B

Delta Reliance

Quantifying Regional Self-Reliance and Reduced Reliance on Water Supplies from the Delta Watershed

1. Background

Under the Sacramento-San Joaquin Delta Reform Act of 2009, state and local public agencies proposing a covered action in the Delta, prior to initiating the implementation of that action, must prepare a written certification of consistency with detailed findings as to whether the covered action is consistent with applicable Delta Plan policies and submit that certification to the Delta Stewardship Council. Anyone may appeal a certification of consistency, and if the Delta Stewardship Council grants the appeal, the covered action may not be implemented until the agency proposing the covered action submits a revised certification of consistency, and either no appeal is filed, or the Delta Stewardship Council denies the subsequent appeal.

The 2020 UWMP Guidebook states that that an urban water supplier that anticipates participating in or receiving water from a proposed project, such as a multi-year water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Sacramento-San Joaquin Delta (Delta) should provide information in their 2015 and 2020 Urban Water Management Plans (UWMPs)'s that can then be used in the covered action process to demonstrate consistency with Delta Plan Policy, WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self Reliance (California Code Req., tit. 23, § 5003).

San Bernardino County Service Area 70J (CSA 70J) is an urban water supplier that anticipates receiving a blend of Delta water indirectly through the use of State Water Project water used by Mojave Water Agency (MWA) to replace groundwater in the basin. When CSA 70J's demand is higher than their Free Production Allocation (FPA), CSA 70J incurs a replacement obligation and can purchase additional pumping rights for the water year in the basin from other suppliers' unused FPA or purchase this replacement water directly from the MWA Watermaster. The MWA Watermaster uses funds collected for the replacement obligation to replenish the groundwater supply with State Water Project water. Therefore, CSA 70J is preparing this analysis to comply with the Delta Plan Policy WR P1.

The Delta Plan Policy WR P1 specifies the measures that must be taken by water suppliers under certain conditions to reduce their reliance on the Delta and improve regional self-reliance. In addition, the Delta Plan recommends that all water suppliers within the Delta watershed voluntarily implement the measures contained in WR P1 to reduce their reliance on the Delta and improve regional self-reliance. Delta Plan WR P1 identifies UWMP's as the tool to be used to demonstrate consistency with the state policy that states that suppliers who carry out or take part in covered actions must reduce their reliance on the Delta.

WR P1 details what is needed for a covered action to demonstrate consistency with reduced reliance on the Delta and improved regional self-reliance. WR P1 subsection (a) states that:

> *(a) Water shall not be exported from, transferred through, or used in the Delta if all the following apply:*
>
> > *(1) One or more water suppliers that would receive water as a result of the export, transfer, or use have failed to adequately contribute to reduced reliance on the Delta and improved regional self-reliance consistent with all of the requirements listed in paragraph (1) of subsection (c);*
> >
> > *(2) That failure has significantly caused the need for the export, transfer, or use; and*

(3) The export, transfer, or use would have a significant adverse environmental impact in the Delta.

WR P1 subsection (c)(1) further defines what adequately contributing to reduced reliance on the Delta means in terms of (a)(1) above.

(c)(1) Water suppliers that have done all the following are contributing to reduced reliance on the Delta and improved regional self-reliance and are therefore consistent with this policy:

(A) Completed a current Urban or Agricultural Water Management Plan (Plan) which has been reviewed by the California Department of Water Resources for compliance with the applicable requirements of Water Code Division 6, Parts 2.55, 2.6, and 2.8;

(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta; and

(C) Included in the Plan, commencing in 2015, the expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance. The expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance shall be reported in the Plan as the reduction in the amount of water used, or in the percentage of water used, from the Delta watershed. For the purposes of reporting, water efficiency is considered a new source of water supply, consistent with Water Code section 1011(a).

The analysis and documentation provided below include all the elements described in WR P1(c)(1) that need to be included in a water supplier's UWMP to support a certification of consistency for a future covered action.

2. Demonstration of Regional Self-Reliance

The methodology used to determine CSA 70J's improved regional self-reliance is consistent with the approach detailed in the DWR's UWMP Guidebook Appendix C (Guidebook Appendix C), including the use of narrative justifications for the accounting of supplies and the documentation of specific data sources. Some of the key assumptions underlying CSA 70J's demonstration of reduced reliance include:

- All data were obtained from the current 2020 UWMP, previously adopted UWMPs, or MWA Watermaster Annual Reports and represent average or normal water year conditions.
- All analyses were conducted at the service area level, and all data reflect the total contributions of CSA 70J and its customers.

Baseline and Expected Outcomes

To demonstrate the expected outcomes for a reduced reliance on the Delta and improved regional self-reliance, a comparison to a baseline is needed. Although the guidebook indicates that starting with a 2010 baseline is recommended, CSA 70J's delta reliance analysis uses 2020 as the baseline. This is because the Guidebook Appendix C also indicates that to accurately represent normal water year data, the projection from the previous year's UWMP shall be used since UWMPs generally do not provide normal water year data for the year that they are adopted (i.e., 2005 UWMP forecasts begin in 2010, 2010 UWMP forecasts begin in 2015, and so on). CSA 70J does not have a UWMP from 2005 or 2010 but does have one from 2015 and therefore the baseline is for year 2020. Thus, population, demand, and supply data for the 2020 baseline were taken from CSA 70J's 2015 UWMP.

Consequently, the expected outcomes for reduced Delta reliance and improved regional self-reliance for 2020 were taken from CSA 70J's 2015 UWMPs. Expected outcomes for 2025-2045 are from the current 2020 UWMP. Documentation of the specific data sources and assumptions are included in the discussions below.

Service Area Demands without Water Use Efficiency

In alignment with the Guidebook Appendix C, this analysis uses normal water year demands, rather than normal water year supplies to calculate expected outcomes in terms of volume of water used. Normal water year demands serve as a proxy for the amount of supplies that would be used in a normal water year, which helps alleviate issues associated with how supply capability is presented to fulfill the requirements of the UWMP Act versus how supplies might be accounted for to demonstrate consistency with WR P1.

Because WR P1 considers water use efficiency savings a source of water supply, water suppliers can calculate their embedded water use efficiency savings based on changes in forecasted per capita water use compared to the baseline. As explained in the Guidebook Appendix C, water use efficiency savings must be added back to the normal year demands to represent demands without water use efficiency savings accounted for; otherwise, the effect of water use efficiency savings on regional self-reliance would be overestimated. **Table 1** shows the results of this adjustment for CSA 70J. Supporting narratives and documentation for all the data shown in **Table 1** are provided below.

Service Area Demands with Water Use Efficiency

The service area water demands shown in **Table 1** represent the total municipal and industrial (M&I) water demands for CSA 70J's retail service area.

The M&I demand data shown in **Table 1** were collected from the following sources:

- Baseline (2020): CSA 70J 2015 UWMP, Table 4-2
- 2025-2045: CSA 70J 2020 UWMP, Table 4-5

Non-Potable Water Demands

CSA 70J does not utilize non-potable resources and thus this section is not applicable.

Potable Service Area Demands with Water Use Efficiency

The "Potable Service Area Demands with Water Use Efficiency" was calculated by subtracting the "Non-Potable Water Demands" from "Service Area Demands with Water Use Efficiency."

Service Area Population

The population data shown in **Table 1** were collected from the following sources:

- Baseline (2015): CSA 70J 2015 UWMP, Table 3-1
- 2020-2045: CSA 70J 2020 UWMP, Table 3-1

Estimated Water Use Efficiency Since Baseline

The "Estimated Water Use Efficiency Since Baseline" was calculated using "Potable Service Area Demands with Water Use Efficiency" divided by "Service Area Population" and then comparing with 2020 Baseline Per Capita Water Use.

Service Area Water Demands without Water Use Efficiency

In **Table 2**, the "Service Area Demands with Water Use Efficiency" was added to the "Estimated Water Use Efficiency Since Baseline" to obtain the "Service Area Water Demands without Water Use Efficiency Accounted For."

