




DATE: March 20, 2023

TO: Commissioner Newsha Ajami, President  
Commissioner Sophie Maxwell, Vice President  
Commissioner Tim Paulson  
Commissioner Anthony Rivera  
Commissioner Kate Stacy

FROM: Dennis J. Herrera, General Manager 

RE: Hetch Hetchy Capital Improvement Program Quarterly Report  
Quarterly Report (2<sup>nd</sup> Quarter / FY 2022-2023)

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Enclosed please find the Hetch Hetchy Capital Improvement Program (HCIP) Quarterly Report for the 2<sup>nd</sup> Quarter (Q2) of Fiscal Year (FY) 2022-2023. The primary intent of the report is to provide the Commission, stakeholders, and the public with a status summary of the HCIP based on data for the period of October 1, 2022 to December 31, 2022.

Attachment

**London N. Breed**  
Mayor

**Newsha K. Ajami**  
President

**Sophie Maxwell**  
Vice President

**Tim Paulson**  
Commissioner

**Anthony Rivera**  
Commissioner

**Kate H. Stacy**  
Commissioner

**Dennis J. Herrera**  
General Manager



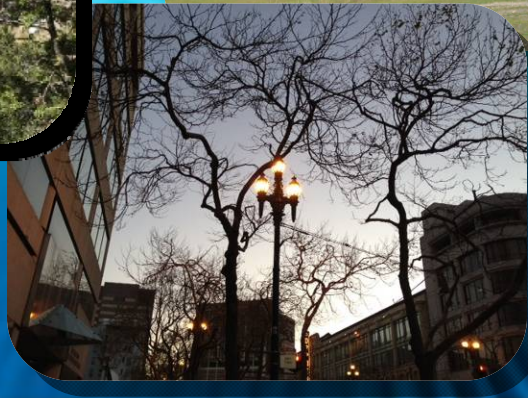
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San Francisco  
**Water Power Sewer**  
Services of the San Francisco Public Utilities Commission



## QUARTERLY REPORT

Hetch Hetchy Capital Improvement Program  
October 2022 – December 2022

Published: March 20, 2023

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**EXECUTIVE SUMMARY**

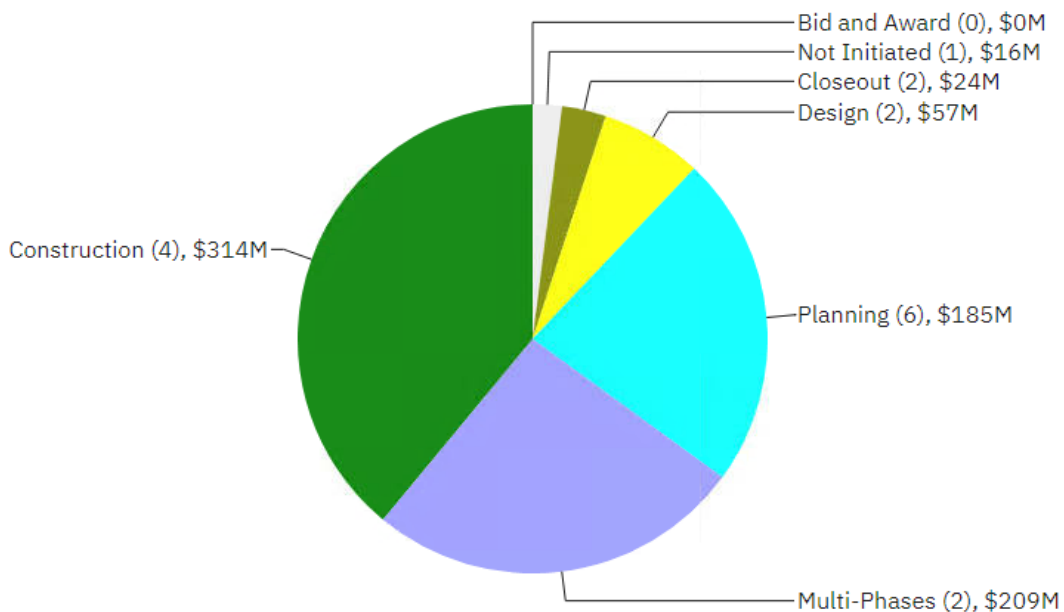
This quarterly report provides a summary update on the Hetch Hetchy Capital Improvement Program (HCIP) that is part of the larger Hetch Hetchy Water Capital Improvement Program. The primary intent of the report is to provide the Commission, stakeholders, and the public with a status summary of the HCIP based on data for the period of October 1, 2022 to December 31, 2022.

This quarterly report includes all approved HCIP projects in the Hetch Hetchy Water Capital Improvement Program according to the 10-Year Capital Plan for FY2022-23 to FY2031-32, presented to and adopted by the Commission on February 8, 2022 (2022 HCIP).

There are seventeen (17) projects in the 2022 HCIP together with three (3) project development (PD) accounts for program-level expenditures for each of the Water, Power, and Joint Programs. There were no projects added or removed from the 2021 HCIP.

**Program Current Status:**

As of the end of the reporting period, the status of the 17 HCIP projects (excluding the Project Development (PD) accounts) is as follows: one (1) project not initiated, eight (8) projects in planning, design, or bid & award, four (4) projects in construction, two (2) projects that are multiple phases, and two (2) projects in closeout.



**Approved Budget for Projects in Each Phase**

The following Tables provide a high-level summary of the cost and schedule status for this program (including the 3 PD accounts).

Table A shows that the 2022 HCIP has a Current Approved Budget and Current Forecast Cost of \$862.31M and \$895.94M, respectively.

Table A. Program Cost Summary

Program	Expenditures To Date (\$ Million) (A)	Current Approved Budget (\$ Million) (B)	Q2/FY22-23 Forecast Costs (\$ Million) (C)	Cost Variance (\$ Million) (D = B - C)	Cost Variance Over Reporting Period * (\$ Million) (E)
<b>Program Total</b>	<b>\$211.21</b>	<b>\$862.31</b>	<b>\$895.94</b>	<b>(\$33.63)</b>	<b>(\$33.63)</b>

\* Negative number reflects cost increases since last quarter, and positive number reflects cost reduction since last quarter.

Table B shows that the 2022 HCIP has an Approved and Forecast Completion Date of 10/30/35.

Table B. Current Approved vs. Current Forecast Schedule Dates

Program	Current Approved Project Start	Actual* Start	Current Approved Completion	Current Forecast Completion	Schedule Variance (Months)
<b>Overall HCIP Program</b>	<b>10/03/11</b>	<b>10/03/11A</b>	<b>10/30/35</b>	<b>10/30/35</b>	<b>-</b>

\* "A" represents the actual date.

**Program Key Updates:**

The key updates for the HCIP include:

- For the SJPL Tesla Valve Replacement project, the as-built drawings were finalized, and the task order was closed out. The project has moved into closeout phase.
- For the SJPL Valve and Safe Entry Improvements project, on Phase 1A, the 60-inch and 24-inch diameter valves were delivered to the contractor’s shop and are ready to be installed during the Q3 planned system shutdown. For Phase 1B, construction Notice to Proceed was granted on November 7 and the contractor started submittals for long-lead items. For Phase 2, 65% design was achieved in November. For Phase 3, the team obtained consensus to move forward with the surge tower design alternative without a detention basin.
- For the Moccasin Powerhouse Bypass Upgrades project, conceptual engineering report (CER) work continued and is anticipated to be complete next quarter. The preferred alternative is to

move the bypass system to a location north of the Moccasin penstocks. Design phase to begin in February 2023.

- For Moccasin Powerhouse (MPH) and Generator Step-Up (GSU) Rehabilitation project, subproject A, HH-1003R, the second new Delta Star GSU2 (F8628) transformer underwent final preparations for planned interconnection in February 2023. Substantial Completion is anticipated in March 2023. For subproject B, DB-121R2, major generator components are to be delivered by March 2023. For subproject C, MPH Systems Upgrade, the final conceptual engineering report (CER) is scheduled for March 2023, and the design phase is scheduled to begin April 2023.
- For Transmission Lines 7/8 Upgrades project, the contractor prepared submittals and placed orders for long lead items, including conductor, insulators, and tower steel. Potholing to locate the existing San Joaquin Pipelines (SJPL) 1, 2, and 3 and tower ground testing began.
- For O’Shaughnessy Dam Outlet Works Phase 1, subproject A (Bulkhead), the California Environmental Quality Act (CEQA) categorical exemption for the proposed work was approved by the CCSF Planning Department in December. The progressive-design-build specification and bid package (DB-135) for the design and construction of the bulkhead was completed. For Subproject B (Access & Drainage), scope is being finalized. For Subproject C (Instream Flow Release Valve Replacement), CEQA categorical exemption for the work was approved by the CCSF Planning Department in December. The 95% design was completed. For Subprojects D (Slide Gate) and E (Drum Gate), work continued on the needs assessment.
- For the Mountain Tunnel Improvement project, installation of the large diameter water conveyance piping within the upstream and downstream bypass tunnels at the Priest Flow Control Facility (FCF) was completed. The final lining of concrete was installed in the bottom twenty feet of the FCF shaft. The double disc knife gate valves for the downstream bypass pipes completed fabrication. The large bulkhead door at the Priest Adit was installed and successfully pressure tested. Excavation and initial lining of the Priest Adit was progressed to about 20 feet away from the existing Mountain Tunnel in preparation for the tie-in during Outage No.2. The temporary water filtration plant at Moccasin and the water treatment plant for construction water at Priest were set up and tested. Road improvement work along Rickson Road at Priest Reservoir is approximately 95% complete. Discussions between the contractor and the City began regarding the possibility of an alternative method from that in the original design to construct the South Fork Siphon Extension.
- For the Bridge Replacement subproject Lake Eleanor Dam Bridge, work on the alternatives analysis report (AAR) continued. For subproject O’Shaughnessy Adit Access Bridge, the project team finalized the AAR after review and approval by the Technical Steering Committee. The team worked on a conceptual design of the selected alternative and the related environmental aspects including wetland delineation, owl survey, ambient noise measurement, archeological survey, historic resources evaluation, and golden eagle nest survey.
- For the Canyon Tunnel Rehabilitation project, the updated conceptual engineering report (CER) was under development to incorporate the project team’s comments. The project team held a 65% design workshop and worked on update of the design drawings, memo, and technical specifications.

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# Quarterly Report

## Hetch Hetchy Capital Improvement Program

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**HETCH HETCHY WATER AND POWER (HHWP)–  
WATER DIVISION CAPITAL IMPROVEMENT PROGRAMS**

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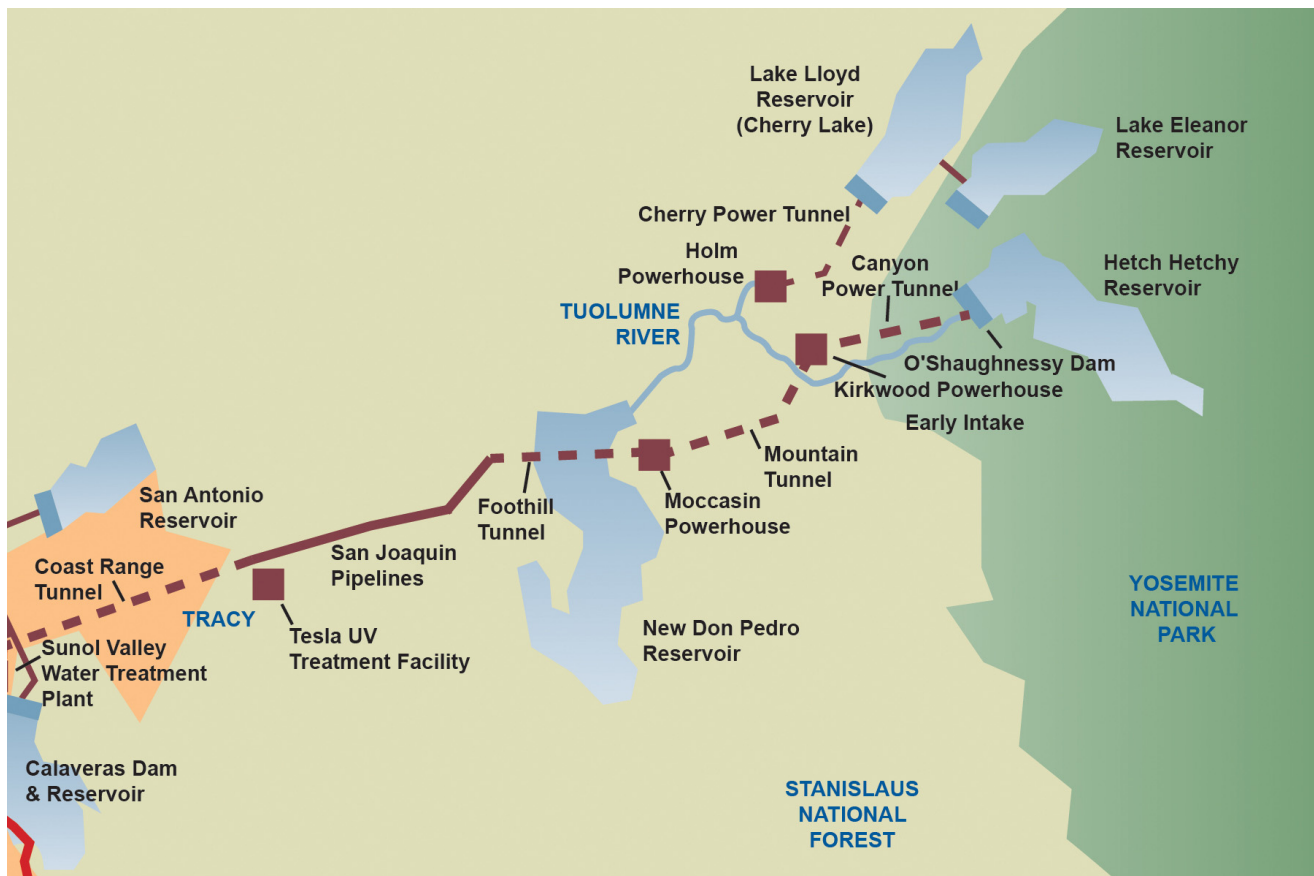
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**INTRODUCTION**

The Hetch Hetchy Water and Power (HHWP) Water Division is the division responsible for operating, managing, and maintaining the HHWP system and facilities. This includes water facilities that are part of the Regional Water System from Hetch Hetchy Reservoir, located in Yosemite National Park, to Alameda East Portal, located in Sunol Valley and power facilities located from Early Intake to Newark. The HHWP Water Division operates, manages, and maintains three impoundment reservoirs, three regulating reservoirs, four powerhouses, one switchyard, three substations, 170 miles of pipeline and tunnels, almost 50 miles of paved road, over 160 miles of transmission lines, watershed land, and right-of-way property. HHWP Water Division provides 85 percent of the San Francisco Public Utilities Commission (SFPUC) water supply for 2.7 million residential, commercial, and industrial customers in Alameda, Santa Clara, San Mateo, and San Francisco counties. On average, HHWP Water Division generates about 1,650 gigawatt hours (GWH) of clean hydro-generated power annually. A majority of HHWP staff is based in Moccasin, CA, which is 140 miles east of San Francisco.

