THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Committee Item
INFORMATION

Engineering, Operations, and Technology Committee

6/8/2026 Committee Meeting

6a

Subject

Update on Metropolitan's Prestressed Concrete Cylinder Pipe Rehabilitation Program

Executive Summary

Metropolitan's Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program is a comprehensive effort to manage Metropolitan's PCCP feeders. The scope of the program includes: proactively inspecting and monitoring the condition of all PCCP lines; installing stray-current mitigation equipment as a proactive and cost-effective measure to prevent corrosion; repairing individual distressed PCCP segments, as necessary; and rehabilitating five priority PCCP feeders in a planned, systematic fashion.

Fiscal Impact

None

Applicable Policy

Not applicable

Related Board Action(s)/Future Action(s)

Not applicable

Details and Background

Background

Metropolitan's water delivery system includes approximately 830 miles of large-diameter pipelines, of which 163 miles were originally comprised of PCCP. These feeders were installed between 1965 and 1985, and range in diameter from 54 to 201 inches. They extend across dense urban areas and remote regions. PCCP is a concrete pipe that uses steel prestressing wires tightly wrapped around a concrete core to handle high internal pressures. The prestressing wires are protected with a layer of cement mortar, which serves as a finished outer surface.

Under certain conditions, PCCP lines have an elevated risk of failure compared to other types of pipe due to the potential for their prestressing wires to corrode and eventually break. PCCP failures can be catastrophic and occur without warning, compromising system reliability and resulting in high costs from service interruptions, unplanned major repairs, and potential third-party damage.

In 2011, Metropolitan initiated the PCCP Rehabilitation Program to develop a comprehensive strategy to enhance the long-term reliability of its PCCP lines. The program minimizes the risks associated with failures by proactively rehabilitating select reaches of PCCP, starting with those that pose the greatest risk. Based on trends from years of monitoring and urgent repairs to PCCP lines within the distribution system, staff identified five feeders as having the highest risk of failure, accounting for 100 of the 163 miles of PCCP in the system. This approach helps avoid possible unplanned system outages, thereby increasing service reliability for all customers within Metropolitan's service area.

The objectives of the program include reducing the risk of unplanned outages, extending the service life of the PCCP lines, performing rehabilitation work cost-effectively, minimizing the effects of rehabilitation efforts on member agency deliveries, minimizing the loss of hydraulic capacity due to rehabilitation, and improving system operational and emergency flexibility. The program has four main elements:

1) Regular electromagnetic inspections. As distressed segments are discovered, the priority and sequence of rehabilitation work may be adjusted as necessary.
2) Regular corrosion and stray-current monitoring. Install stray-current drain stations where necessary to minimize corrosion on affected PCCP lines.
3) Urgent or near-term repairs of PCCP segments as needed before the scheduled rehabilitation of the entire feeder. These near-term repairs will be consistent with the long-term rehabilitation effort.
4) Relining or replacement of the entire PCCP portions of the five at-risk feeders: Second Lower Feeder, Sepulveda Feeder, Calabasas Feeder, Rialto Pipeline, and Allen-McColloch Pipeline (AMP).

The program reached a key milestone in 2017 with the certification of its programmatic environmental impact report (PEIR). The PEIR addressed the rehabilitation of the five PCCP feeders identified as high-risk. By analyzing the entire program at once, the PEIR provides flexibility in implementing rehabilitation of the five feeders, enabling work to shift between individual reaches based on the most up-to-date condition assessments and rehabilitation priorities.

Significant Accomplishments

Initially, rehabilitation efforts focused on the most at-risk segments of the Second Lower Feeder. The Second Lower Feeder is 39 miles long overall, with 29 miles of PCCP. Six reaches for a total of 17.8 miles have been rehabilitated on the Second Lower Feeder. In addition, 3.5 miles of the 8.8 miles of PCCP on AMP have also been rehabilitated. Rehabilitation efforts have now shifted to the Sepulveda Feeder, with a contract for relining Reach 2 awarded in January 2026. With the completion of Reach 2, 5.4 miles of the 35 miles of PCCP on the Sepulveda Feeder will be rehabilitated. In all, 26.7 miles of the 100 miles of at-risk PCCP have been relined or are currently under construction. Planned work will continue to rehabilitate successive reaches of the PCCP lines prioritized by risk.

