. The \$1 billion Presidio Parkway is the first of a series of projects that are being considered for advancement in a P3 format. Combined with LA Measure R cited above, the collective effort to advance major transportation projects in California promises to be one of

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<sup>3</sup> California Administrative Office of the Courts, Long Beach Court House RFP

the largest transportation improvement programs in the United States in coming years.<sup>4</sup>

▪ **Government Code Section 5956-5956.10**

Local government agencies have seen a significant decrease in tax revenues available to fund infrastructure improvements. Section 5956.1 expresses the intent of the legislature that local government agencies have the authority and flexibility to utilize private investment capital to study, plan, design, construct, develop, finance, maintain, rebuild, improve, repair, or operate, in any combination, fee-producing infrastructure facilities. There are as many 5,956 projects advancing in local communities across California.

There are many P3 applications in play around the world, which taken together reflect a broad menu of AP methods. Virtually all share the common goals and objectives of improving procurement timing, facilitating risk transfer, and attaining improved Value for Money (VfM) and life cycle cost savings. In many respects the University of California (UC) system is ahead of the curve, UC having utilized AP methods for over sixty projects, including student and faculty housing, labs, office buildings and parking structures. Most recently, this list includes two noteworthy projects: the West Village at UC Davis, and the Neuroscience Building at UC San Francisco.

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<sup>4</sup> Public Infrastructure Advisory Commission

The experience with these two projects in particular demonstrates the range of scales and techniques that can be used in applying the P3 model.

### **USCF Neuroscience Building**

UCSF's new five-story, 237,000 square foot Neuroscience Building, a research and laboratory facility, is being built on campus land under a novel public-private model in which the university will ground-lease the site to a specifically-created non-profit corporation, the Campus Facilities Improvement Association. The Association will then lease the site to a private developer that will design, build and hold title to the building pursuant to a sub-ground lease, and lease it back to the university. The university will then occupy the facility and make rent payments until it is ultimately conveyed to the university at the end of the ground lease term.

This approach varies from the classic P3 model, in that financing is not being provided by the developer, but is instead being secured through tax exempt revenue bonds (i.e., P3 developer project delivery has been married to conventional public finance). While benefiting from private construction and management over the life of the project and from tax-advantaged public finance secured through the Association in

recognition of UC occupancy and ultimate ownership, the project arguably stops short of capturing the full suite of P3 model benefits. Typically, successful P3s around the world deliver 15 to 30 percent life cycle cost savings, even taking into account public vs. private financing cost differentials. In such (DBFOM) cases, the value of the improvement in timing, project management and integration may exceed the more limited benefit of public financing. In the case of UCSF's Neuroscience Building, the lengthened time required to secure both public finance and a private partner may ultimately reduce the end-to-end benefit. However, combining public finance with classic P3 construction and service delivery methods appears to offer a viable hybrid strategy.

### **UC Davis West Village Project**

UC Davis has used P3 methods for a number of campus projects, most developed in the last ten years.

Aggie Village, a small faculty/staff housing complex, was the university's pilot P3 project. With a license from the university, a private developer financed and built the project and sold the housing units subject to individual unit ground leases from the university. Under the lease, the university maintains control over the disposition of the units to ensure they are available only to university personnel.

The Colleges at La Rue, a student housing/apartment complex, is also based on a ground lease with a private company, which provided finance, built the structure and related infrastructure, and rents the units to students (i.e., the full P3 model).

West Village, now under construction, is being developed as faculty and staff housing to accommodate university personnel who otherwise face high housing costs off-campus, and to facilitate the development of a new university-centered community. The 130-acre project is part of a Neighborhood Master Plan and the university's 2003 Long Range Development Plan. Like Aggie Village but on a larger scale, West Village will provide 343 housing units, as well as beds in apartment-style units for 1,980 students.

The project will also include a village square with surrounding mixed-use development and 42,500 square feet of retail, as well as the UC Davis Center of the Los Rios Community College District. Development of the community college, an instructional facility, will facilitate stronger Davis ties with the community college system and transfers from the college to UC. The university will bring utilities to the edge of the complex, which will operate under multiple 65-year ground leases (apartments and retail) and 99-year ground leases (faculty housing) and will receive income from both the lease

payments from the developer on the student apartments and payments by resident faculty.

By using P3 methods, the university was able to conserve its capital resources for other uses, and its direct investment of \$11 million is being leveraged to support a \$280 million project.

