Mastering Facilities Planning

Series of six sessions

- Mastering Feasibility Studies – May 17, 2012
- Master the 2-7 & Delivery - July 19, 2012
- Master Plan Revisions - Sept. 20, 2012
- Mastering Capital Programs – Nov. 15, 2012
- Mastering the 1-4 COBCP – Jan. 17, 2013
- Mastering BOT Agenda Items – June 6, 2013
Workshop Topics

- What is the 2-7 + when is it required
- 2-7 Form Navigation and Organization
- Types of Cost Estimates
  - Cost Guide + Building Efficiencies
  - Budgeting an Out Year
- Components of a Budget
  - Escalation
  - Hard Costs
  - A/E Consultant + Agency Fees
- Sustainability
  - BRIP + OCIP
- Project Delivery Methods and Scheduling Requirements
Pop Quiz 1

What Capital Projects Require a CPDC 2-7: Cost Estimate?

A. Only those with new Lecture or Lab Capacity
B. All Capital Projects regardless of Total Project Cost
C. All State Funded Capital Projects
D. All State and Non-State Funded Major Capital Projects over $610,000
What is the 2-7?

SUAM, Section VII, Paragraph 9104

• Serves as the primary supporting documentation summarizing all project costs for COBCPs and BOT approvals of Capital Projects

• The Capital Outlay Estimate (CPDC 2-7) is used for budgeting purposes for both the Five-Year Capital Improvement Program and the Capital Outlay Budget Change Proposal (COBCP)
When is the 2-7 required?

SUAM, Section IV, Paragraph 9031-9032

• Required to be submitted at every project milestone submittals

• Serves as a tool to communicate project costs
Quick Poll

Are “Estimates” the same as “Budgets”?

A. Yes
B. No
C. Trick Question
Form Navigation + Organization

- Information is logically ordered in **colored Tabs**
- Drop-Down Lists
- Embedded-Comments
- Use as Guide
- Color-coded cells
Form Navigation + Organization

- Specialty Consultants
- Fees and Compliance Approvals
- Project Costs
- Quick-start Instructions
Form Navigation + Organization

BUILT-IN TOOLS

- User Tab
- Out Year / Cost Guide Calculations
- Sustainable Modifier
- AE Fee Basis/Project Type

<table>
<thead>
<tr>
<th>SPACE TYPE</th>
<th>ASF</th>
<th>EFF %</th>
<th>GSF</th>
<th>USE 67%</th>
<th>$ / GSF</th>
<th>BLDG $</th>
<th>GRP I EQUIP</th>
<th>GRP II EQUIP</th>
<th>SUSTAINABLE MODIFIER</th>
<th>PROJ TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Recreation Center</td>
<td>80051</td>
<td>65%</td>
<td>123,155</td>
<td>100%</td>
<td>354</td>
<td>43,597,006</td>
<td>5% 2,179,250</td>
<td>21.00 100% 1,681,071</td>
<td>52% 7 6 2</td>
<td></td>
</tr>
<tr>
<td>Physical Education/Gymnasium/Dance St.</td>
<td>15000</td>
<td>75%</td>
<td>20,000</td>
<td>67%</td>
<td>265</td>
<td>3,564,400</td>
<td>5% 178,220</td>
<td>16.54 60% 124,800</td>
<td>13% 6 1 3</td>
<td></td>
</tr>
<tr>
<td>Administration</td>
<td>3000</td>
<td>65%</td>
<td>7,892</td>
<td>67%</td>
<td>297</td>
<td>1,530,692</td>
<td>3% 45,921</td>
<td>28.39 50% 67,450</td>
<td>5% 4 0 3</td>
<td></td>
</tr>
</tbody>
</table>

For Out Year Projects, PLUG these values onto page 1
Types of Cost Estimates

A. Near-term/Action Year Projects: **Bottom-Up Method**
   - Detailed estimate, typically utilizing the Uniformat structure
   - Included in the Full Feasibility Study

B. Out Year Projects: **Top-Down Method**
   - Cost per Square Foot
   - Uses Simplified Forms, CSU Cost Guide & 2-7 User Tab
   - Good tool to use to estimate “What-if” scenarios
Pop Quiz 2

What does CCCI stand for?

