ATTACHMENT 2

STRATECON 12/31/2020 REPORT ON METROPOLITAN LAFCO SUBMISSION
December 31, 2020

VIA Email

Mark J. Hattam  
General Counsel  
San Diego County Water Authority  
4677 Overland Avenue  
San Diego, CA 92123

Dear Mr. Hattam:

**RE:** Comments on Proposals by Rainbow Municipal Water District and Fallbrook Public Utility District, Reference Nos. RO20-04 and RO20-05 by the Metropolitan Water District of Southern California

The San Diego County Water Authority (“Water Authority”) asked *Stratecon Inc* to review the above captioned submission by the Metropolitan Water District of Southern California (“Metropolitan”) to the San Diego Local Agency Formation Commission (“LAFCO”) dated September 17, 2020. Based on the information and analysis provided below, in my professional opinion, I conclude that Metropolitan’s submission incorrectly states that the detachment would have no impact on the reliability of water service for Fallbrook and Rainbow customers and no increase in Metropolitan’s reliance on water exports from the Bay Delta.¹

The proposed reorganization will reduce the water supply reliability for residents in Fallbrook and Rainbow. By detaching from the Water Authority, Fallbrook and Rainbow would walk away from the Water Authority’s superior water supply portfolio based on (i) more senior Priority 3 Colorado River water rights than Metropolitan’s Priority 4 Colorado River water rights, and (ii) the drought-proof Carlsbad seawater desalination project. After detachment, Fallbrook and Rainbow’s residents would have water service backed only by Metropolitan’s junior Colorado River rights and a greater reliance on the notoriously variable State Water Project water supplies imported from the Bay Delta.

The proposed reorganization will also increase Metropolitan’s reliance on the Bay Delta. As explained below, the Water Authority’s water sources are less reliant on the Bay Delta than Metropolitan. Therefore, the detachment will increase Southern California’s reliance on Northern California and the environmentally sensitive Bay Delta for water supplies, particularly in the years to come as the Water Authority continues to reduce its reliance on Metropolitan water service.

¹ See Attachment A for professional qualifications.
The discussion starts with the Water Authority’s sources and use of water supply to provide the factual context to address the following issues discussed in Metropolitan’s submission:

- Metropolitan Sources of Water
- Metropolitan’s Water Sales and Deliveries to the Water Authority and Eastern Municipal Water District (“Eastern”)
- Metropolitan Exchange Deliveries to the Water Authority
- Metropolitan’s Emergency Storage
- Water Supply Reliability Issues Related to the Proposed Reorganization (water supply originating from Metropolitan and impact on the Bay Delta)

The discussion concludes by addressing Metropolitan’s history of its rates and charges and the key drivers of its future. While the detachment proposals by Fallbrook and Rainbow bet on Metropolitan’s future rates and charges, Metropolitan’s submission is notably silent on that subject.

**Water Authority’s Sources and Use of Water Supplies**

As the wholesale water provider in San Diego County, the Water Authority meets member agency water demands that exceed local supplies (see Figure 1).\(^2\) Over the past five fiscal years, Water Authority service area water use increased from 454,963 acre-feet in Fiscal Year 2015-16, peaked at 518,397 acre-feet in Fiscal Year 2017-18 and fell to slightly above 463,000 acre-feet the following two fiscal years. Over the same period, member agencies’ local supplies ranged between 62,961 acre-feet and 125,525 acre-feet.

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\(^2\) Compiled from Water Authority’s Annual Reports, Fiscal Year 2015-2016 through Fiscal Year 2019-2020.
These member agencies’ supplies are collectively comprised of local surface water, groundwater, recycled water, and Colorado River water received under San Luis Rey settlement (see Figure 2). Local surface water is the most volatile local supply source, ranging from 18,000 acre-feet to 45,000 acre-feet annually, whereas groundwater and recycled water supplies are relatively stable. With water deliveries starting in Fiscal Year 2017-18, San Luis Rey water became another source of local water supply.

Figure 1
Water Authority Member Agency Water Use and Local Supply

<table>
<thead>
<tr>
<th>Fiscal Year Ending</th>
<th>Water Use (Acre Feet)</th>
<th>Local Supply (Acre Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>454,963</td>
<td>62,961</td>
</tr>
<tr>
<td>2017</td>
<td>477,024</td>
<td>71,624</td>
</tr>
<tr>
<td>2018</td>
<td>518,397</td>
<td>125,525</td>
</tr>
<tr>
<td>2019</td>
<td>463,329</td>
<td>98,246</td>
</tr>
<tr>
<td>2020</td>
<td>463,128</td>
<td>116,697</td>
</tr>
</tbody>
</table>

\[3 \text{Ibid.}\]
The Water Authority serves its member agency customers using IID transfer water, canal lining water and desalinated seawater as a base supply and purchases of Metropolitan water as a supplemental supply (see Figure 3). The volume of transfer water from the Imperial Irrigation District has increased over the past five fiscal years and will stabilize at its maximum annual quantity of 200,000 acre-feet in 2021. Canal lining water is at long-term annual volume of about 78,700 acre-feet, inclusive of the unused water from environmental mitigation projects the Water Authority is projected to receive. Desalinated seawater is approaching its maximum annual volume of 50,000 acre-feet. With the expansion of the Water Authority’s base supply, coupled with increased rainfall in four of the past five years, purchases from Metropolitan have declined by more than 100,000 acre-feet per year over the past five fiscal years.

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4 Ibid.
The supplemental nature of the Water Authority’s purchases of Metropolitan water is demonstrated by the monthly volatility of the delivery of Metropolitan water versus the monthly delivery of IID transfer and Canal Lining water (“QSA water”), which are part of the Water Authority’s base supply—see Figure 4.\(^5\) Increased rainfall reduces member agency demand for water and increases local surface water supplies; thereby, reducing the demand for supplemental water supplies from Metropolitan. Reflecting the supplemental nature of the Water Authority’s purchases of Metropolitan water, monthly variation in rainfall explains 15 percent of the monthly variation in the delivery of Metropolitan water.\(^6\) By contrast, monthly variation in rainfall explains less than 3 percent of the monthly variation in the delivery of QSA water.\(^7\)

\(^5\) Data from Water Authority. Rainfall is monthly rainfall at Lindbergh Field.

