Charting **Metropolitan's** Second Century

OCTOBER 2019

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Retreat 2019

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Introduction

Metropolitan's founding principle is regionalism, which reflects the interdependence among the member agencies for water reliability.

The District's purpose and focus has always been to provide regional benefits for all of the District's member agencies. The District charges the same rates for the same water services regardless of the location of the member agency in the six-county service area, reflecting the uniform services provided to all member agencies. Following this principle, the District has embarked on large scale regional projects, such as the Colorado River Aqueduct, Diamond Valley Lake, Inland Feeder and Delta Conveyance, projects which benefit all agencies, not just some. Metropolitan program initiatives, such as the Local Resources Program (LRP), and demand management programs also reflect this regionalism approach, following a philosophy that a local supply improvement bolsters regional water reliability for all agencies.

Today, Metropolitan finds that its challenges and goals are evolving. The Board of Directors in the 1990s was deeply concerned with member agencies relying too much on importing supplies from Northern California and the Colorado River. Programs to regionalize conservation efforts and to incentivize new local supplies such as the LRP were developed. This approach was developed through regional long-term planning via Metropolitan's Integrated Water Resources Plan (IRP) initiated in 1996.

Today, there is a shifting water landscape. Population growth and water demands (in large part due to tremendous strides in efficiency) are far less than once predicted. Metropolitan's water transactions (sales, exchanges, and wheeling) this year are the lowest in nearly 40 years. A new generation of larger local supply projects are in the planning stages.

Delivery of imported supplies will always be a foundation to meet ongoing regional demands, even with climate change, and importantly so will storage of imported water for droughts and emergencies. But the evolving mix of Southern California's future water portfolio is still to be determined and will be impacted by Metropolitan Board policies and decisions.

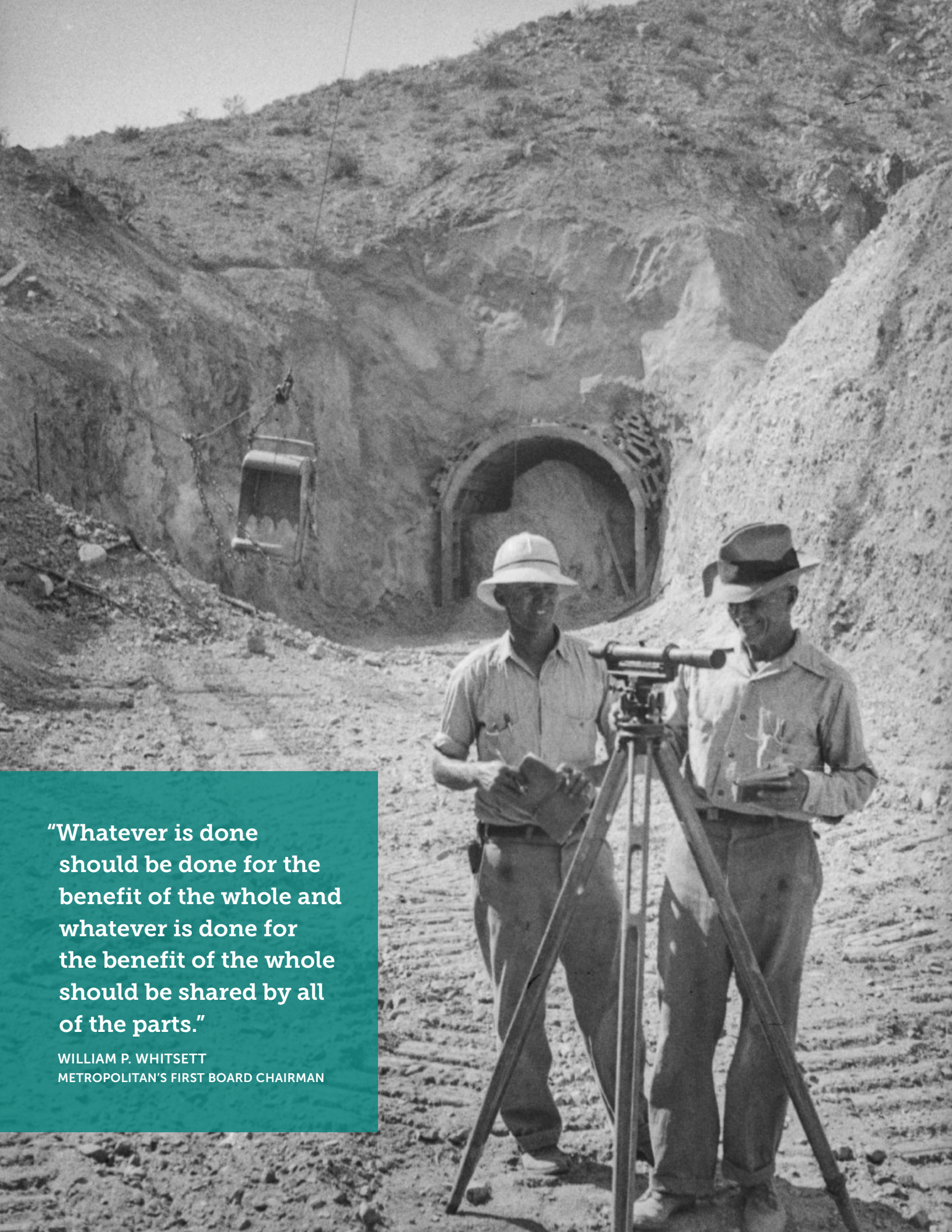
Does the Board envision a Metropolitan in its second century that makes relatively stable levels of imported water available to its member agencies into the future? Or does it envision Metropolitan primarily as a standby system with sufficient reserves available to meet occasional spikes in demands and for emergencies? Or does it envision Metropolitan reducing its drought coverage services and reserves to match diminishing ongoing demands on Metropolitan? Each vision depends on assumptions related to local supply development and costs. Setting this vision will shape numerous decisions related to planning, finance and investments in Metropolitan's system.

This white paper is intended to promote thinking about our shared future via three key Metropolitan objectives – the promotion of regional benefits, forward-looking regional planning to meet a shifting demand pattern and a changing climate, and ensuring sound financial practices and rates that are sustainable even as conditions change. This paper provides a brief overview of material in these areas and poses questions for the Board to consider and discuss.

1. How can the regional model of cooperation and collaboration best serve the member agencies into the future as they work together to overcome major challenges posed by climate change, a stressed Bay Delta, an over-allocated Colorado River, and a desire for continued investment in local resources and conservation?

2. For the first time, the IRP process will contemplate a future where the member agencies may collectively need less regional wholesale water supplies than what is currently available. What does this mean for policy and programs in place to encourage conservation and local resources development?

3. What should the mutual obligation among member agencies be to pay for investments which ensure the reliability of the regional wholesale water system?



"Whatever is done should be done for the benefit of the whole and whatever is done for the benefit of the whole should be shared by all of the parts."

WILLIAM P. WHITSETT
METROPOLITAN'S FIRST BOARD CHAIRMAN

REGIONAL BENEFITS:

Metropolitan's Foundation

02.

Nearly a century ago, Metropolitan was born out of the need for regionalism. A new source of imported supply from the Colorado River was necessary to meet the future needs of growing communities in Southern California. Yet none of the 13 founding member agencies could alone shoulder the financial burden of building the 240-mile aqueduct system. They were stronger together than apart – the benefit of pooling resources ensured reliability, efficiency and cost-effectiveness.

This founding spirit evolved into a fabric of policies, planning objectives and revenue mechanisms that all have the purpose of benefiting the region as a whole. Additionally, member agencies have each individually made substantial progress in developing local supplies and improving water efficiency. Today, the Board's challenge is to examine our shared future in order to shape a vision for the next generation of regional policies and investments needed to ensure regional reliability of supplies and infrastructure.

