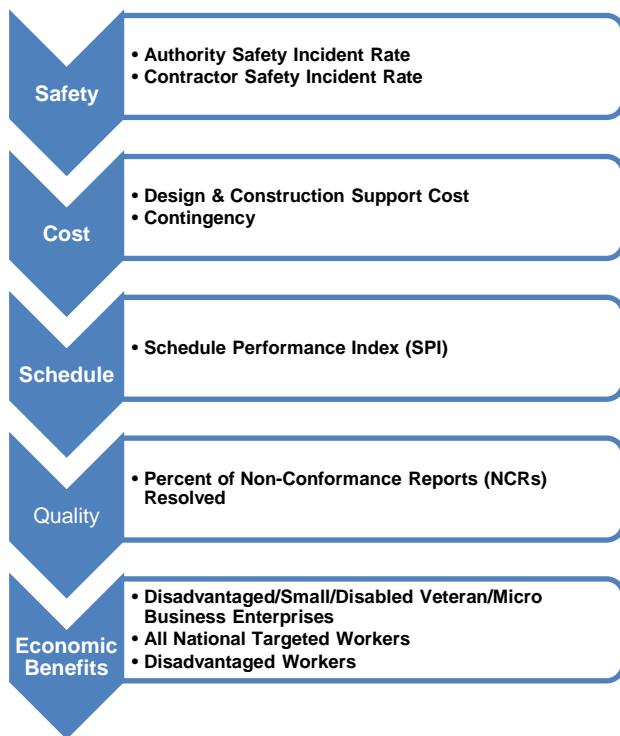


# Finance and Audit Committee Performance Metrics Construction Package 2-3 Contract No. HSR 13-57



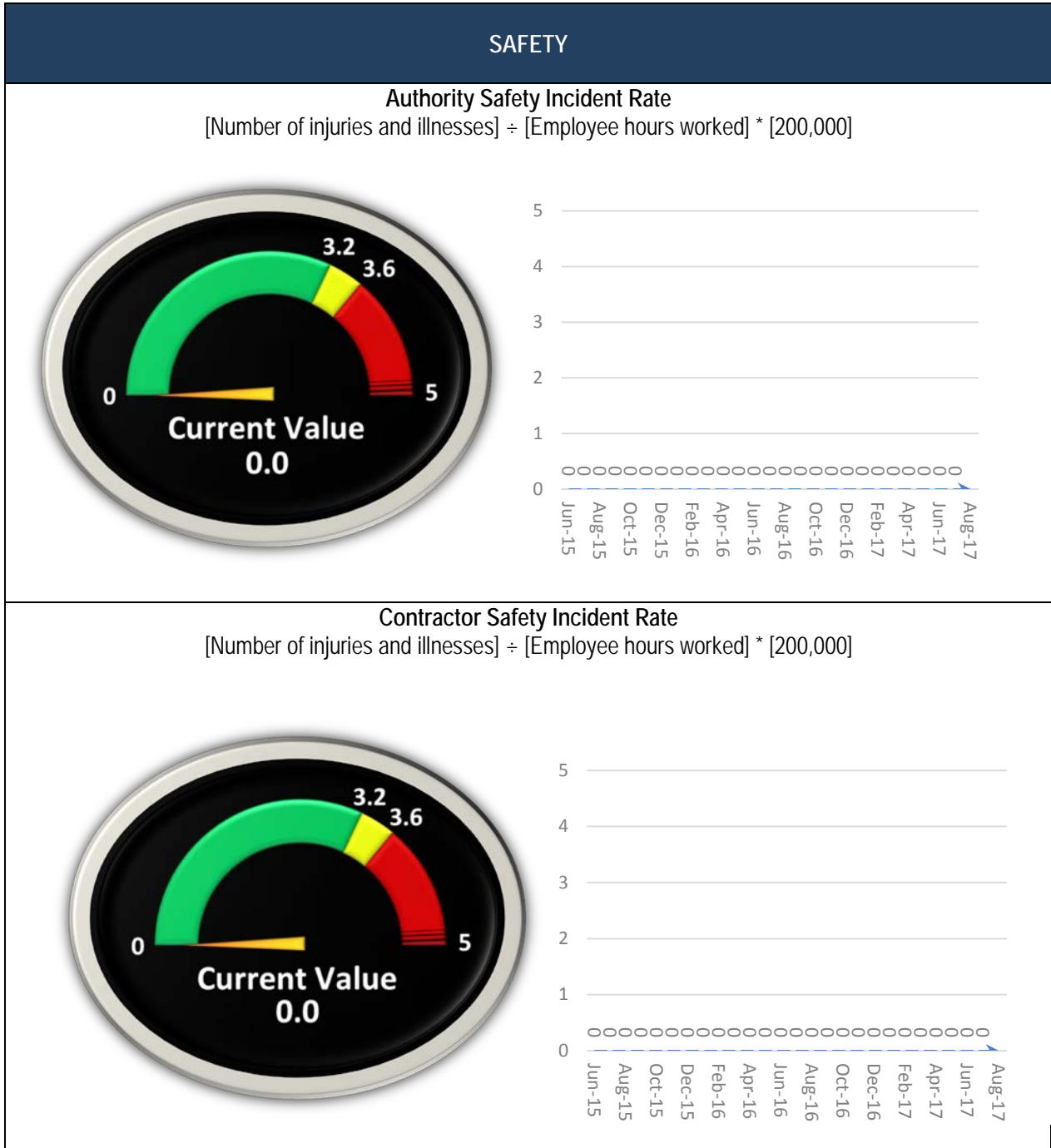
## PERFORMANCE METRICS

The following performance metrics for Construction Package 2-3, a design-build project, 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.



Construction Package 2-3

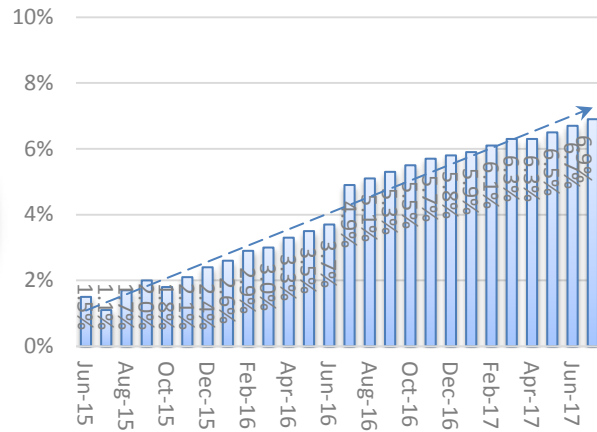
Performance Metrics



Construction Package 2-3

COST

**Design & Construction Support Cost**  
[Design & Construction Support Cost] ÷ [DB Invoiced to Date Amount]



1. Design & Construction Support Costs (PCM Invoiced to date excluding ICE & ISE) = \$24,819,606.19  
DB Invoiced to date = \$357,937,867.17