The HHWP Water Division’s capital improvement programs are divided into two programs: Hetch Hetchy Capital Improvement Program (HCIP) and Renewal and Replacement (R&R). This report provides a quarterly status update on the HCIP, a group of capital improvement projects that are greater than \$5M in value and have been approved by the Commission as part of the SFPUC’s 10-Year Capital Improvement Program. The status of the Hetch Hetchy R&R projects is reported annually in the Annual Report on Water Enterprise-Managed Capital Improvement Projects.

The map below shows the location of the assets and facilities associated with HHWP.



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**HETCH HETCHY CAPITAL IMPROVEMENT PROGRAM (HCIP)**

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## 1. PROGRAM DESCRIPTION

The Hetch Hetchy Capital Improvement Program (HCIP) is a multi-year group of capital projects to upgrade existing, aging infrastructure so that it will meet the challenges of today and the future. These projects will deliver improvements that enhance the SFPUC's ability to provide reliable, affordable, high quality water to its 2.7 million customers in an environmentally sustainable manner. The goals are to 1) provide capital improvements needed to cost-effectively ensure that water quality, seismic reliability, delivery reliability, and water supply objectives established for the Regional Water System facilities managed by HHWP are met, while 2) optimizing the benefits of HHWP power facilities operations. Ongoing development of the HCIP will sustain the Regional Water System's status as an unfiltered water source and a gravity-driven system.

The scope of HCIP is divided into three major project types: Water, Power, and Joint. The Water sub-program includes only asset improvements benefiting the SFPUC's water customers. The Power sub-program includes only asset improvements used to generate environmentally friendly hydroelectric energy. The Joint sub-program includes projects for assets that are used for both water delivery and power generation. In addition, projects in each sub-program of the HCIP have been further organized by asset type consisting of the following:

### Water Infrastructure

- Water Conveyance – projects to enhance the reliability of water delivery through pipelines and penstocks, allowing for both delivery of water to SFPUC customers and delivery of water to powerhouses for power generation.

### Power Infrastructure

- Powerhouse – projects to improve facilities at the Holm, Kirkwood, and Moccasin powerhouses.
- Switchyard & Substations – projects to meet operational objectives for power, including reliability, regulatory compliance, and sustainability.
- Transmission Lines – projects to expand or improve power assets for electricity transmission

### Joint (Water and Power) Infrastructure

- Dams & Reservoirs – projects to improve assets used for storage and delivery of water to SFPUC customers, as well as for water storage for power generation.
- Mountain Tunnel – projects to address deficiencies with the Mountain Tunnel, a critical, non-redundant link in the Hetch Hetchy and Regional Water System that conveys water from Kirkwood Powerhouse to Priest Reservoir.
- Roads & Bridges – projects to replace or improve bridges that are utilized to access HHWP assets.
- Tunnels – projects to repair tunnels along the HHWP system (other than Mountain Tunnel).
- Utilities – projects to expand or improve utilities for asset and work locations such as water and wastewater treatment facilities.
- Buildings – projects to provide safe and code compliant work spaces.

## 2. PROGRAM STATUS

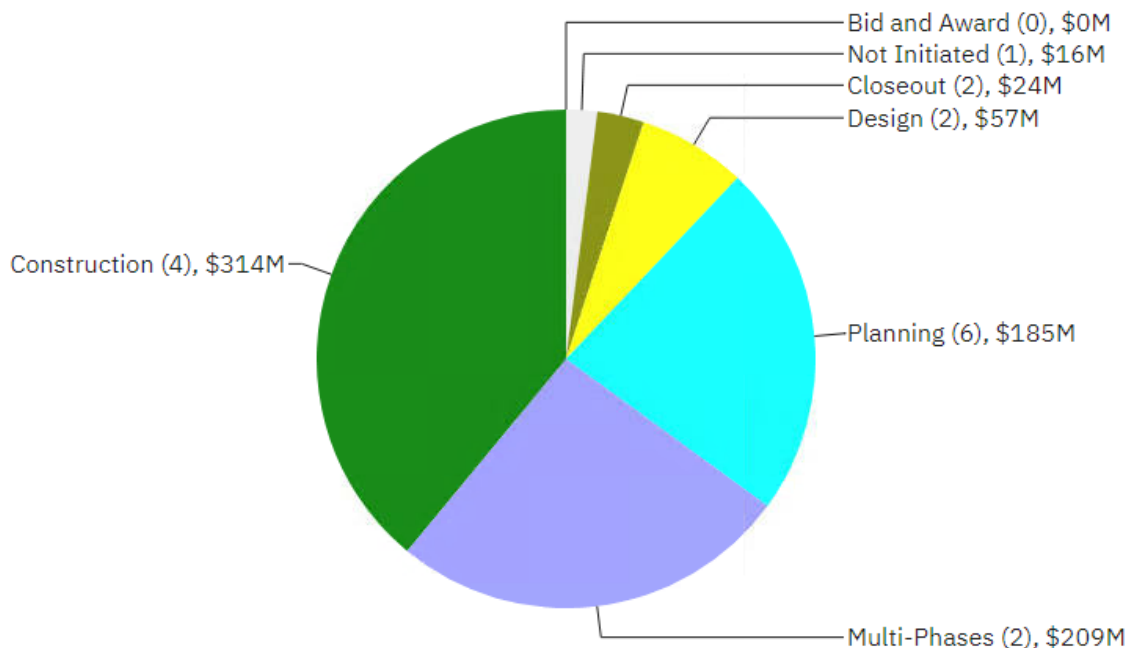
This Quarterly Report presents the progress made on HCIP between October 1, 2022 and December 31, 2022. This document serves as the second (2nd) Quarterly Report in Fiscal Year 2022-2023 (FY23) published for the HCIP.

This quarterly report includes all approved HCIP projects in the Hetch Hetchy Water Capital Improvement Program according to the 10-Year Capital Plan for FY2022-23 to FY2031-32 (FY23-32 CIP), presented to and adopted by the Commission on February 8, 2022, under Resolution No. 22-0031 (2022 HCIP).

There are seventeen (17) projects in the 2022 HCIP together with three (3) project development (PD) accounts for program-level expenditures for each of the Water, Power, and Joint Programs. A description of each project and of each project development account is provided in the Appendix A of this Report.

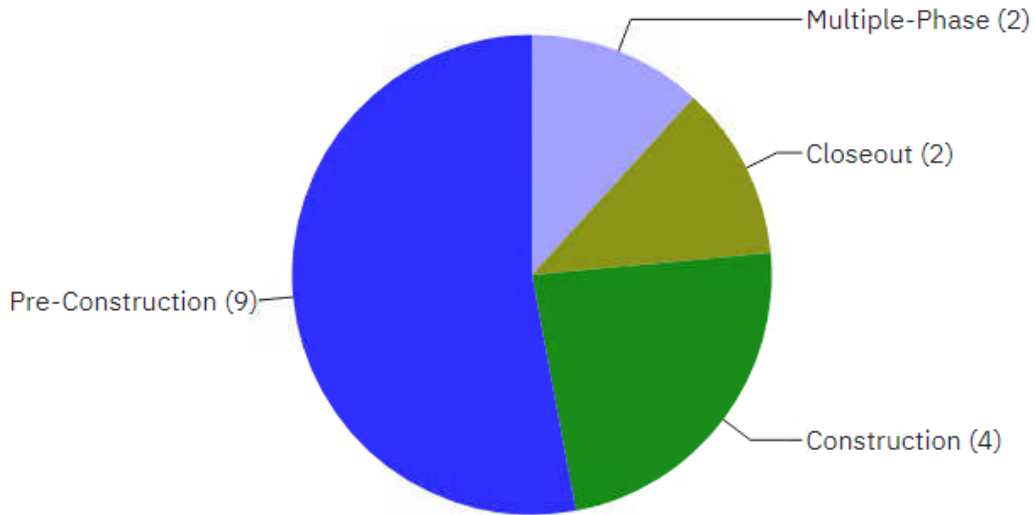
The accrued PD expenditures are included in the Cost Summary in Table 3 in order to give an accurate report of the overall HCIP cost performance.

Figure 2.1 shows the total Approved Budget for all seventeen (17) projects in each phase of the program as of December 31, 2022 (PD accounts do not have phases and are not included in Figure 2.1). The number of projects currently in each phase is shown in parentheses.



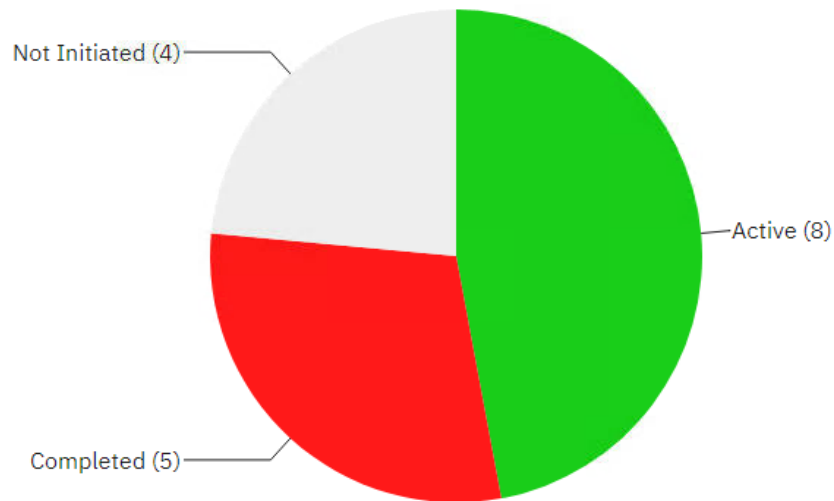
**Figure 2.1 Approved Budget for Projects in Each Phase**

Figure 2.2 shows the total number of projects in the following stages as of December 31, 2022: Pre-construction, Construction, and Post-construction.



**Figure 2.2 Number of Projects in Pre-construction, Construction, and Post-Construction**

Figure 2.3 summarizes the environmental review status of the HCIP projects as of December 31, 2022. Environmental review is performed for projects under California Environmental Quality Act (CEQA).



**Figure 2.3 Program Environmental Review**

**3. PROGRAM COST SUMMARY**

Table 3 provides an overall cost summary of the 17 HCIP projects and 3 HCIP PD accounts at the end of the quarter. It shows the Expenditures to Date, Current Approved Budget, Current Forecast Cost, the Cost Variance between the Approved and Forecast Costs, and the Cost Variance Over the Reporting Period (from the approved budget). The Current Approved Budget and Forecast Cost for the HCIP under the FY23-32 CIP are \$862.31 million and \$895.94 million, respectively.