A. California Construction Community Institute
B. College Construction Cost Index
C. California Construction Cost Index
D. Certified Construction Consultants Industry
CSU Cost Indexes

SUAM, Section VII, Paragraph 9001.1

A. California Construction Cost Index (CCCI)
   • Based on the Engineering News Record
   • Regional average Building Cost index for Los Angeles and San Francisco Guide
   • The Call Letter issued each year includes a CCCI escalation adjustment based on current DOF projections

B. Equipment Price Index (EPI)
CSU Cost Guide

5-Year Capital Improvement Program Call Letter for 2013/14 through 2017/18 – Attachment No 3

<table>
<thead>
<tr>
<th>Type of Project</th>
<th>State Buildings</th>
<th>Group I Equipment Cost (% of Bldg. Cost)</th>
<th>Group II Equipment Cost per ASF</th>
<th>Building Efficiency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom (General)</td>
<td>$352</td>
<td>5%</td>
<td>$16.82</td>
<td>63%</td>
</tr>
<tr>
<td>Humanities</td>
<td></td>
<td>5%</td>
<td>$28.24</td>
<td>63%</td>
</tr>
<tr>
<td>Social Science</td>
<td></td>
<td>5%</td>
<td>$28.42</td>
<td>63%</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td>8%</td>
<td>$27.90</td>
<td>63%</td>
</tr>
<tr>
<td>Business Administration</td>
<td></td>
<td>5%</td>
<td>$35.19</td>
<td>63%</td>
</tr>
<tr>
<td>Language Arts</td>
<td></td>
<td>9%</td>
<td>$35.48</td>
<td>63%</td>
</tr>
<tr>
<td>Laboratories</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### CSU Cost Guide

- Cost Guide is built into the CPDC 2-7.
- USER TAB, Select a Space type and ASF, which then initiates an automatic look-up
- Renovation

<table>
<thead>
<tr>
<th>SPACE TYPE</th>
<th>ASF</th>
<th>EFF %</th>
<th>GSF</th>
<th>USE 67%</th>
<th>$ / GSF</th>
<th>BLDG $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom (General)</td>
<td>20000</td>
<td>63%</td>
<td>31746</td>
<td>100%</td>
<td>322</td>
<td>10,222,222</td>
</tr>
<tr>
<td>Biological Science (Wet Lab)</td>
<td>10000</td>
<td>59%</td>
<td>16949</td>
<td>100%</td>
<td>420</td>
<td>7,118,644</td>
</tr>
<tr>
<td>SELECT SPACE TYPE</td>
<td>0</td>
<td>1%</td>
<td>0</td>
<td>100%</td>
<td>0</td>
<td>0</td>
</tr>
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<td>SELECT SPACE TYPE</td>
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<td>100%</td>
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<td>100%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SELECT SPACE TYPE</td>
<td>0</td>
<td>1%</td>
<td>0</td>
<td>100%</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

[INSERT SPACE TYPE (NON-CAPACITY)]

#DIV/0!
2-7 Escalation & CCCI Adjustments

A. Annual Calculation

- Current divide by Baseline
- \( \frac{6077}{5565} = 1.09\% \)

B. Project Duration

- Project Start
- Mid-Year Construction

<table>
<thead>
<tr>
<th>Project Schedule</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Started</td>
<td>Jul-13</td>
</tr>
<tr>
<td>Schematics Approval (BOT)</td>
<td>Nov-13</td>
</tr>
<tr>
<td>Preliminary Plans Completed</td>
<td>Jan-14</td>
</tr>
<tr>
<td>Working Drawings Completed</td>
<td>Aug-14</td>
</tr>
<tr>
<td>Construction Started (NTP)</td>
<td>Feb-15</td>
</tr>
<tr>
<td>Construction Completed (NOC)</td>
<td>Aug-16</td>
</tr>
<tr>
<td>Total Project Duration (Calendar Days)</td>
<td>1140</td>
</tr>
</tbody>
</table>