Member agencies derive different benefits from Metropolitan's regional approach:

- For some member agencies, Metropolitan is their primary water supply.
- For others, Metropolitan provides a small percentage of their supply portfolio, but represents crucial insurance against drought and local supply interruptions.
- With aggressive source-water protection and five modern water treatment plants with ozone disinfection, Metropolitan consistently provides high-quality water to its customers, whether treated or untreated.
- Metropolitan's highly trained workforce includes water quality, engineering, operations and planning experts available to address difficult regional water supply and delivery challenges.
- Member agencies participate in the LRP and conservation programs to different degrees, but all member agencies benefit from these programs because an acre-foot of water developed or conserved anywhere in Metropolitan's service area benefits all.
- Metropolitan's access to two major supply sources in different watersheds, geographically dispersed storage, and an extensive conveyance and distribution network increases resiliency across the region and the capability to adapt to future challenges such as climate change.
- Metropolitan's size allows access to markets for shared or lower cost financing for large infrastructure projects.
- Metropolitan's size also allows the ability to deliver economies of scale and cost efficiencies.

Metropolitan's first board Chairman, William P. Whitsett, may have said it best: "Whatever is done should be done for the benefit of the whole and whatever is done for the benefit of the whole should be shared by all of the parts."

The Benefits of Regionalism

The advantages of regionalization were identified and grouped in a list of categories in a national review of the benefits of water regionalization (Earl Whitlach and Charles Revelle, 1990). That list is used here to offer a big-picture overview of much that Metropolitan has done for the benefit of the whole—the regional benefits that have advanced supply and delivery reliability for Southern California. Metropolitan's integrated conveyance system (the Colorado River Aqueduct and the State Water Project systems) and distribution system (the system within Metropolitan's service area) are foundational to the regional benefits provided by Metropolitan. Metropolitan has constructed a water grid consisting of over 800 miles of large scale pipes and over one million acre-feet of reservoir capacity in Southern California. This backbone of reliable infrastructure could not have been built without a regional agency like Metropolitan.

1. Improved supply reliability through risk pooling

Metropolitan's regional approach to planning and governance ensures access to reliable, high-quality water for all our member agencies. Risk pooling is an important concept in supply chain management and insurance risk management. For a supply chain, risk pooling suggests that as demand aggregates across many customers and locations, it becomes more likely that a high demand from one customer would be offset by a lower demand from another. This reduction in variability reduces needed storage compared to each customer operating individually. Risk pooling also affords resilience in the face of catastrophic risks to individual members for events that are not highly correlated (e.g., localized groundwater contamination, floods, droughts, or earthquakes).

RESOURCE POOL: The regional approach affords Southern California with a supply diversity unattainable by local water agencies acting independently. Metropolitan brings to the region imported water supplies from two major, independent watersheds. This improves Southern California's reliability by spreading the risk of supply shortages across two distant watersheds as well as the local Southern California watersheds and its interconnected groundwater supply. The chance of all three regions experiencing severe drought or supply disruption simultaneously is much lower than any single region experiencing a disruption.

The 2014–2016 drought demonstrated Metropolitan's ability to spread reliability risk across watersheds. In 2014, the State Water Project (SWP) allocation fell to a record-low five percent. Metropolitan managed the SWP's severe supply limitations by maximizing Colorado River Aqueduct supplies to the region. This included pulling from Metropolitan's diverse storage assets. Decades before—in anticipation of regional drought and similar local shortages—Metropolitan, through its scale and statewide partnerships, had increased its storage capacity by 13 fold since 1990, including the construction of Diamond Valley Lake (DVL) to help fortify our supply reliability. DVL alone secures up to six months in emergency supplies for the region and helps to diversify storage geographically. Metropolitan's integrated system ensured deliveries from the Colorado River could be maximized throughout most of Metropolitan's service area.

INSURANCE POOL: Over Metropolitan's history, several agencies have lost access to local supplies for extended periods of time. For example, Methyl tert-butyl ether (MTBE) groundwater contamination forced Santa Monica to rely on Metropolitan for 85 percent of its water for 14 years. It was only after the city was able to restore the Charnock Well Field by constructing a local treatment plant that Santa Monica was able to bring local supplies back online. (Santa Monica Public Works, 2019). Metropolitan was ready to, and did, meet Santa Monica's sudden increase in demands. Other examples include volatile organic compounds in the City of Los Angeles, environmental restrictions in the Owens Valley, 1,2,3-trichloropropane in the City of Chino Hills, and per- and poly-fluoroalkyl substances (PFAS) in Orange County.

2. Lowered cost from economies of scale

Delivering about 50 percent of Southern California's domestic water, Metropolitan's vast regional system of facilities is an efficient and economical way to transport significant levels of high quality and reliable water to all 26 member agencies. Without Metropolitan's large-scale treatment and delivery system, individual cities, counties, water districts and local governments would have had to independently pursue their supplemental supply and infrastructure needs. The result would have been multiple, distinct, overlapping and competing systems for water importation, storage, treatment and delivery.

Additionally, without a regional coordination effort through a collective such as Metropolitan, it is unlikely that individual local agencies would ever have secured the core imported water supplies from the Colorado River and the State Water Project in the volumes they needed. Nor could future potential investments such as the proposed Delta conveyance project to modernize the SWP likely be realistically achieved.

3. Sustained access to low-cost financing

Metropolitan maintains very high credit ratings from the credit rating agencies, reflecting Metropolitan's history of effective financial management. Such a strong financial position and high credit ratings helps Metropolitan finance significant infrastructure projects on behalf of the region at low-cost interest rates.

Low-cost financing is another benefit of pooling. The ability to reliably collect revenues directly from its member agencies and from a service area with more than 19 million residents in six counties provides an extremely reliable base revenue stream. This revenue stream provides access to funds at low interest rates, allowing Metropolitan to continue to make investments at a regional level and advance supply and delivery reliability.

4. Standardized high-quality water

Metropolitan has five of the largest and best-managed water treatment plants in the world. A major investment in ozone oxidation and disinfection reduced the amounts of chlorinated disinfection by-products by 75 percent from levels in the 1990s and has provided a powerful tool to combat emerging contaminants such as algal toxins. Every day, water deliveries to and from each plant are tested not only to ensure state and federal regulations are met, but also for unregulated constituents and aesthetic qualities needed to maintain a high-quality supply. The ability to consistently ensure reliable,high-quality water has been a fundamental benefit over the years, serving the needs of member agencies that rely on Metropolitan year after year, and member agencies that at times need back-up supplies.

5. Reduced negative social and environmental impacts

Over the years, Metropolitan has advanced an ethic of environmental stewardship through its investments. In Southwestern Riverside County, as an example, four large-scale multi-species reserves spanning more than 30,000 acres are the cornerstone of Metropolitan's investments in environmental conservation and stewardship. The reserves provide open space for native species and their habitat, trails for hiking and horseback riding, and opportunities for research and education. Another example is on the Colorado River, where Metropolitan invested in a multi-species habitat conservation plan to protect native species in the Lower Basin. This level of environmental investment can only be made by entities of the scale of Metropolitan. Investments in environmental projects further Metropolitan's ability to provide wholesale water supplies to its member agencies.

6. Regional Investor in Conservation and Local Supplies

Metropolitan to date has invested approximately $800 million in conservation, $470 million in recycling and $160 million in groundwater recovery. Metropolitan's Local Resources Program is 37 years old, exemplifying the long tradition of the District's direct support of local supply development. Collectively, Metropolitan's conservation and local supply development efforts are referred to as demand management. The Legislature has directed Metropolitan to deliver more demand management as part of providing its wholesale water services to its member agencies.

Metropolitan collects and pools funds from its member agencies for local conservation and local supply development through its Water Stewardship Rate, which is recovered on all water moving on Metropolitan's system. Currently, Metropolitan is undergoing a cost of service study to determine whether there is a more appropriate cost allocation to reflect new circumstances for Metropolitan. Over the past 25-year capital planning period, demand management served to avoid or defer expansion of Metropolitan's conveyance and distribution system, by not needing to build and maintain as large of a transportation system as would otherwise have been needed. Those transportation cost savings for member agencies have been calculated at approximately $3 billion; costs that otherwise would have resulted in higher transportation rates for member agencies.