Supplies Contributing to Regional Self-Reliance

For a covered action to demonstrate consistency with the Delta Plan, WR P1 subsection (c)(1)(C) states that water suppliers must report the expected outcomes for measurable improvement in regional self-reliance. **Table 3** shows expected outcomes for supplies contributing to regional self-reliance in terms of volume. **Table 3** represents efforts to improve regional self-reliance for CSA 70J's entire

service area and include the total contributions of CSA 70J and its customers. Supporting narratives and documentation for all the data provided in **Table 3** are described below.

Water Use Efficiency

The water use efficiency information shown in **Table 3** is taken directly from **Table 1**.

Local and Regional Water Supply and Storage Projects

CSA 70J directly pumps all water from the groundwater basin to meet all demands in the service area. However, any amount that is over their FPA must be purchased from another supplier's unused FPA or purchased directly from MWA to replenish the basin with imported water from the Delta. In 2020, CSA 70J did require more water than the FPA allowed. Therefore, for the purposes of this analysis, the FPA value is reported as the volume of groundwater used each year that contributes to regional self-reliance. It is assumed that for 2025 through 2045, CSA 70J will also require more water than the FPA allows and that the FPA stays the same as 2020. The regional water supplies are shown in **Table 3** and were from the following sources:

- Baseline (2020): MWA Watermaster Annual Report 2019-2020 Appendix B
- 2025-2045: MWA Watermaster Annual Report 2019-2020 Appendix B

3. Reliance on Water Supplies from the Delta Watershed

MWA's service area, as a whole, reduces reliance on the Delta through investments in non-Delta water supplies, local water supplies, and regional and local demand management measures. MWA's water purveyors coordinate reliance on the Delta through MWA, a regional Watermaster overseeing the Mojave River Groundwater Basin and the 12 retail agencies that utilize water from it. Accordingly, regional reliance on the Delta can only be measured regionally—not by individual MWA retail agencies.

MWA's retail agencies, and those agencies' customers, indirectly reduce reliance on the Delta through their collective efforts as a cooperative. MWA's retail agencies do not control how much of the water pumped includes the Delta water used to recharge the basin. Each retail agency is implementing demand management programs that increase the future reliability of water resources for the region. In addition, these demand management programs provide system-wide benefits by decreasing the demand for imported water, which helps to decrease the burden on the district's infrastructure and reduce system costs, and free up conveyance capacity to the benefit of all member agencies.

Because of the integrated nature of MWA's systems and operations, and the collective nature of MWA's regional efforts, it is infeasible to quantify each of MWA retail agencies' individual reliance on the Delta. It is infeasible to attempt to segregate an entity and a system designed to work as an integrated regional cooperative.

Since it is not feasible to separate out individual member agencies' or their customer's reduced reliance on the Delta, MWA has completed the analysis to demonstrate a regional wide reduction which is shown in **Table 4**.

4. Summary of Expected Outcomes for Reduced Reliance on the Delta

As stated in WR P1(c)(1)(C), the policy requires that, commencing in 2015, UWMPs include expected outcomes for measurable reduction in Delta reliance and improved regional self- reliance. WR P1 further states that those outcomes shall be reported in the UWMP as the reduction in the amount of water used, or in the percentage of water used, from the Delta.

The expected outcomes for CSA 70J's reduced Delta reliance and regional self-reliance were developed using the approach and guidance described in Guidebook Appendix C issued in March 2021.

Regional Self-Reliance

The data used to demonstrate increased regional self-reliance in this analysis represent the total regional efforts of CSA 70J and its customers and were developed in conjunction with Western and MWA as part of the UWMP coordination process.

The following provides a summary of the near-term (2025) and long-term (2045) expected outcomes for CSA 70J's regional self-reliance.

- Near-term (2025) – Normal water year regional self-reliance is expected to increase by about 315 AFY from the 2015 baseline (**Table 3**).
- Long-term (2045) – Normal water year regional self-reliance is expected to increase by almost 390 AFY from the 2015 baseline (**Table 3**).

The results show that CSA 70J and its customers are measurably reducing reliance on the Delta and improving regional self-reliance.

Reduced Reliance on Supplies from the Delta Watershed

For reduced reliance on supplies from the Delta Watershed, the data used in this analysis represent the total regional efforts of MWA and its retail water service agencies within MWA's service area and were developed in conjunction with CSA 70J and other MWA retail agencies as part of the UWMP coordination process (as described in Chapter 1 of MWA's 2020 UWMP). In accordance with UWMP requirements, MWA's retail agencies also report demands and supplies for their service areas in their respective UWMPs. The data reported by those agencies are not additive to the regional totals shown in MWA's UWMP, rather their reporting represents subtotals of the regional total and should be considered as such for the purposes of determining reduced reliance on the Delta.

While the demands that MWA's retail agencies report in their UWMP's are a good reflection of the demands in their respective service areas, they do not adequately represent each water suppliers' individual contributions to reduced reliance on the Delta. To calculate and report their reliance on water supplies from the Delta watershed, water suppliers that receive water from the Delta through other regional or wholesale water suppliers would need to determine the amount of Delta water that they receive from the regional or wholesale supplier. Two specific pieces of information are needed to accomplish this, first is the quantity of demands on the regional or wholesale water supplier that accurately reflect a supplier's contributions to reduced reliance on the Delta and second is the quantity of a supplier's demands on the regional or wholesale water supplier that are met by supplies from the Delta watershed.

For water suppliers that make investments in regional projects or programs it may be infeasible to quantify their demands on the regional or wholesale water supplier in a way that accurately reflects their individual contributions to reduced reliance on the Delta. Due to the extensive, long-standing, and successful implementation of regional demand management and local resource incentive programs in MWA's service area, this infeasibility holds true for MWA's agencies. For MWA's service area, reduced reliance on supplies from the Delta watershed can only be accurately accounted for at the regional level.

The results show that as a region, MWA and its retail agencies (including CSA 70J) are measurably reducing reliance on the Delta and improving regional self-reliance.

5. UWMP Implementation

In addition to the analysis and documentation described above, WR P1 subsection (c)(1)(B) requires that all programs and projects included in the UWMP that are locally cost-effective and technically feasible, which reduce reliance on the Delta, are identified, evaluated, and implemented consistent with the implementation schedule. WR P1 (c)(1)(B) states that:

(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta[.]

In accordance with Water Code Section 10631(f), water suppliers must already include in their UWMP a detailed description of expected future projects and programs that they may implement to increase the amount of water supply available to them in normal and single-dry water years and for a period of drought lasting five consecutive years. The UWMP description must also identify specific projects, including a description of the increase in water supply that is expected to be available from each project, and include an estimate regarding the implementation timeline for each project or program.

Chapter 6 of CSA 70J's 2020 UWMP summarizes the implementation plan and continued progress in developing a diversified water portfolio to meet the region's water needs.

6. 2015 UWMP Appendix I

The information contained in this appendix is also intended to be a new Appendix I to CSA 70J's 2015 UWMP consistent with WR P1 subsection (c)(1)(C) (Cal. Code Regs. tit. 23, § 5003). CSA 70J provided notice of the availability of the draft 2020 UWMP, 2021 WSCP, and the new Appendix I to the 2015 UWMP and held a public hearing to consider adoption of the documents in accordance with CWC Sections 10621(b) and 10642, and Government Code Section 6066, and Chapter 17.5 (starting with Section 7290) of Division 7 of Title 1 of the Government Code. The public review drafts of the 2020 UWMP, Appendix J to the 2015 UWMP, and the 2021 WSCP were posted on CSA 70J's website, **specialdistricts.com**, in advance of the public hearing on **June 22, 2021**. The notice of availability of the documents was sent to CSA 70J's customers, as well as cities and counties in CSA 70J's service area. Copies of the notification letter sent to the customers and cities and counties in CSA 70J's service area are included in the 2020 UWMP **Appendix J**. Thus, this **Appendix B** to CSA 70J's 2020 UWMP, which was adopted with CSA 70J's 2020 UWMP, will also be recognized and treated as Appendix I to CSA 70J's 2015 UWMP.