**Table 3. Cost Summary**

Subprograms	Expenditures To Date (\$ Million) (A)	Current Approved Budget (\$ Million) (B)	Q2/FY22-23 Forecast Costs (\$ Million) (C)	Cost Variance (\$ Million) (D = B - C)	Cost Variance Over Reporting Period * (\$ Million) (E)
<b>Water Infrastructure</b>	<b>\$14.76</b>	<b>\$155.87</b>	<b>\$154.71</b>	<b>\$1.16</b>	<b>\$1.16</b>
Water Conveyance (Water)	\$10.34	\$146.40	\$145.24	\$1.16	\$1.16
Water Infrastructure Project Development	\$4.42	\$9.47	\$9.47	-	-
<b>Power Infrastructure</b>	<b>\$71.70</b>	<b>\$205.30</b>	<b>\$217.31</b>	<b>(\$12.01)</b>	<b>(\$12.01)</b>
Powerhouse	\$41.19	\$118.58	\$130.59	(\$12.01)	(\$12.01)
Switchyard & Substations (Power)	\$22.32	\$34.25	\$34.25	-	-
Transmission Lines	\$4.84	\$37.97	\$37.97	-	-
Power Infrastructure Project Development	\$3.33	\$14.50	\$14.50	-	-
<b>Joint Infrastructure</b>	<b>\$124.75</b>	<b>\$501.13</b>	<b>\$523.91</b>	<b>(\$22.78)</b>	<b>(\$22.78)</b>
Water Conveyance (Joint)	\$6.03	\$47.25	\$47.25	-	-
Dams & Reservoirs (Joint)	\$8.34	\$136.88	\$149.87	(\$12.98)	(\$12.98)
Mountain Tunnel	\$99.50	\$238.22	\$238.22	-	-
Roads & Bridges (Joint)	\$2.32	\$29.37	\$29.37	-	-
Tunnels (Joint)	\$1.02	\$8.43	\$14.99	(\$6.56)	(\$6.56)
Utilities (Joint)	\$0.97	\$8.79	\$12.03	(\$3.23)	(\$3.23)
Joint Infrastructure Project Development	\$6.57	\$32.18	\$32.18	-	-
<b>Overall Program Total</b>	<b>\$211.21</b>	<b>\$862.31</b>	<b>\$895.94</b>	<b>(\$33.63)</b>	<b>(\$33.63)</b>

\* Negative number reflects cost increases since last quarter, and positive number reflects cost reduction since last quarter.

The overall program negative forecasted Cost Variance of \$33.63M in Table 3 can be attributed to the following:

- \$1.16M positive variance in the Water Infrastructure group of projects is due to the following project:
  - The 10035574 SJPL Tesla Valves Replacement forecasted cost decreased by \$1.16M.

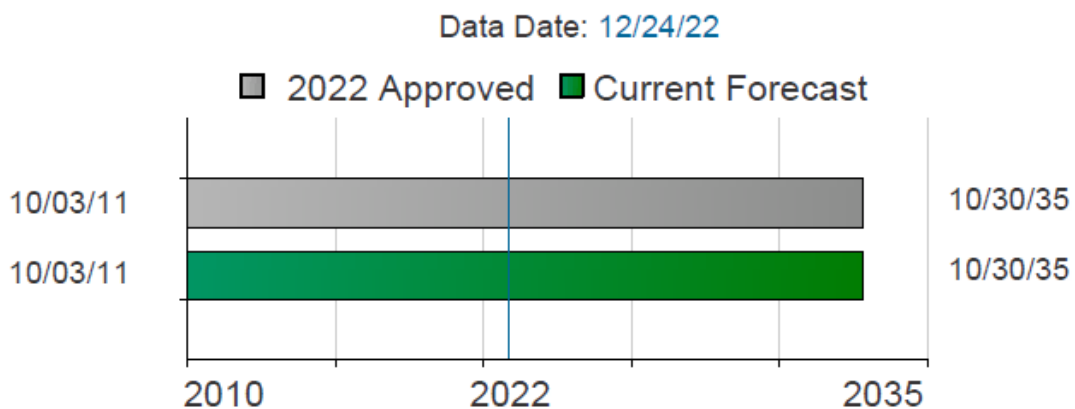
- \$12.01M negative variance in the Power Infrastructure group of projects is due to the combined positive and negative variances in the following projects:
  - The 10014075 Holm and Other Powerhouse Projects forecasted cost decreased by \$0.37M.
  - The 10036809 Moccasin Powerhouse Bypass Upgrades forecasted cost increased by \$12.38M.
- \$22.78M negative variance in the Joint Infrastructure group of projects is due to the combined positive and negative variances in the following projects:
  - The 10030758 OSH Dam Access and Drainage forecasted cost decreased by \$0.10M.
  - The 10014115 Cherry Dam Spillway - Short Term Improvements forecasted cost increased by \$12.99M.
  - The 10032903 O'Shaughnessy Dam Outlet Works Phase 1 forecasted cost increased by \$0.09M.
  - The 10014108 Canyon Tunnel Rehabilitation forecasted cost increased by \$6.56M.
  - The 10014110 Moccasin Wastewater Treatment Plant forecasted cost increased by \$3.23M.

In general, the forecasted cost variances reported in this quarter align with budget adjustments proposed in the FY2024-2033 10-Year CIP; specific project variances are explained in Section 7 of this report.

**4. PROGRAM SCHEDULE SUMMARY**

Figure 4 and Table 4 compare the FY23 – 32 CIP Approved Schedule and the Current Forecast Schedule for the HCIP. As shown in Table 4, the overall HCIP is currently both approved and forecast to be completed in October 2035.

**Figure 4. Program Schedule Summary**



**Table 4. FY23-32 CIP Approved vs. Current Forecast Schedule Dates**

Sub-Program	CIP Approved Project Start	Actual* Start	CIP Approved Completion	Current Forecast Completion	Schedule Variance (Months)
Water Infrastructure	03/26/12	03/26/12 A	06/30/33	06/30/33	-
Power Infrastructure	05/29/12	05/29/12 A	10/30/35	10/30/35	-
Joint Infrastructure	10/03/11	10/03/11 A	06/30/33	06/30/33	-
<b>Overall HCIP Projects</b>	<b>10/03/11</b>	<b>10/03/11 A</b>	<b>10/30/35</b>	<b>10/30/35</b>	<b>-</b>

\* "A" represents the actual date.

**5. BUDGET AND SCHEDULE TREND SUMMARY**

This Table 5 contains all approved HCIP projects that are active and in any of the planning, design, bid and award, or construction phases. The table excludes all Project Development accounts, as well as any projects that are either not-initiated, on-hold, in closeout, or completed.

During this Quarter (Q2 FY22-23), the following major project milestones were achieved:

- Project moved to Closeout phase for SJPL Tesla Valve Replacement project
- Construction Notice to Proceed was granted for SJPL Valve and Safe Entry Improvement (Phase 1B)
- Environmental Approval for O'Shaughnessy Dam Outlet Works Phase I (Subproject A)
- Environmental Approval for O'Shaughnessy Dam Outlet Works Phase I (Subproject C)
- 50% Design for O'Shaughnessy Dam Outlet Works Phase I (Subproject C)
- 95% Design for O'Shaughnessy Dam Outlet Works Phase I (Subproject C)
- 95% Design for Moccasin Wastewater Treatment Plant

**Table 5. Budget and Schedule Trend Summary**

All Costs are shown in million

Project Name	Most Recent CIP Approved Budget		Project Initiation		CER		35% Design		95% Design		Awarded Construction <sup>1</sup>		Current Status	
	Approved Budget	Approved Completion	Forecast Cost	Forecast Completion	Forecast Cost	Forecast Completion	Forecast Cost	Forecast Completion	Forecast Cost	Forecast Completion	Forecast Cost	Forecast Completion	Forecast Cost	Forecast Completion
	a	b	c	d	e	f	g	h	i	j	k	l	m	n
<b>Water Infrastructure</b>														
10035574 - SJPL Tesla Valves Replacement	FY23-32		05/01/19		11/27/20		07/28/20		11/17/20		04/06/21		Q2 - FY22-23	
	\$3.7	12/30/22	\$7.4	06/28/24	\$7.4	06/28/24	\$7.4	06/28/24	\$7.4	06/28/24	\$3.7	12/30/22	\$2.6	06/30/23
10035575 - SJPL Valve and Safe Entry Improvement	FY23-32		7/1/2019		04/16/21		03/03/21 (Phase 1A), 05/28/21 (Phase 1B), 08/15/22 (Phase 2) & 12/30/21 (Phase 3)		07/14/21 (Phase 1A), 10/29/21 (Phase 1B), 02/15/23 (Phase 2) & 04/28/23 (Phase 3)		05/16/22 (Phase 1A), 11/07/22 (Phase 1B), 11/16/23 (Phase 2) & 01/07/24 (Phase 3)		Q2 - FY22-23	
	Phase 1A													
	Phase 1B Phase 2 Phase 3	\$142.7	03/13/28	\$95.3	07/01/25	\$95.3	07/01/25	\$98.9	03/13/28	\$142.7	03/13/28	\$142.7	03/13/28	\$142.7
<b>Power Infrastructure</b>														
10036809 - Moccasin Powerhouse Bypass Upgrades	FY23-32		09/18/20		01/31/23		02/24/23		12/26/23		02/28/25		Q2 - FY22-23	
	\$15.0	12/01/27	\$15.0	12/01/27	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	\$27.4	12/01/27
10014086 - Moccasin Powerhouse and GSU Rehabilitation	FY23-32		01/04/16		05/14/21		07/29/19 (Phase 1), 10/01/19 (Phase 2) & 06/05/23 (Phase 3)		09/09/20 (Phase 1), 05/11/22 (Phase 2) & 03/29/24 (Phase 3)		06/07/21 (Phase 1), 08/15/22 (Phase 2) & 10/02/24 (Phase 3)		Q2 - FY22-23	
	Phase 1													
	Phase 2 Phase 3	\$66.7	12/03/27	\$18.0	10/03/18	\$66.7	04/13/27	\$66.7	12/03/27	\$66.7	12/03/27	\$66.7	12/03/27	\$66.7
10014087 - Warnerville Substation Rehabilitation	FY23-32		09/01/15 (Phase A), 7/01/20 (Phase B) & 01/01/21 (Phase C)		02/29/16 (Phase A), 01/18/21 (Phase B) & 01/03/23 (Phase C)		04/01/16 (Phase A), 04/22/21 (Phase B) & 09/01/23 (Phase C)		12/24/16 (Phase A), 08/16/21 (Phase B) & 04/04/24 (Phase C)		11/26/18 (Phase A), N/A (Phase B) & 02/03/25 (Phase C)		Q2 - FY22-23	
	Phase A (DB-127R)													
	Phase B Phase C	\$34.2	11/25/26	\$27.2	11/25/26	\$34.2	11/25/26	\$34.2	11/25/26	\$34.2	11/25/26	\$24.3	03/04/20	\$34.2
10035721 - Transmission Lines 7/8 Upgrades	FY23-32		07/01/19		12/07/20 <sup>2</sup>		03/19/21		09/24/21		09/08/22		Q2 - FY22-23	
	\$38.0	01/31/25	\$38.0	01/31/25	\$38.0	01/31/25	\$38.0	01/31/25	\$38.0	01/31/25	\$38.0	01/31/25	\$38.0	01/31/25
<b>Joint Infrastructure</b>														
10014088 - Moccasin Penstock	FY23-32		12/11/18		12/21/23		01/31/24		06/10/24		04/15/25		Q2 - FY22-23	
	\$47.3	02/28/28	\$13.2	12/31/24	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	\$47.3	02/28/28
10030758 - OSH Dam Access and Drainage Improvements	FY23-32		03/01/17		06/28/19		09/01/19		08/21/20		09/27/21		Q2 - FY22-23	
	\$4.0	02/28/23	\$5.8	02/26/21	\$5.8	02/26/21	\$5.8	02/11/22	\$5.8	12/16/22	\$4.0	02/28/23	\$3.9	04/28/23

Project Name	Most Recent CIP Approved Budget		Project Initiation		CER		35% Design		95% Design		Awarded Construction <sup>1</sup>		Current Status	
	Approved Budget	Approved Completion	Forecast Cost	Forecast Completion	Forecast Cost	Forecast Completion	Forecast Cost	Forecast Completion	Forecast Cost	Forecast Completion	Forecast Cost	Forecast Completion	Forecast Cost	Forecast Completion
	a	b	c	d	e	f	g	h	i	j	k	l	m	n
10032903 - O'Shaughnessy Dam Outlet Works Phase I <sup>3</sup>	FY23-32		02/01/18		09/30/21 (Subproject A), Complete (Subproject B), 09/30/22 (Subproject C), N/A (Subproject D) & N/A (Subproject E)		10/15/24 (Subproject A), N/A (Subproject B) & 11/25/22 (Subproject C)		01/14/25 (Subproject A), N/A (Subproject B) & 12/23/22 (Subproject C)		05/26/23 (Subproject A), 10/18/23 (Subproject B) & 06/14/23 (Subproject C)		Q2 - FY22-23	
	\$47.9	09/16/25	\$17.2	12/31/24	\$47.9	09/16/25	\$47.9	09/16/25	\$48.0	09/16/25	TBD	TBD	\$48.0	09/16/25
10037351 - Moccasin Dam Long-Term Improvements <sup>3</sup>	FY23-32		05/03/21		04/28/23		07/21/23		12/31/24		05/08/26		Q2 - FY22-23	
	\$73.2	06/30/28	\$83.2	07/01/27	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	\$73.2	06/30/28
10014115 - Cherry Dam Spillway - Short Term Improvements	FY23-32		03/01/21		09/28/23		01/04/24		06/10/24		02/20/25		Q2 - FY22-23	
	\$11.9	07/01/27	\$11.9	07/01/27	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	\$24.9	11/01/27
10014114 - Mountain Tunnel Improvement Project	FY23-32		10/03/11		12/29/17		05/15/18		07/31/19		10/13/20		Q2 - FY22-23	
	\$238.2	06/03/27	\$114.0	12/30/21	\$246.1	12/31/26	\$238.2	12/31/26	\$238.2	12/31/26	\$238.2	06/03/27	\$238.2	06/03/27
10035086 - Bridge Replacement	FY23-32		02/27/20		7/18/23 (Subproject 1) & 03/17/23 (Subproject 2)		11/03/23 (Subproject 1) & 05/05/23 (Subproject 2)		06/03/24 (Subproject 1) & 01/12/24 (Subproject 2)		04/30/25 (Subproject 1) & 07/01/25 (Subproject 2)		Q2 - FY22-23	
	\$44.3	05/25/37	\$44.3	12/30/25	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	\$29.4	12/30/27
10014108 - Canyon Tunnel Rehabilitation	FY23-32		02/03/14		03/06/23		03/30/16		12/14/23		04/01/25		Q2 - FY22-23	
	\$8.4	01/13/25	\$0.5	06/30/16	TBD	TBD	\$8.0	06/30/18	TBD	TBD	TBD	TBD	\$15.0	12/30/26
10014110 - Moccasin Wastewater Treatment Plant <sup>4</sup>	FY23-32		01/03/22		-		04/29/22		12/30/22		11/28/23		Q2 - FY22-23	
	\$8.8	04/07/26	\$8.8	04/07/26	-	-	\$8.8	04/07/26	TBD	TBD	TBD	TBD	\$12.0	04/07/26

**Footnotes:**

1. This represents forecast project cost and project completion date at the time of award of construction contract (or award of CM/GC or Design-Build contracts/packages).
2. This represents the date the Design Criteria Report (DCR) was finalized for Transmission Lines 7/8 Upgrade project. CER was not required for the project.
3. This represents that Contract A will be doing Progressive Design Build during Construction. Contract B is in the process of finalizing the design. Contract D & E will not be doing CER.
4. This represents that the project started during the Design Phase.