## Issues & Considerations

P3 best practices embody a number of elements that contribute to the 15 to 30 percent life cycle cost savings and improvement in timing cited earlier. They also may enable UC to change the way it develops large-scale capital projects. Specifically, P3s provide a framework within which UC can better leverage its value creation potential in a more holistic manner, to create significant long term value for the university at large. Ultimately, UC has the ability to make permanent changes in its procurement methods that can enable it to become more financially self-sufficient over the long term.

For P3 methods to be a viable option, the net advantages delivered by private sector involvement in the Design-Build-Finance-Operate-Maintain (DBFOM) model must outweigh the inherent advantage that UC possesses in being able to access tax exempt financing. The model used to finance and

build UCSF's Neuroscience Building reflects a combination of strategies that takes advantage of UC's ability to access tax exempt funding. But does this approach fully exploit value creation potential brought to the table by UC through the capital improvements being planned for Mission Bay? And does a building-by-building approach to project development enable UC to capture P3's full value spectrum? The answers to these questions require an assessment of the elements of value.

- Typically, financing costs are only 25 percent of total project cost. Of this amount the tax-exempt versus private cost of capital differential is in the range of 1 to 2 percent, which conservatively might translate to 5 percent of total project cost. This leaves 95 percent of total cost as presenting opportunities for additional financial improvement. Thus, the advantage of tax exempt funding can be overstated in its contribution to total project cost and value.
- When the potential for risk transfer, improvements in the timing of project delivery, and 95 percent of other costs are weighed against the typical cost savings differential offered by tax exempt financing, the P3 model can, in appropriate circumstances, provide better overall value in the range of 15 to 30 percent of life cycle cost.

- The P3 model includes operations and maintenance (O&M) costs over the life of an asset, so cost savings are further enhanced by contractually ensuring that these requirements are covered.
- This means that capital improvements can be expected to reach their useful design life in a state of good repair.

Traditional procurement methods that rely on procurement processes tied to conventional tax-exempt financing should therefore be thoughtfully reevaluated.

In UC's case there is more to the argument than the 15 to 30 percent life cycle cost savings. UC possesses unique value-added capacity that has the potential to add significantly to the traditional P3 case. The majority of UC's larger scale capital improvements (mainly campus settings, hospitals, labs and research facilities) define the communities in which they operate. This is not true of a typical P3. The synergistic value of locating a large-scale UC facility in a community adds

substantial value to the development of the community, which positively impacts various public and private sector beneficiaries who locate in these UC-defined communities.

UC defines a significant component of demand elasticity in the communities it populates. Historically, UC has been a "good citizen" and allowed this value to be captured by third parties such as towns, cities and private sector businesses and business partners. By using a P3 approach, UC can capture a greater share of this value, if it applies a highly refined and organized procurement and asset management process that ensures a balanced approach to economics, risk transfer and pricing of services. By following this approach, UC can fund a larger proportion of its future capital requirements without state funding, and can potentially deliver a net positive cash flow stream back to the UC system and/or the state for future investment. In this sense, UC has inherent locked-up value creation potential.

One noteworthy candidate is UC Merced.

## Part II

# UC Merced Case Study

The Merced Case Study presented here is designed to illustrate the application of P3 methods to a large “community scale” campus build-out, linked to an associated off-campus development, in this case University Community North, a 1,000-acre planned community adjacent to the Merced campus. The interaction between the campus project and Community North illustrates the economic value argument cited earlier: specifically, the opportunity to unlock value and pay for campus development with the proceeds from closely aligned projects where UC’s presence defines a credible, demand-inelastic revenue stream capable of supporting a large scale investment.

Table 1 provides a summary overview of how the interaction between the campus and the University Community North development can generate economic value for UC. The Appendix provides a more complete presentation of the model discussed here.

The basic cost of building out the Merced Campus and increasing enrollment from 3,400 to 10,400 students is \$1.118

billion. Utilizing tax exempt financing, total state contributions required to fund the build out are \$1.227 billion. This value excludes operations and maintenance (O&M) costs. The Merced model demonstrates how:

- Using a P3 method of procurement, assuming 15 percent life cycle cost savings (which is at the lower end of what global best practices indicate), reduces costs by \$76 million. The P3 contract includes \$250 million of O&M costs which are not accounted for in the tax exempt funding case.
- Increasing the life cycle cost savings to 20 percent results in a cost reduction of \$259 million, again including O&M.
- The largest economic value accrues when University Community North is switched on, leading the state contribution to drop by 66 percent for a population of 5,513.
- The state contribution drops 169% for a population of 13,635, as the project generates \$842 million in positive cash flow back to UC and the state.
- The state contribution drops 178% for a population of 15,000, as the project generates \$954 million in positive cash flow back to UC and the state.

