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CREDIT OPINION
15 April 2019

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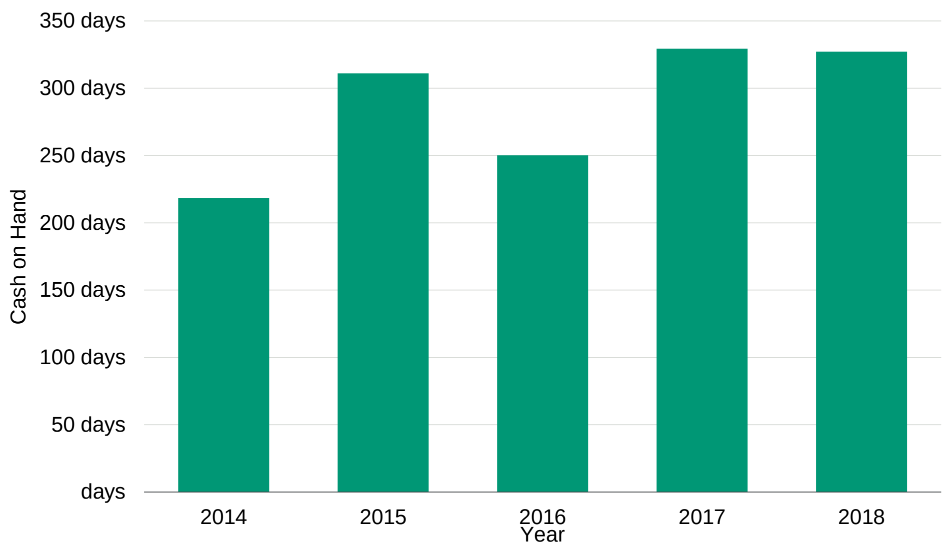
California Dept. of Wtr. Res.

Update to credit analysis

Summary

The State of California Department of Water Resources (Aa1) benefits from the strong take-or-pay nature of the water supply contracts from which debt service payments are derived and the critical, long-term importance of the water supply to its 29 contractors, who combined provide water to 69% of the state's population. While there have been no historical payment delays on the part of contractors, the additional security offered by step-up provisions would enable the Department to withstand a significant amount of potential delinquencies, providing the revenue bonds with elements of more structured credits. The rating also incorporates satisfactory liquidity levels, consistent debt service coverage and sizeable capital investment needs. Risks associated with future capital costs have increased due to uncertain FEMA reimbursements for Oroville Spillway repairs and proposed changes to California's WaterFix project. Although some contracts will begin to expire in 2035, the rating reflects progress in reaching agreement for contract renewals.

Exhibit 1
Liquidity levels remain satisfactory but could be pressured given sizeable capital costs



Source: Moody's Investors Service

Credit strengths

» Strong water delivery contracts with 29 State Water Project contractors representing 69% of the state's population

» Contractors' obligation to levy a property tax or assessment in an amount sufficient to make up shortfalls in net revenues subject to certain requirements

» Step-up provisions for the majority of DWR's annual debt service on its water revenue bonds, which partially offset the risk of delays between discovery of an operating shortfall and collection of property taxes sufficient to close the anticipated payment gap

» Strength of Metropolitan Water District of Southern California (Aa1 stable), which represents 50-55% of total contracted water billings and approximately 41% of projected total revenues expected to be received from water supply contract payments with respect to the parity lien CVP water revenue bonds

» Contractors' payments for water revenue bonds subject to a 1.25x rate covenant

Credit challenges

» Ongoing negotiations for contract extension that the Department will need to finalize prior to issuance of debt with maturities beyond 2035

» Uncertainty of final FEMA reimbursements for Oroville Spillway repairs

» Strict legal and regulatory environment for water exports from the Sacramento-San Joaquin Bay Delta

» Potential borrowing for California WaterFix Bay Delta projects with uncertain timing due to proposed revisions in project's scope

» Limitations on the Department's ability to build up substantial reserves

Rating outlook

Moody's has a stable outlook on the Department's long-term water enterprise ratings, primarily reflecting the time-tested strength of the underlying water supply contracts and the share of contract payments supported by the highly-rated Metropolitan Water District of Southern California. Over the past decade, annual water deliveries have averaged close to 2.5 million acre feet, representing approximately 60% of total contractual allocations. Shortfalls reflect limits on available water supplies, especially during the state's five-year drought. Positively, improved deliveries are expected in the current year. Nevertheless, given the bonds' strong security provisions, Moody's believes that material, future contract payment delinquencies or defaults are unlikely.