CSA 70J held a public hearing for the draft 2020 UWMP, draft Appendix I to the 2015 UWMP, and draft 2021 WSCP on **June 22, 2021**, at a regular Board of Directors meeting, held online due to COVID-19 concerns. CSA 70J's Board of Directors determined that the 2020 UWMP and the 2021 WSCP accurately represent the water resources plan for CSA 70J's service area. In addition, CSA 70J's Board of Directors determined that Appendix J to both the 2015 UWMP and the 2020 UWMP includes all the elements described in Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (Cal. Code Regs. tit. 23, § 5003), which need to be included in a water supplier's UWMP to support a certification of consistency for a future covered action. As stated in Resolutions XXXX, XXXX, and XXXX, the CSA 70J Board of Directors adopted the 2020 UWMP, Appendix J to the 2015 UWMP, and the 2021 WSCP and authorized their submittal to the State of California. Copies of the resolutions are included in the 2020 UWMP **Appendix K**.

Table 1: Optional Calculation of Water Use Efficiency -To be completed if Water Supplier does not specifically estimate Water Use Efficiency as a supply

Service Area Water Use Efficiency Demands (Acre-Feet)	Baseline (2020)	2025	2030	2035	2040	2045
Service Area Water Demands with Water Use Efficiency Accounted For	1,908	1,630	1,640	1,650	1,650	1,680
Non-Potable Water Demands						
Potable Service Area Demands with Water Use Efficiency Accounted For	1,908	1,630	1,640	1,650	1,650	1,680

Total Service Area Population	Baseline (2020)	2025	2030	2035	2040	2045
Service Area Population	10,162	10,356	10,554	10,721	10,876	11,021

Water Use Efficiency Since Baseline (Acre-Feet)	Baseline (2020)	2025	2030	2035	2040	2045
Per Capita Water Use (GPCD)	168	141	139	137	135	136
Change in Per Capita Water Use from Baseline (GPCD)		(27)	(29)	(30)	(32)	(32)
Estimated Water Use Efficiency Since Baseline		314	342	363	392	389

Table 2: Calculation of Service Area Water Demands Without Water Use Efficiency

Total Service Area Water Demands (Acre-Feet)	Baseline (2020)	2025	2030	2035	2040	2045
Service Area Water Demands with Water Use Efficiency Accounted For	1,908	1,630	1,640	1,650	1,650	1,680
Reported Water Use Efficiency or Estimated Water Use Efficiency Since Baseline		314	342	363	392	389
Service Area Water Demands without Water Use Efficiency Accounted For	1,908	1,944	1,982	2,013	2,042	2,069

Table 3: Calculation of Supplies Contributing to Regional Self-Reliance

Water Supplies Contributing to Regional Self-Reliance (Acre-Feet)	Baseline (2020)	2025	2030	2035	2040	2045
Water Use Efficiency	-	314	342	363	392	389
Water Recycling						
Stormwater Capture and Use						
Advanced Water Technologies						
Conjunctive Use Projects						
Local and Regional Water Supply and Storage Projects	559	559	559	559	559	559
Other Programs and Projects the Contribute to Regional Self-Reliance						
Water Supplies Contributing to Regional Self-Reliance	559	873	901	922	951	948

Service Area Water Demands without Water Use Efficiency (Acre-Feet)	Baseline (2020)	2025	2030	2035	2040	2045
Service Area Water Demands without Water Use Efficiency Accounted For	1,908	1,944	1,982	2,013	2,042	2,069

Change in Regional Self Reliance (Acre-Feet)	Baseline (2020)	2025	2030	2035	2040	2045
Water Supplies Contributing to Regional Self-Reliance	559	873	901	922	951	948
Change in Water Supplies Contributing to Regional Self-Reliance		314	342	363	392	389

Table 4: Calculation of Reliance on Water Supplies from the Delta Watershed

Percent Change in Supplies from the Delta Watershed (As a Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Total Percent of Water Supplies from the Delta Watershed	34.3%	34.2%	31.9%	28.7%	26.2%	24.4%	22.9%	22.2%
Change in Percent of Water Supplies from the Delta Watershed		-0.1%	-2.4%	-5.6%	-8.1%	-9.9%	-11.4%	-12.1%

C

UWMP Checklist

2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and Overview	Executive Summary
Chapter 1	10630.5	Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter.	Summary	Chapter 1
Section 2.2	10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Chapter 2.1, 2.2
Section 2.6	10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Chapter 2.3
Section 2.6.2	10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan Preparation	Chapter 2.3
Section 2.6, Section 6.1	10631(h)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source.	System Supplies	Chapter 2.3
Section 3.1	10631(a)	Describe the water supplier service area.	System Description	Chapter 3.1, 3.2
Section 3.3	10631(a)	Describe the climate of the service area of the supplier.	System Description	Chapter 3.3
Section 3.4	10631(a)	Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045.	System Description	Chapter 3.4.1
Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the supplier's water management planning.	System Description	Chapter 3.4.2
Sections 3.4 and 5.4	10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Chapter 3.4.1
Section 3.5	10631(a)	Describe the land uses within the service area.	System Description	Chapter 3.5
Section 4.2	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Chapter 4.1
Section 4.2.4	10631(d)(3)(C)	Retail suppliers shall provide data to show the distribution loss standards were met.	System Water Use	Chapter 4.1.3
Section 4.2.6	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans and other policies or laws.	System Water Use	Chapter 4.1.4
Section 4.2.6	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System Water Use	Chapter 4.1.4
Section 4.3.2.4	10631(d)(3)(A)	Report the distribution system water loss for each of the 5 years preceding the plan update.	System Water Use	Chapter 4.1.3
Section 4.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Chapter 4.2
Section 4.5	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System Water Use	Chapter 4.3
Chapter 5	10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Chapter 5
Chapter 5	10608.24(a)	Retail suppliers shall meet their water use target by December 31, 2020.	Baselines and Targets	Chapter 5.3
Section 5.2	10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Chapter 5.1.1
Section 5.5	10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Chapter 5.3
Section 5.5 and Appendix E	10608.4	Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form in the SBX7-7 2020 Compliance Form.	Baselines and Targets	Chapter 5.3, Appendix G
Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought.	System Supplies	Chapter 6.1
Sections 6.1	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, *including changes in supply due to climate change.*	System Supplies	Chapter 6.1.10
Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System Supplies	Chapter 6.1
Section 6.1.1	10631(b)(3)	Describe measures taken to acquire and develop planned sources of water.	System Supplies	Chapter 6.1
Section 6.2.8	10631(b)	Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030, 2035, 2040 and optionally 2045.	System Supplies	Chapter 6.1.9
Section 6.2	10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Chapter 6.1.2
Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Chapter 6.1.2.1
Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System Supplies	Chapter 6.1.2
Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Chapter 6.1.2.1
Section 6.2.2.1	10631(b)(4)(B)	For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	System Supplies	N/A
Section 6.2.2.4	10631(b)(4)(C)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Chapter 6.1.2.3
Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Chapter 6.1.9
Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long- term basis.	System Supplies	Chapter 6.1.7
Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Chapter 6.1.5
Section 6.2.5	10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Chapter 6.1.5
Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Chapter 6.1.5.1
Section 6.2.5	10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	N/A
Section 6.2.5	10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Chapter 6.1.5.1
Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Chapter 6.1.5.1
Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Chapter 6.1.6
Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods.	System Supplies (Recycled Water)	Chapter 6.1.5

