



DATE: November 14, 2016

TO: Council Sustainability Committee

FROM: Director of Utilities & Environmental Services

SUBJECT

City Efforts Related to Upcoming Mountain Tunnel Shutdowns

RECOMMENDATION

That the Committee reviews this report.

SUMMARY

The San Francisco Public Utilities Commission (SFPUC) plans to shut down the Mountain Tunnel, a key water conveyance tunnel for the Hetch Hetchy Regional Water System, for critical inspections and repairs in early 2017 and again in 2018-19 (see figure on page 2). This work is needed for SFPUC to assess the condition of the Mountain Tunnel and make decisions on whether to repair the Mountain Tunnel completely or build a new, parallel tunnel in the future. During the Mountain Tunnel shutdowns, there will be an elevated risk of potential water supply interruptions since SFPUC will be entirely dependent on local supplies to meet the water supply needs of its customers. The City is working cooperatively with SFPUC and the East Bay Municipal Utility District (EBMUD) to prepare for potential outages by readying the Regional Water System Intertie (Regional Intertie) for service during the Mountain Tunnel shutdowns.

Further, staff is in discussions with the Bay Area Water Supply and Conservation Agency (BAWSCA) regarding the possibility of implementing a pilot water transfer during the second Mountain Tunnel shutdown in 2018-19. The pilot water transfer would test the feasibility of long-term transfers as an option for obtaining supplemental water supplies during dry years. The transfer water would be conveyed through EBMUD's system and the Regional Intertie to BAWSCA's service area through Hayward.

BACKGROUND

The Hetch Hetchy Regional Water System (RWS) provides water to 2.6 million customers in San Francisco, Santa Clara, Alameda, and San Mateo counties, including the City of Hayward. Sierra Nevada snowmelt, stored within the Hetch Hetchy reservoir in Yosemite National Park,

supplies 85% of this water. It then flows 160 miles by gravity through a series of tunnels and pipelines to the Bay Area. A key component of the RWS is the Mountain Tunnel, construction of which was initiated in 1925 and completed in the 1930s. This nineteen-mile tunnel carries water from the Early Intake Reservoir, Kirkwood Powerhouse, to Priest Reservoir, as illustrated on the following figure:



For the past twenty-five years, SFPUC officials have commissioned multiple assessments and inspections on the Mountain Tunnel and determined that it is at risk of collapse from deterioration of the nearly one-hundred-year-old lining. In 2014, a Technical Advisory Panel was assembled by SFPUC to review an alternatives assessment report, which included an analysis of repair of the existing tunnel, as well as construction of a bypass tunnel. While these are long-term projects that are still being reviewed and refined, the SFPUC has also identified near-term projects, such as the need for improved accessibility to the tunnel in order to make repairs in the event of failure.

Beginning in early January 2017, the tunnel will be shut down for about sixty days for critical inspection and repairs of concrete lining. During this January shutdown, improvements will be made to entry ways and access roads to reduce the potential outage time from a Mountain Tunnel failure from up to nine months to three months. It is anticipated that the Tunnel will be reopened in early March 2017. Depending on the results of the first shutdown, the Mountain Tunnel is expected to be out of service for a more extended period, tentatively scheduled to begin in November 2018 and lasting for about 100 days.

SFPUC/Hayward/EBMUD Regional Intertie

SFPUC and EBMUD jointly own the Regional Intertie, a group of facilities that connect the EBMUD and SFPUC regional water systems through the City of Hayward. The Regional Intertie is operated by the City of Hayward and may be used in the event of emergency or planned critical maintenance work to deliver water between SFPUC and EBMUD. The

Regional Intertie has the ability to transfer water at a capacity of approximately thirty million gallons per day. In order to reduce the risk of supply interruptions when the Mountain Tunnel is off line, SFPUC is working cooperatively with EBMUD and Hayward to prepare the Regional Intertie and place it on standby so that it can be activated in short order, if needed. Similarly, SFPUC is also preparing to activate its intertie with the Santa Clara Valley Water District, should it be necessary.