Factors that could lead to an upgrade

» Substantially increased, long-term water delivery reliability

» Increased certainty regarding ultimate contractor charges for major capital efforts including Oroville Dam Spillway repairs and costs associated with the Bay Delta Conservation Plan/California WaterFix

» Effective resolution of contract extension

» Conclusion of significant outstanding litigation

Factors that could lead to a downgrade

» Failure to reach agreement on contract extension with remaining contractors

» Lack of FEMA reimbursements or identified funding sources for required Oroville Dam Spillway projects that would require significant increases in charges or deferment of other needed capital investments

» Significant, permanent reductions in water deliveries

Key indicators

Exhibit 2

California Department Of Water Resources, CA					
System Characteristics					
Asset Condition (Net Fixed Assets / Annual Depreciation)	59 years				
System Size - O&M ($000)	$843,014				
Service Area Wealth: MFI % of US median	96.36%				
Legal Provisions					
Rate Covenant (x)	1.25x				
Debt Service Reserve Requirement	DSRF funded at less than the 3 prong test or a springing DSRF (A)				
Management					
Rate Management	Aa				
Regulatory Compliance and Capital Planning	Aa				
Financial Strength					
	2014	2015	2016	2017	2018
Operating Revenue ($000)	$973,508	$1,019,378	$1,086,650	$1,223,340	$1,206,513
System Size - O&M ($000)	$798,653	$607,407	$707,050	$839,614	$843,014
Net CVP Revenues Available for Debt Service	$260,418	$253,810	$284,560	$271,190	$265,164
Long-Term Revenue Bond Debt	$2,532,234	$2,588,108	$2,636,703	$2,887,798	$2,739,607
Debt Service Coverage CVP Bonds	1.3x	1.3x	1.3x	1.4x	1.3x
Cash on Hand	219 days	311 days	250 days	329 days	327 days
Debt to Operating Revenues (x)	2.6x	2.5x	2.4x	2.4x	2.3x

Source: California Department of Water Resources Audited Financial Statements and Moody's Investors Service

Profile

The California Department of Water Resources is responsible for the construction and operation of the State Water Project, a massive statewide system of aqueducts, dams, reservoirs, pumping stations and electric generation facilities running from Oroville Dam, north of Sacramento to a terminus in Riverside County and delivering water supplies to 69% of the state's population. In addition to water revenue bonds, the Department is additionally responsible for state-issued general obligation bonds of which $38.5 million remains outstanding.

Detailed credit considerations

Service area and system characteristics: agreements with contractors serving 69% of the state's population support critical water deliveries and coordinated management of capital projects

The Department of Water Resources' (DWR or Department) expects to finalize contract renewals with its 29 contractors within the next two years, ensuring resources and favorable legal provisions for DWR's existing and future debt issuances. Positively, ten of the contractors have signed new agreements. Together, DWR's contractors supply water to approximately 69% of the state's population, demonstrating the need for DWR's water deliveries and its role in coordinating and funding large scale water supply projects. Contractors' support has persisted despite the variability of water supplies and delivery levels and the sizeable future capital investments whose costs will be shared among DWR's contractors.

Repairs to the Oroville Dam Spillway, following significant damage to both the main and emergency spillways in February 2017, provide an example of DWR's vulnerability to extreme weather events as well as its responsibility in maintaining major water infrastructure. Total repair costs are estimated at $1.1 billion, of which the Department has spent $980 million. DWR has completed repairs to the main spillway, and expects to complete work on the emergency spillway by the end of April. With water levels in the dam at 76% of full capacity, DWR released its first water over the spillway in April 2019. Site work, including lighting and road signage will continue through November 2019, and environmental restoration will continue into 2020.