\(^6\) Calculated with the data for monthly rainfall and monthly delivery of Metropolitan water.

\(^7\) Calculated with data for monthly rainfall and monthly delivery of QSA water.
The supplemental nature of Metropolitan water is also demonstrated by the monthly pattern of the proportionate share of QSA water relative to the total water delivered by Metropolitan to the Water Authority (see Figure 5). The monthly share of QSA water peaks in the winter months and starts declining in the spring bottoming out in the summer. As monthly water demands start declining in the fall, the share of QSA water starts increasing in the fall to peak again in the following winter. The monthly share of QSA water peaks and bottoms out at higher levels in successive fiscal years because QSA water deliveries were 194,326 acre-feet in Fiscal Year 2017-18, 211,151 acre-feet in Fiscal Year 2018-19, and 259,815 acre-feet in Fiscal Year 2019-20.

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8 Share calculated from the data in Figure 4.
Regional water storage in San Diego County (Water Authority storage and member agency reservoirs) also manages the variability in water supplies and water demands. Regional storage capacity increased in the summer of 2015 by 27 percent with completion of raising San Vicente Dam (see Figure 6). Since 2014, the volume of water in storage has increased from 218,202 acre-feet in the end of January 2014 to 368,368 acre-feet by the end of November 2020. Local rainfall is a driver of monthly changes in regional water storage (Figure 7). Monthly variation in rainfall explains 27 percent of the monthly variation in the change in regional water storage.\(^9\)\(^{10}\)

\(^{9}\) Data from Water Authority staff.
\(^{10}\) Calculated with data from Figure 7.
Figure 6
Regional Water Storage

Figure 7
Monthly Change in Regional Water Storage and Monthly Rainfall
The future portends a continuation of the trend of reduced reliance on Metropolitan water through 2030 (see Table 1). With the Water Authority’s base supply stabilizing at its long-term annual amount of 328,700 acre-feet by 2021, the Water Authority’s demand for Metropolitan water will reach bottom at 43,502 acre-feet by 2030 (almost 50% below the Water Authority’s purchase of Metropolitan in the Fiscal Year 2019-20). After 2030, the projected increase in member agency demand for Water Authority water will increase the Water Authority’s demand for Metropolitan water, although the projected demand does not exceed the Water Authority’s purchases of Metropolitan water in Fiscal Year 2019-20 until after 2040.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Projected Member Agency Water Demand and Regional Supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Item</strong></td>
<td><strong>2025</strong></td>
</tr>
<tr>
<td><strong>Member Agency Demand</strong></td>
<td>561,569</td>
</tr>
<tr>
<td><strong>Local Supply</strong></td>
<td></td>
</tr>
<tr>
<td>Surface Water</td>
<td>46,542</td>
</tr>
<tr>
<td>Water Recycling</td>
<td>54,805</td>
</tr>
<tr>
<td>Groundwater/Recovery</td>
<td>31,070</td>
</tr>
<tr>
<td>Seawater Desalination</td>
<td>6,000</td>
</tr>
<tr>
<td>Potable Reuse</td>
<td>33,042</td>
</tr>
<tr>
<td>San Luis Rey Transfers</td>
<td>15,800</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td>187,259</td>
</tr>
<tr>
<td><strong>Water Authority Demand</strong></td>
<td>374,310</td>
</tr>
<tr>
<td><strong>Water Authority Supply</strong></td>
<td></td>
</tr>
<tr>
<td>Base Supply</td>
<td></td>
</tr>
<tr>
<td>IID Transfer Water</td>
<td>200,000</td>
</tr>
<tr>
<td>Canal Lining Water</td>
<td>78,700</td>
</tr>
<tr>
<td>Seawater Desalination</td>
<td>50,000</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td>328,700</td>
</tr>
<tr>
<td>Supplemental Supply</td>
<td></td>
</tr>
<tr>
<td>Metropolitan Water</td>
<td>45,610</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>374,310</td>
</tr>
</tbody>
</table>

11 Data from presentation of Revised 2020 Urban Water Management Plan and Demand Forecast at a Special Meeting of Water Planning and Environmental Committee, of Water Authority Board of Directors, November 12, 2020.
Metropolitan’s Sources of Water

Metropolitan states that “on average, water supply to Metropolitan’s service area is made up approximately 30% SWP, 20% Colorado River (including the Water Authority’s QSA water), and 50% Local Supplies.” Excluding the 50% local supplies, Figure 8 shows imported water sources since 2000: (1) Metropolitan’s water supplies from its Priority 4 entitlement and Colorado River programs, (2) the Water Authority’s IID transfer and canal lining waters, and (3) Metropolitan water from the State Water Project. The annual variability in water supplies from the State Water Project reflects variability in annual SWP allocations.

SWP water represents the major source of Metropolitan water supplies (see Figure 9). Since 2003 (with implementation of the QSA), SWP water supplies have averaged 62.9% of

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12 See attachment to Letter from Jeff Kightlinger, General Manager of Metropolitan, to Keene Simonds, Executive Officer San Diego Local Agency Formation Commission, dated September 17, 2020 (hereinafter cited as “Metropolitan Comment”, p.2)


14 Correlation between SWP Allocation and Metropolitan’s SWP supplies is 0.88. Correlation measures the degree to which variation of one variable (Metropolitan’s SWP supplies) is related to variation of another variable (SWP Allocation).
Metropolitan’s total imported water. The annual variability in the share of SWP water reflects the variability in annual SWP allocations.\textsuperscript{15}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{composition_of_metropolitan_imported_water_supplies.png}
\caption{Composition of Metropolitan’s Imported Water Supplies}
\end{figure}