**Table 1: UC Merced Case Study Plan**

Base Campus Build-Out Cost Tax Exempt Financing)	\$1.118 billion	Construction Excludes O&M
PPP 15% Savings	-76 million	Includes O&M valued at \$250 million over 30 years
PPP 20% Savings	-259 million	Includes O&M valued at \$250 million over 30 years
Total State Contributions	1.227 billion	Construction and tax exempt debt service (excludes O&M)

University Community North	State Contribution		Population						
	State (\$ Thousands)	Change State	Students		Faculty & Staff		Market Rate		Total
	412 million	-66%	2,700	49%	2,813	51%	0	0%	5,513
	-842 million	-169%	7,900	58%	5,625	42%	0	0%	13,525
	-954 million	-178%	7,900	53%	5,625	38%	1,475	10%	15,000

Ninety percent of the project’s population is demand-inelastic, reflecting UC Merced students, faculty and staff, with students representing the core of demand. Only 10 percent of this population is likely to be market rate sensitive.

Looking more closely at project-level cash flows under differing University Community North ramp-up assumptions, state contributions peak in years 5 to 7 at \$75 to \$125 million and are fully repaid in years 5 to 12. Beyond years 5 to 12, UC and/or the state would receive cash flows on an annual basis for the remaining life of the concession. In effect, UC Merced becomes a long-term contributor of capital to the UC system.



## Part III

# UC Procurement Process

The current budgeting environment within UC is constrained as a result of the State of California's budget crisis and its impact on appropriations to the UC system. Diversifying its capital funding sources beyond traditional tax exempt bond financing offers UC the potential to tap into new sources of capital and improve service delivery.

UC has a range of valuable assets that could benefit from the techniques illustrated in the Merced Case. However, existing procurement practices are not set up to exploit their full potential.

To better capture the entirety of this potential within the UC system, this study suggests that the following measures be considered.

1. Implement a UC-wide capital budgeting and planning process that embodies the principles of long-term life cycle (10-, 20-, 30-year) budgeting and planning and meets the goals and objectives of the university system over time.
2. Consider that the level of infrastructure investment within the UC system could be significantly enhanced through

more effective leveraging of UC assets along the lines depicted in the Merced Case. UC should consider a comprehensive review of such assets, with consideration for the following objectives:

- a. Reposition the process of building-by-building project development to fit into a system-wide master plan reflecting an appropriate balance between campus and UC system needs.
- b. Seek greater value from the revenue generation and growth potential of these assets, with the objective of creating a revolving availability payment pool. The pool could be replenished by return flows to the UC President's Office, as illustrated in the Merced case, and positioned to support large-scale capital projects over the long term.
- c. Seek return flows to the availability payment pool over time and ensure that this need is given an appropriate level of consideration in the project approval and capital budgeting process. All other things being equal (e.g., ensuring that the University's academic mission is being advanced) projects that generate long-term economic value should be given priority.

3. Apply DBFOM best practices to achieve improvement in project timing, development and/or operating productivity.
4. Seek maximum value from P3 strengths:
  - a. Risk transfer;
  - b. Life cycle costing;
  - c. Output versus input-based project specifications;
  - d. Competition in bidding;
  - e. Performance measurement and incentives;
  - f. Private sector management skills.
5. Adopt process management best practices to ensure that all participants have the tools they need to maximize the value of UC's investment (see 2006 Bay Area Council Economic Institute study):
  - a. Gateway Process;
  - b. Public Private Sector Comparator;
  - c. Project Review Group.

6. Adopt employee protection standards (Responsible Contractor Guidelines) in P3 contracts that ensure that public and private labor interests are aligned.
7. Adopt a standard form of concession agreement.
8. Evaluate options for pursuing an alternative procurement budget authorization similar to that used by the Administrative Office of the Courts for the Long Beach Court House.