Notably, DWR had expected to receive reimbursement for up to 75% of Oroville project costs from the Federal Emergency Management Agency (FEMA). However on March 7th, the agency notified DWR that it would not provide $306 million of a requested reimbursement of $639 million. FEMA contends that the state should have addressed preexisting structural problems on the dam's upper spillway prior to its failure in the 2017 storm and has declared those repairs ineligible for reimbursement. In addition, FEMA concluded that the eligibility of the upper chute was not damaged as a result of the incident and was therefore not eligible for disaster assistance. DWR plans to appeal this decision, but FEMA's initial decision illustrates the risks facing its 29 contractors for higher than anticipated future costs. Positively, FEMA has provided $73 million in reimbursement and authorized an additional $333 million. For further information on the FEMA decision, please see Moody's Sector Comment.

Following winter storms that delivered above average snowpack and precipitation levels, DWR has increased water deliveries in 2019 to 2.9 million acre-feet (AF). This exceeds an average of close to 2.5 million AF over the prior decade and represents 70% of contractors' maximum deliveries of 4.2 million AF. This is an increase from 35% in the prior year and close to a recent record of 85% of maximum deliveries in 2017. DWR's reservoirs are also near full capacity. Lake Oroville is at 2.67 million AF, which is about 75% capacity and 103% of historical average. The SWP share of the San Luis Reservoir is full at 1.06 million AF.

Nevertheless, the Department remains susceptible long term to the state's more volatile weather patterns. Climate challenges have also exacerbated the difficulty in meeting the twin goals of maintaining the quality of habitats within the Bay Delta (or "Delta") while protecting water supplies and facilitating conveyance. These challenges add to the uncertainty of future water supplies, electric generation capabilities and capital costs. Nevertheless, the sheer size of the state water project and its role in water provision to the majority of the state's residents serve to ensure that adequate expertise, attention and resources will be dedicated to managing these challenges.

Managed by California's Department of Water Resources, the State Water Project ("the Project") is one of the largest water supply projects ever undertaken and includes an extensive, statewide system of aqueducts, dams and reservoirs, pumping plants, hydroelectric generating facilities and other power plants delivering water to a service area that encompasses approximately 25% of the state's land area. The main stem of the aqueduct system is 443 miles in length and transports water from north of the Delta near Stockton through the Central Valley of California, over the Tehachapi Mountains and then into Southern California. Facilities also include 36 storage facilities of which 21 are primary reservoirs and lakes. Portions of the system include facilities developed jointly with the Central Valley Project operated by the U.S. Bureau of Reclamation. The Project does not include any treatment facilities.

The Project provides water supplies to 29 contractors whose combined population of 27 million represents close to 70% of California's total population. The contractors are a widely varied group of both urban and agricultural municipal entities located primarily in the central and southern portions of the state. Their credit quality varies significantly, and in the case of a few of the very small, agricultural contractors are essentially unknown. However, these smaller contractors, four of which have customer populations of less than 37 each, account for very little of the anticipated contract payments.

Two of the three largest contractors, which together are expected to pay roughly half of debt service on outstanding bonds, are both rated within the Aa category. Payments from the largest of these, Metropolitan Water District of Southern California (MWD), alone are expected to provide roughly 41% of revenues supporting outstanding obligations, with Kern County Water Agency providing 9.5% of projected debt service payments. San Bernardino Valley Municipal Water District also represents a sizeable share, contributing 10.6% of debt service revenues. In total, MWD accounts for 50% to 55% of contractor payments.

DWR's contracts currently have differing expiration dates ranging between 2035 (including that of MWD) and 2042, effectively limiting the final maturity of revenue bonds to 2035. DWR is expecting to finalize contract extensions within the next two years. The proposed contract provide for a number of modifications that support DWR's already strong credit quality. Most significantly, the contracts will uniformly extend until the end of 2085, allowing the Department to finance its sizeable capital program over a longer time period.

