California Transportation Commission
Project Delivery Workshop

Caltrans Capital Outlay Support Budget

by Mike Keever
Division Chief – Caltrans Project Management
Project Development

Planning

1. Identify Project Need
2. Decision to Prepare Project Initiation Document
3. Form Project Development Team
4. Prepare Project Initiation Document

Design

1. Secure Project Programming
2. Prepare Draft Project Report
3. Perform Environmental Studies
4. Secure Project Approval
5. Prepare PS & E
6. Acquire Rights of Way
7. Obtain Approvals, Agreements & Permits

Construction

1. Complete Project Design
2. Prepare & Advertise Contract
3. Contract Administration & Construction of Project
4. Project Close-out
Phases of Project Development

- Planning
- Program
- Capital Outlay Support (COS)
- COS Closeout

1. Need & Priority Identified
2. PID Programming & Allocation
3. PA&ED Allocation
4. PS&E (Design) Allocation
5. Construction
6. Right of Way
7. Design Complete
8. Construction Complete
9. Closeout Complete

Risk and Uncertainty:
- 20% Known
- 80% Unknown

Phases:
- Preliminary Engineering (15¢)
- Construction (85¢)
Revised Caltrans SHOPP PIR Guidance

Caltrans SHOPP PIR guidance has been revised to reflect minimum PID requirements based on May 2017 CTC SHOPP Guidelines

• Estimates
  • **Accurate** support cost estimate for Project Approval and Environmental Document (PA&ED)
  • A **reliable range** for support and capital costs of future phases Plans, Specifications, and Estimates (PS&E), Right of Way (R/W) and Construction

• **Risk Register** that identifies all known risks to future cost, scope, schedule or changes in performance
A risk register is a required attachment.
## Section 18 Estimate, Funding and Programming

Estimated Capital & Support Cost ($1,000s) - Programmable Alternative

<table>
<thead>
<tr>
<th>Component</th>
<th>(A) Optimistic</th>
<th>(B) Pessimistic</th>
<th>(C) Most Likely</th>
<th>(D) Risk Amount</th>
<th>(E) Total including Risk (C+D)</th>
<th>(F) # Years to Mid Yr of Component</th>
<th>(G) Escalation Rate</th>
<th>(H) Escalation Amount</th>
<th>(I) Total Escalated Cost (E + H)</th>
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</thead>
<tbody>
<tr>
<td>Support</td>
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<td>PA&amp;ED²</td>
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<td>PS&amp;E</td>
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<td>Right of Way¹</td>
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</table>

- PA&ED bottom-up estimate is developed as accurately as possible for allocation by the CTC
- Cost estimate ranges are developed for future phases, with the most likely cost estimate used for programming
- The risk amounts generated by the **Risk Register Tool** are applied appropriately to all capital and support amounts
### Field Review Sections for PIR and PR

#### Project Initiation Report Section

**STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION**

**PROJECT INITIATION REPORT**

**DOTP-0002 (NEW 12/2019)**

#### 21. PROJECT REVIEWS

<table>
<thead>
<tr>
<th>Scoping Field Review Participants</th>
<th>Scoping team field review Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Title</td>
</tr>
<tr>
<td>Area of Expertise</td>
<td></td>
</tr>
</tbody>
</table>

#### Project Report Section

#### 12. PROJECT REVIEWS

- Scoping team field review attendance roster attached.
- District Program Advisor Enter Name Date
- Headquarters SHOPP Program Advisor Enter Name Date
- District Maintenance Enter Name Date
- Headquarters Project Delivery Coordinator Enter Name Date
- Project Manager Enter Name Date
- FHWA Enter Name Date
- District Safety Review Date
- Constructability Review Date
- Other Date
Project Initiation Report- PIR

Section 21 Project Reviews- Site Visit

• Project Development Team (PDT)
  • Ultimate Decision Makers but with a documented rationale/justification/risk

• Date & Attendance Roster of Participants properly documented

• Limited Resources- Challenge
  • Incorporate Advanced Technologies-Virtual Visits,
  • Employ Local Caltrans Maintenance Crew- Remote Locations
Current Efforts

Planning is an active participant at the monthly PCR Review Committee Meetings.