6. PROJECT PERFORMANCE SUMMARY\*

All costs are shown in \$1,000s

Project Name	Active Phase (a)	CIP Approved Budget (b)	Current Approved Budget (c)	Current Forecast Cost (d)	Expenditures to Date (e)	Cost Variance (f=c-d)	% Cost Changes (g=f/c)	CIP Completion Date (h)	Approved Completion Date (i)	Forecast Completion Date (j)	Schedule Variance (Days) (k=i-j)
	(**)	(+)	(++)			(+++)	(+++)	(+)	(++)		(+++)
<b>Water Infrastructure</b>											
<b>Water Conveyance (Water)</b>											
10035575 SJPL Valve and Safe Entry Improvement	MP	\$142,662	\$142,662	\$142,662	\$7,965	\$0	0%	03/13/28	03/13/28	03/13/28	0
<b>Power Infrastructure</b>											
<b>Powerhouse</b>											
10036809 Moccasin Powerhouse Bypass Upgrades	PL	\$15,007	\$15,007	\$27,391	\$758	(\$12,384)	(83%)	12/01/27	12/01/27	12/01/27	0
10014086 Moccasin Powerhouse and GSU Rehabilitation	MP	\$66,714	\$66,714	\$66,714	\$20,172	\$0	0%	12/03/27	12/03/27	12/03/27	0
<b>Switchyard &amp; Substations (Power)</b>											
10014087 Warnerville Substation Rehabilitation	CN	\$34,248	\$34,248	\$34,248	\$22,325	\$0	0%	11/25/26	11/25/26	11/25/26	0
<b>Transmission Lines</b>											

\* Does not include projects in closeout, completed, not initiated, on hold, deleted projects, and projects combined with other projects.

<b>** Phase Status Legend</b>			
PL	Planning	DS	Design
BA	Bid & Award	CN	Construction
		MP	Multiple-Phase

**Footnotes:**

- (+) **CIP Approved Budget and Project Completion Date:** The budget and schedule approved as part of 10-year CIP for FY23-32.
- (++) **Current Approved Budget and Schedule:** The budget and schedule approved as part of 10-year CIP for FY23-32, plus any additional budget and schedule changes approved by the Commission as part of construction contract award.
- (+++)

Negative number reflects cost overrun (or schedule delay) and positive number reflects cost underrun (or ahead of schedule). Projects with a forecasted cost overrun greater than 10%, or forecasted delay of greater than 6 months or 10%, will be highlighted in grey.

Project Name	Active Phase (a) (**)	CIP Approved Budget (b) (+)	Current Approved Budget (c) (++)	Current Forecast Cost (d)	Expenditures to Date (e)	Cost Variance (f=c-d) (+++)	% Cost Changes (g=f/c) (+++)	CIP Completion Date (h) (+)	Approved Completion Date (i) (++)	Forecast Completion Date (j)	Schedule Variance (Days) (k=i-j) (+++)
10035721 Transmission Lines 7/8 Upgrades	CN	\$37,969	\$37,969	\$37,969	\$4,843	\$0	0%	01/31/25	01/31/25	01/31/25	0
<b>Joint Infrastructure</b>											
<b>Water Conveyance (Joint)</b>											
10014088 Moccasin Penstock Rehabilitation	PL	\$47,251	\$47,251	\$47,251	\$6,027	\$0	0%	02/28/28	02/28/28	02/28/28	0
<b>Dams &amp; Reservoirs (Joint)</b>											
10030758 OSH Dam Access and Drainage	CN	\$3,952	\$3,952	\$3,852	\$3,141	\$100	3%	02/28/23	02/28/23	04/28/23	(59)
10032903 O'Shaughnessy Dam Outlet Works Phase I	DS	\$47,894	\$47,894	\$47,981	\$3,346	(\$87)	0%	09/16/25	09/16/25	09/16/25	0
10037351 Moccasin Dam & Reservoir Long-Term Improvements	PL	\$73,176	\$73,176	\$73,176	\$816	\$0	0%	06/30/28	06/30/28	06/30/28	0

\* Does not include projects in closeout, completed, not initiated, on hold, deleted projects, and projects combined with other projects.

<b>** Phase Status Legend</b>		
PL	Planning	DS
BA	Bid & Award	CN
		MP
		Multiple-Phase

<b>Footnotes:</b>
(+) <b>CIP Approved Budget and Project Completion Date:</b> The budget and schedule approved as part of 10-year CIP for FY23-32.
(++) <b>Current Approved Budget and Schedule:</b> The budget and schedule approved as part of 10-year CIP for FY23-32, plus any additional budget and schedule changes approved by the Commission as part of construction contract award.
(+++) Negative number reflects cost overrun (or schedule delay) and positive number reflects cost underrun (or ahead of schedule). Projects with a forecasted cost overrun greater than 10%, or forecasted delay of greater than 6 months or 10%, will be highlighted in grey.

Project Name	Active Phase (a) (**)	CIP Approved Budget (b) (+)	Current Approved Budget (c) (++)	Current Forecast Cost (d)	Expenditures to Date (e)	Cost Variance (f=c-d) (+++)	% Cost Changes (g=f/c) (+++)	CIP Completion Date (h) (+)	Approved Completion Date (i) (++)	Forecast Completion Date (j)	Schedule Variance (Days) (k=i-j) (+++)
10014115 Cherry Dam Spillway - Short Term Improvements	PL	\$11,861	\$11,861	\$24,856	\$1,042	(\$12,995)	(110%)	06/30/27	06/30/27	11/01/27	(124)
<b>Mountain Tunnel</b>											
10014114 Mountain Tunnel Improvement Project	CN	\$238,219	\$238,219	\$238,219	\$99,502	\$0	0%	06/03/27	06/03/27	06/03/27	0
<b>Roads &amp; Bridges (Joint)</b>											
10035086 Bridge Replacement	PL	\$29,371	\$29,371	\$29,371	\$2,315	\$0	0%	07/01/27	07/01/27	12/30/27	(182)
<b>Tunnels (Joint)</b>											
10014108 Canyon Tunnel Rehabilitation	PL	\$8,429	\$8,429	\$14,993	\$1,024	(\$6,564)	(78%)	09/01/26	09/01/26	12/30/26	(120)
<b>Utilities (Joint)</b>											
10014110 Moccasin Wastewater Treatment Plant	DS	\$8,795	\$8,795	\$12,029	\$966	(\$3,234)	(37%)	04/07/26	04/07/26	04/07/26	0

\* Does not include projects in closeout, completed, not initiated, on hold, deleted projects, and projects combined with other projects.

<b>** Phase Status Legend</b>		
PL	Planning	DS
DS	Design	CN
BA	Bid & Award	MP
CN	Construction	MP
MP	Multiple-Phase	

**Footnotes:**

- (+) **CIP Approved Budget and Project Completion Date:** The budget and schedule approved as part of 10-year CIP for FY23-32.
- (++) **Current Approved Budget and Schedule:** The budget and schedule approved as part of 10-year CIP for FY23-32, plus any additional budget and schedule changes approved by the Commission as part of construction contract award.
- (+++) **Negative number reflects cost overrun (or schedule delay) and positive number reflects cost underrun (or ahead of schedule). Projects with a forecasted cost overrun greater than 10%, or forecasted delay of greater than 6 months or 10%, will be highlighted in grey.**

**7. PROJECT STATUS REPORT**

**10035575 - SJPL Valve and Safe Entry Improvement**

**Project Description:** The SJPL Entry Assessment and Valve Improvement Project involves the three parallel transmission pipelines that stretch approximately 48-miles across the San Joaquin Valley from Oakdale Portal on the east to Tesla Portal near the City of Tracy on the west, with a partial fourth pipeline consisting of a 6.4-mile Eastern Segment and an 11-mile Western Segment. The four pipelines were built between 1932 and 2012, respectively, and range from 56- to 79.5-inches in diameter. Given the age and condition of the SJPLs, frequent maintenance and inspection are required. Work must be able to occur while the HHRWS is in service. The objective of this project is to upgrade valves and provide isolation points to allow safe entry into any and all sections of the SJPLs for inspection and maintenance while the remainder of the system stays in operation.

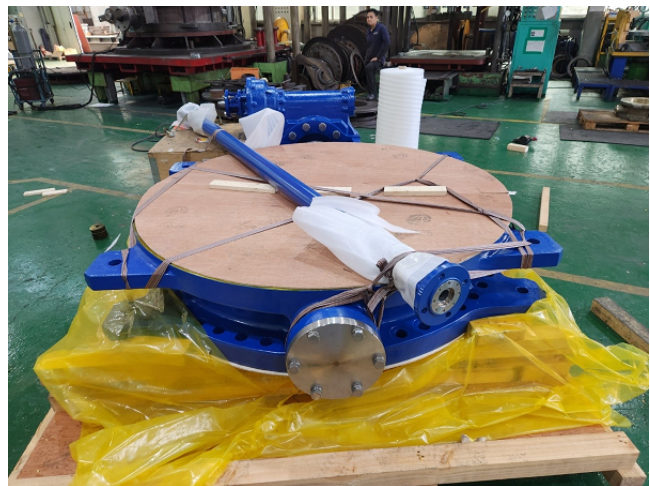
<b>Program:</b> <a href="#">Water Infrastructure</a>	<b>Project Status:</b> <a href="#">Multi-Phases</a>	<b>Environmental Status:</b> <a href="#">Active (Various)</a>
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<b>Project Cost:</b>		<b>Project Schedule:</b>	
Approved		Approved 07/01/19	
Forecast		Forecast 07/01/19	
Actual		Project Percent Complete: <b>12.9%</b>	

Key Milestones	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion	
Current Forecast	A	01/27/22 A	12/25/21 A	05/16/22 A	09/13/24
	B	01/27/22 A	04/21/22 A	11/07/22 A	09/11/24
	C	01/27/22 A	06/01/23	11/16/23	05/24/27
	D	08/10/22 A	07/01/23	01/07/24	07/24/25

**Progress and Status:**

This project is divided into four (4) sub-projects, (A) Phase 1A – Pipeline 2 Tesla & Oakdale Entry Improvements – HH-1005; (B) Phase 1B – Pipelines 3&4 Tesla & Oakdale Entry Improvements HH-1006; (C) Phase 2 -Pelican, Roselle, Emery and P4J Entry Improvements; and (D) Phase 3 - Tesla Surge Tower. For Phase 1A, the 60-inch and 24-inch diameter valves were delivered to the contractor’s shop in Sonora and are ready to be installed during the winter shutdown starting next quarter. For Phase 1B, Notice to Proceed was granted on November 7, and the contractor started working on the submittals of the long-lead items including the new butterfly valves. For Phase 2, 65% design was achieved in November. For Phase 3, the project obtained environmental approval during the previous quarter. The project team obtained a consensus from Water Enterprise to move forward with the surge tower design without a detention basin.



*New 60-inch Butterfly Valve at South Korea being packed for shipping [HH-1005]*

**Issues and Challenges:**

The schedule of Phase 3 (Tesla Surge Tower) has been extended to address water quality concerns and the start of construction will be delayed for approximately one year to incorporate changes. However, this will not impact the overall completion of the entire project, as the project critical path is driven by Phase 2. At this time, no budget change is expected.

**10036809 - Moccasin Powerhouse Bypass Upgrades**

**Project Description:** Provide a reliable hydraulic bypass and energy dissipation system conveying water around the turbines to the Moccasin Reservoir Bypass Pipeline. Upgrade/replace high pressure energy dissipating valves, control systems, and associated structures that dissipate up to 325 million gallons per day (mgd) flow.