2. Currently at 6.9%, performance target is < 6%.

Design Impacts are requiring PCM staff to evaluate change notices. This is contributing to the change to the support cost versus DB invoices ratio.

Some major field construction is expected to start in late 2017 that will increase DB Invoice amount. This will help move the ratio to the green zone.

In addition, PCM is involved with PG&E design and construction at a greater level than anticipated due to the change to have DFJV manage the design and construction rather than PG&E.

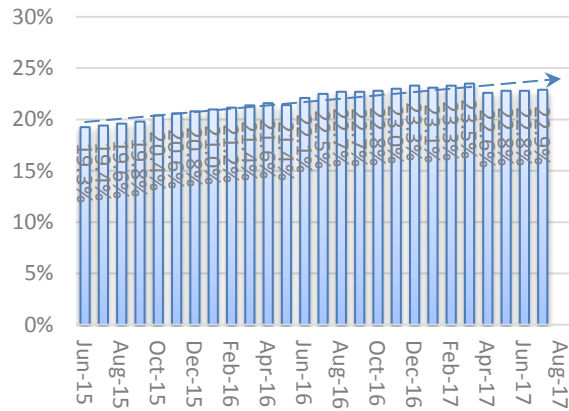
Also, the PCM is providing additional support for ROW, 3<sup>rd</sup> Party work and Environmental due to issues with agreements and permits.