For reference, the Long Beach Courthouse appropriation payment will come out of the Judicial Council's annual budget appropriation from the state's General Fund. In the initial year of appropriation, the Judicial Counsel budget will highlight the increase in budget appropriations with a separate line item outlining the project and the fact that it will be an ongoing budget expenditure for the next 35 years. Once it has been initially appropriated, the project will no longer be broken out in future budgets. After the initial appropriation, the only way for the legislature to prevent payment of funds to the private partner would be to pass specific legislation expressly forbidding the Judicial Council from allocating the appropriated funds.

9. Through the UC Commission on the Future, evaluate the merits of creating a pool of Availability Payment Capital (APC) to address the system's long term capital investment needs. The APC pool could become a long-term feature of the UC capital budgeting program and could regenerate itself over time through:
- a. long term appropriations via the established state budget process (similar to what is being considered by the AOC for the Long Beach Court House);
  - b. allocation of specific revenue streams across the entirety of the UC system to the APC pool, including return flows from successful projects that have the capacity to recharge the pool.

APC has the potential to leverage existing UC assets to support the implementation of long-term concession contracts for critical capital improvements across the UC system.

While not all projects and campuses will have the capacity to generate revenue streams and return capital on a large scale, many do have that capacity. Examples include;

- Student housing;
- Grant supported research labs;

- Health care facilities;
- Parking structures;
- Food service facilities;
- Energy generation infrastructure;
- IT Infrastructure.

For many projects it is possible to take advantage of AP Methods and use multiple sources of financing in a multi-tranched capital structure. For certain types of assets, for example, tax exempt financing can be incorporated into the capital structure alongside other private sources of funding. The particulars of this approach are beyond the scope of this analysis other than to point out that the authors believe that the proposed UC Merced project is likely to meet the requirements that would enable side-by-side P3 applications with tax exempt financing.

To summarize, the P3 model can be used within the UC system on a range of scales, innovatively combining different finance and service delivery elements (e.g., UCSF's Neuroscience Building) and different elements within the DBFOM formula. The UC Merced campus appears to be a strong candidate for the application of this model on a large scale.

To maximize the potential value capture of these financing methods for UC as a whole, the Regents and UC's Commission on the Future should evaluate the merits of a systems approach to project finance, including the creation of an Availability

Payments Pool. Challenging times call for innovation. The Economic Institute believes that using P3 methods for capital project development, as demonstrated in the UC Merced case study, offers one such opportunity.

Appendix

UC Merced Case Study

Table 2: UC Merced Construction Inputs

The Merced model starts with construction inputs provided by the Vice Chancellor for Physical Planning Design & Construction.

MERCED														
Construction Inputs Base Case			Nominal Dollars											
Month					1	2	3	4	5	6	7	8	9	10
Date	Gross Sq Ft / Parking Spaces	Coding	Construct. Pd. Totals	Previously Funded	Dec-10	Dec-11	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
<b>Infrastructure and Site Development</b>														
<b>State Funded Projects</b>														
Social Sciences & Management	101,459	Academic	47,650,000	45,622,000	2,028,000									
Science & Engineering Building 2	101,429	Academic	85,119,000	81,040,000		4,079,000								
Castle 1200 Facilities Renewal	31,475	Academic	15,000,000	14,450,000	550,000									
Site Development & Infrastructure (P4 & P5)		Infra	10,400,000	10,400,000										
Site Development & Infrastructure (P6)		Infra	2,000,000	2,000,000										
Site Development & Infrastructure (P7)		Infra	11,700,000		11,700,000									
Site Development & Infrastructure (P8)		Infra	65,000,000		6,500,000	58,500,000								
Instructor & Student Academic Services Building	83,600	Academic	48,700,000		2,060,000	2,510,000	41,130,000	3,000,000						
Campus Instructional Space Renovations	11,475	Academic	6,080,000			568,000	5,512,000							
Instruction & Research	109,091	Academic	116,000,000			5,200,000	6,400,000	99,200,000		5,200,000				