The development and conservation of local supplies benefit all member agencies regardless of each agency's level of participation. Each acre-foot of water developed or conserved within Metropolitan's service area benefits all, by increasing the availability of waterfor all. This includes increasing Metropolitan's ability to accumulate water reserves on behalf of member agencies for inevitable drought cycles. Investing in local conservation and supply development has prevented an over-reliance on the delivery of imported supplies.

7. Enhanced technical expertise available for problem-solving

Metropolitan employs a large staff of technical experts that enables it to innovate and adapt quickly to improve service and water quality. The District's shops and fabrication facilities help maintain a distribution system of 830 miles of pipeline and 400 service connections to member agencies. Metropolitan's Water Quality Laboratory employs scientists who monitor for algal toxins in the District's source waters. Highly skilled and experienced crafts workers and engineers help member agencies and the Department of Water Resources resolve a wide range of technical challenges every year. Metropolitan staff also developed Integrated Resources Planning that provided regional scale planning for water supply reliability. These are just a few of the specialized technical skills Metropolitan retains to maintain and improve infrastructure and service and provide reliable high-quality water. This breadth of expertise is achievable at a regional level and not easy or cost-effective to replicate at local levels.

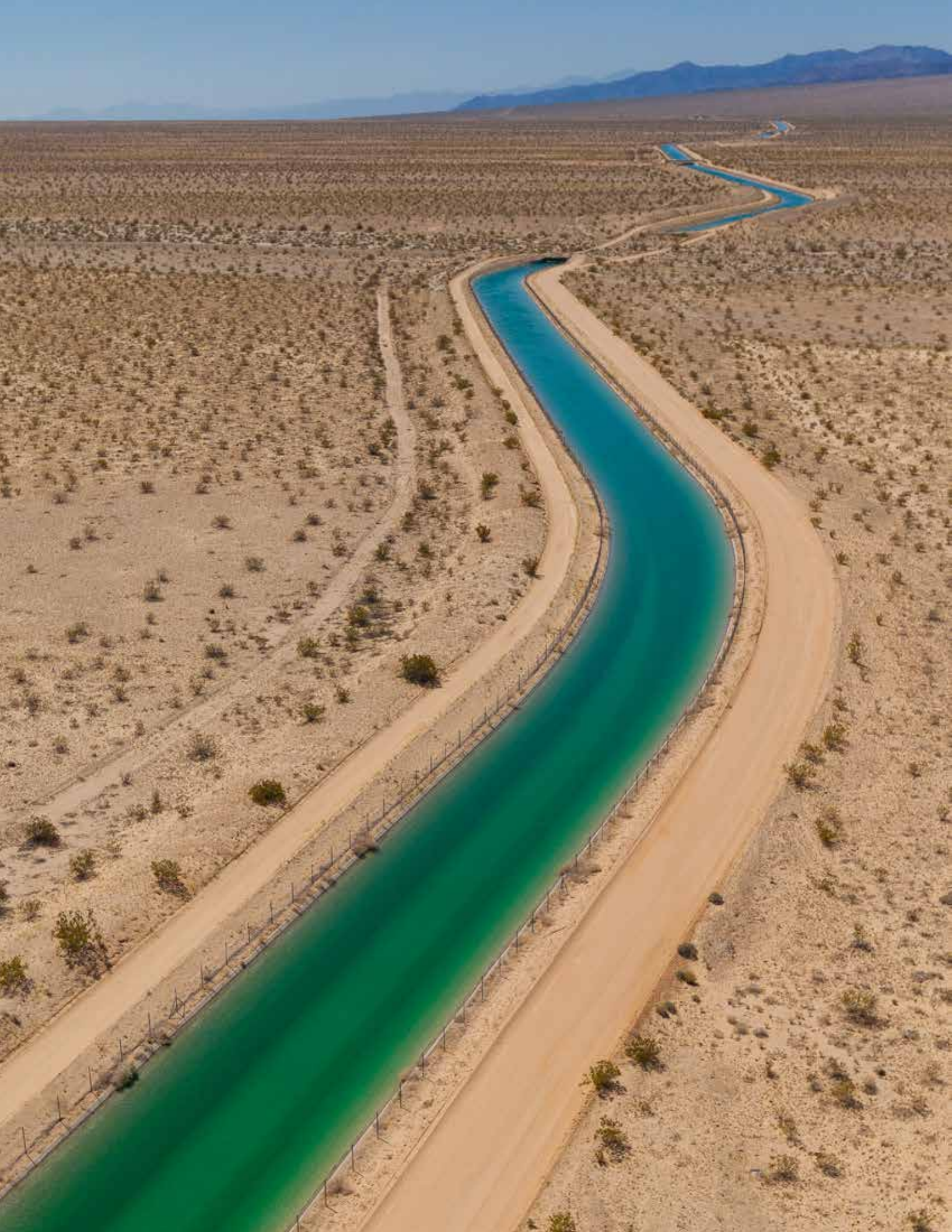
8. Amplified voice in policy matters

Metropolitan has a long history of advocating Southern California's regional view on water policies at the federal, state, and local levels. Metropolitan legislative staff in Sacramento, Washington, D.C., and at the downtown Los Angeles headquarters building amplify the regional voice on policy matters. The historic package of state legislation in 2009 that shaped Delta planning, future state investments and conservation improvements statewide is an example of this benefit. Metropolitan was a centrist force in working closely with leaders on both sides of the political aisle, along with other regions and with environmental groups to craft this package. Southern California's ability to engage and advocate with one constructive voice can have powerful and lasting beneficial effects.

Metropolitan's regional approach to planning and governance ensures access to reliable, high-quality water for all member agencies.

Conclusion

Over the decades, a key part of the Board process at Metropolitan has been the open and transparent deliberations to identify what kind of policies and investments are appropriate to provide for a broad range of regional benefits through Metropolitan, versus those actions that are better funded and carried out locally. The regional benefits provided by Metropolitan remain an important component in planning the Southern California water portfolio for the District's second century.



INTEGRATED REGIONAL PLANNING:

Defining the Role of Imports, Local Resources and Conservation to Meet Evolving Challenges

03.

While Metropolitan's water infrastructure in two watersheds is an engineering marvel and a feat of supply diversity, perhaps the District's greatest attribute is the ability for such a vast region to think, and act, collectively about water. This visioning process is centralized in Metropolitan's long-term strategy, its Integrated Water Resources Plan (IRP).

On its face, the IRP is a series of targets on supply development and assumptions about demands and population growth, but in practice it serves to define Metropolitan's agenda in ensuring water reliability in the region. And as Metropolitan approaches its second century of service, the IRP is at a crossroads in terms of its fundamental mission.

The 1987-1992 drought and the prospect of regional supply shortages sparked a flurry of planning activity by Metropolitan and the member agencies that identified a multitude of options to improve both imported water reliability and to develop local resources. The initial IRP in 1996 was crafted out of a shared desire among Metropolitan and the member agencies to find the right mix between local supply investments and regional investments that was efficient and affordable. In keeping with Metropolitan's founding principles, the right balance of investments between imported and local supplies was intended to reduce the reliance on imported supplies and avoid duplicative, inefficient investments. The 1996 IRP was a renewed engagement in regional cooperation and a first-ever integrated planning effort to combine realistic imported supply expectations with local conservation and local supply targets. Importantly, the IRP regionalized local resource development and conservation efforts to provide consistency throughout all of Southern California.

The IRP to date has sought to prepare Metropolitan to withstand an over-dependence on imported supplies, particularly in the face of a changing climate. The IRP has looked at Metropolitan as a provider of a baseline service. As a living document, the IRP is updated every five years and will be revisited in 2020. Much has changed since 1996 and the discussion next year will reflect Metropolitan's changed role.

Since Metropolitan's formation, its Board has adopted regional water resource policies that adapt to a growing distribution system serving the water supply needs of its member agencies. The Board has periodically refined these policies or adopted new ones, always with a focus on Metropolitan's regional role.

Below is a summary of the major historic Metropolitan water resource policy directives that coalesced the region around a shared meaning of reliability and the means to achieve it.

