

Measuring And Managing CIP Performance

A city's Capital Improvement Program (CIP) represents a significant investment of resources that contributes to the fabric of the community. When I became city manager of the city of Cape Girardeau, over several years I moved the CIP to a five-year, fiscally constrained program that associated a cost with each project, prioritized certain projects as a way of ensuring they received sufficient resources, and emphasized maintenance and preservation as important components of the program. Administering a CIP carefully and responsibly engenders trust and accountability with residents. Delays and cost overruns cost a city both financially and in terms of public trust.

In addition to designing and building capital projects successfully, it is important that projects meet budgets and schedules and performance metrics on projects are tracked. An assessment of a city's CIP function can identify whether it is operating in an efficient and effective manner and relying on best practices to deliver projects that benefit the community. It also can save a lot of money.

Performance metrics and data that show what a project actually costs to deliver are essential components to managing any capital project. Close attention to the execution of the capital improvement program including tight, rigorous management oversight, produces measurable improvements in performance and cost savings. The axiom, "What gets measured is what gets done," is apt here. Put a spotlight on performance, and chances are high that project delivery will improve.

The Costs Of Delays

Delivering a capital project on time and on budget is a fundamental goal of any CIP. Planning and scoping projects are critical to delivering them within the estimated budget

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and timeframe; doing so can save municipalities a significant amount of money.

The reason on-time delivery is crucial is both simple and subtle. The simple reason is construction cost escalation that is almost always present in the construction economy, although the amounts vary based on the state of the overall economy and specific factors in the construction industry. In the last several years construction cost increases have averaged between 2% and 4% per year, but are forecast to be between 5% and 6% in 2022. A consensus forecast recently projected infrastructure

construction costs will rise to about 5% per year through 2025.

The subtle factor affecting municipal CIP delay cost increases is negative leverage. Many local government CIP projects are substantially funded via state and federal grant funding, that are almost always made on a "not to exceed" or capped basis. In other words, a grantor will agree to fund some percentage of costs but cap its share based on a point in time. When a project is delayed beyond the point-in-time estimate, a local government may incur all the additional costs in the local match. Although state and federal sources may constitute a majority of anticipated project funding, changes to the local match can sometimes make a project untenable. Delayed public benefits of safety, efficiency, and additional revenue from the project constitute additional negative effects.

Example Of Typical City Delay And Associated Costs

Management Partners will typically work with a city to ascertain the types of delays being incurred and the degree to which they could or could not have been controlled by early intervention and active management. The table on page 12 shows the results of a random sample of actual projects in a medium-sized city.

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Number	Project Type	Schedule Adherence +/- in Months	Original Projected Construction Cost	Revised Estimated Construction Cost	Cost Increase/ (Decrease)
1	Park improvements	9 +	\$140,000	\$500,000	\$360,000
2	Streets	21 +	\$1,260,000	\$2,360,000	\$1,100,000
3	Traffic signal	21 +	\$175,000	\$231,000	\$56,000
4	Bridge	69 +	\$6,700,000	\$8,342,900	\$1,642,900
5	Streets	81 +	\$1,900,000	\$4,653,700	\$2,753,700
6	Streets	2 -	\$3,230,700	\$2,900,000	(\$330,700)
7	Streets	19 +	\$345,000	\$595,894	\$250,894
8	Building	31 +	\$510,000	\$1,195,000	\$685,000
9	Building	1 -	\$250,000	\$200,000	(\$50,000)
10	Sewer	32 +	\$600,000	\$2,318,535	\$1,718,535
TOTAL			\$15,110,700	\$23,297,029	\$8,186,329
AVERAGE		28.2			\$818,633

Of the projects sampled, most experienced a delay relative to the original engineer estimate and a cost increase relative to the original projected amount. The data indicate that costs increased by approximately 1.9% for every month of delay, which indicates some cost increases resulted from factors other than cost inflation, since the projects took place from 2016 to 2019.

