



Memorandum

TO: TRANSPORTATION AND
ENVIRONMENT COMMITTEE

FROM: Katy Allen

SUBJECT: CALIFORNIA MULTI-AGENCY CIP BENCHMARKING STUDY UPDATE

DATE: 08-04-08

Approved

Date

8/7/08

COUNCIL DISTRICT: City-Wide

RECOMMENDATION

Accept this report on the City's participation in the California Multi-Agency Capital Improvement Project (CIP) Benchmarking Study.

BACKGROUND

The California Multi-Agency CIP Benchmarking Study was initiated in 2001 as a joint effort involving the seven largest cities in California (Los Angeles, San Diego, Long Beach, San Jose, San Francisco, Oakland, and Sacramento). The purpose of this ongoing and open-ended Study is for the agencies to evaluate their capital improvement project delivery cost performance and best management practices geared towards improving that performance.

The Study has an annual cycle which culminates in the publication of a summary report each fall. On a quarterly basis, the agencies meet and discuss process and performance benchmarking topics, as well as project delivery data analysis and other content that populates the annual report. The report and meetings are coordinated by a consultant retained by the agencies at an annual cost of about \$22,000 per agency. In addition, the agencies take turns leading the Study on a rotational basis and San Jose is currently the lead agency.

ANALYSIS

The Study is organized around three major components:

- Performance Benchmarking
- Best Management Practices (BMPs)
- On-Line Discussion Forum

Performance Benchmarking

Performance Benchmarking involves the collection of documented project costs from each agency and the subsequent creation of data models of project delivery costs versus total construction costs. Project delivery costs are defined as the sum of all City and consultant costs associated with project planning, design, bid, award, construction management, and closeout activities. Total construction costs are defined as the sum of the awarded construction contract, net change orders, utility relocation, and construction by agency forces. Data from the agencies is continuously added to a 5-year rolling database. Criteria for projects accepted into the Study are:

- the total construction cost must be \$100,000 or greater,
- the delivery methodology must be design-bid-build, and
- the project must fall within one of the predefined project types (see Exhibit A).

The Study consultant performs an annual statistical analysis of the data and summarizes it via graphs and tables in an Annual Report. In general, the information is focused on delivery cost ranges and averages for the participating agencies for various project classifications. Currently there are approximately 800 projects included in the analyses of the Study and this large number supports the confidence, consistency, and reliability of the results.

When it comes to performance monitoring, no other agency has taken Study data to direct application as San Jose. Exhibit A presents project delivery cost target limits that were derived from model data in the Study. Such target limits are fair and reasonable for San Jose since they are inherently in line with the performance of other similar California municipal agencies. Public Works actively monitors its project delivery performance against these ranges and reports it in the Adopted Operating Budget. When projects fall out of range, staff seeks to understand and mitigate the contributory issues.

In looking at Performance Benchmarking trends, certain key facts have emerged through participation from the Study:

- **Small projects tend to have higher delivery cost percentages than large projects.** This is largely due to the fact that there are certain base costs associated with delivering any project and the lower the total construction costs, the higher the delivery cost percentage will be. Additionally, some projects have implicitly higher planning and/or design costs relative to the total construction costs. Examples of such projects are stand-alone restrooms in parks and the seismic retrofitting of municipal bridges.
- **Projects with significant planning, design and construction challenges tend to have higher delivery cost percentages.** Examples of such projects and their challenges are:
 - Certain street and pipe projects with an unknown underground component or with utility relocations and conflicts.
 - Building renovation projects with a high degree of uncertainty in the existing structure or its component systems.

- Parks, community centers, and other projects with a high degree of community input and scope resolution.

When these project challenges require additional staff time to resolve at any stage, the delivery costs rise.

- **Material cost fluctuation and volatile bidding climates affect the total construction cost.** Material costs have risen significantly in California in the past few years. But at the same time, contractor bids have fluctuated both to the high and low side of staff estimates of construction costs. When total construction costs are lower than expected, but the delivery costs remain unchanged, the delivery cost percentage will increase beyond what was originally targeted.

The realities described above have become constant challenges in the City's Capital Improvement Program. While strong staff efforts are made to curtail the delivery cost impacts of these challenges, delivery costs and their percentages with respect to construction costs are generally on the rise.

Best Management Practices

Proactive participation in the Study has led to significant benefits for San Jose. Public Works staff is regularly implementing, where practicable, the latest BMPs that emerge from the Study. BMPs are practices used in project delivery that directly influence the cost of either design or construction management and ultimately result in efficient project delivery. BMPs have been under constant development since the inception of the Study and are categorized by phases (Planning, Design, and Construction) or aspects (Quality Assurance/Control, Project Management, and Consultant Selection) of projects that they impact.