- 1928 Metropolitan Water District Act, Section 25 – Formed the Metropolitan Water District of Southern California with the purpose of developing, storing and distributing water.

- 1931 Statement of Policy – Established that Metropolitan would make water available *"...in the most effective and economical manner, and to the best interests of the area taken as a unit..."* and *"water will be made available to all areas within the District..."*

The IRP: Its Fundamental Purpose

In essence, the IRP is a plan for providing reliable and affordable water to Southern California for the next 25 years, from its inception in 1996 and then from regular updates, most recently in 2015. It broadly identifies and aligns regional and local needs, priorities, resources and opportunities, both in the scale of actions and in their timing. The emphasis is on its broad collaborative approach to planning.

Each IRP sets important targets, whether they be for new local supply development, water use efficiency, or average-year expectations from the Colorado River and the State Water Project. It does not signal that Metropolitan will build or pay for any specific initiative or project to meet those targets. It has not assumed that any particular local supply project in the planning phase will actually be funded and constructed.

Instead, setting broader supply and demand targets in the IRP, and reassessing them every half-decade with updates, has proven to be an effective planning tool for recalibration of future targets. The latest estimates of future population, for example, help to hone an updated estimate on future demand. The same holds true for the latest information on water use, gains in conservation and efficiency, and expectations of local supply development.

The IRP process pursues reliability and affordability together as essential outcomes. In so doing, it seeks a balance to avoid over- and under-investment, unnecessary redundancies and chokepoints, and stranded assets.

While the IRP is intended as the region's principal resource planning document to identify potential supplies and conservation to meet future demands, Metropolitan recognizes that reliable and comprehensive planning goes beyond resource development. Metropolitan has separate planning initiatives for issues such as emergency preparedness, seismic resilience, climate change mitigation, energy management, finance, workforce diversity and succession planning, shortage and surplus water management, and system operations. But it is the IRP that directs Metropolitan on how to deliver its core mission.

Previous IRPs: Lessons Learned from the Past

Acute short-term water conditions in 1991 inspired Metropolitan's evolution toward long-term planning that incorporated imported and local supplies and conservation. With the IRP, that process became formalized as a long-term strategy and official policy. Under guidance from the IRP, Metropolitan and its member agencies have steadily diversified Southern California's water supply portfolio which has been reflected in each IRP revision.

THE 1996 IRP – INITIAL OBJECTIVES

After the drought of 1987-1992, Metropolitan recognized the need to develop a long-term water resources strategy to fulfill its mission. The result was the IRP, first adopted by Metropolitan in 1996. The goals of the IRP, established by Metropolitan's board early in the process, were to acknowledge environmental and institutional constraints, and ensure:

- Reliability
- Affordability
- Water quality
- Diversity
- Flexibility

A fundamental outcome of the 1996 IRP was the understanding that regional water supply reliability could best be achieved through a diverse portfolio of resource investments and conservation measures. The resulting 1996 IRP strategy was a balance between demand management and supply augmentation, and between local resources and imported supplies.

The 1996 IRP analyzed numerous resources before establishing an optimal blend of supplies, referred to as the "preferred resource mix" that would provide the region with reliable and affordable water supplies through 2020. Establishing the preferred resource mix was an integral part of the 1996 IRP. Subsequent updates have continued to diversify Metropolitan's water portfolio and establish broad resource targets for each of the major supplies available to the region.

- **1952 Laguna Declaration (Administrative Code § 4202) –** Reaffirmed Metropolitan's role in "closing the gap" between the region's water needs and its locally available water supplies and avoiding wasteful duplication of effort.

- **1992 Board-Adopted Mission Statement (Administrative Code § 4201) –** Adopted the current mission statement synthesizing prior directives and provided guidance for planning future activities.

- **1994 Metropolitan Board-Adopted Goals and Objectives –** Developed and adopted Metropolitan's first-ever water supply and reliability goal.

- **1993-95 American Assembly Process (San Pedro Principles) –** Defined regional water resources strategy with a resource mix combining imported supplies with an emphasis on water conservation and development of new local water supplies, culminating with "principles of partnership" among water suppliers, noting that no water supplier in Southern California is an isolated, independent entity unto itself and that Metropolitan is Southern California's lead agency in regional water management.

- **1994-2013 Blue Ribbon Review Committees –** Established to review business practices and operation policies and offer perspectives and recommendations to improve Metropolitan's capability going forward.

- **1999 Strategic Plan –** Established a "Statement of Common Interests" that addressed the topics of regional provider, financial integrity, local resource development, imported water service, choice and competition, responsibility for water quality, and cost allocation and structure, which led to a revised rate structure.

- **2017 Policy Principles for Role in Local Supplies and Conservation –** Called for Metropolitan to take an active role in identifying and evaluating local resource and conservation opportunities within the service area and evaluating the feasibility of direct investment of regionally beneficial local resources and conservation where appropriate.

2004 IRP UPDATE – EMBRACING A NEW COLORADO FUTURE

Metropolitan's first update of the IRP came in the wake of historic developments on the Colorado River the year before. The Quantification Settlement Agreement ushered in a new era of California living within its allocation of 4.4 million acre-feet of Colorado River water, an amount it had historically exceeded. The 2004 IRP Update contained resource development targets through 2025 that reflected these changed conditions on the Colorado River and in other areas.

Revised targets included planned increases in conservation and local supply development, and increased attention to future uncertainty. The 2004 IRP Update explicitly recognized the need to handle uncertainties inherent in any planning process. These uncertainties included fluctuations in population and economic growth, changes in water quality regulations, discovery of new chemical contaminants, regulation of endangered species affecting sources of supplies, and changes in climate and hydrology.

As a result of these recognized uncertainties, a key component of the 2004 IRP Update was the addition of a 500,000 acre-foot "planning buffer" that represented 10 percent of 2025 projected retail demands. As a worst-case contingency, the planning buffer identified additional supplies, both imported and locally developed, that could be implemented if needed.

2010 IRP UPDATE: ADJUSTING TO A CHANGED DELTA

The decline in native fish species in the Delta in the 2000s triggered a new wave of Endangered Species Act restrictions with "biological opinions" that assessed the effect of water deliveries on the fish species' health. Litigation testing the science behind the restrictions followed, setting the stage for the ongoing effort for a lasting set of water system and ecosystem solutions in the Delta. The unsettled landscape of the Delta was a key backdrop of the updated 2010 IRP.

In addition, by 2010, the Colorado River had experienced below-average precipitation conditions for the previous decade. The 2010 IRP Update sought to target investments that would stabilize Metropolitan's traditional imported water supplies and establish additional water resources to withstand California's inevitable dry cycles and growth in water demand. Metropolitan acknowledged the increasing impact of emerging challenges such as environmental regulations, threats to water quality, climate change and economic unknowns and the uncertainty that these challenges would pose to water agencies.

Recognizing that the conditions for developing and maintaining water supply reliability had changed, Metropolitan set out to not only update the IRP but also to examine how best to adapt to the new water supply paradigm.

The 2010 IRP Update specifically planned for uncertainty with adaptive management strategies to meet demands under observed hydrology as well as respond to future uncertainty. The adaptive management strategy was a three-component plan that included a Core Resources Strategy, designed to maintain reliable water supplies under known conditions, an Uncertainty Buffer, a suite of actions that can help mitigate short-term changes, and Foundational Actions, strategies to develop additional resources if needed based on larger shifts in conditions.

2015 IRP UPDATE

As the 2015 IRP Update was developed and published, Southern California was enduring a historic multi-year drought that resulted in statewide emergency declarations, mandatory conservation measures, and depletion of groundwater and other storage reserves. Meanwhile on the Colorado River, the record drought moved into a second decade.

Other changes were happening in Southern California as well. A drop in projected future population meant a drop in future demand on Metropolitan. These factors and others were all incorporated into forecasts and targets in the 2015 IRP Update.