For the Sepulveda Feeder, staff has segmented it into two general sections: the Southern section and the Northern section. A relining contract for the first reach in the southern section is currently underway and is expected to be completed in July 2027. Additional reaches of the southern section are currently planned for construction in 2030 and 2033. Staff planned to prioritize lining the northern reaches to accommodate the potential enlargement of the Sepulveda Feeder Pump Stations and expected higher pressures; the Sepulveda Feeder Pump Stations are currently being evaluated under CAMP4Water. However, the outage of Garvey Reservoir necessitated a return to the previous risk-based plan, as the north reaches of the Sepulveda Feeder are currently needed to supplement flows into the central pool. In addition, staff is investigating other alternatives for surge mitigation that do not require relining the Sepulveda Feeder's north reaches before expanding the Sepulveda Feeder Pump Stations. Design for relining the first north reach segment is underway and nearly complete. In the event the CAMP4Water process determines that proceeding with the enlargement of the Sepulveda Feeder Pump Stations, combined with the relining of the north reaches, is prudent, staff will be able to swiftly pivot to accommodate this direction.

Staff continues to perform regular electromagnetic inspections of all PCCP lines in the system. A complete cycle of inspecting all PCCP lines takes approximately five years. The fifth inspection cycle is nearing completion. In 2025, staff completed inspections of 18 miles of PCCP, including the Box Springs Feeder and West Valley Feeder No. 1. Staff is preparing a Request for Proposals for an agreement to perform the sixth cycle of PCCP inspections. Staff also continues to evaluate new technologies for inspection and condition assessment of PCCP. In February 2024, Metropolitan initiated design for the installation of an Acoustic Fiber Optic monitoring system on a portion of the Foothill Feeder; however, the recent discovery of invasive golden mussels has complicated the ability to dewater the Foothill Feeder, which now requires additional permitting from regulatory agencies, procurement of portable treatment systems to discharge waters in natural waterways, and a longer shutdown window. As an alternative, staff have worked with a consultant to up-scale a free-swimming tool to perform the inspection without dewatering the 201-inch-diameter Foothill Feeder, something that was not

previously possible due to the pipeline's large diameter. Staff will return to the Board in summer 2026 to amend a PCCP electromagnetic inspection agreement to include the Foothill Feeder inspection with the new inspection tool.

Summary

Originally, the program was planned to be completed over 20 years at an overall cost of approximately $2 billion. This initial schedule was prepared independently of the overall Capital Investment Plan (CIP) budget, recognizing at the time that this level of spending would be difficult to sustain within the planned CIP forecast. System operational constraints and financial constraints have led to an extension of the original rehabilitation schedule. Staff is planning for one major PCCP relining project per year going forward to moderate the need for large increases in the overall CIP budget while continuing to manage the risk posed by the aging PCCP within the distribution system. This revised approach will push the overall completion to 2050 and the overall program cost to approximately $3.5 billion, due to inflation. If, through regular scheduled inspections, the need to accelerate relining of selected portions of feeders is identified, staff will reprioritize other PCCP projects.

Staff will continue implementing the PCCP Rehabilitation Program to address the risk of PCCP failure within Metropolitan's distribution system. Staff will balance that risk while remaining sensitive to cost constraints going forward. Staff will reassess and, as needed, adjust the sequence and timing of rehabilitation for individual reaches to execute the program and improve reliability. Staff will also be evaluating potential technologies to reduce costs and shutdown-related impacts to member agencies.

5/18/2026

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5/18/2026

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