At this time, approximately 50 BMPs have been established and San Jose has either already adopted or is in the process of adopting these. An example of the success an adopted BMP is the streamlining effect of the delegation of authority from Council to the Director of Public Works to award construction contracts up to \$1 million. Another BMP that will be pursued by Public Works staff in the near future is the delegation of authority from Council to the Director of Public Works to approve technical-related consultant agreements up to \$250,000 for capital projects. For a complete listing of the current BMPs, see Exhibit B.

On-Line Discussion Forum

Another Study participation benefit is the Online Discussion Forum. When City staff has a question about how other agencies are handling a challenging project delivery situation, or just a current Public Works issue in general, they can turn to the internet and email the other agencies participating in the Study. The agencies are generally committed to rapidly answering such inquiries and sharing information with one another. San Jose has recently turned to the Forum to seek information regarding how other agencies handle:

- utility company delays,
- standard specification/detail formats and revision processes,

- technical approval of construction documents,
- Green Building policies, and
- cost estimating policies and procedures.

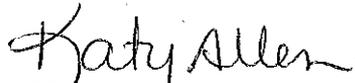
An outcome of the last example is the proposed revisions to Council Policy 8-12 "Estimating Capital Improvement Project Costs and Development of Project Budgets" that are currently underway and have been reported to this Council Committee on April 7, 2008.

In summary, participation in the Study has proven to be an invaluable tool for the City of San Jose's Capital Improvement Program considering the benefits that have already been realized and the supportive framework that it provides as a challenging capital project delivery future lies ahead.

COORDINATION

The Public Works Department partners with the Capital Improvement Program Action Team (CIPAT) of the City Manager's Office in participating in the Benchmarking Study.

For questions, please contact David Sykes, Assistant Director, at 535-8440


Katy Allen
Director of Public Works

**Exhibit A
Public Works Project Delivery Cost Targets**

PROJECT TYPE	Total Construction Cost	Delivery Cost Target*	PROJECT TYPE	Total Construction Cost	Delivery Cost Target*
MUNICIPAL FACILITIES PROJECTS			STREETS PROJECTS (Cont'd.)		
Libraries	\$2M - \$3.5M	50%	Signals	\$0.1M - \$0.2M	59%
	\$3.5M - \$4M	44%		\$0.2M - \$0.5M	55%
	> \$4M	41%		> \$0.5M	49%
Police/Fire Stations	\$0.1M - \$0.6M	58%	PIPE SYSTEMS		
	\$0.6M - \$3M	52%	Gravity Systems	\$0.1M - \$0.5M	51%
	> \$3M	45%		\$0.5M - \$1.1M	45%
Community Bldg /Rec Ctr/Child Care/Gym	\$0.1M - \$0.4M	64%		> \$1.1M	42%
	\$0.4M - \$1.5M	60%	Pressure Systems	\$0.1M - \$0.5M	35%
	> \$1.5M	55%		\$0.5M - \$0.9M	35%
Airport Improvements	TBD ¹	TBD ¹		> \$0.9M	34%
Miscellaneous Municipal Improvements	TBD ¹	TBD ¹	Pump Station	\$0.1M - \$0.7M	53%
				\$0.7M - \$3M	50%
				> \$3M	44%
STREETS PROJECTS			PARKS PROJECTS		
Widening/New/Grade Separation	\$0.1M - \$0.6M	65%	Playgrounds	\$0.1M - \$0.3M	58%
	\$0.6M - \$5M	59%		\$0.3M - \$0.5M	52%
	> \$5M	44%		> \$0.5M	45%
Bridge²	\$0.1M - \$0.3M	104%	Sportfields	\$0.1M - \$0.3M	39%
	\$0.3M - \$2M	93%		\$0.3M - \$0.7M	39%
	> \$2M	68%		> \$0.7M	39%
Reconstruction	\$0.1M - \$0.6M	53%	Trails	TBD ¹	TBD ¹
	\$0.6M - <\$1M	50%			
	> \$1M	48%			
Bike / Pedestrian / Streetscape	\$0.1M - \$0.3M	78%	Restrooms³	\$0.1M - \$0.2M	68%
	\$0.3M - \$0.6M	65%		\$0.2M - \$0.3M	74%
	> \$0.6M	57%		> \$0.3M	102%

*The Project Delivery Cost Target is derived from the 2006 California Multi-Agency CIP Benchmarking Study. The numbers here reflect the 75th percentile of delivery costs. It represents the upper value of the 50% confidence interval for the Project Delivery Cost range established for each specific project type.

The Project Delivery Cost % is calculated as follows:

[All project staff/consultant costs (including overhead costs; excluding real estate costs)]÷[Total Construction Costs] x 100%

¹ This range/target is to be determined because the project type is not yet categorically addressed in the Benchmarking Study.

² Project Delivery Cost for this project type is high due to higher design/engineering costs relative to lower construction costs.