The 2015 Update continued an adaptive management approach, with reliability targets through the year 2040 that sought to stabilize and maintain imported supplies and sustain and develop new local supplies to meet projected growth in long-term demand. Similar to the 2010 IRP Update, the 2015 IRP Update looked to mitigate short-term supply risks by securing and storing water transfers and exchanges during wet and normal years. The IRP identified the potential need for 200,000 acre-feet of additional water conservation and local supplies by 2040 to prevent an over-reliance on the delivery of limited Metropolitan imported supplies. Future Supply Actions, formerly called Foundational Actions, remained a vital part of the IRP's forward-looking resilience strategy to address unanticipated shifts in supply/demand conditions.

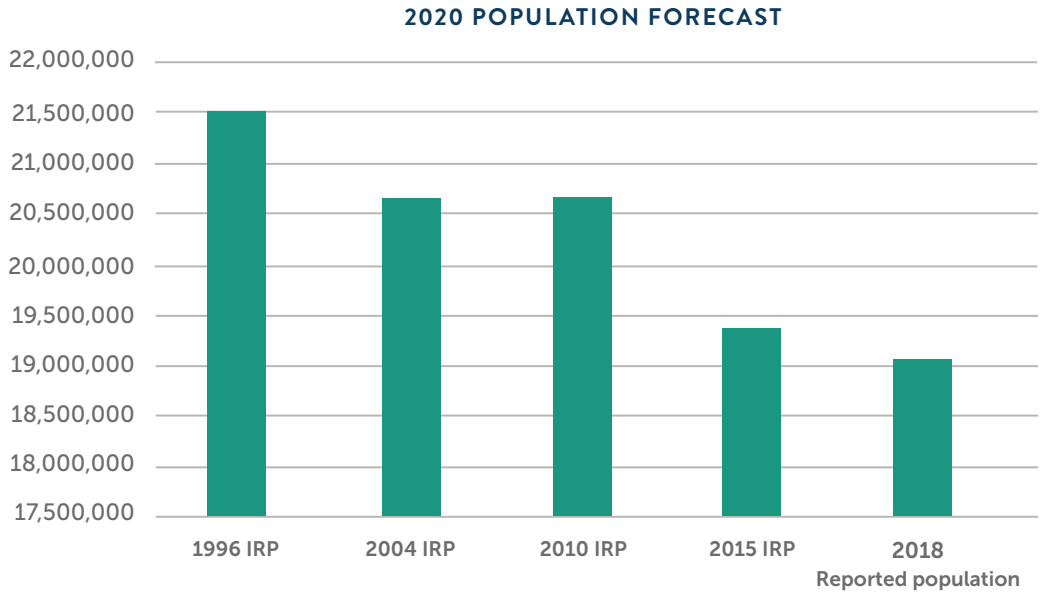
A notable shift occurred in terms of expectations of future supplies from the State Water Project. While the 2010 IRP sought to regain access to supplies lost in court litigation, the 2015 IRP foresaw tighter future regulations in connection with the twin-tunnel California WaterFix approach. But given the Newsom administration's new, single-tunnel permitting approach to Delta conveyance, the SWP assumptions will need to be revised again in the upcoming 2020 IRP update.

The IRP process pursues reliability and affordability together as essential outcomes.

Trends Influencing Southern California Water Planning

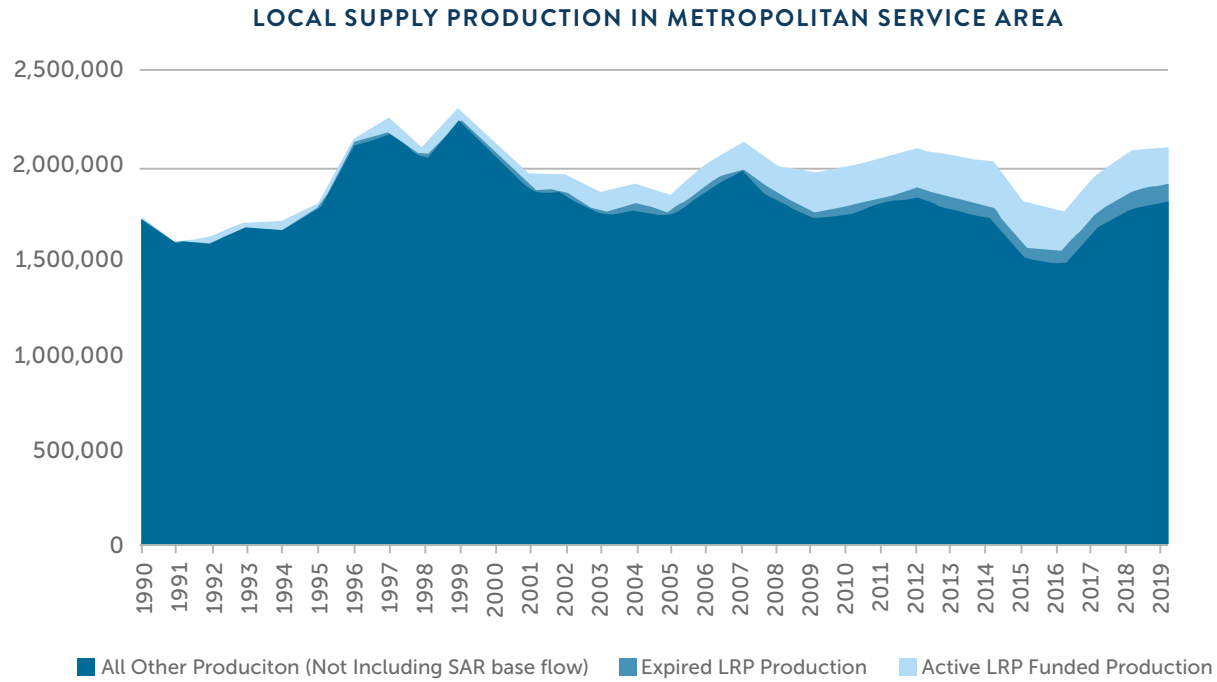
POPULATION PROJECTIONS – FEWER FUTURE SOUTHERN CALIFORNIANS

The region's population has grown more slowly than expected. The population growth that is occurring in Southern California is now largely due to birthrates as opposed to large influxes of new residents from elsewhere, as was the case in the 1990s. This has lessened the growth in demand on Metropolitan.



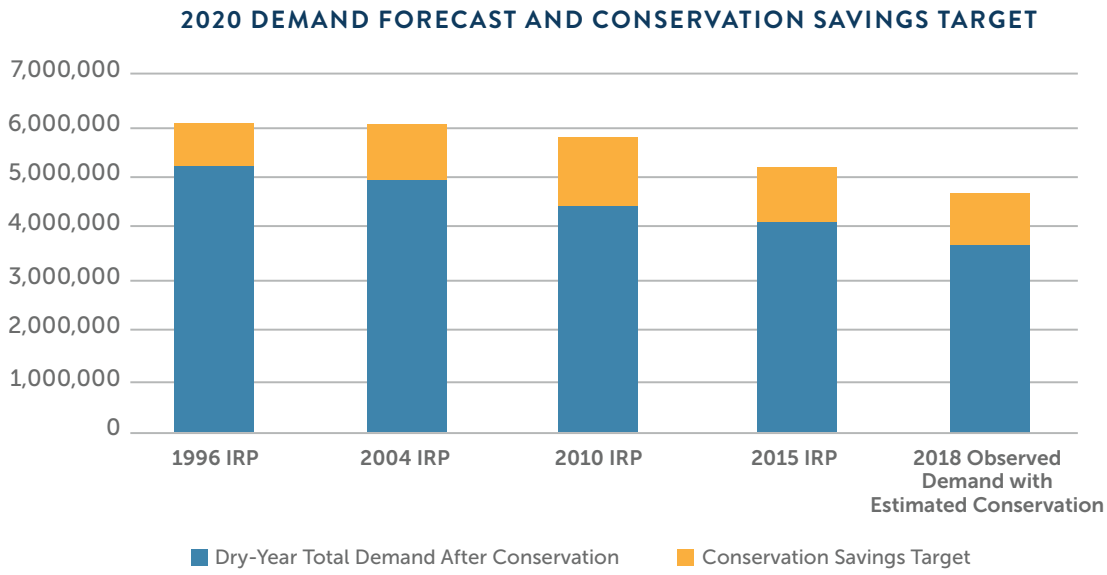
EXISTING LOCAL SUPPLIES – HOLDING STEADY

Increases in new supplies such as recycling have been offset by losses in traditional supplies from the Los Angeles Aqueduct (environmental regulations) and groundwater (a drop in replenishment and native yield, among other factors). Metropolitan's local incentives have helped to shore up local production that would have otherwise declined. Guided by the IRP, Metropolitan's incentive programs help set the pace and scale of new production, consistent with preventing over-reliance on the delivery of imported supplies.