\textbf{Metropolitan Water Sales Deliveries to the Water Authority and Eastern}

Metropolitan notes that the Water Authority and Eastern are both Metropolitan member agencies that purchase water from Metropolitan.\textsuperscript{16} Both receive a blend of water from the SWP, Colorado River and any additional Metropolitan water supplies, consistent with MWD board policies as to both agencies, and with respect to the Water Authority, consistent with the terms of the Exchange Agreement. Water is conveyed through Metropolitan facilities. As shown in Figure 4 of Metropolitan’s Comment,\textsuperscript{17} imported Colorado River water enters Metropolitan through the Colorado River Aqueduct from the east. Imported SWP water enters the SWP East Branch from the northeast, and the SWP West Branch from the northwest. Colorado River water is blended with SWP water from the East Branch and delivered south to San Diego. Colorado River water is also sent west in the Metropolitan service area and is blended with SWP water from the SWP East Branch to serve other Metropolitan member agencies in Orange County and further west in Los

\textsuperscript{15} Correlation between SWP Allocation and Metropolitan’s share of SWP water is 0.74.
\textsuperscript{16} Metropolitan Comment, p. 5.
\textsuperscript{17} Ibid, p. 6.
Angeles County into the San Fernando Valley. SWP water is exclusively used in pockets of Metropolitan’s service area near Metropolitan’s connections to the SWP East Branch and SWP West Branch.

Metropolitan’s discussion is silent on how Metropolitan would use its own water sources to deliver water to the Water Authority or Eastern, before and after a detachment.

**Metropolitan Exchange Deliveries to the Water Authority**

Metropolitan summarizes the underlying agreements of the Water Authority’s transfer with the Imperial Irrigation District and the Water Authority’s exchange agreement with Metropolitan. The discussion includes the statement:18

“The exchange water that Metropolitan delivers is no different than the water SDCWA purchases from Metropolitan.”

For the purposes of assessing the impact of detachment, one must discuss how Metropolitan would source its water deliveries before and after a detachment (see below). Metropolitan is silent.

**Metropolitan’s Emergency Storage**

Metropolitan summarizes how Metropolitan’s storage is reserved to meet water supply emergencies. The discussion includes the statements:19

“Together, Metropolitan’s diverse portfolio of supplies, flexible, interconnected regionwide infrastructure and emergency storage provide its member agencies with water supply reliability. In fact, Metropolitan’s overall water storage is at historic levels, currently in excess of approximately 3.8 million acre-feet.” (emphasis added)

The first sentence is an assertion of water supply reliability, not a demonstration of water supply reliability (see below). The second sentence does not acknowledge that Metropolitan’s current storage reflects an unusually high SWP allocation in 2019 (75%)—the 2020 SWP allocation is 20%. Metropolitan storage has also increased due to a decade long decline in water sales (see below). In addition, Metropolitan also does not discuss the numerous calls by non-Metropolitan agencies on Metropolitan’s stored water.

18 *Ibid*.
Water Supply Reliability Issues Related to the Proposed Reorganization

Metropolitan asserts that the proposed detachment would have no impact on the water supply originating from Metropolitan and would have no impact on the Bay Delta. Metropolitan’s assertions are incorrect.

**Water Supply Originating from Metropolitan**

Metropolitan’s argument that the detachment would have no impact on the water supply originating from Metropolitan is as follows:20

“Currently, SDCWA requests that Metropolitan deliver water for SDCWA directly to Rainbow and Fallbrook. Under the proposed reorganization, Metropolitan’s member agency Eastern would now make the same request to Metropolitan. Metropolitan’s water service to Eastern by delivering directly to the Applicant’s service area will continue to consist of the same blends of source water already provided to that area.” (emphasis added)

I characterize this argument as the “same water” would source water demands before and after the attachment.

It is useful to consider the factual setting of current water service to Fallbrook and Rainbow. Treated water deliveries are made through four active turnout structures to Fallbrook and eight active turnout structures to Rainbow (see Table 2).21 For Fallbrook, sixty-five percent of water deliveries are through Flow Control Facilities owned by Metropolitan and thirty-five percent of water deliveries are through Flow Control Facilities owned by the Water Authority.22 For Rainbow, twenty-four percent of water deliveries are through Flow Control Facilities owned by Metropolitan and seventy-six percent of water deliveries are through Flow Control Facilities owned by the Water Authority.23

**Table 2**

**Annual Treated Water Delivery to Fallbrook and Rainbow (acre feet)**

<table>
<thead>
<tr>
<th>Flow Control Facility</th>
<th>Pipeline to Turnout Structure Owner</th>
<th>Flow Control Facility Owner</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>DeLuz 1</td>
<td>Metropolitan</td>
<td>Metropolitan</td>
<td>2,492</td>
<td>2,257</td>
<td>2,107</td>
<td>2,122</td>
<td>1,258</td>
</tr>
<tr>
<td>Fallbrook 3</td>
<td>Metropolitan</td>
<td>Water Authority</td>
<td>2,759</td>
<td>2,743</td>
<td>1,631</td>
<td>1,344</td>
<td>2,297</td>
</tr>
<tr>
<td>Fallbrook 4</td>
<td>Water Authority</td>
<td>Water Authority</td>
<td>890</td>
<td>1,196</td>
<td>1,405</td>
<td>1,416</td>
<td>746</td>
</tr>
</tbody>
</table>

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20 Ibid.
22 Percentages based on cumulative water deliveries from 2015 through 2019.
23 Ibid.
Flow Control Facility | Pipeline to Turnout Structure Owner | Flow Control Facility Owner | 2015 | 2016 | 2017 | 2018 | 2019
--- | --- | --- | --- | --- | --- | --- | ---
Fallbrook 6 | Metropolitan | Metropolitan | 3,765 | 4,156 | 4,232 | 4,612 | 3,457
Sub-Total | 9,906 | 10,352 | 9,375 | 9,494 | 7,758
Rainbow 1 | Metropolitan | Water Authority | 2,715 | 2,368 | 2,454 | 3,305 | 2,578
Rainbow 3 | Water Authority | Water Authority | 3,686 | 4,026 | 3,443 | 4,487 | 2,456
Rainbow 6 | Water Authority | Water Authority | 2,301 | 2,519 | 2,646 | 1,991 | 1,978
Rainbow 7 | Water Authority | Water Authority | 1,721 | 2,496 | 2,995 | 3,744 | 1,428
Rainbow 8 | Metropolitan | Metropolitan | 3,499 | 2,502 | 2,875 | 1,011 | 2,963
Rainbow 9 | Metropolitan | Metropolitan | 1,582 | 1,639 | 1,593 | 1,732 | 1,292
Rainbow 10 | Metropolitan | Water Authority | 981 | 1,062 | 979 | 914 | 318
Rainbow 11 | Water Authority | Water Authority | 1,332 | 1,136 | 1,099 | 718 | 635
Sub-Total | 17,817 | 17,748 | 18,084 | 17,902 | 13,648
Grand Total | 27,723 | 28,100 | 27,459 | 27,396 | 21,406