<b>Program:</b> Power Infrastructure	<b>Project Status:</b> Planning	<b>Environmental Status:</b> Not Initiated (TBD)
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<b>Project Cost:</b>		<b>Project Schedule:</b>	
Approved	\$ 15.01 M	Approved 09/18/20	12/01/27
Forecast	\$ 27.39 M	Forecast 09/18/20	12/01/27
Actual	\$ 0.76 M	Project Percent Complete: 8.7%	

Key Milestones	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	08/26/24	08/27/24	02/28/25	06/01/27

**Progress and Status:**

The preferred alternative for the project is to move the bypass system to a location outside of the powerhouse and north of the Moccasin penstocks. The consultant submitted a draft Planning Phase conceptual engineering report in December for review, comment, and approval. Design Phase is expected to begin in March 2023.

**Issues and Challenges:**

The forecasted cost has increased from the initial project budget based on an updated cost estimate for the selected alternative in the alternatives analysis report (AAR) issued in March 2022. The former (approved) budget was based on a high level estimate at project initiation derived from similar pipeline project costs. A more detailed cost estimate will be performed at the end of the planning phase.


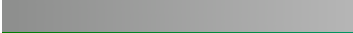





*Moccasin Bypass Penstock Tie-in Point*

**10014086 - Moccasin Powerhouse and GSU Rehabilitation**

**Project Description:** Moccasin Powerhouse Generators were completed in 1969 and generate a combined maximum output of 110 Megawatts. Both generator units have exceeded their life expectancy and need repair in order to continue operating reliably. The objective of this project is to replace stator cores and coils. The scope of work also includes entire field pole replacement. The project will also involve replacement of two generator step-up transformers (GSU's), and power plant systems upgrades including: replacing 480V switchgear, 13.8kV switchgear, motor control centers, main control boards, protective relays, cooling water piping, and improving oil containment systems.

<b>Program:</b> Power Infrastructure	<b>Project Status:</b> Multi-Phases	<b>Environmental Status:</b> Active (Various)
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<b>Project Cost:</b>		<b>Project Schedule:</b>	
Approved	 \$ 66.71 M	Approved 01/04/16	 12/03/27
Forecast	 \$ 66.71 M	Forecast 01/04/16	 12/03/27
Actual	 \$ 20.17 M	Project Percent Complete: 34.4%	

Key Milestones	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion	
Current Forecast	A	09/28/20 A	11/20/20 A	06/07/21 A	05/23/23
	B	09/28/20 A	10/30/20 A	08/15/22 A	06/17/24
	C	04/25/23	04/01/24	10/02/24	06/07/27

**Progress and Status:**

This project is divided into 3 subprojects, (A) Moccasin Powerhouse Generator Step-Up (GSU's) Transformers HH-1003R; (B) Moccasin Powerhouse Generators Rewind – DB-121R2; and (C) Moccasin Powerhouse Systems Upgrade. For subproject A, contract HH-1003R, the second new Delta Star GSU2 transformer is scheduled to be moved to the new foundation rails in February 2023 for interconnection. Contractor final testing and energization, and Substantial Completion of the construction are anticipated by March 2023. For subproject B, contract DB-121R2, major generator components for Generator M2 Rewind are anticipated to be fabricated, tested, and delivered by March 2023, with construction mobilization scheduled for May 2023. For subproject C, Moccasin Powerhouse (MPH) Systems Upgrade, the final conceptual engineering report (CER) is anticipated to be issued for signatures in March 2023, with Design Phase NTP scheduled for April 2023.



MPH HH-1003R GSU2 Foundation

**Issues and Challenges:**

Mobilization for construction of the Generator M2 Rewind project is delayed due to procurement challenges that delayed key equipment deliveries. The construction cost estimate in the draft CER for MPH Systems Upgrade has increased over the previous estimate from Needs Assessment due to additional scope and scope refinement as well as higher anticipated construction and procurement costs; these higher cost forecasts are being reviewed and will be reported on in future quarters when there is more certainty about scope.

**10014087 - Warnerville Substation Rehabilitation**

**Project Description:** Provide the remaining installation work for Warnerville Substation Rehabilitation project equipment that was deleted under Design Build Contract #DB-127R. A new construction contract will be issued to install the new equipment that has been procured and is on site, including replacement of four oil circuit breakers, relay protection, and other ancillary equipment.

<b>Program:</b> Power Infrastructure	<b>Project Status:</b> Construction	<b>Environmental Status:</b> Active (TBD)
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<b>Project Cost:</b>		<b>Project Schedule:</b>	
Approved	\$ 34.25 M	Approved 09/01/15	11/25/26
Forecast	\$ 34.25 M	Forecast 09/01/15	11/25/26
Actual	\$ 22.32 M	Project Percent Complete: 79.2%	

Key Milestones	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	A	01/24/17 A	10/05/17 A	03/31/24
	C	09/06/24	02/03/25	02/04/26

**Progress and Status:**

This project is planned to have 2 or 3 construction contracts: (A) Warnerville Substation Rehabilitation Phase DB-127R; (B) Warnerville “breaker failure contingency plan” (only if needed); and (C) Warnerville Substation Phase 2. (A) Phase 1: The project team, in coordination with the City Attorney’s office, is working to close out construction contract DB-127R. (B) Contract HH-1008, the “breaker failure contingency plan,” provides for emergency temporary replacement of any breakers that fail until they can be permanently replaced. The contracting strategy for this work that would only be required in the event of breaker failure is still being determined. (C) Warnerville Substation Rehabilitation Phase 2 will use a design-bid-build contract. Consultant submitted the draft conceptual engineering report in December 2022 for review, comment, and approval. Design phase is anticipated to begin in February 2023.

**Issues and Challenges:**

None at this time.








TOP: Warnerville Substation South Yard

BOTTOM: Warnerville Substation Protection and Control Relay Panel

**10035721 - Transmission Lines 7/8 Upgrades**

**Project Description:** This project develops the scope of work, design, and contract documents necessary to bid, award, and manage the reconductoring contract. Reconductoring will include replacement of the existing 115kV conductors on Lines 7/8 from Warnerville to Standiford substations, resulting in improved transmission tower stability, and resolved clearance detections. The project will be partially funded by independent power generators interconnecting on the California Independent System Operator (CAISO) and the Transmission Line Clearance Mitigation Project (10014089).

<b>Program:</b> Power Infrastructure	<b>Project Status:</b> Construction	<b>Environmental Status:</b> Completed (Permitting Only)
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<b>Project Cost:</b>		<b>Project Schedule:</b>	
Approved	 \$ 37.97 M	Approved 12/02/19	 01/31/25
Forecast	 \$ 37.97 M	Forecast 12/02/19	 01/31/25
Actual	 \$ 4.84 M	Project Percent Complete: 18.3%	

Key Milestones	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	11/04/21 A	02/11/22 A	09/28/22 A	07/26/24

**Progress and Status:**

The contractor prepared submittals and placed orders for long lead-time materials including conductor, insulators, and tower steel. Potholing to locate the existing San Joaquin Pipelines (SJPL) 1, 2, and 3 was performed. In addition, the contractor has started with tower ground testing. The existing 115kV steel lattice transmission towers contain a ground system consisting of ground rods and copper cable buried beneath the earth to protect the system and personnel from overcurrent or lightning strikes. As part of the construction contract, the existing tower grounding system is being tested to verify there is no discontinuity or failure of the existing system. The grounding test consists of placing an electrical current connected directly to the existing copper ground wire and measuring the electrical resistance in the earth with a metal probe. If the earth resistance is measured at less than 25 ohms, than the grounding system is determined to provide adequate protection. To date, all testing has passed and no additional grounding is required. All work is progressing as scheduled.



*Potholing Existing San Joaquin Pipelines 1, 2, and 3 at Tower 518S*

**Issues and Challenges:**



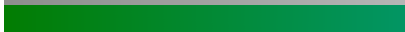


None at this time.



**10014088 - Moccasin Penstock Rehabilitation**

**Project Description:** Moccasin Penstock was built in the early 1920's and conveys water from Moccasin Tunnel to Moccasin Powerhouse. A Condition Assessment Report, Phase I was submitted in 2011 by CH2MHill. The reports identified numerous deficiencies. The penstocks contain segments of hammer forged welded steel (HFWS) that has experienced failures in the past. The proposed scope of this project includes rehabilitation of anchors blocks, penstock coating, penstock saddle, air valves, large diameter butterfly valves, bifurcation sections and flow meters; and upgrade of electrical system, power transformers, standby generator in the West Portal Valve House, and bulkhead isolation valves in the surge tower. The proposed project budget detailed below does not include the replacement of all HFWS pipes. This project will continue with the planning phase and further investigate if the HFWS in its' current condition meets the 100-year life span criteria. The existing allocated funds will be sufficient through Planning and Design Phases. The additional funding request is for additional scope in construction.

<b>Program:</b> Joint Infrastructure	<b>Project Status:</b> Planning	<b>Environmental Status:</b> Active (TBD)
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<b>Project Cost:</b>		<b>Project Schedule:</b>	
Approved		\$ 47.25 M	Approved 02/01/16  02/28/28
Forecast		\$ 47.25 M	Forecast 02/01/16  02/28/28
Actual		\$ 6.03 M	Project Percent Complete: 13.1%

Key Milestones	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	10/07/24	10/08/24	04/16/25	08/24/27

**Progress and Status:**

Phased Array Ultrasonic Testing and Magnetic Particle Inspection were initiated and completed in October; intermittent cracks were observed on the investigated sections of the hammer forged welded steel penstock pipe. Five workshops with Hetch Hetchy Water & Power (HHWP), Health & Safety, and the Engineering Management Bureau Mechanical group were held from November 3 to December 19 to discuss these recent observations of cracks and to develop potential feasible pipe replacement alternatives. A further workshop is scheduled to be held in January to present the replacement alternatives.

**Issues and Challenges:**

None at this time.








*Phased Array Ultrasonic Testing inspection of a hammer forged welded steel pipe section of the penstocks*

**10030758 - OSH Dam Access and Drainage**

**Project Description:** The key objective of this project is to fall protection safety for Hetch Hetchy Water and Power (HHWP) operators inside the O'Shaughnessy Dam by installing fall protection systems that are in conformance with the updated Occupational Safety and Health Administration (OSHA) requirements, including ladders and landings with safety cage and/or fall restraint systems.

<b>Program:</b> Joint Infrastructure	<b>Project Status:</b> Construction	<b>Environmental Status:</b> Completed (Cat Ex)
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<b>Project Cost:</b>		<b>Project Schedule:</b>	
Approved	 \$ 3.95 M	Approved 03/01/17	 02/28/23
Forecast	 \$ 3.85 M	Forecast 03/01/17	 04/28/23
Actual	 \$ 3.14 M	Project Percent Complete: 94.1%	

Key Milestones	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	07/16/20 A	03/18/21 A	09/27/21 A	01/10/23

**Progress and Status:**

Because the contractor has been unable to produce appropriate as-built drawings, the project team negotiated a credit during the quarter for the City to complete the AutoCAD as-built drawings. Final completion is anticipated early in January.

**Issues and Challenges:**

None at this time.



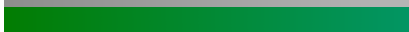




*Spillway Access Ladder*

**10032903 - O'Shaughnessy Dam Outlet Works Phase I**

**Project Description:** O'Shaughnessy Dam (OSH) was completed in 1923 and raised in 1938. The original outlet works including gates and valves have been in services for more than 98 years. Inspections, condition assessments, and studies concluded that improvements and refurbishments of the outlet works system are needed to ensure safety and reliability. The work will be implemented in two phases. This project is to cover the Phase 1 work. The O'Shaughnessy Dam Outlet Works Phase 1 Project addresses the identified deficiencies of the existing outlet works system at OSH. Phase 1 will include five projects: (1) supply and installation of nine new bulkheads; (2) improvements to the existing dam drainage system, repair cracks and joints, and lighting; (3) replacement of existing Instream Flow Release (IFR) valves; (4) NAR and AAR for twelve existing slide gates; and (5) NAR and AAR for the existing drum gates.

<b>Program:</b> Joint Infrastructure	<b>Project Status:</b> Design	<b>Environmental Status:</b> Active (TBD)
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<b>Project Cost:</b>		<b>Project Schedule:</b>	
Approved		\$ 47.89 M	Approved 02/01/18  09/16/25
Forecast		\$ 47.98 M	Forecast 02/01/18  09/16/25
Actual		\$ 3.35 M	Project Percent Complete: 9.1%

Key Milestones	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion	
Current Forecast	A	12/02/22 A	01/09/23	09/03/24	03/14/25
	B	12/05/23	05/01/23	12/05/23	07/25/24
	C	12/02/22 A	02/02/23	08/01/23	03/25/25

**Progress and Status:**

Subproject A (Bulkhead): During this quarter, The California Environmental Quality Act (CEQA) Categorical Exemption for the proposed work was approved by the CCSF Planning Department in December 2022. The progressive-design-build specification and bid package (DB-135) for the design and construction of the bulkhead was completed in late December and is anticipated to be ready for advertisement in January 2023. Subproject B (Access & Drainage): The scope of the needed remediation for the drainage, cracks, joints, and lighting in the dam is being finalized. Subproject C (Instream Flow Release Valve Replacement): CEQA Categorical Exemption for the proposed work was approved by the CCSF Planning Department in December 2022. The 95% design was completed. Subprojects D (Slide Gate) and E (Drum Gate): The engineering consultant continued work on the needs assessment.

