

Finance and Audit Committee Performance Metrics State Route 99 Realignment Project Contract No. HSR 12-06



PERFORMANCE METRICS

The following performance metrics for SR99, a Caltrans design-build project within the limits of CP1, are intended to give the Authority's Board of Directors and other key stakeholders a high level overview of the performance of this project. Safety is a top priority and listed first, followed by key metrics for cost, schedule, and quality, as all are fundamental metrics for the management of the project. In addition and in support of the business aspects of the project, three key metrics are included for economic benefits. The Authority's management team, both on the project site and at the headquarters in Sacramento, will also review other aspects of the project's performance. The Authority will track and monitor the trends of these performance metrics to proactively manage the project.



Performance Metrics



COST



Total Support Cost
[Invoiced to Date Amount] ÷ [Total Capital Cost]



Construction Contingency
[Remaining Contingency Value] ÷ [Construction Contract Value]



Cost Performance Index (CPI)
[Earned Value] ÷ [Actual Cost]

SCHEDULE



Schedule Performance Index (SPI)
[Earned Value] ÷ [Planned Value]

QUALITY



Construction Contract Change Orders (CCO's)
[Number of unplanned CCO's] ÷ [Construction Dollars Earned] * [5,000,000]

ECONOMIC BENEFITS



Disadvantaged/Small Business Enterprise
[Total Value of DBE/SBE/DVBE/MB Contracts
Signed to Date with the Contractor] ÷
[Construction Contract Value]

Note: Participation will increase towards the 30% goal, as the project progresses into construction.

Performance Metrics Explanations (Red & Yellow metrics)

Cost Performance Index – Yellow (CPI = Earned Value-EV / Actual Cost - AC)

1. EV = \$12,588,585; AC = \$13,538,854
2. Currently at 0.93, performance target is >1.0.

Reason – The earned value for the project has been lagging due to ongoing clarifications in the design and scope of work of the project as compared to when the budget was established and pending design decisions. There has also been continuous Value Engineering through the design phase that has resulted in a large effort in support during the PS&E phase of the project.

Mitigation/Improvements – The project is implementing CMGC procurement methodology that has a significant upfront effort to resolve issues and add value to the project in the design phase. The goal is to reduce risks and eliminate changes and change orders in construction thereby potentially reducing support cost in that phase. This metric will begin to improve once the outstanding decisions pertaining to design are finalized.

Schedule Performance Index – Yellow (SPI = Earned Value-EV / Planned Value-PV)

1. EV = \$12,588,585; PV = \$12,699,997
2. Currently at 0.99, performance target is >1.0.

Reason – The earned value for the project has been lagging due to ongoing clarifications in the design and scope of work of the project as compared to when the budget was established and pending design decisions. There has also been continuous Value Engineering through the design phase that has resulted in a large effort in support during the PS&E phase of the project.

Mitigation/Improvements – The project is implementing CMGC procurement methodology that has a significant upfront effort to resolve issues and add value to the project in the design phase. The goal is to reduce risks and eliminate changes and change orders in construction thereby potentially reducing support cost in that phase. This metric is on target for all practical purposes and will improve once the outstanding decisions pertaining to design are finalized.

Disadvantaged/Small Business Enterprise – Red [Total DBE/SBE/DVBE/MB payments made to date] ÷ [Total Subcontract Contract Payments made to Date]

1. Total DBE/SBE/DVBE/MB payments made to date = \$31,302
2. Total Subcontract Contract Payments made to Date = \$ 576,237
2. Currently at 5.4%, performance target is 10% for the pre construction phase.

Reason – As the project is in the Pre Construction phase a majority of the work performed by the CMGC contractor is self performed and the opportunity to hire SB sub consultants are very limited.

Mitigation/Improvements – The project target is to achieve the 30% goal by project completion. The Project Team set an intermediate goal of 10% for all sub contracts in the Pre construction phase. The contractor has maximized the SB participation by hiring SB for all work that is not self performed. This metric will improve once the contractor begins to execute subcontracts for the construction phase of the project.