Understanding the sources of water delivered to Fallbrook and Rainbow requires consideration of the sources and operations of the Water Authority’s water supplies. Under its Exchange Agreement with Metropolitan, the Water Authority exchanges water available from its long-term water conservation and transfer agreement with IID and the lining of the All American Canal and Coachella Canal at Imperial Dam (collectively “QSA water”) for a like amount of water Metropolitan makes available to the Water Authority. The Water Authority receives its purchases of water from Metropolitan commingled with the exchange water from the IID transfer and canal lining.

To the extent Metropolitan mixes State Water Project (“SWP”) water and its own Colorado River water to meet its exchange obligation to the Water Authority, the delivery of exchange water has a priority claim on Metropolitan’s own Colorado River and SWP water supplies. The SWP water and Metropolitan’s own Colorado River water used to meet Metropolitan’s exchange obligation to the Water Authority is offset by the amount of QSA water not used in the direct delivery of exchange water to the Water Authority.

The Water Authority serves its member agencies using QSA water and desalinated seawater as a base supply and purchases of Metropolitan water as a supplemental supply (see above). Before detachment, Fallbrook’s and Rainbow’s water deliveries are backed by QSA water and desalinated seawater. Purchases of Metropolitan water are supplemental water supplies mostly to address seasonal variability in water demands (see discussion of Figures 4 and 5). After detachment, Fallbrook and Rainbow would purchase all their water directly from Metropolitan. Deliveries to Fallbrook and Rainbow would no longer be backed by the Water Authority’s QSA water and desalinated seawater. Instead, Fallbrook and Rainbow would rely solely on Metropolitan’s own Colorado River water supplies and imported SWP water.
In contrast to Metropolitan’s assertion, the “same water” would not be used to meet Fallbrook’s and Rainbow’s water demands after detachment. Metropolitan states:24

“All the delivered water to the Applicants (Fallbrook and Rainbow) will continue to come from Metropolitan from the exact same sources. . . . The transfer of those service connections to Eastern would not change Metropolitan’s reliability.”

But the question is not whether detachment would change the reliability of Metropolitan’s water sources. The question is whether detachment would change the reliability of Fallbrook’s and Rainbow’s water service provided to their customers because the Water Authority’s supplies are more reliable than Metropolitan’s.

The water sources used to provide water service to Fallbrook and Rainbow is not the same before and after detachment (see Table 3). Under the Exchange Agreement, the Water Authority makes IID transfer water and Canal Lining water (“QSA water”) available to Metropolitan who delivers the same quantity of water to the Water Authority. The exchange water reflects a combination of QSA water made available to Metropolitan, Metropolitan’s own Colorado River water supplies and State Water Project water. After detachment, Fallbrook and Rainbow would rely exclusively on Metropolitan’s own Colorado River supplies and State Water Project water.

<table>
<thead>
<tr>
<th>Water Source</th>
<th>Before Detachment</th>
<th>After Detachment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Authority Sources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- IID Transfer Water</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>- Canal Lining Water</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>- Desalinated seawater</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Metropolitan Sources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Own Colorado River water</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>- State Water Project</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

The impact of the detachment on the reliability of Fallbrook’s and Rainbow’s water service depends on the relative reliability of the Water Authority’s and Metropolitan’s water supplies. Table 4 provides a list of issues to determine the comparative reliability of water sources.

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24 Metropolitan Comment, pp. 9-10.
Table 4
Comparative Assessment of Water Sources

<table>
<thead>
<tr>
<th>Water Source</th>
<th>Water Authority</th>
<th>Metropolitan</th>
<th>Comment</th>
</tr>
</thead>
</table>
| Colorado River water  | Priority 3 QSA Water | • Priority 4 MWD water  
                       |                  | • PVID Land Fallowing  
                       |                  | • IID conservation  
                       |                  | • Water Authority senior to Metropolitan Priority 4  
                       |                  | • Metropolitan faces risks from Priority 1/2 overruns  
                       |                  | • Water Authority on same priority with IID conservation  |
| Desalinated seawater  | Carlsbad plant  | none                                               | Drought-proof                                         |
| State Water Project   | Limited usage, depending on supplemental water needs from Metropolitan | Base element of MWD supply | Metropolitan’s SWP water is subject to significant drought/hydrology/regulatory limitations |

*The Priority System.* California has an annual entitlement to 4.4 million acre-feet of Colorado River water. Available water is allocated in the following priority:

- Indians Tribes and miscellaneous present perfected rights (PPRs) recognized in the U.S. Supreme Court Decision in *Arizona v. California.*
- The next 3.85 million acre-feet per year to agricultural water users, first to the Palos Verde Irrigation District (Priority 1), second Yuma Water Project (Priority 2), third 3.1 million acre-feet per year to IID and the Coachella Valley Water District, “Coachella”, (Priority 3), less actual Colorado River use by Indian Tribes and miscellaneous PPRs up to 14,500 acre-feet per year.\(^{25}\)
- Metropolitan has the fourth priority of 550,000 acre-feet per year less use by Indian Tribes and miscellaneous PPRs above 14,500 acre-feet per year.

If available Colorado River water to California falls below 4.4 million acre-feet per year, the first cutbacks are borne by Metropolitan. Only if the shortfall in California’s available Colorado River water exceeds Metropolitan’s Priority 4 rights (as adjusted by the use by Indians Tribes and miscellaneous PPRs above 14,500 acre-feet per year), will there be any cutbacks in water available to the agricultural priorities.