Section 6.2.8, Section 6.3.7	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years.	System Supplies	Chapter 6.1.8
Section 6.4 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a supplier can readily obtain.	System Suppliers, Energy Intensity	Chapter 6.2
Section 7.2	10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Chapter 7.1.1
Section 7.2.4	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Chapter 7.1.3, Chapter 9
Section 7.3	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Chapter 7.1.3
Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water Supply Reliability Assessment	Chapter 7.2
Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years.	Water Supply Reliability Assessment	Chapter 7.2
Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water Supply Reliability Assessment	Chapter 7.2
Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.	Water Supply Reliability Assessment	Chapter 7.2
Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water Supply Reliability Assessment	Chapter 7.2
Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water Shortage Contingency Planning	Appendix A
Chapter 8	10632(a)(1)	Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP	Water Shortage Contingency Planning	Appendix A Section 1.1
Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water Shortage Contingency Planning	Appendix A Section 1.2.1
Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	Water Shortage Contingency Planning	Appendix A Section 1.2.2
Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water Shortage Contingency Planning	Appendix A Section 1.2.2
Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water Shortage Contingency Planning	Appendix A Section 1.3
Section 8.3	10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Water Shortage Contingency Planning	Appendix A Section 1.3.1
Section 8.4	10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water Shortage Contingency Planning	Appendix A Section 1.4.2
Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water Shortage Contingency Planning	Appendix A Section 1.4.1
Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water Shortage Contingency Planning	Appendix A Section 1.4.3
Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions.	Water Shortage Contingency Planning	Appendix A Section 1.4.4
Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water Shortage Contingency Planning	Appendix A Section 1.4.7
Section 8.4.6	10632.5	The plan shall include a seismic risk assessment and mitigation plan.	Water Shortage Contingency Plan	Appendix A Section 1.4.6, Attachment 1
Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water Shortage Contingency Planning	Appendix A Section 1.5
Section 8.5 and 8.6	10632(a)(5)(B) 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water Shortage Contingency Planning	Appendix A Section 1.5
Section 8.6	10632(a)(6)	Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water Shortage Contingency Planning	Appendix A Section 1.6
Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Water Shortage Contingency Planning	Appendix A Section 1.7
Section 8.7	10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Water Shortage Contingency Planning	Appendix A Section 1.7
Section 8.7	10632(a)(7)(C)	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water Shortage Contingency Planning	Appendix A Section 1.7
Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Appendix A Section 1.8
Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Appendix A Section 1.8
Section 8.8	10632(a)(8)(C)	Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought	Water Shortage Contingency Planning	Appendix A Section 1.8
Section 8.9	10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water Shortage Contingency Planning	Appendix A Section 1.9
Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water Shortage Contingency Planning	Appendix A Section 1.11
Sections 8.12 and 10.4	10635(c)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Appendix A Section 1.12
Section 8.14	10632(c)	Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 after adopted the plan.	Water Shortage Contingency Planning	Appendix A Section 1.12
Sections 9.2 and 9.3	10631(e)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Chapter 9
Chapter 10	10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan Adoption, Submittal, and Implementation	To be completed per Chapter 10.2
Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1.	Plan Adoption, Submittal, and Implementation	Chapter 10.2.1
Section 10.4	10621(f)	Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.	Plan Adoption, Submittal, and Implementation	Chapter 10.4
Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan.	Plan Adoption, Submittal, and Implementation	Chapter 10.2.2, 10.3, Appendix J

Section 10.2.2	10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Chapter 10.3
Section 10.3.2	10642	Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Appendix K
Section 10.4	10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	To be completed per Chapter 10.4
Section 10.4	10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	To be completed per Chapter 10.4
Sections 10.4.1 and 10.4.2	10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	To be completed per Chapter 10.4
Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	To be completed per Chapter 10.5
Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	To be completed per Chapter 10.5
Section 10.6	10621(c)	If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan Adoption, Submittal, and Implementation	N/A
Section 10.7.2	10644(b)	If revised, submit a copy of the water shortage contingency plan to DWR within 30 days of adoption.	Plan Adoption, Submittal, and Implementation	To be completed per Chapter 10.6

D

DWR Tables

DWR Tables

Appendix D Table 1. DWR 4-3R Total Water Use

	2020	2020	2030	2035	2040	2045
Potable and Raw Water From Table 4-1R and 4-2R	1,617	1,630	1,640	1,650	1,650	1,680
Recycled Water Demand* From Table 6-4R	0	0	0	0	0	0
Total Water Use:	**1,617**	**1,630**	**1,640**	**1,650**	**1,650**	**1,680**

Appendix D Table 2. DWR 6-3R Wastewater Treatment and Discharge within Service Area in 2020

No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table.

WASTEWATER TREATMENT PLANT NAME	DISCHARGE LOCATION NAME OR IDENTIFIER	DISCHARGE LOCATION DESCRIPTION	WASTEWATER DISCHARGE ID NUMBER	METHOD OF DISPOSAL	PLANT TREATS WASTEWATER GENERATED OUTSIDE THE SERVICE AREA	TREATMENT LEVEL	2020 VOLUMES				
							WASTEWATER TREATED	DISCHARGED TREATED WASTEWATER	RECYCLED WITHIN SERVICE AREA	RECYCLED OUTSIDE OF SERVICE AREA	INSTREAM FLOW PERMIT REQUIREMENT
						TOTAL:	**-**	**-**	**-**	**-**	**-**

[1] Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.
[2] If the Wastewater Discharge ID Number is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility

Appendix D Table 3. DWR 6-4R Recycled Water within Service Area in 2020

Recycled water is not used and is not planned for the use within the service area of the supplier. The supplier will not complete the table.

Name of Supplier Producing (Treating) the Recycled Water:										
Name of Supplier Operating the Recycled Water Distribution System:										
Supplemental Volume of Water Added in 2020:										
Source of 2020 Supplemental Water:										
BENEFICIAL USE TYPE	**POTENTIAL BENEFICIAL USES OF RECYCLED WATER**	**AMOUNT OF POTENTIAL USES OF RECYCLED WATER**	**GENERAL DESCRIPTION OF 2020 USES**	**LEVEL OF TREATMENT**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**
AGRICULTURAL IRRIGATION										
LANDSCAPE IRRIGATION (EXC GOLF COURSES)										
GOLF COURSE IRRIGATION										
COMMERCIAL USE										
INDUSTRIAL USE										
GEOTHERMAL AND OTHER ENERGY PRODUCTION										
SEAWATER INTRUSION BARRIER										
RECREATIONAL IMPOUNDMENT										
WETLANDS OR WILDLIFE HABITAT										
GROUNDWATER RECHARGE (IPR)										
RESERVOIR WATER AUGMENTATION (IPR)										
DIRECT POTABLE REUSE										
OTHER										
				TOTAL:	**-**	**-**	**-**	**-**	**-**	**-**
INTERNAL REUSE (NOT INCLUDED IN STATEWIDE RECYCLED WATER VOLUME).										

*IPR - Indirect Potable Reuse

Appendix D Table 4. DWR 6-5R 2015 Recycled Water Use Projection Compared to 2020 Actual

Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table.

BENEFICIAL USE TYPE	2015 PROJECTION FOR 2020	2020 ACTUAL USE
AGRICULTURAL IRRIGATION		
LANDSCAPE IRRIGATION (EXCLUDES GOLF COURSES)		
GOLF COURSE IRRIGATION		
COMMERCIAL USE		
INDUSTRIAL USE		
GEOTHERMAL AND OTHER ENERGY PRODUCTION		
SEAWATER INTRUSION BARRIER		
RECREATIONAL IMPOUNDMENT		
WETLANDS OR WILDLIFE HABITAT		
GROUNDWATER RECHARGE (IPR)*		
SURFACE WATER AUGMENTATION (IPR)*		
DIRECT POTABLE REUSE		
TOTAL:	-	-

Appendix D Table 5. DWR 6-6R Methods to Expand Future Recycled Water Use

The supplier does not plan to expand recycled water use in the future. The supplier will not complete the table below but will provide narrative explanation.