The contract would also increase minimum operating reserves to $150 million, bolstering liquidity, and would simplify billing procedures by allowing contractors to be billed on a "pay-as-you-go" basis rather than the current system, which amortizes a portion of the costs. This would allow DWR to more closely match future revenues with future expenditure requirements. The proposed contract also provides an internal financing mechanism through which the Department could self-fund certain capital projects and subsequently recover these costs, with associated interest charges, from contractors.

The contractors' long-run willingness and ability to make full and timely payments is ultimately dependent on the Department's continuing ability to provide cost effective water supplies. Contractors will likely remain fully willing and able to pay if the long-run average cost of DWR supplies remains below the marginal cost of securing alternative sources of supply. The Department clearly exhibits the size and levels of staffing expertise consistent with favorable economies of scale and successful project execution, and we believe that the Department's favorable unit cost will endure for the foreseeable future.

Projected unit costs ($/AF) are expected to remain relatively the same for many contractors, and MWD at around $320/AF. This figure can vary significantly depending upon hydrological conditions and water deliveries. Typically, differential charges reflect varying transportation distances and when contractors joined the system, with those joining later paying higher rates. DWR bills contractors based upon actual costs and required debt service coverage.

Of the total costs associated with Oroville Spillway repairs, only $45 million were incorporated into calendar 2019 water charges. The remainder, inclusive of any charges not reimbursed by FEMA, will still need to be folded into future billings to the contractors.

Debt service coverage and liquidity: strong contract features, Including step-up provisions, offset narrower coverage levels; liquidity expected to remain stable.

While debt service coverage levels will approximate a narrower covenanted minimum of 1.25x, satisfactory liquidity and favorable step-up provisions will continue to support strong credit quality. DWR's high credit quality is primarily derived from the strong terms of its water delivery contracts with each of the 29 State Water Project contractors. The contracts are judicially validated and require charges sufficient for debt service and fixed cost payments regardless of actual water deliveries, which can vary substantially from year to year. The guaranteed nature of these payments, which in turn support DWR's water revenue bonds, serves to offset debt service coverage levels that are narrower than similarly rated water utilities.

Historically, debt service coverage has ranged from 1.25x to 1.37x, as DWR refunds coverage in excess of the 1.25x rate maintenance coverage back to contractors in the subsequent calendar year. In fiscal 2018, coverage of CVP bonds equaled close to 1.28x, and coverage is expected to remain stable going forward despite generally flat revenues expected in fiscal 2019. Fiscal 2019 revenues are not expected to increase significantly as overbillings in calendar year 2017 are returned to contractors through adjustments over the next two years' billing cycles in order to maintain coverage at a covenanted 1.25x.

Increased operating costs in calendar 2020 are driven by dam safety efforts, higher pension and other post employment benefits and biological treatment mandates, which in combination are expected to increase O&M costs. Nevertheless, we expect coverage to remain stable.

Although contractors' individual credit qualities vary widely, there have been no payment defaults or delinquencies, even through the recession and subsequent severe drought conditions. Furthermore, in the event that a contractor is unable to raise sufficient funds from operations to make its fixed contract payments, the contractor has an obligation to levy a property tax or assessment in an amount sufficient to make up the shortfall.

While debt service provisions vary among the Department's outstanding obligations depending upon the contractors' relative benefits from differing projects, 65% of outstanding payment obligations are covered by a universal step-up provision under which every non defaulting contractor is proportionally responsible for defaulted debt service of up to 25% of the amount otherwise payable. MWD is fully responsible for any other contractor defaults on close to $36.9 million in outstanding debt service (12% of total) associated with the East Branch Enlargement. These step-up provisions provide meaningful credit enhancement. Typically, the 25% step up requirement of the three largest contractors equals close to one-half of total annual debt service payment obligations and in combination is roughly twice the annual payment owed by the next largest contractor.

Overall, the majority of contractor revenues are derived from user charges, and this is certainly true of the Department's larger customers. While these entities would presumably be able to generate additional revenues fairly quickly with advance planning and rate increases, step-up provisions do provide an additional guarantee, serving to offset the risk of delays between a contractor's realization of a potential operating revenue shortfall and the implementation of rate increases or the collection of property taxes to close the operating gap.