Construction Package 2-3

**COST (Continued)**

**Contingency**

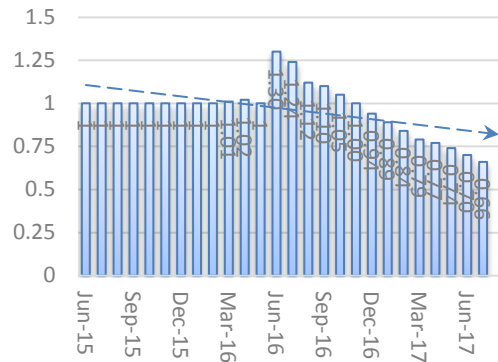
$[\text{Remaining Contingency Value}] \div [\text{Remaining Contract Value}]$



**SCHEDULE**

**Schedule Performance Index (SPI)**

$[\text{Earned Value}] \div [\text{Planned Value}]$



- 1 Earned Value = \$357,937,867.17; Average Planned Value = \$541,414,072.50.
- 2 Currently at .66. The performance target is  $\geq 1$ .
- 3 Average Planned Value (average of Early and Late Planned Value) is used instead of the Early Planned Value to calculate Schedule Performance Index.

**Reason** – SPI is in red because the start of major field construction is needed to increase DB invoice amount.

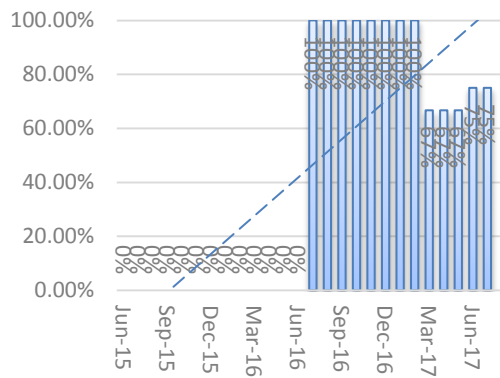
**Mitigation/ Improvements** – The SPI calculation improves when DB contractor will start invoicing for major field construction. Some major construction work is planned to commence in the Fall 2017. Working with the DB contractor to find opportunities to start construction.

Construction Package 2-3

QUALITY

**NCR Resolution Rate**

$[\text{Total NCRs Resolved to Date}] \div [\text{Total NCRs Issued to date}]$   
NOTE: Four NCRs have been issued. Three have been resolved



Reason – Environmental Sustainability Reporting

Mitigation – DFJV to comply with requirements

Construction Package 2-3

**ECONOMIC BENEFITS**

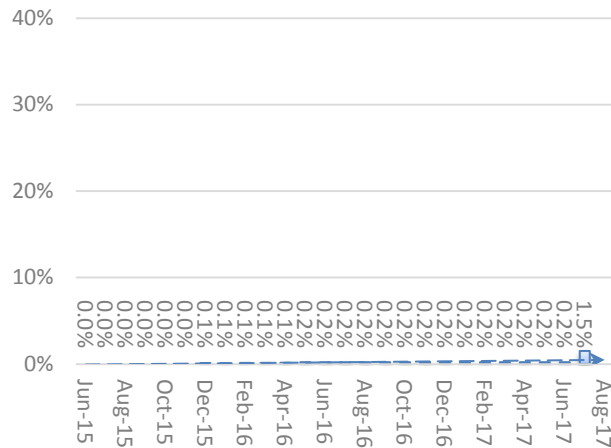
**Disadvantaged/Small/Disabled Veteran/Micro Business Enterprises**

[Total Value of DBE/SBE/DVBE/MB Contracts Signed to Date with the DB Contractor] ÷ [DB Contract Value]

**Reason** – The project is in the Design phase. The majority of the work performed to date is management, mobilization and design work. These activities are performed by the Design-Build Joint Venture and its Designer of Record. The opportunity to hire Small Business sub consultants are very limited.