**HISTORICAL COST INDEXES 1987 TO PRESENT**

<table>
<thead>
<tr>
<th>Year 7/8</th>
<th>ENR</th>
<th>CCCI</th>
<th>% Change</th>
<th>EPI</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987/88</td>
<td>4420</td>
<td>2753</td>
<td></td>
<td>1975</td>
<td></td>
</tr>
<tr>
<td>1988/89</td>
<td>4535</td>
<td>2824</td>
<td>2.602%</td>
<td>1975</td>
<td>0.000%</td>
</tr>
<tr>
<td>1989/90</td>
<td>4665</td>
<td>2905</td>
<td>2.867%</td>
<td>2032</td>
<td>2.886%</td>
</tr>
<tr>
<td>1990/91</td>
<td>4828</td>
<td>3007</td>
<td>3.494%</td>
<td>2145</td>
<td>5.561%</td>
</tr>
<tr>
<td>1991/92</td>
<td>4877</td>
<td>3037</td>
<td>1.015%</td>
<td>2242</td>
<td>4.522%</td>
</tr>
<tr>
<td>1992/93</td>
<td>4999</td>
<td>3113</td>
<td>2.502%</td>
<td>2285</td>
<td>1.918%</td>
</tr>
<tr>
<td>1993/94</td>
<td>5153</td>
<td>3209</td>
<td>3.081%</td>
<td>2321</td>
<td>1.575%</td>
</tr>
<tr>
<td>1994/95</td>
<td>5341</td>
<td>3326</td>
<td>3.648%</td>
<td>2370</td>
<td>2.111%</td>
</tr>
<tr>
<td>1995/96</td>
<td>5595</td>
<td>3484</td>
<td>4.756%</td>
<td>2397</td>
<td>1.139%</td>
</tr>
<tr>
<td>1996/97</td>
<td>5595</td>
<td>3484</td>
<td>0.000%</td>
<td>2397</td>
<td>0.000%</td>
</tr>
<tr>
<td>1997/98</td>
<td>5734</td>
<td>3571</td>
<td>2.484%</td>
<td>2475</td>
<td>3.254%</td>
</tr>
<tr>
<td>1998/99</td>
<td>5977</td>
<td>3722</td>
<td>4.231%</td>
<td>2485</td>
<td>0.404%</td>
</tr>
<tr>
<td>1999/00</td>
<td>6178</td>
<td>3847</td>
<td>3.358%</td>
<td>2485</td>
<td>0.000%</td>
</tr>
<tr>
<td>2000/01</td>
<td>6278</td>
<td>3909</td>
<td>1.612%</td>
<td>2502</td>
<td>0.684%</td>
</tr>
<tr>
<td>2001/02</td>
<td>6454</td>
<td>4019</td>
<td>2.814%</td>
<td>2564</td>
<td>2.478%</td>
</tr>
<tr>
<td>2002/03</td>
<td>6454</td>
<td>4019</td>
<td>0.000%</td>
<td>2564</td>
<td>0.000%</td>
</tr>
<tr>
<td>2003/04</td>
<td>6454</td>
<td>4019</td>
<td>0.000%</td>
<td>2564</td>
<td>0.000%</td>
</tr>
<tr>
<td>2004/05</td>
<td>6654</td>
<td>4120</td>
<td>2.045%</td>
<td>2584</td>
<td>0.000%</td>
</tr>
</tbody>
</table>

**ESCALATION CALCULATION TO MIDPOINT OF CONSTRUCTION**

<table>
<thead>
<tr>
<th>New Construction</th>
<th>Renovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATE</td>
<td>NONSTATE</td>
</tr>
<tr>
<td>$20,453,000</td>
<td>$0</td>
</tr>
</tbody>
</table>

- Beginning of Budget Year: Jul-10
- Construction Start Date: Jul-12
- Midpoint of Construction: Sep-13
- Months to midpoint of construction: 39
- Average monthly inflation – DOF Approved: 0.42%
- Escalation percentage over project: 16.23%
Out Year Budget Example

A. Generate a Ballpark estimate for a Project:
• New Construction : Wet lab facility = 20,000 asf
• New Construction : Lecture Classroom = 5,000 asf
• Renovation: Faculty Offices = 12,000 asf