³ Project Delivery Cost for this project type is high due to inherent project-related costs relative to lower construction costs.

Exhibit B
California Multi-Agency CIP Benchmarking Study
Best Management Practices (BMPs)
August 2008

Category	Reference #	BMP
Planning	1.a.	Define capital projects well with respect to scope and budget including community and client approval at the end of the planning phase.
	1.b.	Complete Feasibility Studies on projects prior to defining budget and scope.
	1.d.	Utilize a Board/Council project prioritization system.
	1.e.	Resource load all CIP projects for design and construction.
	1.f.	Include a Master Schedule in the CIP that identifies start and finish dates for projects.
	1.g 2007	Make an early determination on which environmental document is required and incorporate into the schedule.
	1.i.	Show projects on a Geographical Information System.
Design	2.b.	Provide a detailed clear, precise scope, schedule, and budget to designers prior to design start.
Quality Assurance / Quality Control	2.f.	Define requirements for reliability, maintenance, and operation prior to design initiation.
	2.i.	Adapt successful designs to project sites, whenever possible (e.g. fire stations, gymnasiums, etc).
	2.k. 2003	Train in-house staff to use Green Building Standards.
	2.l. 2004	Limit Scope Changes to early stages of design.
	2.m. 2004	Require scope changes during design to be accompanied by budget and schedule approvals.
	2.n. 2006	Implement a rotating Request for Quote process for contracting small projects to streamline the bidding and award process during construction. (Include criteria for exemptions from formal Council approval.)
	2.o 2007	Establish criteria for obtaining independent cost estimates which take in consideration both project characteristics and volatility of the market.
	2.p.2008	Establish criteria for responsible charge design approval such that it occurs at the lowest appropriate organizational level in order to expedite design completion.
	3.I.a.	Develop and use a standardized Project Delivery Manual.
	3.II.b.	Perform a formal Value Engineering Study for projects larger than \$1 million.
3.III.a.	Use a formal Quality Management System.	
3.III.b	Perform and use post-project reviews to identify lessons learned.	
3.III.k 2007	Establish a Utility Coordinating Committee with members from public and private entities.	
3.III.l 2007	Designate a responsible person or group and establish a process of notifications and milestones for utility relocations.	
Construction Management	3.III.m.2008	Maintain and regularly update electronic standard contract specifications and related documents, as well as technical/special provisions.
	4.I.a.	Delegate authority to the City Engineer/Public Works Director or other departments to approve change orders to the contingency amount.
	4.I.m.	Classify types of change orders.
	4.II.a.	Include a formal Dispute Resolution Procedure in all contract agreements.
	4.III.a.	Use a team building process for projects greater than \$5 million.
	4.IV.a.	Involve the Construction Management Team prior to completion of design.
	4.V.a. 2003	Delegate authority below Council to make contract awards under \$1 million.
	4.V.b 2003	Establish a pre-qualification process for contractors on large, complex projects.
	4.V.c 2003	Make bid documents available online.
Project Management	5.I.f.	Assign a client representative to every project.

Exhibit B
California Multi-Agency CIP Benchmarking Study
Best Management Practices (BMPs)
August 2008

	5.I.j 2003	Create in-house project management team for small projects.
	5.I.k 2004	Institutionalize Project Manager performance and accountability.
	5.II.a	Provide formal training for Project Managers on a regular basis.
	5.II.d 2006	Implement verification procedures to ensure that PM training includes agency policies, procedures, forms, and standards of practice (scheduling, budgeting, claims avoidance, risk analysis, etc).
	5.III.a.	Adopt and use a Project Control System on all projects.
	5.III.e 2006	Implement a financial system that tracks expenditures by category to monitor project hard and soft costs during project delivery.
	5.III.f 2006	Implement a Work Breakdown Structure (WBS) to measure progress on project deliverables.
	5.III.g 2006	Monitor "earned value" versus budgeted and actual expenditures during project delivery.
	5.III.h 2007	Include a fixed ROW acquisition milestone schedule and obtain commitments from participating City departments.
	5.III.i.2008	Implement an electronic progress payment system to improve efficiency.
	5.IV.a 2006	Bundle small projects whenever possible.
	5.IV.b 2007	Have a coordinator with expertise in the environmental process within the department delivering the engineering/capital project.
Consultant Selection and Use	6.c.	Include a standard consultant contract in the RFQ/RFP with an indemnification clause.
	6.e.	Delegate authority to the Public Works Director/City Engineer to approve consultant contracts under \$250,000 when a formal RFP selection process is used.
	6.g.	Implement and use a consultant rating system that identifies quality of consultant performance.
	6.m 2006	Implement as-needed, rotating, or on-call contracts for design and construction management work that allow work to be authorized on a task order basis to expedite the delivery of smaller projects.