NAME OF ACTION	DESCRIPTION	PLANNED IMPLEMENTATION YEAR	EXPECTED INCREASE OF RECYCLED WATER USE
		TOTAL:	-

Appendix D Table 6. DWR 6-7R Expected Future Water Supply Projects or Programs

Optional subtitle goes here.

No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table.

Page Location for Narrative in UWMP:

NAME OF FUTURE PROJECTS OR PROGRAMS	JOINT PROJECT WITH OTHER SUPPLIERS	AGENCY NAME	DESCRIPTION	PLANNED IMPLEMENTATION YEAR	PLANNED FOR USE IN YEAR TYPE	EXPECTED INCREASE IN WATER SUPPLY TO SUPPLIER

Appendix D Table 7. DWR 6-8DS Source Water Desalination

Neither groundwater nor surface water are reduced in salinity prior to distribution. The supplier will not complete the table.

						VOLUME OF WATER DESALINATED IN AFY				
PLANT NAME OR WELL ID	PLANT CAPACITY	INTAKE TYPE	SOURCE WATER TYPE	INFLUENT TDS	BRINE DISCHARGE	2016	2017	2018	2019	2020
					TOTAL:	-	-	-	-	-

E

MWA Population Forecast

UC RIVERSIDE | School of Business
CENTER FOR ECONOMIC FORECASTING & DEVELOPMENT

MOJAVE WATER AGENCY

POPULATION FORECAST | 2020 EDITION

August 2020

Mojave Water Agency

UC RIVERSIDE | School of Business
CENTER FOR ECONOMIC FORECASTING & DEVELOPMENT

ABOUT THE CENTER

The UC Riverside School of Business Center for Economic Forecasting and Development opened its doors in October 2015 and represents a major economic research initiative in one of California's most vital growth regions. The Center produces a wide variety of research both independently and in collaboration with academic, business, and government partners. Research products include monthly employment analyses, quarterly regional economic forecasts, a quarterly business activity index, a white paper series, and a major regional economic forecast conference, hosted annually.

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EXECUTIVE SUMMARY

Urban planning involves the investment of millions of dollars in infrastructure projects long before they will be realized. From transportation to water supply management, these developments require many years of planning and resources in order to become fully functional. As a result, it is imperative to have a firm understanding of the size of population needed to support these projects, especially regarding water supply. This report, commissioned by the Mojave Water Agency (MWA), details population estimates forecasted to 2065 for the MWA region, subareas, and incorporated cities and towns. It also discusses methodology and recent changes in population trends, and provides an overview of the economic conditions in the Inland Empire and, specifically, San Bernardino County.

For years, California has experienced a housing supply crisis with several major metropolitan areas suffering a serious shortage of available homes. Home prices have skyrocketed over the past decade, with most California metropolitan areas surpassing pre-Recession peaks. However, San Bernardino County and the Inland Empire have remained considerably more affordable than some nearby counties, Los Angeles and Orange County in particular. The Inland Empire has the third largest workforce of any of California's metropolitan regions. It is a powerhouse for Logistical industries such as Transportation and Warehousing, and is ideally situated near the ports of Los Angeles and Long Beach, the largest in the nation in terms of import and export movement. As such, it is likely that interest in the Inland Empire will continue to grow as nearby counties in Southern California become less affordable and supply remains low.

Current economic and demographic trends indicate that California's population is slowing down, and will continue to do so well into the future. Statewide net migration remains positive but has declined significantly, relying on foreign migration to keep total net migration above zero. Furthermore, birth rates have dropped across most racial and ethnic groups, and are expected to flatten out or continue declining. The UCR Center for Economic Forecasting ("The UCR Center") expects the same patterns to resonate within San Bernardino County and the Mojave Water Agency. While the County and MWA service area experience greater home affordability compared to the nearby regions, regional data patterns over the past few years have shown negative net migration and declining birth rates. Net migration has averaged below zero between 2010 and 2019 – periods of considerable economic expansion. Between 2007 and 2018, San Bernardino County has gone from roughly 18 births per 1000 people to 13 births per 1000, a 24.2% drop. With crude birth rates declining and net migration in the negatives, San Bernardino County's and the MWA service area's populations have been revised down considerably.

The UCR Center estimates that between 2020 and 2060, the MWA service area will grow by 39.2% - which remains considerably larger than estimated growths in both San Bernardino County (21.1%) and California (12.9%).

The UCR Center forecasts incorporated cities and towns in order to estimate future populations in the MWA service areas and its subareas as well. The following are some key findings for recent estimates of the MWA incorporated cities and towns:

- Adelanto had the largest percentage growth of any incorporated city in the last decade, with population increasing by 10.5% between 2011 and 2019.

- Victorville, the largest population of any MWA incorporated city, saw the second largest percent growth at 7.7% between 2011 and 2019.

- The slowest growing cities by percentage were Apple Valley and Barstow, at 5.3% each between 2011 and 2019.

FORECAST METHODOLOGY

The UCR Center uses a comprehensive econometric forecasting model for the MWA service area, to include population estimates for the incorporated cities, subareas, and water purveyors. Structured around a long-term forecast of the San Bernardino County economy, the model includes economic indicators such as residential housing stock, home prices, and employment trends. Relying on the underlying fundamentals of each variable, research is applied to identify the relationship between the variables of interest and various moving parts of the economy. Using this methodology, the UCR Center estimates population forecasts based on the incorporated cities in the MWA service area.

Historical population data was collected from two primary sources: The United States decennial census, and the DOF for annual estimates dating back to 1970. Census estimates were used to derive shares of population by census block in order to calculate population for subareas and purveyors by cities/towns. The DOF historical estimates were used to build a time series model, incorporating not only historical population estimates, but economic indicators including housing stock and home prices. The incorporated cities were then estimated using these econometric models out to 2065, and their respective shares were used to build the MWA service area. The subareas and water purveyors were developed using growth estimates from the incorporated cities and using the shares based off of the census blocks.

The long-run estimates from the DOF's San Bernardino County population forecast are used as a driver for the incorporated cities, accompanied by economic variables that help define the structure and interrelationships within the economy. As previously mentioned, demographic projections in California have been revised significantly to better reflect the changes in birth rates, deaths and net migration patterns. For example, California overall has seen its population forecast for 2060 lowered by roughly 5.2 million people, from over 50 million to just over 45 million. For San Bernardino County, 2060 estimates were lowered from roughly 3.2 million to about 2.7 million. A primary reason for the lower estimates is the revision in annual net migration. Previous iterations of the population forecasts predicted annual net migration between 2020 and 2060 to average roughly 14,470. In the revised forecasts, net migration averages just over 2,500 people per year. This means that, according to the revised forecast, an estimated 478,000 fewer people will move to San Bernardino County between 2020 and 2060. Given changes to the population at the county level, there will be notable differences in population estimates for the incorporated cities, subareas, purveyors and therefore the MWA service area as a whole.

Long-run forecasts are an estimate of what the population is expected to be in a given time period based on current economic and demographic trends. Policy decisions and large, random events add to the inherent uncertainty of any economic outlook. However, these models are developed using the most up-to-date data, and include comprehensive variables to accurately estimate what the population of the MWA service area will be in the future, given current and anticipated economic conditions.