LOWER PROJECTIONS FOR WATER DEMANDS

Demand forecasts for each successive IRP reflect current trends in demographics and economic conditions as well as water use efficiency gains. Overall, the demand forecast is trending down. How long this trend will continue is not clear. Technology continues to improve water efficiency efforts while population growth, though slower than in the past, continues to push demands upward. And there are other factors at work as well such as warming weather and shifts in urban development planning.



Conclusion

THE 2020 IRP UPDATE IS A PIVOTAL MOMENT

Metropolitan's Board will face fundamental policy decisions that will flow from the 2020 IRP update. The core decision is what vision the Board has for Metropolitan for its second century – to stand by ready to provide a service at reduced levels of demand, or stand by ready to provide the insurance of a system ready to serve at higher capacity. This vision will help drive the direction of the 2020 IRP as well as many other decisions.

It is no surprise that member agencies have different observations and expectations about the role of Metropolitan going forward. Such differences in a region as diverse as Southern California are healthy and to be expected.

Member agencies that anticipate only needing Metropolitan for "insurance" going forward have a quite different perspective on imported supplies. Rather than needed on a regular basis, under the insurance role, Metropolitan's supplies may only be needed occasionally or in much smaller quantities than before, or Metropolitan may be expected to be ready to meet all of an agency's demands in an emergency.

Investments of past generations and boards have enabled us to be in a powerful position today to help guide our future. The array of investment choices may seem vast and complex. Through planning and deliberations, the Metropolitan of today can position Southern California water supply and infrastructure for tomorrow.


MEMBRANE PERMEATE

METROPOLITAN FINANCES:

Determining the Right Revenue Mix for a Sustainable Future

04.

Metropolitan over the years has shifted from receiving the bulk of its revenues from a single source – ad valorem property taxes – to a mix of fixed charges and volumetric rates. This shift took place over decades for numerous reasons, including the availability of water to deliver to Metropolitan's member agencies. Metropolitan has made the shift in a way that protected Metropolitan's strong financial position and maintained Metropolitan's ability to finance large scale regional infrastructure.

Metropolitan's revenues are now primarily comprised of 80 percent from volumetric rates and 20 percent from fixed charges, ad valorem property taxes, and income (interest, hydroelectric power sales, leases and grant funding). The district has maintained high credit ratings due to its strong financial practices and its ability to manage hydrological variability and unexpected circumstances of its member agencies.

It has always been the case that member agencies' purchases and use of the system vary for a variety of reasons, with member agencies able to come onto and off of the system from year to year. Metropolitan's volumetric rates and its charges have taken this into account. Because Metropolitan's role for most member agencies has been as a baseline water provider, the volumetric revenue base has been consistent with that role. It, however, may not be consistent with an alternate future role of Metropolitan if Metropolitan's primary function for more member agencies is to serve more as a "backstop" insurance provider.

Since its inception in 1928, Metropolitan has sought to develop a resilient financial structure and to provide a reliable water supply and transportation system for its member agency customers. This remains true today.

TODAY'S FINANCIAL STRUCTURE

Until the early 2000s, Metropolitan's rate was "bundled" into a single rate. In 2001, the Metropolitan Board adopted an unbundled rate structure for transparency, comprised of multiple components: (1) two supply rates – Tier 1 and Tier 2; and (2) three transportation rates – System Access Rate, System Power Rate, and Water Stewardship Rate. The structure also consisted of a Readiness-to-Serve Charge (which a member agency could opt to fund through a Standby Charge levied on properties within its service area) and a Capacity Charge. Lastly, there was a treatment surcharge if a member

agency opted to purchase treated water. Together, all of these rate and charge components comprised Metropolitan's full service rate for the sale and delivery of water. The unbundled rate structure took effect in 2003 and is still in effect today.[1]

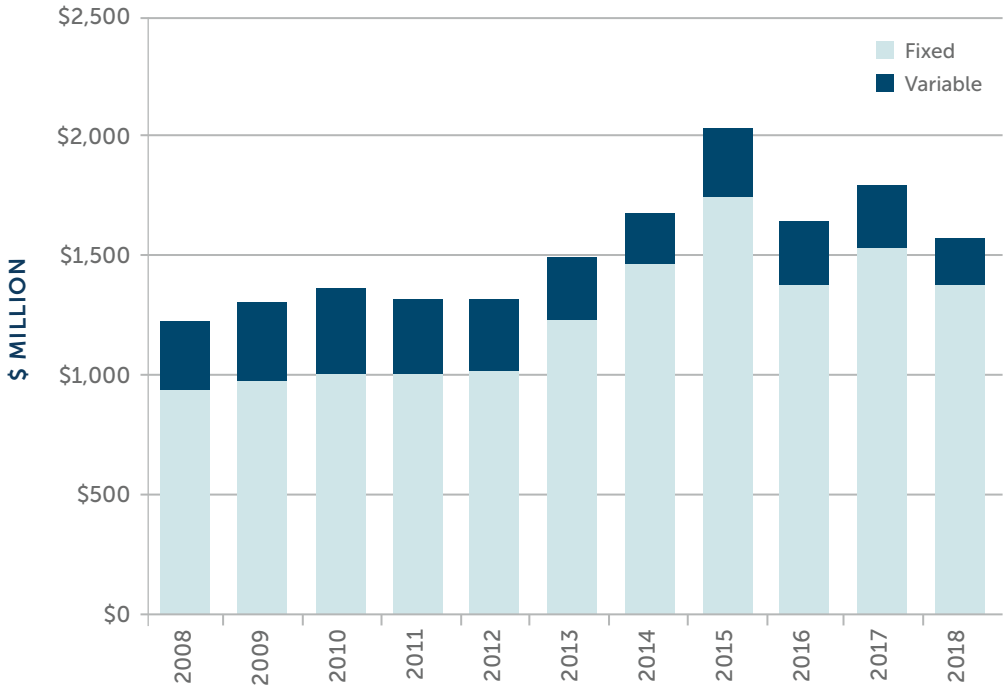
CURRENT CHALLENGES AND LOOKING TO THE FUTURE

In more recent years, challenges Metropolitan has faced include higher fixed costs, declines in member agency demand, reductions in the allocation of SWP water and fluctuations in the availability of Colorado River water, and changes to federal and state water treatment standards. As has always been the case given Metropolitan's role as a supplemental supplier to its member agencies, water sales have fluctuated year to year based on weather, shifting demands and other reasons. However, the existing financial structure accommodates the financial issues associated with such fluctuations. The primary tool to cushion the variability in demands has been use of reserve funds. If overall demands are on a continuing downward long-term trend, the Board will need to consider if this model is the best and most equitable approach for sharing costs and collecting revenues.