\(^{25}\) The first 14,500 acre-feet per year of use by Indians and miscellaneous PPRs deducted from IID and Coachella’s Priority 3 right by the respective ratio of IID’s 11,500 acre-feet per year obligation and Coachella’s 2,500 acre-feet per year obligation to the total obligation of 14,500 acre-feet per year.
Priority 3 versus Priority 4. The risk of Colorado River water shortages is becoming material (see Figure 10). In successive forecasts starting in 2015, the prospect of a shortage of Colorado River water was looming “next year” with increasing risk in subsequent years (although the January 1, 2017 forecast backed off from earlier forecasts due to high runoff). The January 1, 2019 forecast was the most alarming with shortage becoming virtually unavoidable in the early 2020s. Due to a high runoff in the Colorado River Basin, the June 2019 forecast stretched out shortage risk into the mid-2020s. The April 2020 forecast has the risk of shortages returning to earlier projections by 2023.

![Figure 10](https://www.ppic.org/blog/what-does-the-colorado-river-drought-plan-mean-for-california/#:~:text=What%20Does%20the%20Colorado%20River%20Drought%20Plan%20Mean%20for%20California%3F,-Gokce%20Sencan%20May&text=This%20drought%20contingency%20plan%20(DCP,water%20shortages%20in%20the%20basin)

The Drought Contingency Plan ("DCP") calls for California to make an annual contribution of 200,000 acre-feet to 350,000 acre-feet, or a cumulative contribution of up to 1,050,000 acre-feet through the life of the DCP, based on the Bureau of Reclamation’s latest hydrology projections -- available through conservation to increase Lake Mead storage when the elevation of Lake Mead drops to and below 1,045 feet. The DCP was executed without IID’s

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26 Compiled from Reclamation’s Five-Year Projections of risk of water shortages.
participation. Metropolitan is legally responsible to cover California’s obligation. The DCP continues through 2026 as a bridge to an anticipated longer-term agreement among Colorado River Basin parties (including Mexico). With California agreeing to obligations under the DCP, should one anticipate that the long-term agreement will have a smaller, larger, or same obligation?

The future for the Colorado River depends on which road we are traveling. Have we been in a prolonged drought, or are the unusually wet hydrologic conditions in the early 20th century giving way to the long-term average calculated by tree-ring studies (see Figure 11)? Under the former belief, the last decade was a drought. Under the latter belief, a drought in the first decade of the 21st century was broken by the year 2011 until returning in 2018. Have we been experiencing the long-term “new normal?” The nature of the risks we are managing depends on which world we are inhabiting. The value of seniority of Colorado River water versus junior Colorado River water will increase over time.

Climate change is another factor affecting future water supplies. By the last quarter of this century, climate change is estimated to reduce runoff on the Colorado River by 10%.28

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With the Water Authority’s QSA supplies having IID’s Priority 3 water rights, and Metropolitan having Priority 4 rights, the water sources of the two agencies are not “the same.” Detachment would reduce the water supply reliability of Fallbrook and Rainbow’s water service.

**PVID Land Fallowing and IID Conservation Agreements.** Metropolitan has entered into long-term water conservation agreements with IID and the Palo Verde Irrigation District (“PVID”). Metropolitan recently purchased land in PVID and is now the largest landowner in PVID. Metropolitan also has access to unused Priority 3 water, Intentionally Created Surplus credits, engages in interstate banking arrangements and related transfers with the Southern Nevada Water Authority and participates in system efficiency projects in the Lower Basin.

Under the QSA, Metropolitan’s available Colorado River water is adjusted annually depending on whether the consumptive use of Colorado River water under Priority 1, 2 and 3b is below or above 420,000 acre-feet.\(^{29}\) Priority 1, 2 and 3b are, respectively, the consumptive use of Colorado River water by PVID, the Reservation Division of the Yuma Project and the Lower Palo Verde Mesa.\(^{30}\) By reducing PVID’s use of Colorado River water, PVID land fallowing increases the amount of Colorado River water available to Metropolitan (see Figure 12).

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\(^{29}\) [Colorado River Water Delivery Agreement: Federal Quantification Settlement Agreement](http://www.usbr.gov/lc/region/g4000/crwda/crwda.pdf), October 10, 2003, Section 4d.

\(^{30}\) The Bureau of Reclamation also includes the use of Colorado River water on Yuma Island in the calculation.
Figure 13 plots Metropolitan’s Agricultural Adjustment (on the vertical axis) versus the amount of water conserved by PVID land fallowing (on the horizontal axis) to illustrate how land fallowing under Metropolitan’s agreement with PVID is a key driver of Metropolitan’s Agricultural Adjustment. The annual variation of the amount of water conserved by land fallowing explains 72% of the annual variation in Metropolitan’s Agricultural Adjustment for available Colorado River supplies from the consumptive use of Priority 1, 2 and 3b. For the period 2005-2019, “Metropolitan Agricultural Adjustment” has averaged 19,768 acre-feet. Even though PVID land fallowing averaged 94,293 acre-feet, there has been sustained overruns by Priority 1, 2 and 3b relative to the 420,000 acre-foot benchmark.31

Metropolitan must engage in significant land fallowing to offset its liability for underwriting the risk that the consumptive use of Colorado River water by Priority 1, 2 and 3b (plus Yuma Island) exceeds 420,000 acre-feet per year. Metropolitan must conserve about 77,800 acre-feet of water by land fallowing for Metropolitan to avoid its liability for Priority 1, 2 and 3b overruns (see Figure 13).32 Metropolitan’s average net increase in annual Colorado River water

31 Without land fallowing, the estimated value of Metropolitan adjustment is -93,525 (the intercept in the equation in Figure 13).
32 The value of “x” that yields an estimated Metropolitan Adjustment of zero using the equation in Figure 13.
supplies after accounting for the liability of Priority 1, 2 and 3b overruns (19,768 acre-feet) is about 21% of the average annual amount of 94,293 acre-feet of land fallowing.\textsuperscript{33}