Building														
Professional School	89,879	Academic	67,400,000					2,800,000	3,400,000	56,200,000	5,000,000			
EH&S/Facilities Management & Public Safety Facility	45,455	R&A	33,000,000					1,350,000	1,650,000	27,000,000	3,000,000			
Central Campus West Site Dev & Infrastructure		Academic	22,500,000						1,000,000	21,500,000				
Classroom & Office Building 2	75,000	Academic	44,500,000						1,870,000	2,280,000	40,350,000			
Instruction & Research Building 2	109,000	Academic	6,290,000							2,830,000	3,460,000			
<b>Summary State Funded Projects</b>														
State funds			581,339,000	45,622,000	109,918,000	20,810,000	70,857,000	57,192,000	110,120,000	109,810,000	57,010,000	—	—	—
Non-Sate Funds			(26,200,000)	(3,700,000)	—	—	—	—	—	—	(1,000,000)	(21,500,000)	—	—
<b>Subtotal</b>			<b>607,539,000</b>	<b>49,322,000</b>	<b>109,918,000</b>	<b>20,810,000</b>	<b>70,857,000</b>	<b>57,192,000</b>	<b>110,120,000</b>	<b>109,810,000</b>	<b>58,010,000</b>	<b>21,500,000</b>	<b>—</b>	<b>—</b>

**Campus Funded (Non-State Funded Projects)**

Campus Approved Projects Under \$15 million		Academic	10,000,000		1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Student Housing Phase 3	95,082	Housing	42,000,000	42,000,000										
JE Gallo Recreation and Wellness Expansion	47,000	R&A	17,100,000	770,000	16,330,000									
Campus Parking Lots I, J & K	430	Parking	1,200,000		1,200,000									
Academic Surge Building	34,426	Academic	20,000,000		20,000,000									
Multipurpose Recreation Field		R&A	5,500,000			5,500,000								
Campus Parking Lot L	600	Parking	1,650,000			1,650,000								
Student Housing Phase 4	95,000	Housing	48,700,000			48,700,000								
Campus Parking Lot M	325	Parking	900,000				900,000							
Bellevue Gateway Site Dev & Infrastructure		Infra	10,400,000				10,400,000							
Administration West	74,000	Academic	42,800,000				4,280,000	38,520,000						
Baseball & Softball Competition Field Complex		R&A	9,000,000				9,000,000							
Student Union	86,000	R&A	42,900,000				1,900,000	41,000,000						
Tennis Courts		R&A	1,000,000					1,000,000						
Outdoor Basketball Courts		R&A	500,000					500,000						



Campus Parking Lots N & O	350	Parking	2,500,000					2,500,000				
Student Aquatics Center	16,000	R&A	15,000,000						675,000	14,325,000		
Campus Parking Lot P	460	Parking	1,600,000							1,600,000		
Early Childhood Education Center 2	12,850	R&A	12,500,000						1,100,000	11,400,000		
Student Housing Phase 5	155,000	Housing	71,500,000						3,217,000	68,283,000		
South Bowl Neighborhood Dining	16,000	Housing	11,500,000						11,500,000			
Organized Research Building	80,000	Academic	89,780,000						4,040,000	85,740,000		
Administration Building/Alumni Conference Center	80,000	R&A	42,900,000						1,980,000	40,920,000		
Campus Parking Lot Q	550	Parking	2,000,000							2,000,000		

<b>Non State-Funded Projects</b>	502,930,000	42,770,000	38,530,000	56,850,000	1,900,000	26,580,000	84,520,000	23,512,000	225,268,000	1,000,000	1,000,000	1,000,000
State Funds	—	—	—	—	—	—	—	—	—	—	—	—
Non-State Funds	502,930,000	42,770,000	38,530,000	56,850,000	1,900,000	26,580,000	84,520,000	23,512,000	225,268,000	1,000,000	1,000,000	1,000,000
<b>Subtotal</b>	<b>502,930,000</b>	<b>42,770,000</b>	<b>38,530,000</b>	<b>56,850,000</b>	<b>1,900,000</b>	<b>26,580,000</b>	<b>84,520,000</b>	<b>23,512,000</b>	<b>225,268,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>

<b>State and Non-State Total</b>												
State Funds	581,339,000	45,622,000	109,918,000	20,810,000	70,857,000	57,192,000	110,120,000	109,810,000	57,010,000	—	—	—
Non-State Funds	529,130,000	46,470,000	38,530,000	56,850,000	1,900,000	26,580,000	84,520,000	23,512,000	226,268,000	22,500,000	1,000,000	1,000,000
<b>Total</b>	<b>1,110,469,000</b>	<b>92,092,000</b>	<b>148,448,000</b>	<b>77,660,000</b>	<b>72,757,000</b>	<b>83,772,000</b>	<b>194,640,000</b>	<b>133,322,000</b>	<b>283,278,000</b>	<b>22,500,000</b>	<b>1,000,000</b>	<b>1,000,000</b>



### Table 3: University Community North Assumptions

The next set of critical model inputs defines University Community North, the planned community adjacent to the university. Note that three cases were considered, including Case A (5,513 population), Case B (13,525 population) and Case C (15,000 population).