• Lessons Learned are continuously transmitted and looped back to the PID authors

• Developing trends are captured and mitigated

• Past issues are discussed as potential risks in discussions when developing future PID Risk Registers.
## Bottom Up Tool Template

- **Project Name**: [Insert project name]
- **Functional Unit Name & Number**: [Insert functional unit name & number]

<table>
<thead>
<tr>
<th>WBS</th>
<th>Task</th>
<th>Assumptions</th>
<th>ABCD 3000</th>
<th>BCDE 3001</th>
<th>CDEF 3002</th>
<th>DEFG 3003</th>
<th>EFGH 3004</th>
<th>FGHI 3005</th>
<th>GHJ 3006</th>
<th>HIJK 3007</th>
<th>JKL 3008</th>
<th>Total (S)</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

**Project Totals**

- **Total**: [Insert total]

### 0: PAED

**BUCKET**

**PROJECT DIRECT EXPENSES**

**Travel**

### 100

**PERFORM PROJECT MANAGEMENT**

- **PROJECT MANAGEMENT PAED COMPONENT**
  - **PAED Component Execution and Control**
    - Coordination with Implementing Agency
    - Project Status and Reporting
    - Attend PDT, Focused, and/or Field Meetings
    - Quality Management Plan
    - Public Hearings

- **Executable Cooperative Agreement for Future Phases**
  - Review 1st Submittal
  - Review 2nd Submittal
  - Approval Circulation

- **Perform Preliminary Engineering Studies and Draft Project Report**

### 100.10

**ENGINEERING STUDIES**

**TRAFFIC FORECASTING AND TRAFFIC STUDY**

- Review 1st Submittal
- Review 2nd Submittal
Support Cost Estimating Process

**Legend**

- **New Tool**
- **New Process**
- **Revised Process**

- (PM) Project Manager
- (TM) Task Manager
- (FM) Functional Manager
- (PE) Project Engineer
- (PDT) Project Development Team

- A. Functional Unit Project Scoping Fact Sheet data supplement to assist functional units with resource estimates.
- B. Project unit charging summaries for completed projects pulled from PRSM.
- C. Spreadsheets tailored to each functional unit for ease of entering and calculating hours/cost estimates specific to each project with outputs easily interpreted by PMs.
- D. Top Down Estimate Check: Tools allow historical data to compare capital and support hours/costs for similar projects.
- E. Can pull data for various combinations of support and capital costs from historical data.
- F. Quantified risk register tool: Monte Carlo analysis available for more complex projects from the District Risk Coordinator.
- G. PRSM Programming Sheet provides an automated distribution of programming funding by phase and PV.

*Updated policy for escalation.*

**Support Cost Estimating Process Diagram**

- **DRAFT PID**
- **PREPARE ESTIMATE USING BOTTOM UP TOOL**
- **REALITY CHECK AND VALIDATION**
- **ADJUST ESTIMATE**
- **PM NEGOTIATIONS**
- **FINAL (NEGOTIATED) FUNCTIONAL UNIT ESTIMATE**
- **QUANTIFY RISKS USING RISK REGISTER TOOL**
- **UPDATE PRSM WORK PLAN**
- **11-PAGE ESTIMATE TOOL**
- **PRISM PROGRAMMING SHEET**

**Base Estimate**

**Known Risks**

**Escalation**

**Programmed Amount**
Supplemental Funding and Greater Than 20% Allocation Requests

95-99% of Projects

Caltrans District - Project Change Management

Caltrans HQ - Project Change Management

Watch List

CTC
Change Management Process

**Project Level**
- PDT develops change request
- Discusses with District Management

**District Level**
- District determines alternatives
- District implements corrective action
  - No impact change
  - Amendment
  - G-12
  - Greater than 120% or Supplemental