Table 5 compares Metropolitan’s Colorado River water supplies before and after 2003. For the ten years before 2003, Metropolitan’s Colorado River water supplies averaged 1,203,822 acre-feet due to unused Lower Basin entitlements and surplus water. With implementation of the QSA, California is now limited to its basic 4.4 million acre-foot annual entitlement unless the Secretary of the Interior declares the availability of surplus water, which has not happened nor anticipated to happen. From 2003 and thereafter Metropolitan’s supplies from its Priority 4 rights and transfer agreements with IID and PVID averaged 664,061 acre-feet. When combined with the average amount of unused Priority 3 water available, Metropolitan’s Colorado River water supplies averaged 752,990 acre-feet. Therefore, the end of the era of unused entitlement water and surplus water means that, despite its programs over the past eighteen years, Metropolitan has 450,832 acre-feet per year less Colorado River water. The Water Authority’ QSA water supplies offset 237,711 acre-feet of Metropolitan’s reduced Colorado River water supplies in 2019. When the Water Authority’s QSA water supplies reach their long-term level, it will offset 277,000 acre-feet per year of Metropolitan’s reduced Colorado River water supplies over the long-term.

\textbf{Table 5}  
\textit{Comparison of Metropolitan’s Annual Colorado River Water Supplies Pre and Post 2003}

<table>
<thead>
<tr>
<th>Item</th>
<th>Acre Feet</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-2003</td>
<td>1,203,822</td>
<td>Mostly Priority 4 and Priority 5 water</td>
</tr>
<tr>
<td>Post-2003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priority 4</td>
<td>550,000</td>
<td>Exclusive of liability for Indian/Misc. PPRs</td>
</tr>
<tr>
<td>IID</td>
<td>94,293</td>
<td>Per-2003 agreement</td>
</tr>
<tr>
<td>PVID</td>
<td>19,768</td>
<td>Inclusive of liability for Priority 1, 2 3b overruns</td>
</tr>
<tr>
<td>Sub-Total</td>
<td>664,061</td>
<td></td>
</tr>
<tr>
<td>Unused Priority 3</td>
<td>88,929</td>
<td>In excess of Priority 4 right pre-2003 agreement</td>
</tr>
<tr>
<td>Total</td>
<td>752,990</td>
<td></td>
</tr>
<tr>
<td>Lost Supply</td>
<td>450,837</td>
<td></td>
</tr>
</tbody>
</table>

\textit{SWP Water.} The history of SWP allocations has three distinct time periods (see Figure 14). Between 1968 through 1989, SWP allocations averaged 95%.\textsuperscript{34} Spurred by the 1991 drought, SWP allocations dropped and averaged 73% through the 1990s. There was a brief recovery in SWP allocations, increasing by 10 percentage points until the early 2000s as environmental

\textsuperscript{33} 19,193 AF equals the projected Metropolitan Agricultural Adjustment from Figure 13 when PVID land fallowing equals 94,293 AF.

\textsuperscript{34} Before the 1994 Monterey Amendment, agencies submitted water requests reflecting their actual water demands. With the Monterey Amendment, available water was pro-rated in accordance with requests. This provided an incentive for agencies to request their full entitlement amounts (see Figure 15).
problems in the Delta mounted. Since then, average SWP allocations have been declining. The final SWP Allocation for 2014 was only 5% (most of the year the declared SWP Allocation was zero). The Final Allocation for 2015 was 20%. Final Allocations increased in 2016 and 2017, plummeted in 2018, increased to 75% for 2019 and fell again to 20% in 2020.

![Figure 14
State Water Project Allocation History](image)

The period of 90%+ SWP Allocations corresponded to the scheduled build-up of the SWP (see Figure 15). SWP Contract Amounts grew until 1990. Therefore, the relevant historical period for SWP Allocations going forward is the post-1989 record. After the Monterey Amendments to SWP contracts, SWP contractors now request their full contract amounts each year.

The legendary disputes over water exports from northern California to Southern California have been ongoing for over 40 years when the State Water Resources Control Board initiated hearings to revise water quality standards in the Bay Delta. Since 2003, the loss of Colorado River water supplies forced increased reliance by Metropolitan on the State Water Project. With the continued collapse of the delta ecosystem, the 2009 Delta Reform Act included the state policy requiring water suppliers to reduce Delta reliance. Consistent with that policy directive and hydrology, the 10-year running average of State Water Project allocations fell from 65% to 50% by 2020.
Conclusions Regarding Metropolitan’s Water Sources. The year 2003 represents a turning point for Metropolitan’s water sources. On the Colorado River, the era of large volumes of Priority 5 Colorado River water ended with implementation of the QSA. On the positive side, the QSA paved the way for Metropolitan’s long-term PVID fallowing program that has conserved, on average, 94,293 acre-feet per year. On the downside, Metropolitan assumed the risk for overruns by Priority 1, 2 and 3b. The net effect has been that its PVID venture has yielded, on average, 19,768 acre-feet per year of Colorado River water. The year 2003 was also a turning point for Metropolitan with respect to SWP supplies with the emergence of a decreasing trend in SWP Table A Allocations.

Metropolitan’s Water Supplies are Less Reliable than the Water Authority’s. Metropolitan’s water sources include junior Colorado River rights, a PVID land fallowing program with a Priority 1 right subject to the risk of overruns by Priority 1&2 (80% of Metropolitan’s land fallowing program is needed to offset the risk of Priority 1&2 overruns), a water conservation agreement with IID and reliance on the volatile SWP for almost two-thirds of its water supplies. In contrast, the Water Authority’s water includes QSA conserved water supplies based on a more seniority priority than Metropolitan’s Priority 4 rights and equal priority to Metropolitan’s much smaller water conservation agreement with IID.
**Impacts on Bay Delta**

Metropolitan argues that a detachment will have no impact on the Bay Delta. It reaches its conclusion stating, “because identical water will continue to be delivered from Metropolitan’s service connections regardless of which Metropolitan member agency services them.”