The Department's flow of funds also enhances credit quality, with all contractor payments flowing immediately to the interest and principal accounts on a monthly basis before surplus amounts are then released to the Operating Account for payment of O&M. This flow of funds serves to insulate debt service payments from reductions in operating revenues associated with decreased water sales. Additionally, because the Department bills contractors six months in advance of debt service payments, these receipts, in combination with a pooled reserve of ½ MADS debt service requirement, ensure that a full year's debt service is on hand at any given time.

LIQUIDITY

Ending cash balances in the Department's Central Valley Project fund approached $731.4 million at the end of fiscal 2018, declining slightly from $808.8 million at the end of fiscal 2017, but remain sound. This ending position in fiscal 2018 is equivalent to 327 days. While ending cash for fiscal 2019 is expected to remain satisfactory at between $700 and $800 million, this figure could be pressured given sizeable capital needs. This is especially true should DWR's appeal of FEMA's decision to reject $306 million in reimbursements for Oroville Dam Spillway repairs prove unsuccessful.

Adequate liquidity is important given the Department's current billing practices, under which the Department provides contractors with an estimate of charges for the coming calendar year by July 1st. Simultaneously, the Department also recalculates charges for all prior years to reconcile the actual costs to DWR versus the payments made by the contractors. These “true-up” charges are then expected to be paid in the following year, potentially leading to unexpectedly large variations in bills from year to year and potentially creating a lag in cash flow reimbursements to the Department.

As discussed previously, proposed contract amendments should help to ensure continuation of satisfactory liquidity levels if finalized as proposed, with a minimum balance of $150 million representing a significant increase from the roughly $30 million allowed currently.

DWR has improved the accuracy of cost projections, with monthly tracking of real-time expenditures in order to recognize variances earlier in the year, and recent results reflect billings tracking closely to required cost recovery. Importantly, proposed contract changes would allow additional billing on a pay-as-you-go basis, improving the reliability of the Department's cash flows.

Debt profile and legal covenants: adopted policies and satisfactory legal covenants support a sound debt structure, although the need for significant additional borrowing looms

Although DWR's existing debt service declines through final maturity in 2035, outstanding debt will increase significantly once contracts are extended though 2085 and DWR issues long-term obligations to finance a number of substantial capital efforts.

Following the 2019 issuance, DWR will have close to $2.79 billion in outstanding parity Central Valley Project revenue bonds. DWR also has $32 million in outstanding Devil Canyon-Castaic Bonds, supported by only 6 contractors. These bonds also lack of step-up provisions, and a lower rate maintenance requirement of 1.0x. These risk factors are largely offset by MWD's responsibility for 88% of debt service for those bonds.

DWR has identified an additional $2.37 billion in capital projects of which Oroville Dam Spillway repairs constitute $535 million, although this figure may increase if DWR is unsuccessful in its appeal to FEMA. Other major projects could include $545 million for additional North Bay Aqueduct intake improvements and $615 million in general facilities reconstruction and improvement projects.

Nevertheless, DWR's debt profile should remain manageable given the 29 contractors responsible for payments, whose combined customer base accounts for 70% of the state's population. DWR also has a detailed Debt Management Policy that is regularly reviewed and includes detailed provisions governing authorized financing instruments, refunding savings thresholds, and ongoing disclosure requirements. The debt policy also limits unhedged variable rate debt to 20% of total outstanding obligations.

DEBT STRUCTURE

The vast majority (90%) of DWR's outstanding long-term debt are fixed-rate obligations. The $258.5 million in Series AT and AU Index Floating Rate Bonds constitute DWR's only long-term variable rate debt, remaining well within the debt policy guidelines. However, largely in response to Oroville Dam Spillway project costs, DWR has increased the size of its longstanding commercial paper program (rated P-1).

The Series 1 commercial paper (CP) has been doubled from $300 to $600 million, of which $190 million is outstanding; $76 million for Oroville Dam Spillway repairs. A second line of $800 million is entirely targeted for Oroville Dam Spillway projects, with $790 million outstanding. The Series 2019 issuance is expected to redeem $346 million of the $979 million in outstanding CP. DWR intends to finance Oroville Dam Spillway repairs with CP until it is determined whether these amounts will be taken out with long-term financing or FEMA reimbursements.