B. CCCI /EPI Adjustment:
• 2-7 originally created in 2012/13 @ CCCI 5950
• Current 2013/14 @ CCCI 6077

Always start with updated 2-7 from our CPDC Website
Components of a Budget

Hard Costs
• Building (Uniformat system) + Site Utility Costs (CPDC 2-8)
• Escalation Costs
• General Conditions / OH+P (Project Delivery)

Soft Costs
• A/E Consultant Fees
• Agency Approvals/Compliance Review
• CSU Construction Insurance: BRIP + OCIP
• Sustainability
Budgeting through Phases

2-7.5 ensures consistency in evaluation.

Changes can be tracked historically from schematic through final construction.

Reduction in time and cost for evaluating alternatives

Pop Quiz

When is BRIP **not** required?

A. On projects > $600,000 < $10,000,000
B. On Demo and Abatement Projects
C. On MCOs and JOCs
D. On Design-Build Projects Only
**BRIP: Builder’s Risk Insurance Program**

- Required on all projects > $610,000
- Premiums adjust annually
- Enrollment required prior to Project Construction Start
- Campus to contact CPDC-CM to enroll

[Link to BRIP webpage](http://www.calstate.edu/cpdc/CM/BRIP.shtml)
OCIP: Owner Controlled Insurance Program

- “Wrap” Insurance
- Required on all Major Projects
- Starting construction on or after Jan 1, 2012
- Construction costs greater than $10,000,000

- 2-7 Estimate: 2.5% of Total Construction
- Campus to contact
  - Alliant Insurance Services, Inc
  - CPDC-CM for additional questions

http://www.calstate.edu/cpdc/CM/OCIP.shtml
Sustainability

- CSU Policy and State Law require all State public buildings to be designed and constructed to a US Green Building Council LEED Silver certification level or equivalent
- Certification is not required on State projects. Can be funded through Non-State
- LEED 3.0 rating system
Sustainability

• Based on Building Type
• Automatically calculates to LEED Silver baseline.
• Use calc’s to populate front page.
• Use as estimate in lieu of detail sustainability study.

<table>
<thead>
<tr>
<th>SUSTAINABLE ESTIMATES (based on LEED v3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATE-New Construction</td>
</tr>
<tr>
<td>Building Cost: 10,101,221 x 5.00% = 505,000</td>
</tr>
<tr>
<td>Site Cost: 2,004,242 x 3.00% = 60,000</td>
</tr>
<tr>
<td>NON-STATE-New Construction</td>
</tr>
<tr>
<td>Building Cost: 0 x 5.00% = 0</td>
</tr>
<tr>
<td>Site Cost: 0 x 3.00% = 0</td>
</tr>
<tr>
<td>STATE-Remodel</td>
</tr>
<tr>
<td>Building Cost: 2,890,307 x 6.00% = 173,000</td>
</tr>
<tr>
<td>Site Cost: 0 x 4.00% = 0</td>
</tr>
<tr>
<td>NON-STATE-Remodel</td>
</tr>
<tr>
<td>Building Cost: 0 x 6.00% = 0</td>
</tr>
<tr>
<td>Site Cost: 0 x 4.00% = 0</td>
</tr>
</tbody>
</table>

PLUG these values in the appropriate columns on Unformat lines F50 and G50.
Sustainability

- Building Considerations and Analysis
- Project Cost Estimates
- LEED 3.0 Checklist (minimal)
- Basis of Design Approach / Goals Setting

Feasibility Study OR Calculation of AVERAGES based on the following criteria:

- Facility Type
- Performance
- Different sustainable measures
2-8: Energy & Site Utilities

- Planning Checklist / Estimating tool that presents a series of questions and issues that pertain Site Utility services and capacity.