Metropolitan uses the “same water” argument advanced in addressing the water supply originating from Metropolitan (see above). However, the water sources providing water service to Fallbrook and Rainbow are not the same before and after detachment. Before detachment, water service to Fallbrook and Rainbow is secured by the Water Authority’s base supply (QSA water and desalinated seawater) supplemented by purchases from Metropolitan’s own Colorado River water and State Project water. After detachment, water service to Fallbrook and Rainbow is only available from Metropolitan’s own Colorado River and SWP water supplies. Therefore, by becoming a Metropolitan customer (via Eastern), the volume of Metropolitan water would sell to Fallbrook and Rainbow is a new water demand, at least to the extent the Water Authority would not otherwise buy water at any given time from Metropolitan.

Metropolitan is substantially more dependent on imported water from Northern California than the Water Authority. Metropolitan relies on the SWP for 62.9% of its water supplies (see Figure 9). With the Water Authority’s low and declining reliance on Metropolitan, the Water Authority’s reliance on water from Northern California is substantially less than Metropolitan’s (see Figure 16). The first bar in the chart for each year equals the share of the Water Authority’s total water supplies (base supply plus purchases of supplemental water from Metropolitan) represented by purchases of supplemental water from Metropolitan. The second bar in the chart for each year equals the Water Authority’s reliance on Metropolitan (the first bar) multiplied by Metropolitan’s reliance on SWP water (62.9%).

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35 Metropolitan Comment, p. 9.
36 Water Authority reliance on Metropolitan based on data in Table 1. Water Authority on Northern California equals reliance on Metropolitan (data in Figure 16) multiplied by 62.9%.
Metropolitan’s Water Rates and Charges

The stated motivation for Fallbrook and Rainbow seeking detachment from the Water Authority is the belief that Metropolitan’s future water rates will be less than the Water Authority’s. The Metropolitan Comment is entirely silent on Metropolitan’s history and future of its rates and charges. Metropolitan’s rates and charges have a long history of increasing faster than inflation. The challenges facing Metropolitan going forward are substantial.

History. Metropolitan’s real (inflation-adjusted) water price has been on an increasing trend since 1960 (see Figure 17). The real water price was increasing through the mid-1980s, fluctuated around no trend through 2007, and has been on a sharp upward trend thereafter (see Table 6). There is a stubborn dynamic of Metropolitan water rates increasing faster than inflation.

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37 Data compiled from Metropolitan annual reports and resolutions. Water rate is for untreated full service until 2003 and Tier 1 rate for untreated water service thereafter. Readiness-to-Serve (“RTS”) charge equals RTS revenue requirement divided by the RTS Base (Metropolitan’s 10-Year running average of total firm deliveries). Real Water Rate equals sum of the Water Rate and the RTS Charge adjusted by the Consumer Price Index where 2020$ = 1.0.
Table 6

Annual Increases in Metropolitan’s Water Rate by Eras

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolitan Water Rate</td>
<td>11.3%</td>
<td>3.0%</td>
<td>6.4%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Inflation</td>
<td>5.4%</td>
<td>3.0%</td>
<td>1.6%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Real Metropolitan Water Rate</td>
<td>5.7%</td>
<td>0.0%</td>
<td>4.7%</td>
<td>3.1%</td>
</tr>
</tbody>
</table>

The drivers during these time periods provide a context for predicting Metropolitan’s future. The first period (1960-1984) was a transition from property taxes to water rates as well as phasing in payments for the State Water Project. The second period (1985-2007) was a period of rising water sales from the ramp up of deliveries from the State Water Project and continuation of a full Colorado River Aqueduct. The third period (2008-2020) reflects Metropolitan’s need to develop new water supplies to replace lost Colorado River water, declining allocations from the State Water Project and declining water sales (see below).

Metropolitan’s rate for full water service is now based on components for water supply, system access, water stewardship (in past years), and system power (see Table 7). The largest component is system access followed by the Tier 2 and Tier 1 rates for water supply. Since 2008,
the System Access rate and the Tier 1 supply has increased, respectively, by almost 6% per year and 7.4% per year faster than inflation.

### Table 7

**Composition of Metropolitan’s Full-Service Rate for Untreated Water***

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Tier 1 Supply</th>
<th>Tier 2 Supply</th>
<th>System Access</th>
<th>Water Stewardship*</th>
<th>System Power</th>
<th>Tier 1 Full Service</th>
<th>Tier 2 Full Service</th>
<th>Readiness-to-Serve Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAGR</td>
<td>6.4%</td>
<td>3.9%</td>
<td>5.4%</td>
<td>6.3%</td>
<td>2.5%</td>
<td>5.1%</td>
<td>4.4%</td>
<td>3.1%</td>
</tr>
<tr>
<td>2003-2020</td>
<td>9.1%</td>
<td>4.6%</td>
<td>7.6%</td>
<td>8.3%</td>
<td>1.8%</td>
<td>6.6%</td>
<td>5.4%</td>
<td>4.9%</td>
</tr>
<tr>
<td>2020 Rate</td>
<td>$208</td>
<td>$295</td>
<td>$346</td>
<td>$65</td>
<td>$136</td>
<td>$755</td>
<td>$842</td>
<td>$87</td>
</tr>
<tr>
<td>Real CAGR</td>
<td>4.2%</td>
<td>1.8%</td>
<td>3.3%</td>
<td>4.1%</td>
<td>0.4%</td>
<td>2.9%</td>
<td>2.2%</td>
<td>1.0%</td>
</tr>
<tr>
<td>2003-2020</td>
<td>7.4%</td>
<td>3.0%</td>
<td>5.9%</td>
<td>6.6%</td>
<td>0.2%</td>
<td>4.9%</td>
<td>3.7%</td>
<td>3.3%</td>
</tr>
</tbody>
</table>

* CAGR (cumulative average growth rate)

**Future Challenges.** Metropolitan’s water rates and charges face further upward pressure. Given Metropolitan’s extensive fixed costs, deteriorating yields from the Colorado River and SWP place upward pressure on rates and charges. Metropolitan will need to undertake new investment due to Metropolitan and SWP asset management programs, a potential regional recycled program, extension of its SWP contract and the delta tunnel project to secure SWP supplies. In addition to an escalating Metropolitan revenue requirement, the inevitable escalation in Metropolitan’s water rates will reduce Metropolitan’s water sales and further feed back into increases in Metropolitan’s rates and charges. Given Metropolitan’s recent experience, the feedback of declining sales to water rates and charges may be substantial.