**Issues and Challenges:**

The increase in the forecasted project cost is due to the increase in escalation rates.



*Instream Flow Release Pipe and Valves in Diversion Tunnel*

**10037351 - Moccasin Dam & Reservoir Long-Term Improvements**

**Project Description:** The flow capacity of the existing spillway is inadequate to protect the Moccasin Dam against overtopping and erosion from severe flood events. The dam almost overtopped during the March 2018 storm event when flows were released from the auxiliary spillway and caused significant damage to the auxiliary spillway. The surrounding areas and the upstream diversion dam also sustained damage from the flood. This project is needed for dam safety. The objective of this project is to increase the spillway flow capacity to allow safe passage of flood flows without overtopping the dam and to protect the associated facilities within the Moccasin reservoir boundary against flood damages.

<b>Program:</b> Joint Infrastructure	<b>Project Status:</b> Planning	<b>Environmental Status:</b> Not Initiated (TBD)
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<b>Project Cost:</b>		<b>Project Schedule:</b>	
Approved	\$ 73.18 M	Approved 05/03/21	06/30/28
Forecast	\$ 73.18 M	Forecast 05/03/21	06/30/28
Actual	\$ 0.82 M	Project Percent Complete: 2.0%	

Key Milestones	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	06/30/26	01/02/26	09/03/26	12/30/27

**Progress and Status:**

The engineering consultant continued work on hydraulic analysis and conceptual engineering for the new auxiliary spillway during this quarter.

**Issues and Challenges:**

None at this time.



*Moccasin Dam Spillway Chute*

**10014115 - Cherry Dam Spillway - Short Term Improvements**

**Project Description:** A spillway release from Cherry Dam in 2010 caused a landslide, blockage of the spill channel, and extensive erosion in the close proximity of the dam’s right abutment. In addition, it caused flooding of the Cherry Power Tunnel Adit, and flooding of a campground further downstream. Engineering studies determined that significant long-term improvements to increase the spillway flow capacity are needed to maintain dam safety. The objective of this project is to re-establish containment for the breached spill channel section and to protect the downstream slope of the existing embankment dam from uncontrolled releases and erosion in the interim until the long-term improvements are implemented.

<b>Program:</b> Joint Infrastructure	<b>Project Status:</b> Planning	<b>Environmental Status:</b> Active (TBD)
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<b>Project Cost:</b>		<b>Project Schedule:</b>	
Approved	\$ 11.86 M	Approved 03/01/21	06/30/27
Forecast	\$ 24.86 M	Forecast 03/01/21	11/01/27
Actual	\$ 1.04 M	Project Percent Complete: 13.0%	

Key Milestones	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	09/09/24	09/03/24	09/03/25	05/04/27

**Progress and Status:**

Field geotechnical investigation was completed in November 2022. An alternatives analysis report and selection of alternative for the spillway short-term improvement are being finalized.

**Issues and Challenges:**

The increase in forecasted cost and schedule resulted from the addition of scope to provide flood protection near the lower spill channel to improve public safety.



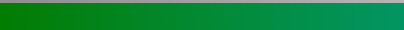




*Cherry Valley Dam Spillway Geotechnical Exploration*

**10014114 - Mountain Tunnel Improvement Project**

**Project Description:** To be updated; Mountain Tunnel conveys the SFPUC water supply from Kirkwood Powerhouse to Priest Reservoir. Mountain Tunnel has been in service since 1925. Due to its age, deferred maintenance, and construction deficiencies in the early 1900s, sections of the tunnel lining have deteriorated, some extensively. This project provides design and construction of major tunnel repair and rehabilitation work, adit and tunnel entry improvements, access road improvements, and installation of a new flow control facility at Priest Reservoir to ensure that the tunnel can reliably provide drinking water to customers for the next 100 years. The flow control structure and isolation valves will also be used to isolate the tunnel from Priest Reservoir during tunnel shutdowns. This will allow the reservoir to remain full and not backwater for over 8 miles into the dewatered tunnel. The full reservoir provides more supply water for safely extending the tunnel shutdowns to longer durations of 100 days for construction inside the tunnel. These longer outages will reduce the need for more typical 60-day outages and shorten the overall duration of the construction schedule.

<b>Program:</b> Joint Infrastructure	<b>Project Status:</b> Construction	<b>Environmental Status:</b> Completed
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<b>Project Cost:</b>		<b>Project Schedule:</b>	
Approved		\$ 238.22 M	Approved 10/03/11  06/03/27
Forecast		\$ 238.22 M	Forecast 10/03/11  06/03/27
Actual		\$ 99.50 M	Project Percent Complete: 41.4%

Key Milestones	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	01/14/20 A	11/13/19 A	01/29/21 A	12/03/26

**Progress and Status:**

This quarter's progress included completing the installation of the large diameter water conveyance piping within the upstream and downstream bypass tunnels, completing the Flow Control Facility (FCF) final lining concrete in the bottom twenty feet of the shaft, and completion of the off-site fabrication of the double disc knife gate valves for the downstream bypass pipes. The large bulkhead door at the Priest Adit was installed and successfully pressure tested. Excavation and initial lining of the Priest Adit was progressed to about 20 feet away from the existing Mountain Tunnel to prepare for Outage No. 2. Other miscellaneous work was completed at the FCF and the Priest Adit in preparation for tie-in to the existing Mountain Tunnel during Outage No.2, including setting up the temporary water filtration plant at Moccasin and the water treatment plant for construction water at Priest. Road improvement work along Rickson Road at Priest Reservoir is approximately 95% complete. Road improvement work continued at Adit 5/6 and South Fork Roads. Discussions between the contractor and the City are taking place regarding possible alternative methods that may be feasible to construct the South Fork Siphon Extension.



*Bottom of FCF Shaft Preparing for Final Lining Concrete Pour*

**Issues and Challenges:**

Winter storms at the end of the quarter resulted in a delay to the start date for Outage No. 2. Any cost or schedule impacts will be determined at a later date.

**10035086 - Bridge Replacement**

**Project Description:** HHWP is responsible for maintaining 14 bridges located in the Cherry, Eleanor and Hetch Hetchy region. Condition assessment has identified the need for rehabilitation and/or replacement (age and to meet current seismic design criteria). Two of the fourteen bridges require substantial modification or replacement and have been combined into this project. This project includes rehabilitation and/or replacement of O'Shaughnessy Adit Access Bridge; and Lake Eleanor Dam Bridge. The Lake Eleanor Dam Bridge is a structural component of the Lake Eleanor Dam which is integral to the structural/seismic integrity of the arch dam and should be addressed immediately. The O'Shaughnessy Adit Access Bridge was built in 1960. It is approximately 84 feet long and is a four-span simply supported bridge with a timber deck and concrete piers. It is located right at the downstream of O'Shaughnessy Dam and provides on land two-way access to Canyon Tunnel.

<b>Program:</b> Joint Infrastructure	<b>Project Status:</b> Planning	<b>Environmental Status:</b> Not Initiated (Various)
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<b>Project Cost:</b>		<b>Project Schedule:</b>	
Approved	\$ 29.37 M	Approved 02/27/20	07/01/27
Forecast	\$ 29.37 M	Forecast 02/27/20	12/30/27
Actual	\$ 2.32 M	Project Percent Complete: 8.2%	

Key Milestones	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion	
Current Forecast	A	09/04/24	07/17/24	04/30/25	09/29/26
	B	09/30/24	10/01/24	07/01/25	06/30/27

**Progress and Status:**

This project is divided into 2 subprojects, (A) Lake Eleanor Dam Bridge; and (B) O'Shaughnessy Adit Access Bridge. For the Lake Eleanor Dam Bridge, work continues on finishing the alternatives analysis report. For the O'Shaughnessy Adit Access Bridge, the project team finalized the alternative analysis report with the Technical Steering Committee's approval. Work continues on drafting a conceptual engineering report, updating cost estimates, and revisiting the hydraulic analysis report. San Francisco Public Work's design proposal, including proposed consultant resources to complete a condition assessment for the timber bridge, was developed and reviewed. The selected alternative is being assessed for potential environmental requirements, such as wetland delineation, owl survey, ambient noise measurement, archeological survey, historic resources evaluation and golden eagle nest survey.



*Aerial View of the Lake Eleanor Dam Bridge*

**Issues and Challenges:**

The bridge replacement project schedule is forecasted to be delayed by six (6) months due to the decision to extend the Environmental phase of the O'Shaughnessy Adit Access Bridge sub-project to assume requirements from the California Environmental Quality Act (CEQA) Mitigated Negative Declaration and also to increase Bid & Award phase based on recent contract bidding history.

**10014108 - Canyon Tunnel Rehabilitation**

**Project Description:** Canyon Tunnel was built over 55 years ago. A condition assessment was performed on the tunnel in 2009 and the tunnel is in generally good condition with the exception of the Hetchy Adit, a tunnel access point. Temporary repairs have been made to the "plug" at this adit twice (1989, 2009), but permanent repairs are needed to reduce leakage and increase reliability of the system. Project scope includes installation of a new reinforced concrete plug downstream of the existing plug. This project is being delayed because of boundary correction issues.

<b>Program:</b> Joint Infrastructure	<b>Project Status:</b> Planning	<b>Environmental Status:</b> Active (TBD)
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<b>Project Cost:</b>		<b>Project Schedule:</b>	
Approved	\$ 8.43 M	Approved 02/03/14	09/01/26
Forecast	\$ 14.99 M	Forecast 02/03/14	12/30/26
Actual	\$ 1.02 M	Project Percent Complete: 11.0%	

Key Milestones	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	12/29/23	08/01/24	04/01/25	06/30/26

**Progress and Status:**

The updated conceptual engineering report was further developed to incorporate the project team’s comments. The project team held a 65% design workshop on November 2 and worked to update design drawings, design memo, and technical specifications.

**Issues and Challenges:**

The project forecast completion date has been extended and the cost has increased for several reasons. First, this project has been on hold since 2016 in order to implement a right of way boundary correction; now that the correction has been made, the schedule forecast has been updated. Second, a recent construction cost estimate from 2022 shows increase of direct costs for construction due to recommended additional rock excavation, concrete batch plant set up, and mechanical equipment upgrades. In addition, costs were updated for the current forecasted construction schedule.



*Site visit to evaluate the existing plug at Hetch Hetchy Adit within the Canyon Tunnel*



**10014110 - Moccasin Wastewater Treatment Plant**

**Project Description:** The Moccasin Wastewater Treatment Plant (WWTP) provides primary treatment of wastewater from Moccasin Compound prior to discharging the treated water to a nearby spray field. The WWTP was constructed in the 1970s and has been in continuous operation since its installation. The WWTP has reached the end of its reliable service life, and is becoming increasingly maintenance intensive. The scope of work is to replace the existing plant with a package two-train sequencing batch reactor (SBR) plant with grit removal and screening facilities, upgraded electrical and flow monitoring systems, flow equalization, SCADA instrumentation and automation features, and related site improvements.

<b>Program:</b> Joint Infrastructure	<b>Project Status:</b> Design	<b>Environmental Status:</b> Active (TBD)
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<b>Project Cost:</b>		<b>Project Schedule:</b>	
Approved	\$ 8.79 M	Approved 01/03/22	04/07/26
Forecast	\$ 12.03 M	Forecast 01/03/22	04/07/26
Actual	\$ 0.97 M	Project Percent Complete: 16.0%	

Key Milestones	Environmental Approval	Bid Advertisement	Construction NTP	Construction Final Completion
Current Forecast	11/14/23	05/10/23	11/28/23	09/09/25

**Progress and Status:**

The design criteria report was updated and finalized. The project team worked on developing the 95% design drawings, specifications, cost estimate, and constructability review. A workshop to present 95% design is scheduled to be held next quarter in February.

**Issues and Challenges:**

The increase in the forecasted project cost is due to a recent construction estimate developed in 2022 that demonstrates increases in base construction cost, additional process equipment costs, additional site development costs, and increased escalation costs.



Site visit with HHWP, Consultant, and EMB

8. ON-GOING CONSTRUCTION\*

Construction Contract	Schedule			Budget		Variance (Approved - Forecast)		Percent Complete
	NTP Date	Approved Construction Final Completion**	Current Forecast Construction Final Completion	Approved Contract Cost	Current Forecast Cost**	Schedule (Cal Days)	Cost	
<b>Water Infrastructure</b>								
10035575 - SJPL Valve & Safe Entry Improvement - (Contract A) - HH-1005	05/16/22	09/13/24	09/13/24	\$11,879,454	\$11,879,454	0	\$0	11.7%
10035575 - SJPL Valve & Safe Entry Improvement - (Contract B) - HH-1006	11/07/22	09/11/24	09/11/24	\$12,981,989	\$12,981,989	0	\$0	0.0%
<b>Power Infrastructure</b>								
10014086 - Moccasin Powerhouse Transformers Installation (Contract A) - HH-1003R	06/07/21	05/23/23	05/23/23	\$3,940,319	\$3,940,319	0	\$0	78.7%
10014086 - Moccasin Powerhouse Generator Rehab (Contract B) - DB-121R2	06/21/21	06/17/24	06/17/24	\$28,898,986	\$28,898,986	0	\$0	24.9%
10014087 - Warnerville Substation - DB-127R **	10/05/17	03/31/24	03/31/24	\$14,591,450	\$14,591,450	0	\$0	90.4%
10035721 - Transmission Lines 7/8 Upgrade - HH-1007	09/28/22	07/26/24	07/26/24	\$26,378,155	\$26,378,155	0	\$0	2.32%
<b>Joint Infrastructure</b>								
10030758 - OSH Dam Access & Drainage Improvement - HH-1002R	09/27/21	08/21/22	01/10/23	\$1,648,556	\$1,648,556	(142)	\$0	99.4%
10014114 - Mountain Tunnel Improvement - HH-1000R	01/29/21	12/03/26	12/03/26	\$152,870,508	\$155,567,864	0	(\$2,697,356)	37.4%

Note: \* This table reflects Active Construction Contracts with an original contract amount greater than \$1M.