<table>
<thead>
<tr>
<th>ELECTRICAL SERVICE</th>
<th>UNITS</th>
<th>ESTIMATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Campus Service Voltage</td>
<td>x VOLTS</td>
<td></td>
</tr>
<tr>
<td>2 This project will be served by</td>
<td>SELECT PUBLIC UTILITY</td>
<td>$0</td>
</tr>
<tr>
<td>3 Has the serving utility provided the connection fee for new service?</td>
<td>Yes/No</td>
<td>$0</td>
</tr>
<tr>
<td>4 Building Service Underground Conduit</td>
<td>0 LF</td>
<td>$0</td>
</tr>
<tr>
<td>5 Service Transformer:</td>
<td>Estimated Capacity</td>
<td>$0</td>
</tr>
<tr>
<td>6 Main Service Switchboard with Metering</td>
<td>Estimated Capacity</td>
<td>$0</td>
</tr>
<tr>
<td>7 Emergency Generator with Auto Transfer Switch:</td>
<td>Estimated Capacity</td>
<td>$0</td>
</tr>
<tr>
<td>8 Uninterrupted Power Service (UPS) - if required</td>
<td>Estimated Capacity</td>
<td>$0</td>
</tr>
</tbody>
</table>
Energy-Form B

- Used to estimate potential energy savings of new construction projects or large retrofits.
Project Delivery Methods

1. CSU A/E GC
2. CSU A/E CM

- Design
- Bid
- Build

- GC
- S
- M
- E
- P

[Diagram showing the project delivery methods with CSU A/E GC, CSU A/E CM, and their respective connections to Design, Bid, and Build.]
Project Delivery Methods

2-7 Cost Estimate Impacts:
- Project Schedule
- General Conditions / OH+P
- Pre-Con CM Services
- Contingency
## Project Delivery Methods

<table>
<thead>
<tr>
<th>Delivery Method Fee</th>
<th>Detailed Breakdown</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New Construction</td>
</tr>
<tr>
<td></td>
<td>CM @ Risk</td>
</tr>
<tr>
<td></td>
<td>Design-Bid-Build</td>
</tr>
<tr>
<td></td>
<td>Design-Build</td>
</tr>
<tr>
<td>Pre-Con Services (PW)</td>
<td>1.0%</td>
</tr>
<tr>
<td>Construction Services (C)</td>
<td>6.5%</td>
</tr>
<tr>
<td>CM Contingency (1-3%)</td>
<td>1.0%</td>
</tr>
<tr>
<td>OH + Profit</td>
<td>5.0%</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>13.5%</strong></td>
</tr>
<tr>
<td><strong>Project Contingency</strong></td>
<td><strong>4.0%</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17.5%</strong></td>
</tr>
</tbody>
</table>

### Renovation Fees

- **OH+P**: + 1%
- **Project Contingency**: + 2%
AE / Consultant Fees

- Calculated for all Delivery Methods: Fee Calcs Tab
- Calculations based on the appropriate AE Professional Service Agreement: Exhibit B
  http://www.calstate.edu/CPDC/ae/pro-serv-agree/design-bid.shtml

- Consultant Fees
Action Year Budget Example

A. Generate a Ballpark estimate for a Project:

B. CCCI /EPI Adjustment:
  • 2-7 originally created in 2012/13 @ CCCI 5950
  • Current 2013/14 @ CCCI 6077
2-7 Form Updates

Annual - COBCP Draft
  • CCCI
  • BRIP + OCIP Premiums
  • Cost Guide
  • Budget Year Start

Quarterly Updates
  • Captures any major changes Fees, Agency, Policy
  • Incorporates any new policies/programs
Resources

- CSU Construction Insurance Programs: BRIP & OCIP [http://www.calstate.edu/cpdc/cm/construction-insurance-programs.shtml](http://www.calstate.edu/cpdc/cm/construction-insurance-programs.shtml)
- CSU AE Professional Services Agreement: Exhibit B – Schedule of Lump Sum Fees [http://www.calstate.edu/CPDC/ae/pro-serv-agree/design-bid.shtml](http://www.calstate.edu/CPDC/ae/pro-serv-agree/design-bid.shtml)
- CPDC Training Site [http://centralstationu.calstate.edu/cpdc](http://centralstationu.calstate.edu/cpdc)
“Dilbert” Quick Poll

Thumbs Up or Down?

• Was this webinar helpful?
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Q&A