#### University Community North Real Estate Assumptions (Population, Revenue, Costs)

Case A		5,513 Population									
	Population	Total Population 2.5 Persons / Household	Avg Sq Ft	Cost Sq Ft \$	Total Cap \$ Thousands	Monthly Revenue / Bed, Unit \$	Annual Revenue / Bed, Unit	Annual Initial Revenue \$ Thousands		Sq Ft	
Student Beds	2,700	2,700	135	150	54,675	650	7,800	21,060		364,500	
Faculty Living Units	375	938	1,250	175	82,031	950	11,400	4,275		468,750	
Staff Living Units	750	1,875	1,250	175	164,063	950	11,400	8,550	Cap Rate	937,500	2.5
	3,825	5,513			300,769			33,885	11.3%	1,770,750	4,427
			Total			Annual Rent/Sq ft \$		Annual Initial Revenue \$ Thousands	Cap Rate	Sq Ft	
Commercial			100,000	150	15,000	25		2,500	16.7%	100,000	
Total					315,769			36,385		1,870,750	
Case B		13,525 Population									
	Population	Total Population 2.5 Persons / Household	Avg Sq Ft	Cost Sq Ft \$	Total Cap \$ Thousands	Monthly Revenue / Bed, Unit \$	Annual Revenue / Bed, Unit	Annual Initial Revenue \$ Thousands		Sq Ft	
Student Beds	7,900	7,900	135	150	159,975	650	7,800	61,620		1,066,500	
Faculty Living Units	750	1,875	1,250	175	164,063	950	11,400	8,550		937,500	
Staff Living Units	1,500	3,750	1,250	175	328,125	950	11,400	17,100		1,875,000	2.5
	10,150	13,525			652,163			87,270	13.4%	3,879,000	9,698

	<b>Total</b>		<b>Annual Rent/Sq Ft \$</b>		<b>Annual Initial Revenue \$ Thousands</b>		<b>Cap Rate</b>	<b>Sq Ft</b>	
<b>Commercial</b>	265,000	150	39,750	25	6,625	16.7%	265,000		
<b>Total</b>			691,913		93,895				
<b>Case C 15,000 Population</b>									
	<b>Population</b>	<b>Total Pops 2.5 Persons / Household</b>	<b>Avg Sq Ft</b>	<b>Cost Sq Ft \$</b>	<b>Total Cap \$ Thousands</b>	<b>Monthly Revenue / Bed, Unit \$</b>	<b>Annual Revenue / Bed, Unit</b>	<b>Annual Initial Revenue \$Thousands</b>	<b>Sq Ft</b>
<b>Student Beds</b>	7,900	7,900	135	150	159,975	650	7,800	61,620	1,066,500
<b>Faculty Living Units</b>	750	1,875	1,250	175	164,063	950	11,400	8,550	937,500
<b>Staff Living Units</b>	1,500	3,750	1,250	175	328,125	950	11,400	17,100	1,875,000
	<b>10,150</b>	<b>13,525</b>			<b>652,163</b>			<b>87,270</b>	<b>3,879,000</b>
								<b>13.4%</b>	<b>9,698</b>
	<b>Total</b>		<b>Annual Rent/Sq ft \$</b>		<b>Annual Initial Revenue \$ Thousands</b>		<b>Cap Rate</b>	<b>Sq Ft</b>	
<b>Commercial</b>	265,000	150	39,750	25	6,625	16.7%	265,000		
							397.5		
							398		
<b>Units Sold Outright</b>					<b>Starting Sale Price \$</b>	<b>Total Revenue</b>			
	590	1,475	1,750	175	180,688	650,000	383,500		
<b>Total</b>		<b>15,000</b>			<b>872,601</b>		<b>383,500</b>		



## Table 4: Merced Model Case Sensitivities

Model cases were run as follows:

- Base Case 100% Tax Exempt Financing
- P3 Concession 15% Cost Savings
- P3 Concession 20% Cost Savings
- P3 Concession 15% Cost Savings, University Community North Population 5,513
- P3 Concession 15% Cost Savings, University Community North Population 13,525
- P3 Concession 15% Cost Savings, University Community North Population 15,000

<b>Table 4: UC Merced Campus Build Out 2010–2019</b>						
<b>Merced Model Cases (\$ Thousands)</b>	<b>BASE CASE Tax Exempt Debt</b>	<b>CASE A PPP Concession 15% Cost Savings</b>	<b>CASE B PPP Concession 20% Cost Savings</b>	<b>CASE C PPP Concession + University Community North 5,513 Population</b>	<b>CASE D PPP Concession + University Community North 13, 525 Population</b>	<b>CASE E PPP Concession + University Community North 15,000 Population</b>
<b>Inputs</b>		<b>CHANGE FROM BASE CASE</b>				
Availability Payment	78,100	77,000	73,000	73,500	65,000	65,000
Time Period (Years)	30	30	30	30	30	30
Debt/Total Cap	100%	80%	80%	80%	80%	80%
Construction Cost Savings	0%	15%	20%	15%	15%	15%
<b>Sources</b>						
Debt Financing	1,140,982.9	(385,525.2)	(429,844.5)	(129,130.2)	176,638.8	323,892.9
Equity Investment	–	188,864.4	177,784.6	252,963.2	329,405.4	366,219.0
UC Debt/Concession Payments						
State 52%	1,226,578.4	63,344.4	(3,664.6)	(814,593.5)	(2,068,191.5)	(2,180,117.6)
Non-State 48%	1,116,421.6	57,655.6	(3,335.4)	726,735.4	1,696,729.2	1,767,445.8
University Community North	–	–	–	1,635,600.1	3,961,451.1	4,137,347.4
	<b>3,483,982.9</b>	<b>(75,660.7)</b>	<b>(259,059.9)</b>	<b>1,671,575.0</b>	<b>4,096,033.0</b>	<b>4,414,787.4</b>
<b>Uses</b>						
Campus Construction	1,118,119.2	(190,426.8)	(244,997.0)	(190,426.8)	(190,426.8)	(190,426.8)
University Community North	–	–	–	315,768.8	691,912.5	872,607.5
O&M	–	285,981.7	285,981.7	496,154.7	726,071.3	712,347.3
Debt Service	2,365,863.4	(798,126.8)	(889,952.4)	(266,971.4)	366,901.3	672,616.3
Equity return	–	626,911.6	589,908.1	1,294,485.7	2,472,460.2	2,332,252.6
	<b>3,483,982.5</b>	<b>(75,660.3)</b>	<b>(259,059.5)</b>	<b>1,649,010.9</b>	<b>4,066,918.5</b>	<b>4,399,396.9</b>
<b>University Community North Summary</b>	–					
University Community North Revenue Escalator	0.0%			2.0%	2.0%	2.0%
Student Beds	–			2,700	7,900	7,900
Faculty Housing	–			375	750	750
Staff Housing	–			750	1,500	1,500
Market Rate Housing	–			0	0	590
Total Community Population				<b>5,513</b>	<b>13,525</b>	<b>15,000</b>

**Table 5: Merced Model Sources & Uses of Funds  
P3 Case with 15% Life Cycle Cost Savings  
(Construction Phase Only 2010–2019)**

The model provides Net Cash Flow, Term Debt and Sources & Uses sheets that are too large to reproduce in this Appendix but are available on request.