**HQ Level**
- Reviews requested change (Cost, Scope, Schedule)
- Approves, Denies, or recommends a different solution
- Requests appropriate change from CTC

**CTC Actions**
- Review departmental request
- Recommends approval or Denial
- Commission acts
Support Costs for projects completing CCA between Jan 1 and Dec 31 2018 compared to their Approved Budget

<table>
<thead>
<tr>
<th>Percentage of Budget Expended</th>
<th>Number of Projects</th>
<th>Percentage of Projects</th>
<th>Approved Support Budget ($1,000's)</th>
<th>Actual Support Cost ($1,000's)</th>
<th>Over (Under) Budget ($1,000's)</th>
<th>% Over (Under) Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 80%</td>
<td>113</td>
<td>39%</td>
<td>$297,496</td>
<td>$175,830</td>
<td>$(121,666)</td>
<td>(41%)</td>
</tr>
<tr>
<td>80% to 120%</td>
<td>111</td>
<td>38%</td>
<td>$290,790</td>
<td>$288,150</td>
<td>$(2,640)</td>
<td>(1%)</td>
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<tr>
<td>&gt; 120%</td>
<td>66</td>
<td>23%</td>
<td>$130,806</td>
<td>$218,900</td>
<td>$88,094</td>
<td>67%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>290</strong></td>
<td><strong>100%</strong></td>
<td><strong>$719,092</strong></td>
<td><strong>$682,880</strong></td>
<td><strong>$(36,212)</strong></td>
<td><strong>(5%)</strong></td>
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</table>

Programmed vs Expended Support Costs

Phases completed in FY 17/18 and 18/19 with voted allocations
<table>
<thead>
<tr>
<th>Phase Level Support Cost Strike Zone</th>
</tr>
</thead>
</table>

**Phase 0**

<table>
<thead>
<tr>
<th>Percentage of Budget Expended Phase 0</th>
<th>Number of Projects</th>
<th>Percentage of Projects - Phase 0</th>
<th>Approved Support Budget ($1,000's) - Phase 0</th>
<th>Actual Support Cost ($1,000's) - Phase 0</th>
<th>Over (Under) Budget ($1,000's) - Phase 0</th>
<th>% Over (Under) Budget - Phase 0</th>
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</thead>
<tbody>
<tr>
<td>&lt;80%</td>
<td>173</td>
<td>29.73%</td>
<td>162,034</td>
<td>87,134</td>
<td>(74,900)</td>
<td>(46%)</td>
</tr>
<tr>
<td>80% to 120%</td>
<td>246</td>
<td>42.27%</td>
<td>194,325</td>
<td>200,993</td>
<td>6,668</td>
<td>3%</td>
</tr>
<tr>
<td>&gt;120%</td>
<td>163</td>
<td>28.01%</td>
<td>88,920</td>
<td>141,283</td>
<td>52,363</td>
<td>59%</td>
</tr>
<tr>
<td>Grand Total</td>
<td>582</td>
<td>100.00%</td>
<td>446,279</td>
<td>429,410</td>
<td>(15,869)</td>
<td>(4%)</td>
</tr>
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</table>

**Phase 1**

<table>
<thead>
<tr>
<th>Percentage of Budget Expended Phase 1</th>
<th>Number of Projects</th>
<th>Percentage of Projects - Phase 1</th>
<th>Approved Support Budget ($1,000's) - Phase 1</th>
<th>Actual Support Cost ($1,000's) - Phase 1</th>
<th>Over (Under) Budget ($1,000's) - Phase 1</th>
<th>% Over (Under) Budget - Phase 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;80%</td>
<td>88</td>
<td>30.56%</td>
<td>136,314</td>
<td>81,765</td>
<td>(54,576)</td>
<td>(40%)</td>
</tr>
<tr>
<td>80% to 120%</td>
<td>116</td>
<td>40.28%</td>
<td>145,814</td>
<td>159,922</td>
<td>14,108</td>
<td>10%</td>
</tr>
<tr>
<td>&gt;120%</td>
<td>84</td>
<td>29.17%</td>
<td>69,727</td>
<td>100,475</td>
<td>30,748</td>
<td>44%</td>
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<td>Grand Total</td>
<td>288</td>
<td>100.00%</td>
<td>351,882</td>
<td>342,161</td>
<td>(9,721)</td>
<td>(3%)</td>
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</table>