Metropolitan’s water sales have been in material decline (see Figure 18), falling by 1,088,829,486 acre-feet per year from Fiscal Year Ending 2007 to Fiscal Year Ending 2019.

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* MWD chose not to charge the WSR for rate years 2021-22, but has not decided what to do for the future.
* Data compiled from Annual Reports of the Metropolitan Water District of Southern California, Table “Water Use by Metropolitan’s Member Agencies” Table 1-2 in the 2019 Annual Report and comparable tables in earlier annual reports. Metropolitan includes San Diego’s Colorado River supplies in its estimate of firm supply. The data Water Sales with exchanges is the data provided in Metropolitan’s annual reports. The data Water Sales without exchanges subtracts the Water Authority’s Colorado River water.
Conclusion

Metropolitan’s submission to San Diego LAFCO misstates the impact of the detachment on water service reliability for Fallbrook and Rainbow customers and misstates the impact on the Bay Delta. Metropolitan provides no analysis or data in support of its assertions. It neglects to acknowledge how the Water Authority’s sources of supply used to provide service to Fallbrook and Rainbow differ from the water supply sources available to Metropolitan which will be used to serve Fallbrook and Rainbow via Eastern MWD if the reorganizations are approved.

Metropolitan is also silent on its history and future of its rates and charges—the stated motivation for Fallbrook and Rainbow seeking detachment from the Water Authority. Metropolitan history of rates and charges shows a stubborn dynamic of increasing substantially faster than inflation. Going forward, Metropolitan faces a future of new key cost drivers that will further increase Metropolitan’s revenue requirements. In the face of Metropolitan’s decline in water sales over recent years, Metropolitan will be setting rates and charges based on escalating revenue requirements collected on a declining base of water sales.

Thank you for the opportunity to review Metropolitan’s Comment on the proposed detachment. Our state has struggled with the south’s reliance on the north for decades. Southern California’s water demands stress the local economies and ecosystems in the north. The Fallbrook and Rainbow detachment proposal would intensify the conflict, reduce the reliability of water
service of Fallbrook and Rainbow water customers, and increase their exposure to Metropolitan’s record of rapidly increasing water rates historically that may be expected to accelerate in the future.

Rodney T. Smith, Ph.D.
President
Attachment A
Rodney T. Smith, Ph.D.

Rodney Smith is President of Stratecon Inc (www.stratwater.com), an economics and strategic planning consulting firm specializing in the economics, finance, and policy of water resources, President of Baja Norte Water Resources, LLC, a project developer of bi-national water projects.

Dr. Smith is involved as an advisor in the acquisition of water rights throughout the western United States and in the sale and leasing of water rights and water supplies to public and private sector water users. This first-hand experience in the decades long development of water markets provides industry expertise to identify the best candidate locations for electronic water markets, proper market design and navigate related public policy issues.

He has consulted extensively for public and private sector clients, including high net worth investors, on business and public policy issues concerning water resources, including California’s Drought Water Bank, the government of New South Wales, Australia’s effort to privatize irrigation organizations, and the economic, financial, legal, and political dimensions of water transactions in many western states. Rod worked on the IID/San Diego County Water Authority Agreement, the settlement of Colorado River disputes on behalf of the Imperial Irrigation District, and the acquisition of 42,000 acres from the United States Filter Corporation, a unit of Veolia Environment. He is routinely involved in economic valuation of water rights, water investments, and negotiation of water acquisition and transportation agreements. He also performed studies on the economic risk of water shortages and valuation of surface water and groundwater storage. He has also served as an expert witness in the economic valuation of groundwater resources, disputes over the economic interpretation of water contracts, economics of water conservation and water use practices, and the socio-economic impacts of land fallowing. He served as an outside advisor and author of Water Transfers in the West: Projects, Trends and Leading Practices in Voluntary Water Trading, by the Western Governors Association and the Western States Water Council (2012).

Dr. Smith has written extensively on the law, economics, and finance of water resources and water policy. In 1987, he created and became co-editor of Stratecon’s paid-circulation publication Water Strategist: A Quarterly Analysis of Water Marketing, Finance, Legislation, and Litigation, In January 1999, the publication became a monthly web-based publication (www.waterstrategist.com) and information service, Water Strategist, which extended its coverage to include developments in the emerging private corporate participation in western water matters. In addition, Stratecon, Inc. introduced The Water Strategist Community, (www.waterchat.com), a web-based news portal providing free access to the direct press releases and important reports from over 300 public agencies, water firms and bond rating agencies. In 2011, Stratecon stopped publishing Water Strategist and replaced it with a contract research service based on its proprietary database. Earlier in 2013, Stratecon introduced prediction markets to the water industry (www.waterpolicymarkets.com), and in 2014, Stratecon introduced Journal of Water (www.journalofwater.com).
Rod is also known for his books *Troubled Waters: Financing Water in the West* and *Trading Water: A Legal Framework for Water Marketing*, sponsored by the Ford Foundation through grants to the Council of Governors' Policy Advisors. Former Secretary of the Interior Bruce Babbitt wrote forwards for both books.

Dr. Smith received his Ph.D. in Economics from the University of Chicago and a Bachelor of Arts in Economics from the University of California at Los Angeles. Prior to making a full time commitment to the private sector, he was a professor of economics at Claremont McKenna College for fifteen years, Director of the *Lowe Institute of Political Economy*, and a member of the editorial board of *Economic Inquiry*, the professional economics research journal of the *Western Economics Association*. In 1989, he was the John M. Olin Visiting Professor of Law and Economics at Columbia Law School. In the late 1970s and early 1980s, he was also a visiting assistant professor of economics at the Graduate School of Business, University of Chicago, where he also served as the Associate Director of the *Center for the Study of the Economy and the State*, founded by the late Nobel Prize winner in economics, George Stigler. Rod started his career after graduate school as an economist at the RAND Corporation, where he participated in a study commissioned by the California Legislature on the role of markets to address California’s water problems.