**Mitigation/Improvements** – The project target is to achieve the 30% goal by project completion. The Project Team has revised intermediate goals to 3% by December 2017, 10% by June 2018 and 20% by December 2018. The Project Team has achieved 1.5% target. Expected amounts to be awarded by December 2017 have been reviewed, and we feel confident that the 3% target by December 2017 will be achieved.

This metric will improve once the contractor begins to execute subcontracts for the construction phase of the project and the contractor can commit to more small business utilization during construction.

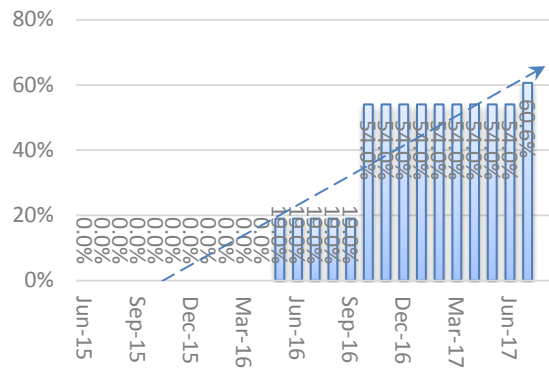


Construction Package 2-3

ECONOMIC BENEFITS (Continued)

All National Targeted Workers

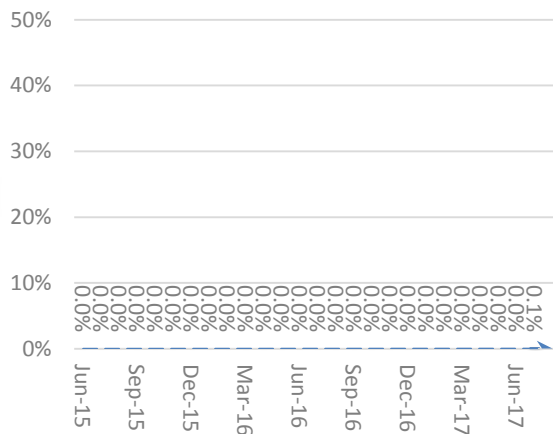
[National Targeted Worker Craft Hours to Date] ÷ [Total Craft Hours to Date]



Note: Data is reported quarterly. We are using the same Data from the previous report while checking the validity and accuracy of Data received recently.

Disadvantaged Workers

[Disadvantaged Worker Craft Hours to Date] ÷ [National Targeted Worker Hours]



**Reason** – Most work performed to date has been in management, mobilization, and design by the Design-Build Joint Venture and its Designer of Record.

**Mitigation/ Improvements** – More opportunities to hire Disadvantaged Workers when contractor begins to execute subcontracts for the construction phase.