Currently, as noted, variable water transactions account for approximately 80 percent of Metropolitan's revenue, with the remaining 20 percent being derived from fixed charges, ad valorem (property) taxes, interest income, hydroelectric power sales, leases and grant funding.[2]

FIGURE 1

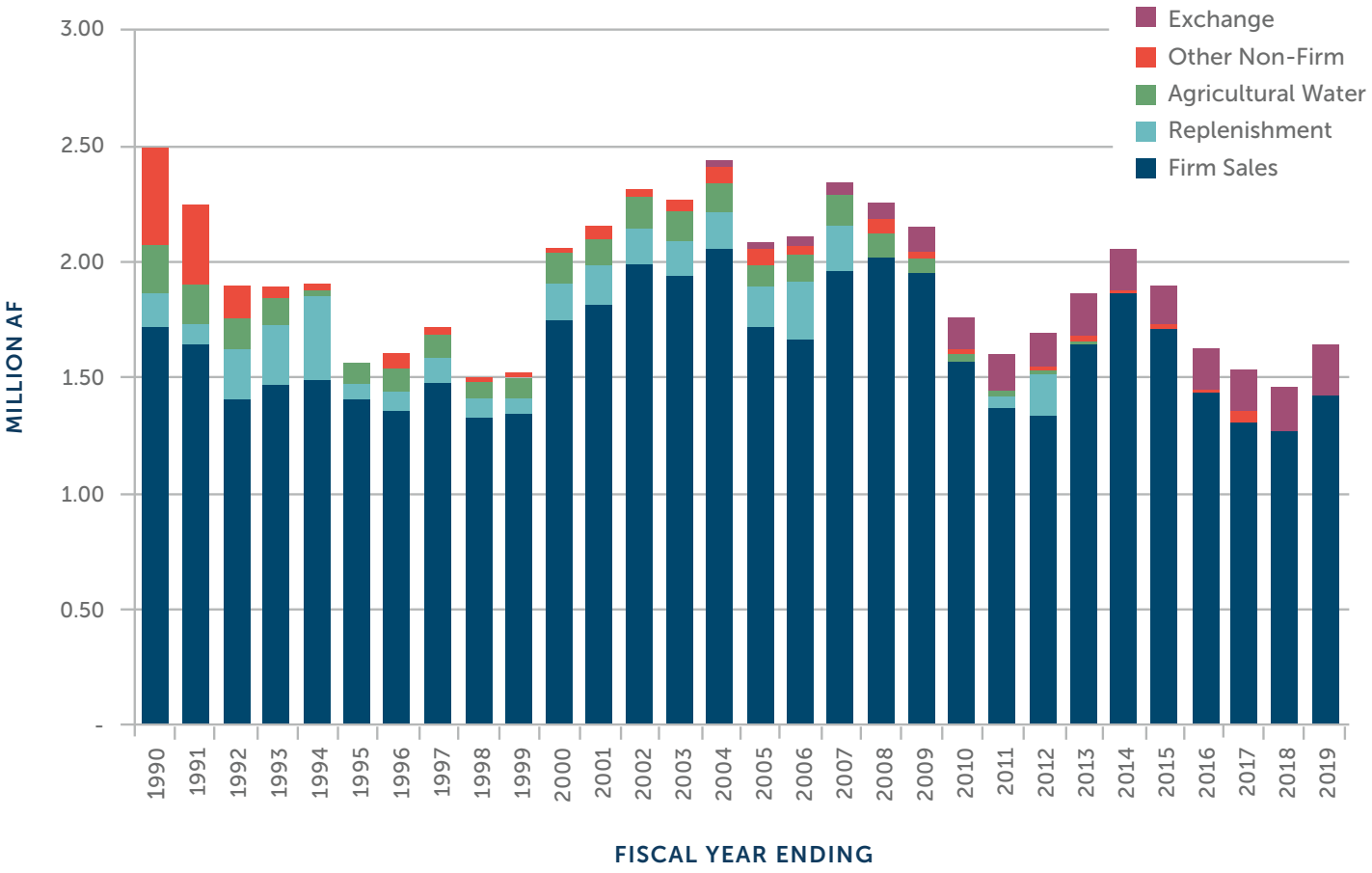
METROPOLITAN FIXED AND VARIABLE COSTS 2008-2018



[1] There have been legal challenges to this rate structure. The courts have upheld multiple aspects of the structure. The California Court of Appeal did rule that in the years 2011-2014, Metropolitan's administrative record before the court in that litigation was not sufficient to support the allocation of the Water Stewardship Rate to transportation.

FIGURE 2

WATER TRANSACTIONS FY 1990-2019



[2] There have been legal challenges to this rate structure. The courts have upheld multiple aspects of the structure. The California Court of Appeal did rule that in the years 2011-2014, Metropolitan's administrative record before the court in that litigation was not sufficient to support the allocation of the Water Stewardship Rate to transportation.