\*\* The Forecast Cost includes all approved, pending, and potential change orders; and Final Completion includes all approved, pending, and potential change orders, and trends.

**8. ON-GOING CONSTRUCTION\* (CONT'D)**

	Approved Contract Cost	Current Forecast Cost	Variance	
			Cost	Percent
<b>Program Total for On-Going Construction</b>	<b>\$253,189,417</b>	<b>\$255,886,773</b>	<b>(\$2,697,356)</b>	<b>(1.1%)</b>

Note: \* This table reflects Active Construction Contracts with an original contract amount greater than \$1M.

\*\* The Forecast Cost includes all approved, pending, and potential change orders; and Final Completion includes all approved, pending, and potential change orders, and trends.

## 9. PROJECTS IN CLOSEOUT

Project Title	Current Approved Construction Phase Completion	Actual Construction Phase Completion	Current Approved Construction Phase Budget	Construction Phase Expenditures To Date
<b>Water Infrastructure</b>				
<b>Water Conveyance (Water)</b>				
10035574 - SJPL Tesla Valves Replacement	07/29/22	10/28/22	\$1,948,649	\$916,008
<b>Power Infrastructure</b>				
<b>Powerhouse</b>				
10014075 - Holm and Other Powerhouse Projects	05/14/21	05/14/21	\$12,959,275	\$12,636,797
<b>TOTAL</b>			<b>\$14,907,924</b>	<b>\$13,552,805</b>

## 10. COMPLETED PROJECTS

*There are no completed projects*

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**APPENDICES**

**A PROJECT DESCRIPTIONS**

**B APPROVED PROJECT LEVEL SCHEDULES / BUDGETS**

**C LIST OF ACRONYMS**



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## APPENDIX A. PROJECT DESCRIPTION

### WATER INFRASTRUCTURE

#### Water Conveyance (Water)

##### 10035574 SJPL Tesla Valves Replacement

This original project was to replace four large diameter butterfly valves, TUV 101 to 401, at Tesla Valve Vault so that the San Joaquin Pipelines (SJPL) could be safely isolated individually without the entire system shutdown. This would also improve safety to enter the pipelines for maintenance and inspection purposes. After the planning phase of the SJPL Valve and Safe Entry Improvement project (Project 10035575), it was recommended that the scope of the SJPL Tesla Valve Replacement be reduced to focus on completing the replacement of TUV101 only. The remainder of the work will be combined with the work of SJPL Valve and Safe Entry Improvement. The proposed baseline has been reduced by \$3.64m, from \$7.38m to \$3.74m, to reflect this reduction in scope.

##### 10035575 SJPL Valve and Safe Entry Improvement

The SJPL Entry Assessment and Valve Improvement Project involves the three parallel transmission pipelines that stretch approximately 48-miles across the San Joaquin Valley from Oakdale Portal on the east to Tesla Portal near the City of Tracy on the west, with a partial fourth pipeline consisting of a 6.4-mile Eastern Segment and an 11-mile Western Segment. The four pipelines were built between 1932 and 2012, respectively, and range from 56- to 79.5-inches in diameter. As part of the WSIP, valve vaults were constructed along the SJPL System at various locations to increase operational flexibility and the overall reliability of the SJPL System. The valves are not sufficiently rated for hydrostatic or transient/surge pressures resulting in an unsafe condition for personnel to enter the pipelines unless there is a complete shutdown of the Hetch Hetchy Regional Water System (HHRWS). Given the age and condition of the SJPLs, work must be able to occur while the HHRWS is in service. The objective of this project is to allow safe entry into any and all sections of the SJPLs for inspection and maintenance while the remainder of the system stays in operation. This project will allow for isolation of the pipelines to prevent a water engulfment hazard during a Permit-Required Confined Space (PRCS) entry of a pipeline. In addition, replacement of the butterfly valves TUV 201 through 401, originally planned under SJPL Tesla Valves Replacement will be completed under this project.

#### Water Infrastructure Project Development

##### 10014072 WATER ONLY/PROJ DEV

The Project Development (PD) Account captures Program level expenditures. There are four types of charges that will be allocated to the PD Account: 1) Task orders for overall program management and project prioritization tasks, where the costs should be distributed over all CIP Projects. 2) Infrastructure and Hetchy staff performing program level tasks including: capital plan development, budget management (including fund management, and cost reallocations); Unifier and Quarterly Report generation tasks, where the costs should be distributed over all CIP Projects. 3) Portal support for the existing SharePoint Portal (includes document management and project dashboard reporting) 4) Work Outreach program.

**APPENDIX A. PROJECT DESCRIPTION CONT'D****POWER INFRASTRUCTURE****Powerhouse****10036809 Moccasin Powerhouse Bypass Upgrades**

Provide a reliable hydraulic bypass and energy dissipation system conveying water around the turbines to the Moccasin Reservoir Bypass Pipeline. Upgrade/replace high pressure energy dissipating valves, control systems, and associated structures to absorb 1,147 feet of pressure head and 430 cubic feet per second flow without damage.

**10014086 Moccasin Powerhouse and GSU Rehabilitation**

Moccasin Powerhouse Generators were completed in 1969 and generate a combined maximum output of 110 Megawatts. Both generator units have exceeded their life expectancy and need repair in order to continue operating reliably. Since their original installation, the generators have not had any major maintenance work done (no rewinds or overhauls). The objective of this project is to replace stator cores and coils. The scope of work also includes entire field pole replacement, replacement of the rotor pole/rim tail connection system with a new T-tail connection system, and supply of a new rotor rim for each generator following inspection and testing. The project will also involve replacement of two generator step-up transformers (GSU's), and power plant systems upgrades including: replacing 480V switchgear, 13.8kV switchgear, motor control centers, main control boards, protective relays, cooling water piping, and improving oil containment systems. The work is divided into three phases: Phase 1 - Generator Rehabilitation Phase 2 - GSU Replacement Phase 3 - Power Plant Systems Upgrades.

**10014075 Holm and Other Powerhouse Projects**

PLEASE NOTE: This project has been replaced by 10036104 and will not be requesting any additional funding in the Capital Plan. The powerhouses are made up of the following systems: 1) Turbine and governors; 2) Generator and excitation; 3) Electrical - Power train, station service and protection systems; 4) Step-up transformers; and 5) Mechanical systems. Rehabilitation costs for categories 1, 2, and 4 above are estimated at about 85% of total powerhouse rehabilitation costs (excluding building costs) and will be performed by Infrastructure. This project will fund: 1) Project under categories 3 and 5; 2) Unplanned failures for all categories; and 3) Managing replacement of assets with shorter life expectancies. Examples of electrical and mechanical systems covered in this project include inverters, breakers in 480V switchgear, 480V Motor Control Centers, electrical protective relays, cooling water piping/tubing, turbine shut-off valve control water piping/tubing, station air compressor, SCADA/control system, and vibration monitoring.

**10036810 Kirkwood Powerhouse Bypass Upgrades**

Provide a reliable hydraulic bypass and energy dissipation system conveying water around the turbines to the Kirkwood Powerhouse Bypass Chamber and Mountain Tunnel. Upgrade/replace high pressure energy dissipating valves, control systems, and associated structures to absorb 1,245 feet of pressure head and 430 cubic feet per second flow without damage.

**Switchyard & Substations (Power)****10014087 Warnerville Substation Rehabilitation**

The additional funding request is to cover the remaining work for Warnerville Substation Rehabilitation project. Under Design Build Contract #DB-127R, installation of some 230kV equipment was deleted from

the contract but procured including circuit breakers, switches, insulators, and current voltage transformers. This remaining work includes the replacement of, four oil circuit breakers, bushings, surge arrestors, disconnect switches, current voltage transformer, insulators, relay protection, and other ancillary equipment. The Planning of the remaining work is expected to start in August 2020. Project Estimate is approximately \$6.2 Million.

## Transmission Lines

### 10035721 Transmission Lines 7/8 Upgrades

**BACKGROUND:** The San Francisco Public Utilities Commission (SFPUC) electric transmission lines 7/8 conveys power from Warnerville Substation to Modesto Irrigation District's Standiford Substation. The SFPUC must accommodate additional power flowing across its transmission system due to grid interconnection requests from independent power generators interconnecting on the California Independent System Operator (CAISO). This is a requirement for SFPUC and HHWP obligations as a neighboring provider of electric transmission service. Studies performed by the SFPUC indicate the principal impact to its system is an overload of 115kV Lines 7&8 between HHWP Warnerville Substation and MID Standiford Substation under contingency conditions if interconnections are made without modification to the system's capacity. Without modifications, the SFPUC and HHWP transmission system could face reliability issues. Reconductoring also resolves multiple locations where the clearance between the existing conductors and the ground or structures does not meet current safe clearance regulations. **DESCRIPTION:** This project develops the scope of work, design, and contract documents necessary to bid, award, and manage the reconductoring contract. Reconductoring will include replacement of the existing 115kV conductors on Lines 7/8 from Warnerville to Standiford substations, resulting in improved transmission tower stability, and resolved clearance detections. The project will be partially funded by independent power generators interconnecting on the California Independent System Operator (CAISO) and the Transmission Line Clearance Mitigation Project (10014089).

## Power Infrastructure Project Development

### 10014092 POWER ONLY/PROJ DEVELP

The Project Development (PD) Account captures Program level expenditures. There are four types of charges that will be allocated to the PD Account: 1) Task orders for overall program management and project prioritization tasks, where the costs should be distributed over all CIP Projects. 2) Infrastructure and Hetchy staff performing program level tasks including: capital plan development, budget management (including fund management, and cost reallocations); and Quarterly Report generation tasks, where the costs should be distributed over all CIP Projects. 3) Portal support for the existing SharePoint Portal (includes document management and project dashboard reporting) 4) Work Outreach program.

**APPENDIX A. PROJECT DESCRIPTION CONT'D****JOINT INFRASTRUCTURE****Water Conveyance (Joint)****10014088 Moccasin Penstock Rehabilitation**

Moccasin Penstock was built in the early 1920's and conveys water from Moccasin Tunnel to Moccasin Powerhouse. A Condition Assessment Report, Phase I was submitted in 2011 by CH2M Hill. The reports identified numerous deficiencies. The penstocks contain segments of hammer forged welded steel (HFWS) that has experienced failures in the past. This type of HFWS pipe has a history of brittle fracture failure at both Pacific Gas & Electric and Southern California Edison Penstocks. In addition, issues have been identified regarding the anchor/saddle system with respect to Alkali Reactive Silica which degrades the concrete. An Alternative Analysis Report and a Design Criteria report were submitted by MWH/Stantec in 2016. Due to lack of funds in the previous budget cycle, the project scope was reduced to limit the repair to one penstock. The design of the rehabilitation work for one penstock was completed and went out for bid. Because of the 2018 March Storm event and concerns about the isolation point at West Portal, the construction contract was terminated before the contractor started work. In view of long term asset reliability, HHWP decides to revisit the scope to include the rehabilitation work of both penstocks and other upgrade. The proposed new scope of this project includes rehabilitation of anchors blocks, penstock coating, penstock saddle, air valves, large diameter butterfly valves, bifurcation sections and flow meters; and upgrade of electrical system, power transformers, standby generator in the West Portal Valve House, and bulkhead isolation valves in the surge tower. The proposed project budget detailed below does not include the replacement of all HFWS pipes. This project will continue with the planning phase in FY2018-19 and further investigate if the HFWS in its' current condition meets the 100-year life span criteria. The existing allocated funds will be sufficient through Planning and Design Phases. The additional funding request is for additional scope in construction.

**Dams & Reservoirs (Joint)****10030758 OSH Dam Access and Drainage**

The key objective of this project is to fall protection safety for Hetch Hetchy Water and Power (HHWP) operators inside the O'Shaughnessy Dam by installing fall protection systems that are in conformance with the updated Occupational Safety and Health Administration (OSHA) requirements, including ladders and landings with safety cage and/or fall restraint systems.