Construction Package 2-3

## Performance Metrics – Explanatory Details

Category	Description
<b>General</b>	<b>Data Period</b>
Description	Performance Metrics represent the period of 06/12/15 (Limited Notice to Proceed) to 07/31/2017.
<b>Safety</b>	<b>Authority Safety Incident Rate:</b> $[\text{Number of injuries and illnesses} \times 200,000] \div [\text{Employee hours worked}]$
Description	<ul style="list-style-type: none"> <li>The goal is to contain the incidence rate at <math>\leq 3.2</math>.</li> <li>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.</li> <li>Authority (CP 2-3 Authority and Consultant on-site staff) has zero incidents of recordable injury or illness to date.</li> <li>The Consultant staff has 213,908 hours worked through June. Hours worked in July are estimated to be 16,712 hours. Total estimated hours through July are 230,620. The incidence rate represents the number of nonfatal occupational injuries and illnesses per 100 full-time workers and is calculated as: <math>(N \times 200,000) \div \text{EH}</math>, 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).</li> </ul>
<b>Safety</b>	<b>Contractor Safety Incident Rate:</b> $[\text{Number of injuries and illnesses} \times 200,000] \div [\text{Employee hours worked}]^*$
Description	<ul style="list-style-type: none"> <li>The goal is to contain the incidence rate at <math>\leq 3.2</math>.</li> <li>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.</li> <li>Design-Build Contractor (DB) has zero (0) incidents of recordable injury or illness to date.</li> <li>Design-Build Contractor (DB) has 865,795 hours worked through June. Hours worked in July are 42,782 hours. Total hours through July are 908,577. The project is still in the design phase. The incidence rate represents the number of nonfatal occupational injuries and illnesses per 100 full-time workers and is calculated as: <math>(N \times 200,000) \div \text{EH}</math>, 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).</li> </ul>
<b>Cost</b>	<b>Design &amp; Construction Support Cost:</b> $[\text{Design \& Construction Support Cost}] \div [\text{DB Invoiced to Date Amount}]$
Description	<ul style="list-style-type: none"> <li>The goal is to keep the support cost at <math>\leq 6\%</math>.</li> <li>Benchmark: Transit Cooperative Research Program (TCRP) Report 138 is an industry resource for understanding soft costs and was sponsored by the FTA. Construction Administration &amp; Management should be in the range of 5% to 6% of construction costs.</li> <li>The Design &amp; Construction Support Cost encompasses the Project &amp; Construction Management Team (PCM) invoiced to date amount (excluding ICE and ISE) = \$24,819,606.19</li> <li>The DB Invoiced to Date Amount = \$357,937,867.17 based on July 2017 billing of \$7,998,899.74</li> </ul>



Construction Package 2-3

<b>Cost</b>	<b>Contingency:</b> $[\text{Remaining Contingency Value}] \div [\text{Remaining Contract Value}]$
Description	<ul style="list-style-type: none"> <li>The goal is to contain the contingency in the range of 10-20%.</li> <li>Benchmark: As per guidelines by Federal Transit Authority cost for contingency should be in the range of 10% to 20% of construction cost during the 15% - 30% Preliminary Design Report.</li> <li><i>(Note: The contingency percentage will be adjusted per FTA guidelines as design and construction move forward.)</i></li> <li>The Remaining Contingency = <math>[\text{Current Allocated Contingency Amount}] - [\text{Executed Change Orders Affecting Contingency}] = \\$236,194,371.50</math></li> <li>The Remaining Contract Value = <math>[\text{Revised DB Contract Amount}] - [\text{Authority Approved Invoices to Date}] = \\$1,032,403,651.33</math></li> </ul>
<b>Schedule</b>	<b>Schedule Performance Index (SPI):</b> $\text{Earned Value (EV)} \div \text{Planned Value (PV)}$
Description	<ul style="list-style-type: none"> <li>The goal is to achieve <math>\text{SPI} \geq 1</math>, which is same as <math>\geq 100\%</math> when expressed in percent.</li> <li>Benchmark: As per guidelines by PMI (Project Management Institute, World Wide) the SPI should be <math>\geq 1</math> or 100%.</li> <li>At a value of 100% the Project is forecasted to complete on-time.</li> <li><math>\text{EV} = \text{Percent Complete} \times \text{BAC (Budget at Completion)}</math></li> <li><math>\text{PV} = \text{Planned Value}</math></li> <li>Planned Value (Baseline Average of Early Start and Late Start Cashflow): <math>\\$541,414,072.50</math></li> <li>Design Builder invoiced to date is <math>\\$357,937,867.17</math>.</li> <li>SPI calculation using the average cashflow is <math>\\$357,937,867.17</math> divided by <math>\\$541,414,072.50 = .66</math></li> <li>SPI calculation using the Baseline Late Start cashflow is <math>\\$357,937,867.17</math> divided by <math>\\$384,696,745 = .93</math></li> </ul>
<b>Quality</b>	<b>Non-Conformance Report Resolution (NCR) Rate:</b> $[\text{Total Non-Conformance Reports Resolved to Date}] \div [\text{Total Non-Conformance Reports Issued to Date}]$
Description	<ul style="list-style-type: none"> <li>Measures the effective resolution of NCRs based on percentage of NCR corrective actions approved.</li> <li>The goal is to identify and approve resolution of the NCR as soon as practical.</li> <li>The target rate is to stay above 85% closed.</li> <li>This metric is a measure of the resolution rate of non-conforming work issues identified on the project, based on the KPI Standard Organization's Heavy and Civil Engineering Construction definition.</li> <li>The target rate identified is preliminary and is derived from the professional judgment of multiple construction professionals and NCR data to date. This metric will be measured and trended for refinement throughout the life of the CP 2-3 project and across multiple High Speed Rail construction packages to develop a performance standard for the High Speed Rail.</li> <li>Total NCR Issued to Date: 4 (DFJV Issued = 1), (PCM Issued = 3)</li> <li>Total NCR Resolved to Date: 3 (DFJV Resolved =1), (PCM Resolved =2)</li> <li>CMS has 5 NCRs listed. However, (1) of these NCRs titled (Re-use Number) is voided.</li> </ul>
<b>Economic Benefits</b>	<b>Disadvantaged/Small/Disabled Veteran/Micro Business Enterprises:</b> $[\text{Total Value of DBE/SBE/DVBE/MB Contracts Signed to Date with the DB}] \div [\text{DB Contract Value}]$
Description	<ul style="list-style-type: none"> <li>The current goal is to achieve <math>\geq 30\%</math></li> <li>Benchmark: As the project design is refined, the DB executes DBE/SBE/DVBE/MB subcontracts for specific portions of work. To date, the DB has not provided a schedule of</li> </ul>