<b>MERCED</b>											
<b>Construction Period Sources and Uses of Funds</b>											
Month		1	2	3	4	5	6	7	8	9	10
Date		Dec-10	Dec-11	Dec-12	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
<b>Uses of Funds (\$ Thousands)</b>											
<b>Capital Costs</b>											
Escalation Factor	2.50%										
Escalation Base Year	2010										
Escalation		1.00	1.03	1.05	1.08	1.10	1.13	1.16	1.19	1.22	1.25
	<b>Total Cap</b>										
Infrastructure and Site Development	88,159	10,540	15,857	52,242	9,520	-	-	-	-	-	-
Academic Buildings	536,948	100,740	3,145	11,928	55,948	138,850	84,485	138,743	1,010	1,036	1,062
Student Housing	123,892	-	42,430	-	-	-	14,153	67,309	-	-	-
Parking	9,156	1,020	1,438	804	-	2,346	-	3,549	-	-	-
Recreation and Admin	169,538	13,881	4,792	-	11,213	41,423	29,577	68,652	-	-	-
	<b>927,692</b>	<b>126,181</b>	<b>67,661</b>	<b>64,974</b>	<b>76,681</b>	<b>182,619</b>	<b>128,215</b>	<b>278,253</b>	<b>1,010</b>	<b>1,036</b>	<b>1,062</b>
1 = Base Case (No Community North)	<b>Population</b>										
Community North Capital Costs	0	-	-	-	-	-	-	-	-	-	-
<b>Total Capital Costs</b>		<b>927,692</b>	<b>126,181</b>	<b>67,661</b>	<b>64,974</b>	<b>76,681</b>	<b>182,619</b>	<b>128,215</b>	<b>278,253</b>	<b>1,010</b>	<b>1,062</b>
		<b>927,692</b>	<b>126,181</b>	<b>67,661</b>	<b>64,974</b>	<b>76,681</b>	<b>182,619</b>	<b>128,215</b>	<b>278,253</b>	<b>1,010</b>	<b>1,062</b>
<b>Financing Costs</b>											
Tr A Arranger Fee	1.75%	13,221	13,221								
Tr A Legal/Experts	1,500	1,500	1,500								
Tr A Commitment Fee	909	236	184	167	148	102	70	1	1	0	-
Tr A IDC		-	-	-	-	-	-	-	-	-	-
<b>Total Tr A Uses</b>		<b>15,630</b>	<b>14,957</b>	<b>184</b>	<b>167</b>	<b>148</b>	<b>102</b>	<b>70</b>	<b>1</b>	<b>1</b>	<b>0</b>



## Table 6: Key Assumptions

- Model inputs conform to the Long Range Development Plan prepared by UC Merced.
- Construction of all campus elements starts in 2010 and ends in 2019, a period of 9 years.
- During this time period, enrollment is assumed to increase from its current level of 3,400 to 10,400 students.
- The completion schedule conforms to the Long Range Development Plan, noting that under Lease/Concession methods of procurement, the time line could be accelerated. This may not be feasible, however, given the pace at which new students and faculty can be brought to campus.
- The Base Case capital structure assumes 100% tax exempt debt financing.
- The Lease/Concession model cases assume 80% debt and 20% equity at current market rates. There are many scenarios that could be considered in a formal modeling process that would most likely improve the results depicted here. These include structures that can accommodate tax exempt financing.
- Construction costs are escalated at 2.5% per annum during the construction phase.
- In the Lease/Concession model cases, it is assumed that the majority of risks associated with the elements of Design-Build-Finance-Operate-Maintain (DBFOM) are transferred to the Concessionaire (private sector). The only risks that would remain with UC are those that do not justify risk transfer based on cost/benefits attained.
- VfM gains improve timing and result in lower construction and life cycle costs. The model incorporates 15 and 30 percent VfM discounts to the Long Range Development Plan project costs in the sensitivity cases. This assumption is at the lower end of typical life cycle cost savings based on empirical research reviewing global project experience over the last 20 years. Whether UC Merced attains this cost savings is a function of the success of the proposed AP method of procurement.
- The facility will be returned to the UC system in a state of good repair at the end of the Concession;
- Concession payments remain flat over the 35 year life of the Concession, which is similar to the assumptions made in association with the tax exempt bond payments.

- Campus revenue streams are escalated at 2.5 percent per annum.
- The logic associated with replacing the availability payment over time is predicated on revenue streams coming from UC Merced, including the development of University Community North where the model depicts various scenarios of faculty, staff and students occupying beds.
- Looking at the UC Merced Case Study, if every possible room is brought to maximum occupancy (e.g., converting doubles to triples) the capacity of on-campus housing increases to ~2,500 beds. This is significantly short of UC Merced's Long Range Development Plan which calls for

50 percent on campus, which at 10,400 students would be a provision of 5,200 beds.

- The model incorporates logic that captures cash flow and value creation potential from the proposed University Community North development in three cases accommodating up to 15,000 people.

There are many other basic assumptions incorporated into the model. Beyond the scope of what is presented here, the best way to review all of the assumptions and model logic is to take possession of the model and run it with independent assumptions. The model has been provided to Merced campus staff and consultants and is available on request.