Performance Metrics – Explanatory Details

Category	Description
General	Data Period
Description	The Performance Metrics represent the period of 2/19/2013 to 09/30/2014.
Safety	Caltrans Safety Incident Rate: $[\text{Number of injuries and illnesses}] \div [\text{Employee hours worked}] \times [200,000]$ *
Description	<ul style="list-style-type: none"> The goal is to contain the incidence rate at ≤ 3.2. Benchmark: The average incidence rate per the 2012 U.S. Bureau of Labor Statistics, U.S. Department of Labor for heavy and civil engineering construction is 3.2. Caltrans has TBD incidents of recordable injury or illness to date. Caltrans has TBD construction hours worked to date. The incidence rate represents the number of nonfatal occupational injuries and illnesses per 100 full-time workers and is calculated as: $(N/EH) \times 200,000$, where N = number of injuries and illnesses EH = total hours worked by all employees during the calendar year 200,000 = base for 100 equivalent full-time workers (working 40 hours per week, 50 weeks per year) Reporting for this metric will commence when construction begins
Safety	Contractor Safety Incident Rate: $[\text{Number of injuries and illnesses}] \div [\text{Employee hours worked}] \times [200,000]$ *
Description	<ul style="list-style-type: none"> The goal is to contain the incidence rate at ≤ 3.2. Benchmark: The average incidence rate per the 2012 U.S. Bureau of Labor Statistics, U.S. Department of Labor for heavy and civil engineering construction is 3.2. The Contractor has <u>TBD</u> incidents of recordable injury or illness to date. (Will Start reporting in the construction phase of project) The Contractor has <u>TBD</u> hours worked to date. The incidence rate represents the number of nonfatal occupational injuries and illnesses per 100 full-time workers and is calculated as: $(N/EH) \times 200,000$, where N = number of injuries and illnesses EH = total hours worked by all employees during the calendar year 200,000 = base for 100 equivalent full-time workers (working 40 hours per week, 50 weeks per year) Reporting for this metric will commence when construction begins
Cost	Total Support Cost: $[\text{Construction Support Cost}] \div [\text{DB Invoiced to Date Amount}]$
Description	<ul style="list-style-type: none"> The goal is to keep the support cost at $\leq 20\%$ of the Capital cost. Benchmark: The statewide average Support to Capital ratio for project development cost on the State Highway System is approx 32% of the Capital costs for major projects. For this project the Total Support Cost encompasses the effort required to provide Project Management, Contract Administration, Inspection and Quality Control for the Design, Right of Way and Construction phases. Expended to date amount = <u>\$ 13,538,854</u> Total Capital Cost = <u>\$ 190,000,000</u> Project Total Support to Capital ratio = <u>7.1%</u>

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Cost	Construction Contingency: $[\text{Remaining Contingency Value}] \div [\text{Construction Contract Value}]$
Description	<ul style="list-style-type: none"> The goal is contain the contingency to 5% of the total construction cost. Benchmark: Caltrans is using an alternative procurement method called CMGC. However, their contingency will be established in their normal manner of design-bid-build. Once the project is awarded, a 5% construction contingency will be established. At baseline estimate of \$110,000,000 for construction, a 5% contingency amount would equal \$5,500,000 contingency. The Remaining Contingency = $[\text{Current Allocated Contingency Amount}] - [\text{Executed Change Orders}] = \\TBD The Construction Contract Value = $[\text{Construction Contract Amount}] - [\text{Monthly Progress Payment Estimates}] = \text{TBD}$ Reporting for this metric will commence when construction begins
Cost	Cost Performance Index (CPI): $\text{Earned Value (EV)} \div \text{Actual Cost (AC)}$
Description	<ul style="list-style-type: none"> The goal is to achieve $\text{CPI} \geq 1$, which is same as $\geq 100\%$ when expressed in percent. Benchmark: As per guidelines by PMI (Project Management Institute, World Wide) the CPI should be ≥ 1 or 100%. At a value of 100% the value earned is same as planned, and the project is right on cost. EV = Percent Complete x BAC (Budget at Completion) - <u>\$ 12,588,585</u> AC = Actual Costs to Date - <u>\$ 13,538,854</u> Project Cost Performance Index = <u>0.93</u>
Schedule	Schedule Performance Index (SPI): $\text{Earned Value (EV)} \div \text{Planned Value (PV)}$
Description	<ul style="list-style-type: none"> The goal is to achieve $\text{SPI} \geq 1$, which is same as $\geq 100\%$ when expressed in percent. Benchmark: As per guidelines by PMI (Project Management Institute, World Wide) the SPI should be ≥ 1 or 100%. At a value of 100% the Project is forecasted to complete on-time. EV= Percent Complete x BAC (Budget at Completion) - <u>\$ 12,588,585</u> PV= Planned Value - <u>\$ 12,699,997</u> Planned Value in dollars to be spent to date is derived from the approved baseline established for the project using a linear burn rate. Project Schedule Performance Index = <u>0.99</u>
Quality	Construction Contract Change Orders (CCO's): $[\text{Number of unplanned CCO's}] \div [\text{Construction Dollars Earned}] * [5,000,000]$
Description	<ul style="list-style-type: none"> The goal is to maintain Number of unplanned CCO's to ≤ 1.0. This represents 1 construction unplanned CCO per \$5M of construction work performed. The approved baseline schedule currently allocates approximately <u>\$110,000,000</u> to construction activities. This equates to an estimated <u>22</u> unplanned CCO's over the duration of construction to stay within the target. The target rate identified is preliminary and is derived from the professional judgment of multiple Caltrans' managers and experience on other Caltrans' projects. This metric will be measured and trended for refinement throughout the life of this project Reporting for this metric will commence when construction begins

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Economic Benefits	Disadvantaged/Small Business Enterprise: $\frac{[\text{Total Value of DBE/SBE/DVBE/MB payments made to Date}]}{[\text{Total Subcontract Contract Payments made to Date}]}$
Description	<ul style="list-style-type: none"> • The current goal is achieve $\geq 30\%$. • Benchmark: This project will use an alternative procurement method called CMGC. As the project design is refined, the contractor will execute DBE/SBE/DVBE/MB subcontracts for specific portions of work. At 90 % design, the contractor will provide a schedule of when all of the DBE/SBE/DVBE/MB subcontracts will be signed. • The project will achieve the 30% goal by project completion. • The Project Team set an intermediate goal of 10% for all sub contracts in the Pre construction phase. <p>Total SB work performed amount = \$ <u>31,302</u> Total Sub Contract payments = \$ <u>576,237</u> The project has achieved a 5.4 % participation currently in the pre construction phase</p>