FIGURE 3

SWP AND CRA SUPPLIES IN THE METROPOLITAN SERVICE AREA 1976-2017

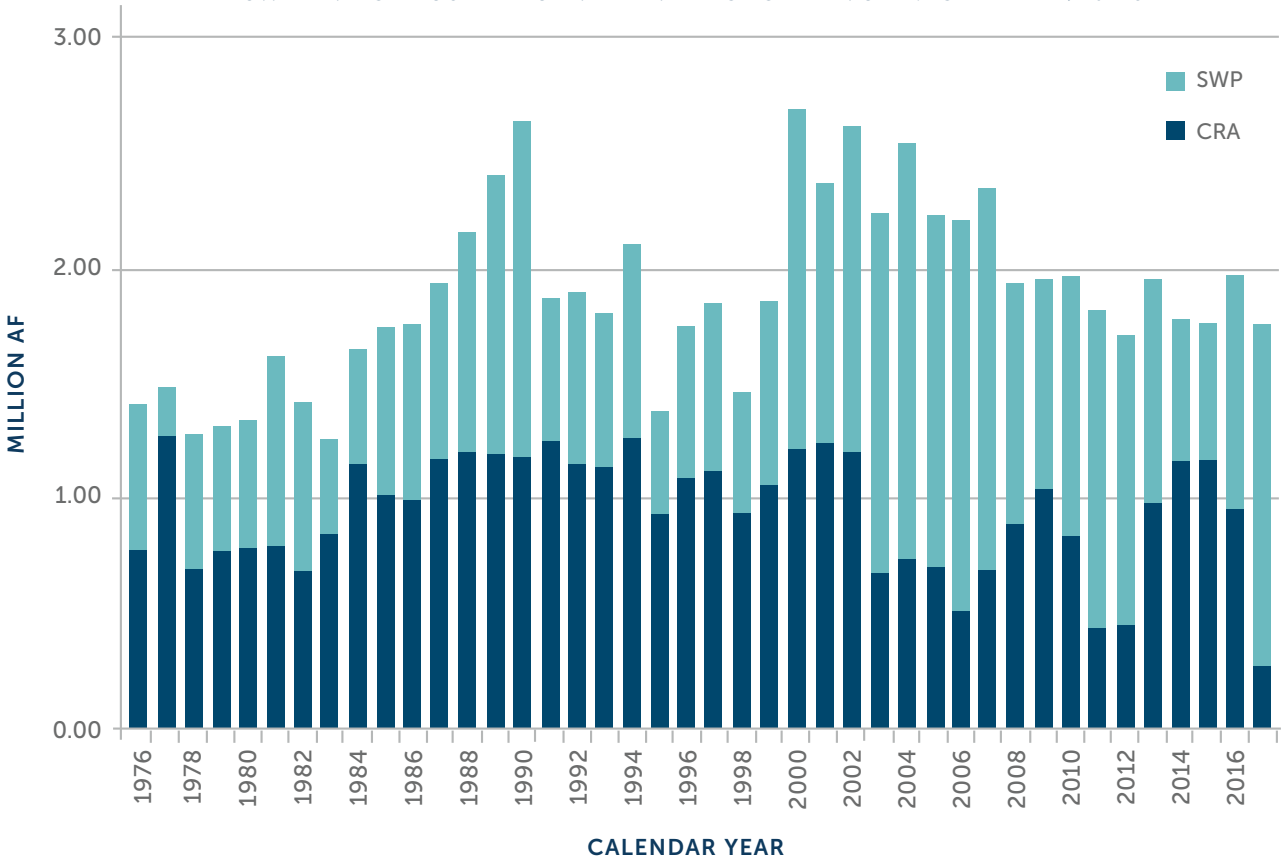


FIGURE 4

DETAILED BREAKDOWN OF REVENUE SOURCES 2008-2019

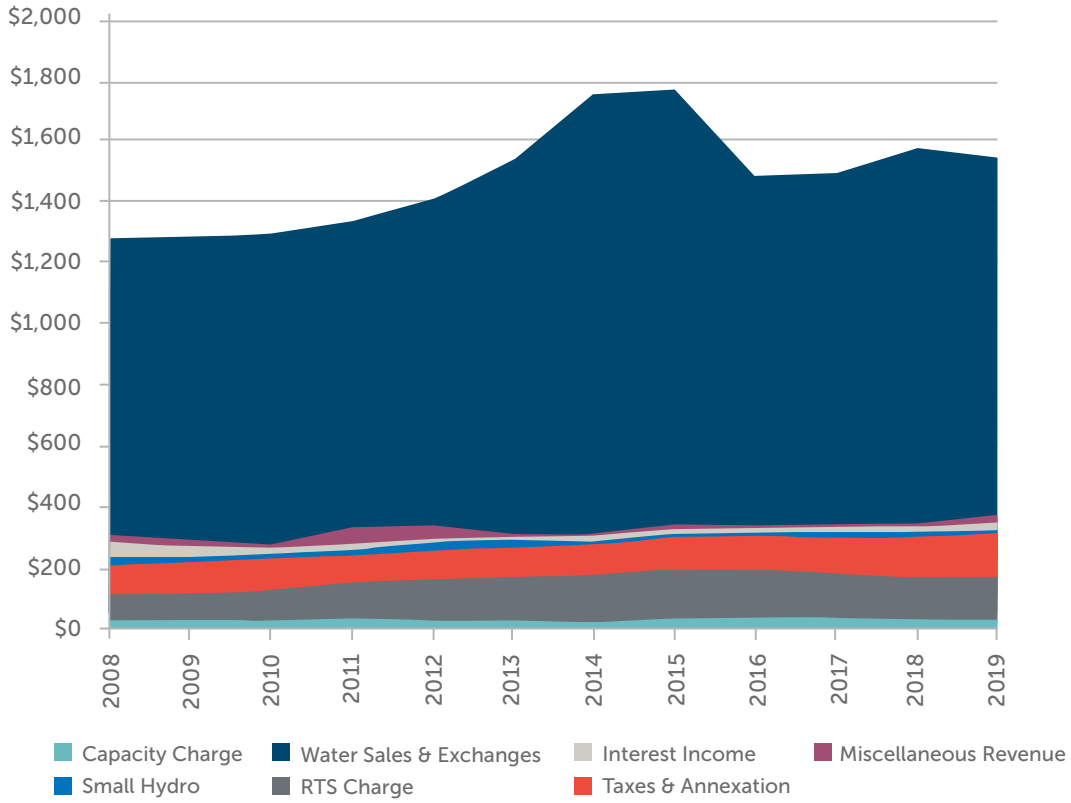
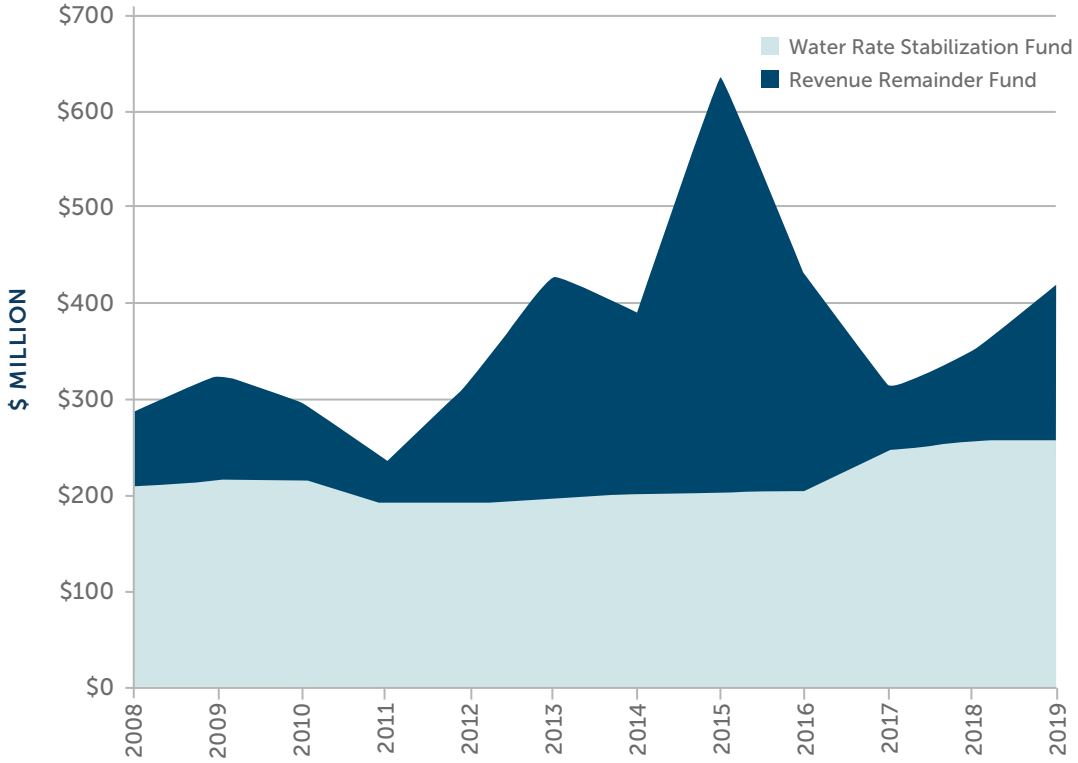


FIGURE 5

METROPOLITAN WATER RATE STABILIZATION FUND AND REVENUE REMAINDER FUND 2008-2019



Looking forward, any changes to the rate structure will send signals to Metropolitan member agencies. The goal should be to maintain a rate structure that avoids duplication of effort, is sustainable for the long-term and is equitable to rate payers throughout the service area.

Conclusion: Determining Metropolitan's Future Role

Metropolitan's transformation from a property-tax funded agency to one funded by a variable revenue structure has served the district well for years.

However, a primarily variable rate structure does present challenges as member agencies roll off the system, for short or lengthy periods. At the same time, agencies have the ability to return to Metropolitan's system when other water resources are unavailable, a local supply such as groundwater is out of production temporarily or for a long period, or in the event of an emergency. This insurance role is not entirely captured by a volumetric sales approach.

Metropolitan has served its member agencies well as a supplemental supplier with fluctuating sales. Its financial approach has been effective as Metropolitan has been primarily concerned about "rolling onto" importing supplies and has focused on reducing demands on the system. That same financial structure may not be as effective in the future if water transactions decline over a long period of time and more member agencies rely on Metropolitan primarily as an insurer, particularly in the event of an emergency. Those member agencies would expect Metropolitan's water supplies and infrastructure to be ready and available upon request, despite paying less into the revenue structure.

Continuing to rely on variable revenues will drive the need for higher volumetric rates to build and maintain larger reserves for Metropolitan to withstand declines in transactions that last longer periods of time. This can incentivize a downward spiral trend of further rolling off that could strand investments.

Alternatively, a shift to generating more revenue from fixed charges would involve considerable deliberations to identify sources that are both sustainable and equitable.

Given the region's tremendous success in achieving water conservation goals well in advance of mandated targets, which has helped lead to record high storage levels, and the prospect of major new investments in large-scale local supply projects, demands will likely remain low for at least the near term. Financing conservation and local supplies based on shrinking volumetric sales could lead to policy decisions to reduce the scale of those programs.

Metropolitan's dependence on water sales for revenue will shape the Board's upcoming discussions during the biennial budget process. Water sales in calendar 2019 will be the lowest in decades, translating into less revenue to meet ongoing expenses. While Metropolitan is prepared to meet this challenge short-term, it illustrates the need for the Board to discuss alternate cost recovery approaches or alternative approaches to providing Metropolitan's services going forward.

ABOUT METROPOLITAN

The Metropolitan Water District of Southern California is a state-established cooperative of 26 member agencies – cities and public water agencies – that serve nearly 19 million people in six counties. Metropolitan imports water from the Colorado River and Northern California to supplement local supplies and helps its members develop increased water conservation, recycling, storage and other resource management programs.

OUR MISSION

The mission of the Metropolitan Water District of Southern California is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

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