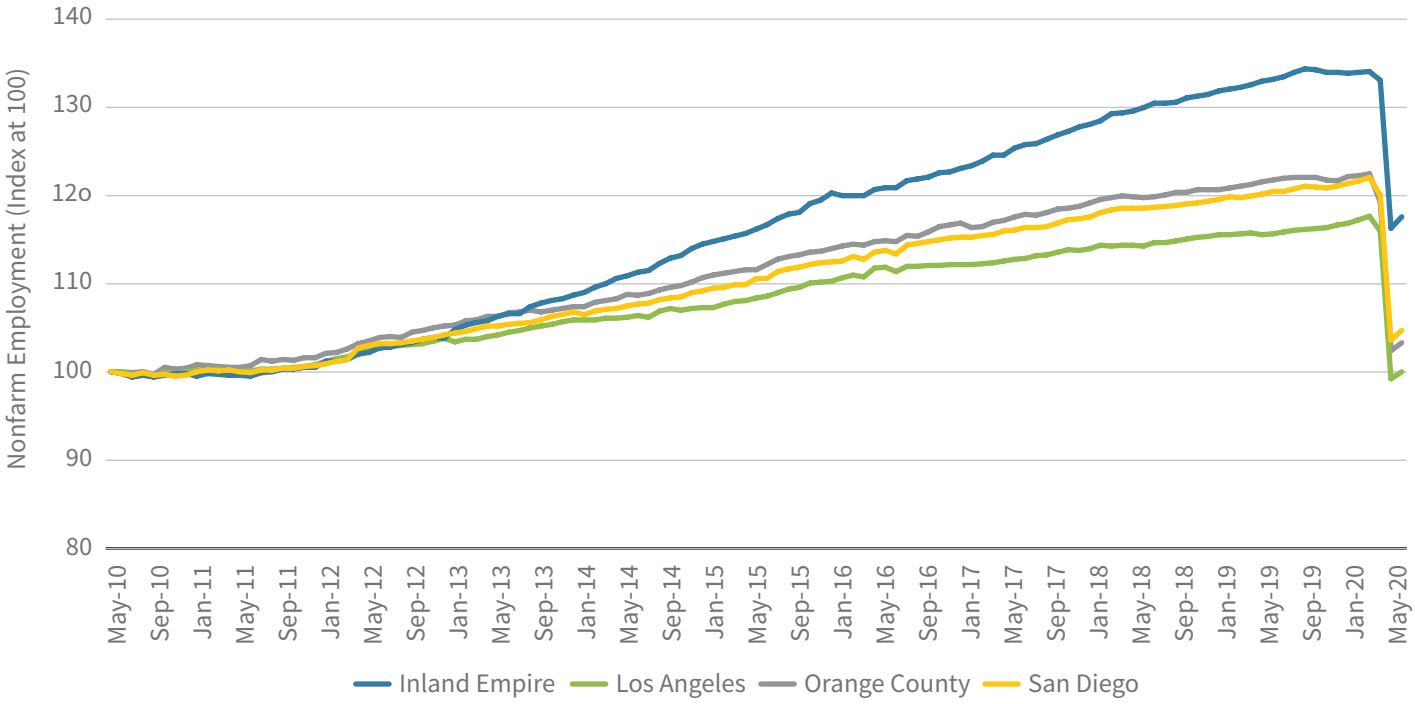
ECONOMIC AND DEMOGRAPHIC TRENDS INLAND EMPIRE AND SAN BERNARDINO COUNTY

Demographic trends are affected by various factors, from employment opportunities and economic development, to housing supply. Understanding the current situation in the Inland Empire and, more specifically, in San Bernardino County, gives better insight into how the population may change. Moreover, it is highly unlikely that any one factor would, by itself, determine and drive population trends and growth in any given area. For example, a city that has focused solely on housing supply, without taking economic and workforce developments into consideration, is unlikely to attract workers and large cohorts of the population. It takes a mixture of good economic development opportunities, housing affordability and more to attract large in-migration.

JOB GROWTH: 10-YEAR CHANGE AND THE COVID IMPACT

Since the recovery from the Great Recession, the Inland Empire has experienced some of the highest employment growth rates in the state. As a primary national hub for Logistics, the Inland Empire has seen significant employment increases in the Transportation, Trade, and Warehouse sectors. Furthermore, greater housing affordability has allowed workers to move to the region and commute to nearby areas such as Los Angeles and Orange County.

TOTAL NONFARM GROWTH INDEX AT 100



Source: California Employment Development Department; Analysis by The Center for Economic Forecasting

Over the past ten years, total nonfarm employment growth in the Inland Empire has surpassed all other metropolitan areas in Southern California. In the first quarter of 2020, as the COVID-19 pandemic began to shut down economies, levels of growth in the Inland Empire were better sustained than Los Angeles, Orange County, or San Diego.

PRE-COVID ECONOMY:

JOB GROWTH BETWEEN FEBRUARY 2010 AND FEBRUARY 2020 IN SOUTHERN CALIFORNIA

Industry	Inland Empire Feb-2020 Employment (000s)	*10-Year % Growth*			
		Inland Empire	Los Angeles	Orange County	San Diego
Total Nonfarm	1,549.5	34.9	18.4	23.6	23.8
Construction	109.1	79.1	46.4	57.2	51.2
Education/Health	255.7	58.6	28.0	39.1	34.6
Logistics	397.1	47.7	16.3	7.0	13.5
Leisure and Hospitality	172.9	42.2	45.3	39.3	33.4
Wholesale Trade	66.8	38.7	10.1	3.6	6.7
Admin Support	106.8	38.4	27.9	33.7	23.9
Professional/Business	156.6	29.9	27.3	32.7	32.1
NR/Mining	1.2	18.4	-35.7	2.6	33.7
Other Services	44.8	18.0	18.3	25.5	20.3
Retail Trade	181.8	16.9	8.7	7.8	11.8
Manufacturing	98.7	15.5	-11.6	6.2	23.3
Government	258.4	9.6	3.0	7.8	11.4
Financial Activities	43.6	6.8	7.1	17.6	15.2
Information	11.3	-20.4	20.2	15.4	-8.1

Source: California Employment Development Department; Analysis by The Center for Economic Forecasting

Compared to its neighbors, growth in the Inland Empire over the past decade has been astonishing. Between 2010 and 2020, growth in Construction, Education/Health, Wholesale Trade, and Admin Support was significantly higher than other regions in Southern California. However, it is in Logistics that growth has dwarfed nearby counties. With a growth of 47.7% between February 2010 and February 2020, the Inland Empire's percentage growth was almost three times higher than the next highest growing county in Southern California.

While the Inland Empire economy has enjoyed a strong resurgence over the last ten years, in line with nationwide trends, the outbreak of COVID-19 halted the largest U.S. economic expansion in history, effectively shutting down the economy. Because mitigation efforts have largely allowed only essential businesses to remain open, customer-reliant industries such as Leisure and Hospitality, In-store Retail, and Other Services (barbershops, nail salons, dry cleaners and so on) have taken a huge hit. Industries that have traditionally proved resilient during economic cycles, such as Health Care, have also suffered substantial job losses, since changes in consumer demand have cause people to book less routine and elective procedures due to concerns over health risks.

The uncertainty surrounding the timeline of the virus outbreak, and severity of the surge in cases has resulted in businesses being forced to close and re-open. Between February and June of 2020, the impact of the COVID-19 shutdowns in the Inland Empire has mirrored statewide figures. Total nonfarm employment has declined 10% over the last four months, compared to 11% statewide. Although the Leisure and Hospitality and Other Services industries have been hit hardest, the pandemic has caused declines in every industry, across both the Inland Empire and California.

Logistics, the Inland Empire's largest employer, contracted 7.6% between February and June, slightly less than the 9.3% figure for California overall. However, demand for Transportation and Warehousing has increased considerably in the COVID-19 economy as the pandemic has spurred e-commerce and direct-to-consumer shopping. As long-term changes in consumer behavior continue, the Inland Empire will be well positioned to capitalize on these structural shifts.

The economic effects in other sectors of the Inland Empire economy will be contingent on the length and severity of each stage of the re-opening process; the degree to which each sector has been impacted throughout the mitigation phase; and any structural changes that have occurred within the industry. A crucial component of the recovery will be the number of people circulating within the economy (i.e. consumers returning to pre-pandemic behaviors). This is contingent on public policy and mandated business closures and consumers' willingness to engage in high contact environments.