**Phase 3**

<table>
<thead>
<tr>
<th>Percentage of Budget Expended Phase 3</th>
<th>Number of Projects</th>
<th>Percentage of Projects - Phase 3</th>
<th>Approved Support Budget ($1,000's) - Phase 3</th>
<th>Actual Support Cost ($1,000's) - Phase 3</th>
<th>Over (Under) Budget ($1,000's) - Phase 3</th>
<th>% Over (Under) Budget - Phase 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;80%</td>
<td>79</td>
<td>59.96%</td>
<td>83,765</td>
<td>43,167</td>
<td>(40,598)</td>
<td>(48.5%)</td>
</tr>
<tr>
<td>80% to 120%</td>
<td>38</td>
<td>28.36%</td>
<td>35,211</td>
<td>34,546</td>
<td>(665)</td>
<td>(1.9%)</td>
</tr>
<tr>
<td>&gt;120%</td>
<td>17</td>
<td>12.69%</td>
<td>9,870</td>
<td>18,729</td>
<td>8,859</td>
<td>89.8%</td>
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<tr>
<td>Grand Total</td>
<td>134</td>
<td>100.00%</td>
<td>128,846</td>
<td>96,462</td>
<td>(32,404)</td>
<td>(25.1%)</td>
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</table>

Phases completed in FY 17/18 and 18/19 with voted allocations
Annual Budget Development

- Zero-based each year for project direct
  - Fiscal year “slice” of multi-year project workload hours
  - Based on project work plans
    - Approximately 3,000 projects ongoing
  - Aligned with programmed funding
    - E.g. STIP, SHOPP, SB 1, Partnership, Prop 1B, Toll Program

- FTE hours are converted to dollars using average rates for regular personal services, cash overtime, and A&E

- Indirect is based on 17% of direct

- Corporate (HQ) Base
COS annual budget request is based on a fiscal year slice of approx. 3,000 projects.
Fiscal Year Project Resource Slice

Fiscal Year “Slice” of Project Workload

PHASES
- Environmental Phase
- Design Phase
- Construction Support Phase
- Right of Way Support Phase

TASKS
- Task 185 – Base Maps and Plan Sheets
  - Task 205 – Permits and Agreements
    - Task 230 – Draft PS&E
    - Task 235 – Environmental Impacts & Hazardous Waste
  - Task 240 – Draft Structures PS&E
    - Task 250 – Final Structures PS&E
    - Task 255 – Final District PS&E
  - Task 260 – Contract Bid Documents
  - Task 265 – Award and Approve Contract
  - Fiscal Year “Slice”

ASSIGNMENTS
- Unit 1342 – Design
- Unit 3265 – Environmental
- Unit 8473 – Traffic Operations
- Unit 0945 – Construction
- Unit 2310 – Maintenance
- Unit 4256 – Right of Way
- Unit 7465 – Surveys
Conclusion

• Overall Caltrans delivers a large complex program, with most projects delivered within our budgetary authority.
• We need to do more.
• We are creating new tools, rolling out training, and measuring our performance to make improvements to our work plan support cost estimates.
• We need to take more risk when developing our work plans, use our risk and change management processes to work to stay within budget, but it may mean more project adjustments will be needed including possible CTC action.
• We need to use our site visits as a tool to manage project change risks.
• With these changes we intend to put more of our money to work, increase efficiency, and encourage innovation.
Questions?