Pilot Water Transfer

Separately, BAWSCA has been working with EBMUD since 2012 to evaluate the feasibility of partnering on water transfers to provide additional water supplies during droughts. In September 2013, BAWSCA and EBMUD completed the BAWSCA-EBMUD Short-term Pilot Water Transfer Plan that recommends implementing a pilot water transfer to test the institutional arrangements and technical feasibility of water transfers using the Regional Intertie. The pilot water transfer described in the study anticipated use of EBMUD's Freeport Regional Water Project, with an intake located on the Sacramento River, to deliver transfer water to the BAWSCA service area via EBMUD's raw water and treated water distribution system and the Regional Intertie. Transfer water delivered from EBMUD through the Regional Intertie would be directly used by Hayward customers in-lieu of taking delivery of water from the SFPUC RWS. In turn, the freed-up SFPUC water supplies would be delivered to other BAWSCA member agencies.

On September 17, 2013, staff briefed Council on the proposed BAWSCA-EBMUD pilot water transfer. Council generally expressed support for the effort and directed staff to proceed with discussions. However, Council also expressed concerns with potential water quality and operational impacts to Hayward customers and directed that staff work with BAWSCA to address these concerns and ensure Hayward is adequately compensated for its role in implementing a pilot water transfer. Council agreed with staff that although all BAWSCA members, including Hayward, benefit from additional water in dry years, Hayward alone could be uniquely impacted by taking delivery of Sacramento River water from EBMUD through the Regional Intertie.

In February 2015, the City and BAWSCA entered into a cooperative agreement to develop a pilot water transfer plan and cost-share on a consultant study to identify potential impacts on Hayward, including changes in water quality, flow and pressure that could occur as a result of the pilot transfer. The consultant study was completed in March 2016 and confirmed that reversing the direction of flow and providing Hayward with a water supply from EBMUD through the Regional Intertie could result in changes to the water system pressures and flows. While these impacts would be acceptable during an emergency or a shutdown of the Regional Water System for critical maintenance work, more analysis, data collection and potential mitigation measures would be needed before the City commits to a long-term use of the Regional Intertie during droughts or other water shortage years. In the near-term, Hayward and BAWSCA staffs have identified the second Mountain Tunnel shutdown in 2018-2019 as a potential window of opportunity to implement the pilot water transfer during SFPUC's planned critical maintenance work on Mountain Tunnel.

DISCUSSION

Preparation of the Regional Intertie for Use

On August 16, 2016, SFPUC formally requested that EBMUD and Hayward initiate activities to prepare the Regional Intertie for use during the Mountain Tunnel shutdown planned for January 3 – March 6, 2017. It is not anticipated that the SFPUC will need to activate the Regional Intertie during this period, as winter demands are significantly lower than average, and sufficient local supplies are currently available for the limited duration. However, given the higher-than-normal risk of supply interruption, the SFPUC has requested that the Regional Intertie be capable of supplying water within twelve hours of notification.

Due to limitations in the design of the Regional Intertie, the current operation and maintenance process to prepare the Regional Intertie for use requires substantial time, effort, and water to ensure acceptable water quality. Hayward and SFPUC staff have identified that installation of a larger valve to flush the Regional Intertie would significantly reduce the amount of time and effort needed to ready the Regional Intertie for use. With SFPUC's agreement, Hayward staff is currently in the process of installing a new flushing valve. Staff anticipates that this work will be completed by the end of December. Once installed, the new flushing valve can be used to quickly bring the Regional Intertie to a state of readiness in the future.

Planning for the Pilot Water Transfer

City staff is currently working with BAWSCA on a second, staff-level cooperative agreement to complete planning efforts for a pilot water transfer that could be implemented during the 2018-2019 Mountain Tunnel shutdown. The agreement outlines roles and responsibilities for working cooperatively with BAWSCA, EBMUD and SFPUC to define the scope of the pilot water transfer and develop operational, monitoring and mitigation, and communication plans that would be implemented during the pilot water transfer. BAWSCA and the City are also responsible for jointly developing a Pilot Water Transfer Agreement that would include a list of costs that the parties agree would be reimbursable for the City's efforts to implement the pilot water transfer.