COVID'S IMPACT ON JOBS:
INLAND EMPIRE VS CALIFORNIA

Industry	June 2020 Employment (000s)	*% Growth February to June 2020*	
		Inland Empire	California
Total Nonfarm	1,393.9	-10.0	-11.0
Logistics	367.1	-7.6	-9.3
Government	242.7	-6.1	-8.6
Education/Health	239.2	-6.4	-7.0
Retail Trade	159.2	-12.4	-11.6
Professional/Business	145.6	-7.0	-7.6
Leisure and Hospitality	118.2	-31.6	-30.8
Construction	102.4	-6.2	-5.4
Admin Support	97.4	-8.8	-11.5
Manufacturing	90.0	-8.8	-7.4
Wholesale Trade	64.0	-4.3	-6.5
Financial Activities	42.1	-3.5	-2.4
Other Services	36.0	-19.7	-24.1
Information	9.5	-16.4	-12.9
NR/Mining	1.1	-7.2	-1.8

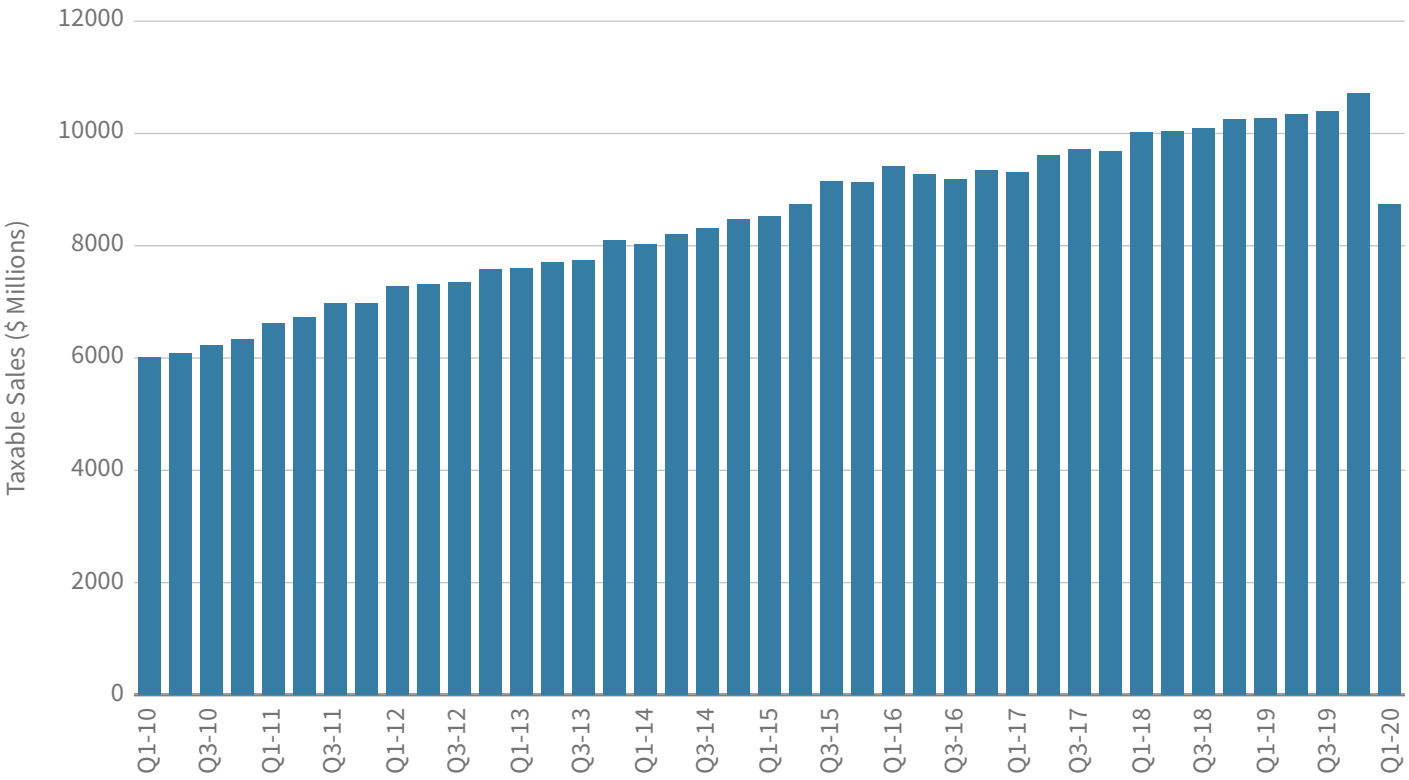
Source: California Employment Development Department; Analysis by The Center for Economic Forecasting

Along with employment, consumer spending has also been hit hard by the COVID-19 crisis. The resulting freeze-up of consumer-driven revenues, such as sales and use tax and transient occupancy tax, have left local governments with multiyear budget shortfalls. Additionally, the freeze in consumer demand is keeping jobs sidelined, especially in customer-facing service sectors such as Leisure and Hospitality and Retail Trade, where consumers must engage in environments requiring close personal contact.

Prior to the pandemic, taxable sales in the Inland Empire, and especially San Bernardino, had been growing significantly. Between the fourth quarter of 2010 and the fourth quarter of 2019, taxable sales in San Bernardino County grew by 82.4% to over $11.3 billion. Over the decade from 2010 to 2019, San Bernardino had the second largest percent growth in taxable sales after Riverside County (89.7%).

TAXABLE SALES

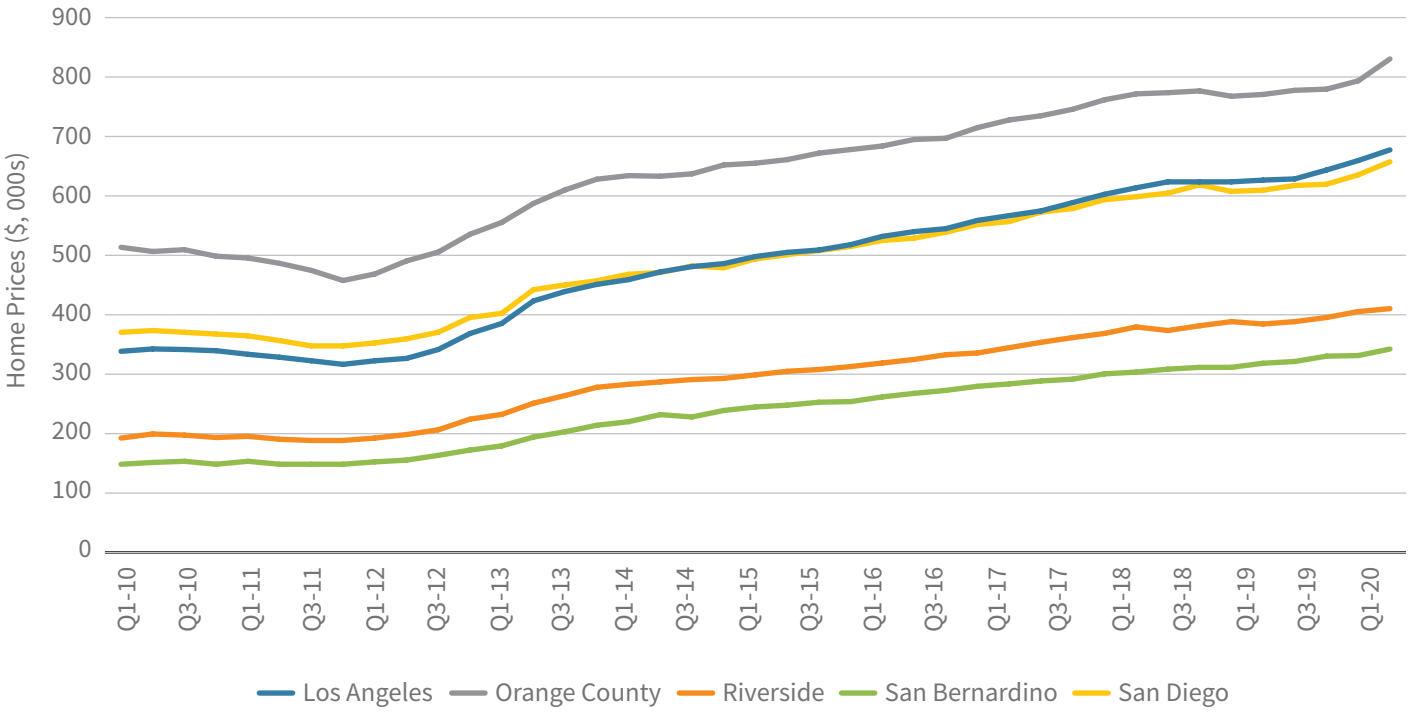
SAN BERNARDINO COUNTY, Q1-2010 TO Q1-2020