We worked with the teams involved in these projects and determined an average of about 16 months of delays per project could have been avoided by more active management or application of resources. This is a conservative estimate, as some of the delays considered unavoidable (usually regulatory

delay or scope changes) may arguably have been expedited. Additionally, we estimated at least 0.4% of the monthly cost increases experienced could be attributed to straight cost inflation, or a little over \$2 million for the year analyzed. To staunch this cost, the city decided to invest between \$500,000 and \$1,000,000 per year into efforts to better resource and manage the CIP, such as those discussed below.

The Risks Of Not Tracking CIP Performance

For accountability and transparency, a city's CIP needs to have a system in place that tracks specific measures for each project *and* tracks the execution of the overall capital improvement program. Many cities have no clear, simple management tool for measuring or tracking the execution of a capital improvement program. Although high-visibility projects often get a lot of attention, the majority of day-to-day projects do not. Often the result is that a large number of projects are carried over from one fiscal year to the next because they did not get done.

Many jurisdictions use project management software to manage their capital projects. However, this software is used for individual projects rather than for the capital improvement program in the aggregate.

When there is no management system for tracking the quality of the execution of the capital program as a whole, it is not possible to answer the question of whether the CIP was executed efficiently and timely compared to prior year(s). How well the projects are executed against the planned budget and planned

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schedule are the primary variables that management can and should be managing.

Toward Performance Management

Reducing delays and cost overruns begins by taking steps to track relevant metrics, then using metrics to manage the program by fostering accountability and investing in people and tools to increase productivity.

Some questions to consider when considering how performance management can help a city's CIP:

- Is there data that reveals whether CIP projects are being delivered on time and within budget?
- Do current CIP planning (scoping) and budgeting practices result in realistic schedules and reasonable cost projections, or are schedules and cost projections unrealistic and understated?
- Do capital project budgets include staff costs? If excluded, does that compromise accountability and performance and understate the true cost of delivering a project?
- Is there sufficient quality assurance/quality control (QA/QC) review of project plans? Are in-field changes increasing costs?
- Do CIP reports provide good information on the status of capital improvement projects? Could they be expanded and presented to the city council and public?

Implementation of a comprehensive capital improvement program management system can be the basis for evaluating the management of two key elements of the CIP—time and project budgets. The major elements include:

Cost

- Estimated design cost vs. actual design cost
- Engineer's estimated contract amount vs. contract award
- Total project cost
- Budget estimate vs. actual project cost
- Revised estimate vs. actual project cost
- Construction cost: revised estimate vs. actual cost

Schedule

- Planned design time vs. actual design time
- Planned bid opening date vs. actual bid opening date

- Planned notice to proceed date vs. actual notice to proceed date
- Revised estimated construction completion vs. actual construction (Consider incentive/disincentive bidding)
- Planned project completion date vs. actual completion date

Use of these metrics will assist city managers in gauging the specific indicators for each project, as well as the effectiveness of the management of the CIP overall. They will also build a culture that expects projects to be completed on time and on budget that will drive innovation and pragmatic solutions.

The Benefits Of CIP Performance Management

An in-depth review of current capital improvement projects with respect to scope and delivery schedules, the use of performance metrics, and consideration of all project costs will give city leaders and others a more realistic estimate of the cost of project delivery and more accurate projections on how long it takes to deliver projects. When a project is approved in the CIP, the budget and schedule should be seen as a commitment to the city council and the community. In that regard, cultivating an “on-time and on-budget” culture for capital projects will improve performance and public trust.

Use of performance metrics, accurate reporting on the status of capital projects, and proper use of management and information systems are essential to the execution of the capital improvement program. Tighter, more rigorous management will likely produce measurable improvements in CIP performance. Quarterly reporting of each capital tax fund of project costs, as well as annual reporting of the CIP projects during the CIP approval process, give a high level of accountability, while monthly reporting and follow-up discussions allow officials to adjust projects before they become public issues. 🍃

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