Construction Package 2-3

	<p>when all of the DBE/SBE/DVBE/MB subcontracts will be signed. The Project and Construction Management Team set goals of 30% over the course of the project.</p> <ul style="list-style-type: none"> <li>DB is continuing its process of executing subcontracts with DBE/SBE/DVBE/MB firms. DBE/SBE/DVBE/MB Contract Amount Signed to date: \$20,275,767.55. The Project Team has achieved 1.5% target. The Project Team has revised intermediate goals to 3% by December 2017, 10% by June 2018 and 20% by December 2018. Expected amounts to be awarded by December 2017 have been reviewed, and we feel confident that the 3% target by December 2017 will be achieved.</li> </ul>
<b>Economic Benefits</b>	<b>All National Targeted Workers:</b> [National Targeted Worker Craft Hours to Date] ÷ [Total Craft Hours to Date]
Description	<ul style="list-style-type: none"> <li>The goal is <math>\geq 30\%</math> as identified in the contract.</li> <li>Benchmark: The Community Benefits Agreement requires a minimum of 30% of all hours of Project Work shall be performed by National Targeted Workers. The data is officially reported quarterly and estimated monthly by the DB.</li> <li>DB has 30,097.25 National Targeted Worker craft hours to date.</li> <li>DB has 49,697 craft hours to date.</li> </ul>
<b>Economic Benefits</b>	<b>Disadvantaged Workers:</b> [Disadvantaged Worker Craft Hours to Date] ÷ [National Targeted Worker Hours to Date]
Description	<ul style="list-style-type: none"> <li>The goal is <math>\geq 10\%</math> as identified in the contract.</li> <li>Benchmark: The Community Benefits Agreement requires a minimum of 10% of all National Targeted Worker hours shall be performed by Disadvantaged Workers. The data is officially reported quarterly and estimated monthly by the DB.</li> <li>DB has 63.0 Disadvantaged Worker craft hours to date.</li> <li>DB has 49,697 National Targeted Worker hours to date.</li> </ul>