A liquidity facility provided by Bank of America, N.A. (A1/P-1) backs the $600 million of Series 1, and a Wells Fargo Bank, N.A. (Aa1/P-1) liquidity agreement covers the $800 million in Series 2. Liquidity support under Bank of America and Wells Fargo extends through October 15, 2021 and February 25, 2021, respectively. DWR has never drawn upon credit agreements.

The Governor's recent indication that the scope of California's WaterFix project is likely to change creates additional uncertainty. The project is designed to implement new conveyance facilities in the Bay Delta and secure reliable water supplies over the longer-term. Previously, total project costs were estimated at $16.7 billion of which DWR's contractors would likely cover a significant portion. While this figure could be reduced as the project is potentially modified to include one, rather than two water tunnels, construction delays and required reworking of legal permits and agreements will ultimately add to the cost.

The Department's water revenue bonds benefit from a 1.25x rate covenant for both net revenue generation and additional bond issuance, and actual debt service coverage has historically met or slightly exceeded this amount. Unlike a typical municipal enterprise, any excess coverage above sum sufficient is refunded or credited back to the contractors in the following year.

DWR's debt service reserve requirement is weaker than typical for a municipal water enterprise at only 50% of maximum annual debt service. However, pooled debt service reserves are funded in cash, enhancing this security feature. Additionally, given the Department's other credit strengths, its reserve requirement is currently not heavily weighted in our analysis. Should future conditions result in increased financial pressure on the contractors or diminished willingness to pay, this credit deterioration could result in Moody's placing additional emphasis on reserve fund levels in our credit assessment.

Legal protections for identified revenue streams for bond repayment are strong. For example, in a 1986 opinion, the state's Court of Appeals ruled that any required property tax levy would be outside the state's constitutional 1% property tax limit, since the bonding authority for the State Water Project was voter approved prior to 1978. This effectively means that the Department's water revenue bonds are secured by a property tax pledge and a tax base, as measured by assessed valuation, of more than half of the entire state. This security can be relied upon with somewhat less certainty than a typical voter-approved, property-tax secured bond, since the passage of state Proposition 218 in 1996 exposes this taxing authority to possible legal challenge. Additionally, in the case of MWD, in order to levy the tax, MWD would be required to determine that the tax is essential to maintain its fiscal integrity.

While the State of California's (Aa3, positive) financial and economic picture has improved over prior years, it is still worth noting that the rating also reflects the legally separate “special fund” accounting for these water revenue bonds from that of the state's general fund. While the contractor payments from which debt service is paid are held in the state's Pooled Money Investment Account along with the state's general fund money, any budget and liquidity difficulties that the state may experience in the future would pertain to its general fund, rather than its special revenue funds.

The California Department of Water Resources (Power System) revenue bonds (Aa1 stable) are separately secured. Please see our January 22, 2019 Issuer Comment for our most recent analysis of the Department's power revenue bonds' credit quality.

DEBT-RELATED DERIVATIVES

The Department does not have any debt related derivatives. While the Department's Debt Policy does not expressly prohibit the use of derivatives, it acknowledges that the Department does not have the unambiguous right under its existing contracts for collecting any required payments under potential swap agreements.

PENSIONS AND OPEB

State departments participate in the California Public Employees' Retirement System “CalPERS.” In fiscal 2018, the Department's contribution equaled $58.3 million, accounting for 7.1% of operating expenditures. This figure has risen slightly over time, but we expect future costs to remain manageable.

The state also provides post-retirement health care benefits, which are funded on a pay-as-you-go basis. DWR's 2018 annual contribution of $21 million is a modest 2.6% of operating expenditures. Pension and OPEB costs remain manageable and do not represent a central component to our credit evaluation.

Management and governance

The State of California Department of Water Resources is a department within the California Natural Resources Agency of the State of California. The Director and Chief Deputy Director are appointed by the Governor. Staff resources are broad and experienced, and management is enhanced by detailed adopted policies.

REPORT NUMBER 1168883

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