**10032903 O'Shaughnessy Dam Outlet Works Phase I**

O'Shaughnessy Dam (OSH) was completed in 1923 and raised in 1938. The original outlet works including gates and valves have been in services for more than 98 years. Inspections, condition assessments, and studies concluded that improvements and refurbishments of the outlet works system are needed to ensure safety and reliability. The work will be implemented in two phases. This project is to cover the Phase 1 work. The O'Shaughnessy Dam Outlet Works Phase 1 Project addresses the identified deficiencies of the existing outlet works system at OSH. Phase 1 will include five projects: (1) supply and installation of nine new bulkheads; (2) improvements to the existing dam drainage system, repair cracks and joints, and lighting; (3) replacement of existing Instream Flow Release (IFR) valves; (4) NAR and AAR for twelve existing slide gates; and (5) NAR and AAR for the existing drum gates. The existing control gates and valves are essential features for dam safety and reservoir operation. The project is needed to maintain safe and reliable operation of these aging assets. Failure or malfunction of these gates and valves will affect dam safety and result in reduction of storage and reduction of water deliveries to SFPUC customers.

**10037351 Moccasin Dam & Reservoir Long-Term Improvements**

The flow capacity of the existing spillway is inadequate to protect the Moccasin Dam against overtopping and erosion from severe flood events. The dam almost overtopped during the March 2018 storm event when flows were released from the auxiliary spillway and caused significant damage to the auxiliary spillway. The surrounding areas and the upstream diversion dam also sustained damage from the flood. This project is needed for dam safety. The objective of this project is to increase the spillway flow capacity to allow safe passage of flood flows without overtopping the dam and to protect the associated facilities within the Moccasin reservoir boundary against flood damages.

**10014115 Cherry Dam Spillway - Short Term Improvements**

A spillway release from Cherry Dam in 2010 caused a landslide, blockage of the spill channel, and extensive erosion in the close proximity of the dam's right abutment. In addition, it caused flooding of the Cherry Power Tunnel Adit, and flooding of a campground further downstream. Engineering studies determined that significant long-term improvements to increase the spillway flow capacity are needed to maintain dam safety. The objective of this project is to re-establish containment for the breached spill channel section and to protect the downstream slope of the existing embankment dam from uncontrolled releases and erosion in the interim until the long-term improvements are implemented.

**Mountain Tunnel****10014114 Mountain Tunnel Improvement Project**

Constructed between 1917-25, Mountain Tunnel (MT) is a critical, non-redundant link in the Hetch Hetchy water system, conveying SFPUC water supply from Kirkwood Powerhouse to Priest Reservoir. Due to the tunnel's 90 years of operation, deferred maintenance, as well as the construction deficiencies in the early 1900s, sections of the tunnel have deteriorated, some more extensively than others. MT improvements to enhance SFPUC's ability to provide reliable, high-quality water to its customers, will be carried out through three projects: 1. MT Adits & Access Improvement 2. MT Inspection and Repair 3. MT Tunnel Improvements. Mountain Tunnel Adits & Access Improvement Project will enlarge Adits 5/6 and 8/9 to accommodate quick entry of construction crews and equipment into the tunnel; and will improve access roads to the said adits. Mountain Tunnel Inspection & Repairs Project provides for a tunnel inspection in 2017 to update the Condition Assessment conducted in 2008, as well as short-term repairs in 2017 and 2018 to reduce the risk of failures in the concrete lining prior to the long-term project being implemented. Mountain Tunnel Improvements (Rehabilitation) Project was selected for the design and construction of the preferred engineering alternative that will keep this vital component of the Hetch Hetchy Water and Power System in reliable service for years to come. Budget and schedule is based on the Mountain Tunnel Improvement which has an anticipated construction phase between from 2021 to 2027 (MRN 238-241, 244, 245) \*\*This is the Water portion of the Mountain Tunnel project.

**Roads & Bridges (Joint)****10035086 Bridge Replacement**

HHWP is responsible for maintaining 14 bridges located in the Cherry, Eleanor and Hetch Hetchy region. Condition assessment has identified the need for rehabilitation and/or replacement (age and to meet current seismic design criteria). Two of the fourteen bridges require substantial modification or replacement and have been combined into this project. This project includes rehabilitation and/or replacement of O'Shaughnessy Adit Access Bridge; and Lake Eleanor Dam Bridge. The Lake Eleanor Dam Bridge is a structural component of the Lake Eleanor Dam which is integral to the structural/seismic integrity of the arch dam and should be addressed immediately. The O'Shaughnessy Adit Access Bridge

was built in 1960. It is approximately 84 feet long and is a four-span simply supported bridge with a timber deck and concrete piers. It is located right at the downstream of O'Shaughnessy Dam and provides on land two-way access to Canyon Tunnel.

### **Tunnels (Joint)**

#### **10014108 Canyon Tunnel Rehabilitation**

Canyon Tunnel was built over 55 years ago. A condition assessment was performed on the tunnel in 2009 and the tunnel is in generally good condition with the exception of the Hetchy Adit, a tunnel access point. Temporary repairs have been made to the "plug" at this adit twice (1989, 2009), but permanent repairs are needed to reduce leakage and increase reliability of the system. Project scope includes installation of a new reinforced concrete plug downstream of the existing plug. This project is being delayed because of boundary correction issues.

### **Utilities (Joint)**

#### **10014110 Moccasin Wastewater Treatment Plant**

The Moccasin Wastewater Treatment Plant (WWTP) provides primary treatment of wastewater from Moccasin Compound prior to discharging the treated water to a nearby spray field. The WWTP was constructed in the 1970s and has been in continuous operation since its installation. The WWTP has reached the end of its reliable service life, and is becoming increasingly maintenance intensive. The scope of work is to replace the existing plant with a package two-train sequencing batch reactor (SBR) plant with grit removal and screening facilities, upgraded electrical and flow monitoring systems, flow equalization, SCADA instrumentation and automation features, and related site improvements.

### **Joint Infrastructure Project Development**

#### **10014116 JOINT - PROJECT DEVELOPMENT**

The Project Development (PD) Account captures Program level expenditures. There are four types of charges that will be allocated to the PD Account: 1) Task orders for overall program management and project prioritization tasks, where the costs should be distributed over all CIP Projects. 2) Infrastructure and Hetchy staff performing program level tasks including: capital plan development, budget management (including fund management, and cost reallocations); Unifier and Quarterly Report generation tasks, where the costs should be distributed over all CIP Projects. 3) Portal support for the existing SharePoint Portal (includes document management and project dashboard reporting) 4) Work Outreach program.

## APPENDIX B. Hetch Hetchy Capital Improvement Program Approved Project Level Schedules/Budgets

Project Name	Approved Budget	Start	Finish	FY2022		FY2023		FY2024		FY2025		FY2026		FY2027		FY2028		FY2029		FY2030		FY2031		FY2032		
				FQ1	FQ2	FQ3	FQ4	FQ1	FQ2	FQ3	FQ4	FQ1	FQ2	FQ3	FQ4	FQ1	FQ2	FQ3	FQ4	FQ1	FQ2	FQ3	FQ4	FQ1	FQ2	FQ3
Hetchy Capital Improvement Program	\$862,306,192.00	03-Oct-11	30-Oct-35																							
<b>Hetch Hetchy Water Enterprise</b>	<b>\$862,306,192.00</b>	<b>03-Oct-11</b>	<b>30-Oct-35</b>																							
Water Infrastructure	\$155,874,178.00	26-Mar-12	30-Jun-33																							
Water Conveyance (Water)	\$146,401,975.01	01-May-19	13-Mar-28																							
10035574 SJPL Tesla Valves Replacement	\$3,740,000.00	01-May-19	30-Dec-22																							
10035575 SJPL Valve and Safe Entry Improvement	\$142,661,975.00	01-Jul-19	13-Mar-28																							
Water Infrastructure Project Development	\$9,472,203.00	26-Mar-12	30-Jun-33																							
10014072 WATER ONLY/PROJ DEV	\$9,472,203.00	26-Mar-12	30-Jun-33																							
Power Infrastructure	\$205,300,184.00	29-May-12	30-Oct-35																							
Powerhouse	\$118,581,215.00	03-Sep-13	30-Oct-35																							
10014075 Holm and Other Powerhouse Projects	\$20,703,580.00	03-Sep-13	22-Aug-22																							
10014086 Moccasin Powerhouse and GSU Rehabilitation	\$66,713,635.00	04-Jan-16	03-Dec-27																							
10036809 Moccasin Powerhouse Bypass Upgrades	\$15,007,000.00	18-Sep-20	01-Dec-27																							
10036810 Kirkwood Powerhouse Bypass Upgrades	\$16,157,000.00	27-Feb-20	30-Oct-35																							
Switchyard & Substations (Power)	\$34,248,428.00	01-Sep-15	25-Nov-26																							
10014087 Wamerville Substation Rehabilitation	\$34,248,428.00	01-Sep-15	25-Nov-26																							
Transmission Lines	\$37,969,000.00	02-Dec-19	31-Jan-25																							
10035721 Transmission Lines 7/8 Upgrades	\$37,969,000.00	02-Dec-19	31-Jan-25																							
Power Infrastructure Project Development	\$14,501,541.00	29-May-12	30-Jun-33																							
10014092 POWER ONLY/PROJ DEVELP	\$14,501,541.00	29-May-12	30-Jun-33																							
Joint Infrastructure	\$501,131,830.00	03-Oct-11	30-Jun-33																							
Water Conveyance (Joint)	\$47,251,363.00	01-Feb-16	28-Feb-28																							
10014088 Moccasin Penstock	\$47,251,363.00	01-Feb-16	28-Feb-28																							
Dams & Reservoirs (Joint)	\$136,883,506.01	01-Mar-17	30-Jun-28																							
10032903 O'Shaughnessy Dam Outlet Works Phase I	\$47,894,099.00	01-Feb-18	16-Sep-25																							
10030758 OSH Dam Access and Drainage Improvements	\$3,952,211.00	01-Mar-17	28-Feb-23																							
10037351 Moccasin Dam Long-Term Improvements	\$73,176,231.00	03-May-21	30-Jun-28																							
10014115 Cherry Dam Spillway - Short Term Improvem	\$11,860,965.00	01-Mar-21	30-Jun-27																							
Mountain Tunnel	\$238,218,951.01	03-Oct-11	03-Jun-27																							
10014114 Mountain Tunnel Improvement Project	\$238,218,951.01	03-Oct-11	03-Jun-27																							
Road and Bridges (Joint)	\$29,370,881.00	27-Feb-20	01-Jul-27																							
10035086 Bridge Replacement (4 - Bridges)	\$29,370,881.00	27-Feb-20	01-Jul-27																							
Tunnels (Joint)	\$8,428,813.00	03-Feb-14	01-Sep-26																							
10014108 Canyon Tunnel Rehabilitation	\$8,428,813.00	03-Feb-14	01-Sep-26																							
Utilities (Joint)	\$8,794,549.00	03-Jan-22	07-Apr-26																							
10014110 Moccasin Wastewater Treatment Plant	\$8,794,549.00	03-Jan-22	07-Apr-26																							
Joint Infrastructure Project Development	\$32,183,767.00	25-Jun-12	30-Jun-33																							
10014116 JOINT - PROJECT DEVELOPMENT	\$32,183,767.00	25-Jun-12	30-Jun-33																							



**APPENDIX C. LIST OF ACRONYMS**

<b>AAR</b>	Alternative Analysis Report
<b>BLM</b>	Bureau of Land Management
<b>CAISO</b>	California Independent System Operator
<b>CATEX</b>	Categorical Exemption
<b>CCTV</b>	Closed-Circuit Television
<b>CEQA</b>	California Environmental Quality Act
<b>CER</b>	Conceptual Engineering Report
<b>CIP</b>	Capital Improvement Program
<b>CRT</b>	Coast Range Tunnel
<b>DB</b>	Design-Build
<b>DCR</b>	Design Criteria Report
<b>DSOD</b>	Division of Safety of Dams
<b>EMB</b>	Engineering Management Bureau
<b>FCF</b>	Flow Control Facility
<b>FY</b>	Fiscal Year
<b>GSU</b>	Generator Step-Up
<b>GWH</b>	Gigawatt Hours
<b>HCIP</b>	Hetch Hetchy Capital Improvement Program
<b>HH</b>	Hetch Hetchy
<b>HHWP</b>	Hetch Hetchy Water and Power
<b>HPH</b>	Holm Powerhouse
<b>IFR</b>	Instream Flow Release
<b>JOC</b>	Job Order Contract
<b>KPH</b>	Kirkwood Powerhouse
<b>MGD</b>	Million Gallons per Day
<b>MID</b>	Modesto Irrigation District
<b>MPH</b>	Moccasin Powerhouse
<b>NAR</b>	Needs Assessment Report
<b>NERC</b>	North American Electric Reliability Corporation
<b>NTP</b>	Notice to Proceed
<b>OSH</b>	O'Shaughnessy Dam
<b>PD</b>	Project Development
<b>PG&amp;E</b>	Pacific Gas and Electric Company
<b>PLC</b>	Programmable Logic Controllers
<b>PSI</b>	Per Square Inch
<b>R&amp;R</b>	Renewal and Replacement
<b>SBR</b>	Sequence Batch Reactor
<b>SCADA</b>	Supervisory Control and Data Acquisition
<b>SFPUC</b>	San Francisco Public Utilities Commission
<b>SJPL</b>	San Joaquin Pipeline
<b>TSC</b>	Technical Steering Committee
<b>TTF</b>	Tesla Treatment Facility
<b>TUV</b>	Tesla Ultra Violet
<b>TVH</b>	Tesla Valve House
<b>WSIP</b>	Water System Improvement Program
<b>WWTP</b>	Wastewater Treatment Plant