The source of the pilot water transfer is unknown at this point. It is too early to know if EBMUD will be in a water shortage condition that requires use of the Freeport facilities to deliver Sacramento River water to its service area, and potentially to BAWSCA as part of the pilot water transfer. Therefore, it is possible that Hayward could receive transfer water from EBMUD's normal water supply sources and would not see a noticeable difference in water quality.

Implementing the pilot water transfer during the Mountain Tunnel shutdown should also minimize potential flow and pressure impacts to Hayward as the pilot water transfer would occur during the winter when Hayward's demands are lowest. Although not every element of the pilot water transfer may be simulated, staff believes that planning to implement the pilot water transfer during the Mountain Tunnel shutdown would allow BAWSCA to move forward with developing the institutional arrangements and completing environmental reviews and

approvals needed to test the viability of water transfers as a supplemental water supply source, while staying within the agreed upon purposes for using the Regional Intertie.

ECONOMIC IMPACT

There will be no impact on Hayward ratepayers related to Hayward's work to ready the Regional Intertie. SFPUC has indicated that it will reimburse the City for all costs to prepare the Regional Intertie for use during the Mountain Tunnel shutdowns and any associated operation costs should the Regional Intertie be placed into service.

Likewise, staff anticipates that all operational costs incurred by Hayward specific to a potential pilot water transfer implemented during the 2018-2019 Mountain Tunnel shutdown would be reimbursed by BAWSCA.

FISCAL IMPACT

All costs related to preparing and operating the Regional Intertie during the Mountain Tunnel shutdown will be reimbursed by SFPUC, with no impact to the Water Enterprise Fund.

Hayward's costs for planning for the pilot water transfer are anticipated to be limited to staff time needed to develop various plans and agreements. Staff anticipates that all operational costs directly related to Hayward's efforts to implement the pilot water transfer would be reimbursed by BAWSCA, with no impact on Hayward's Water Enterprise Fund. There would also be no impact on the General Fund.

SUSTAINABILITY FEATURES

Water Supply Reliability: The Mountain Tunnel is critical to the SFPUC RWS and failure of the tunnel would be catastrophic in terms of water supply. City efforts to work cooperatively to prepare the Regional Intertie for use will help mitigate the potential for supply outages during the Mountain Tunnel shutdowns.

The pilot water transfer will test the feasibility of water transfers to increase the overall reliability of water supplies to BAWSCA customers during droughts or in the event of required SFPUC cutbacks.

PUBLIC CONTACT

During the Mountain Tunnel shutdowns, SFPUC will rely on local water sources. While the water will meet all federal and state drinking water quality standards, customers may experience a difference in taste and odor. Depending on the extent of the changes, it may be necessary to notify water sensitive customers by direct contacts and general customers through media, the City's website, and other available outlets.

Prior to implementing the pilot water transfer, staff will develop a communications plan, should there be a need to inform customers of potential changes in water quality. The scope

of the outreach will depend on the quality of the water Hayward expects to receive during the pilot water transfer.

NEXT STEPS

Staff is currently working cooperatively with SFPUC and EBMUD to prepare the Regional Intertie for use by the end of December 2016. Staff is also continuing to work with BAWSCA on planning efforts to implement a pilot water transfer during the 2018-2019 Mountain Tunnel shutdown. Staff will continue to work cooperatively with BAWSCA, EBMUD and SFPUC on all efforts related to the Mountain Tunnel shutdowns and keep the Committee apprised of progress as projects move forward.

Prepared by: Jan Lee, Water Resources Manager

Recommended by: Alex Ameri, Director of Utilities & Environmental Services

Approved by:



Kelly McAdoo, City Manager