Source: California Department of Tax and Fee Administration; Analysis by The Center for Economic Forecasting

Prior to COVID's impact on the economy, housing shortage was one of the biggest problems facing California. In terms of population growth, housing supply has fallen drastically short of requirements. The severity of the matter is spread unevenly among California's major metropolitan regions. The Inland Empire, and San Bernardino County in particular, remain an affordable haven compared to other areas, with median home prices the lowest of the five major counties in Southern California.

MEDIAN HOME PRICES



Source: CoreLogic; Analysis by The Center for Economic Forecasting

As of the first quarter of 2020, the Inland Empire also had the lowest office and retail rents (both at $23.3 per square foot). In fact, it is the only region in Southern California where office and retail rents are below $30 per square foot.

	Q1-2020 Cost of Rent ($ per Square Foot)		
Region	Office	Retail	Warehouse/Distribution
Los Angeles	40.6	34.0	7.9
Orange County	35.1	34.5	7.6
San Diego	34.2	32.6	9.2
Inland Empire	23.3	23.3	5.8

Source: REIS; Analysis by The Center for Economic Forecasting

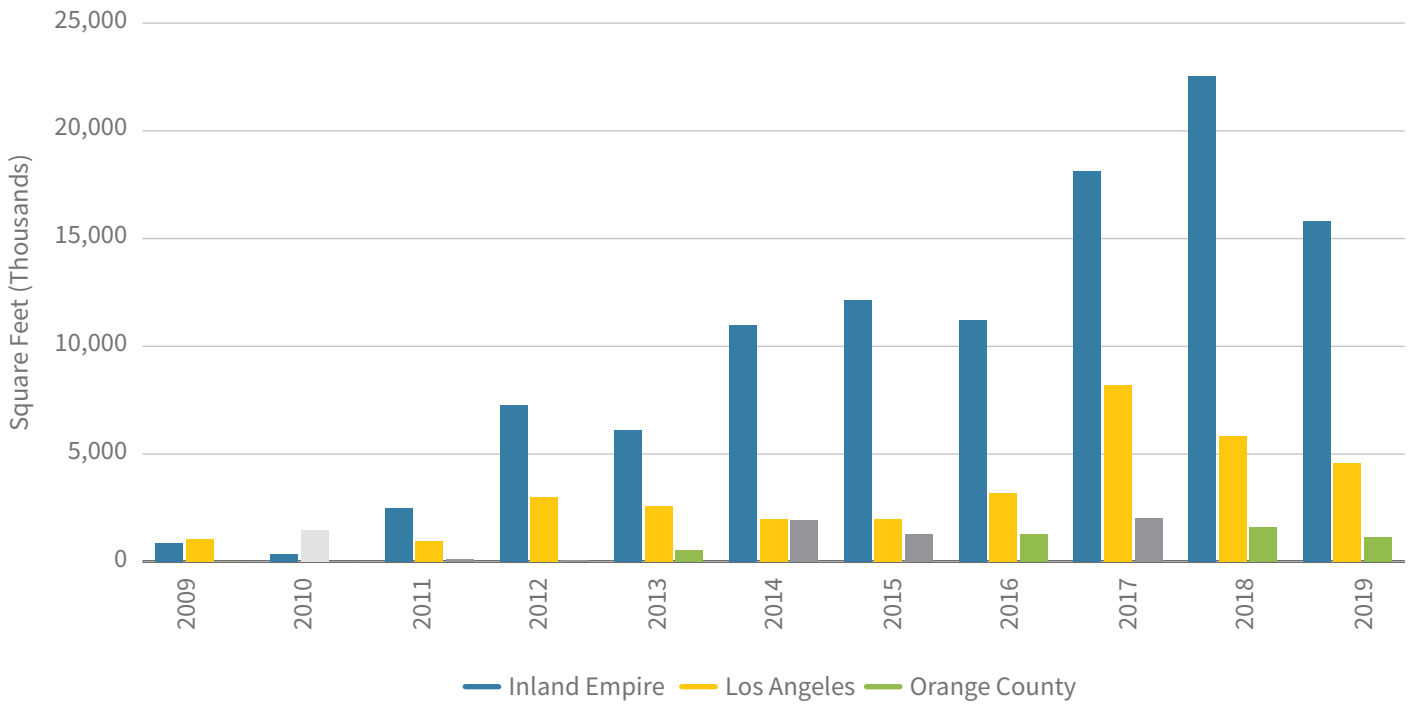
Despite tremendous growth in Logistics over the past ten years, the Inland Empire still offers cheaper rents for warehousing and distribution, and more availability, since its vacancy rate of 10.2% is higher than any other region in Southern California.

	Q1-2020 Vacancy Rate (%)		
Region	Office	Retail	Warehouse/Distribution
Los Angeles	14.2	7.2	5.7
Orange County	16.6	5.6	7.5
San Diego	16.0	6.0	8.7
Inland Empire	16.7	9.8	10.2

Source: REIS; Analysis by The Center for Economic Forecasting

Compared to other Southern California regions, vacancy rates in the Inland Empire are generally higher across commercial real estate properties. However, this is more a result of construction activity in the region rather than a lack of demand for commercial real estate. The square footage of office, retail, and industrial property completed in the Inland Empire vastly outpaces neighboring Los Angeles and Orange County. Additionally, substantial and sustained levels of net absorption over the last ten years suggest that the high commercial vacancy rates in the Inland Empire are due to construction activity fueled by high demand for space.

COMMERCIAL REAL ESTATE COMPLETIONS



Source: REIS; Analysis by The Center for Economic Forecasting

DOES AFFORDABILITY DRIVE MIGRATION?

Domestic and foreign migration patterns differ considerably in California. For the most part, foreign net migration has been positive, with an average of around 150,000 net migrants coming from abroad every year since 2010. Domestically however, the story is quite different. Over the last decade, the average annual net domestic migration has been -110,000. In 2018, roughly 698,300 people left California, the most popular destinations being Texas (12%), Arizona (10%), and Washington (7.5%).

San Bernardino County's migration patterns are similar to California's. Domestic migration has been negative for the past few years, while foreign migration has been largely positive. So how is it that an exceptionally affordable region has seen negative domestic migration? One reason is the different economic composition and workforce development opportunities in San Bernardino County compared to other regions. Given the rapid economic growth in Texas and Arizona, some Californians are opting to move there to take advantage of housing affordability and a lower cost of living. Alongside Riverside, San Bernardino is without doubt a powerhouse in the Logistics and Leisure industries. However, those sectors offer relatively low paying jobs. Cost of living and diverse economic opportunities are persuading many Californians to resettle out-of-state.

There's no doubt that housing affordability has its advantages in attracting migrants. However, in order to compete with states such as Arizona and Texas, San Bernardino County would also have to offer economic and workforce development opportunities to attract people to various industries. With population forecasts being revised down as birth rates across all races and ethnicities are expected to drop or flatten, it will ultimately be migration patterns that drive population growth.

MOJAVE WATER AGENCY POPULATION FORECAST

In 2019, the Mojave Water Agency (MWA) service area was estimated to include roughly 487,923 people, or 22.3% of the total estimated San Bernardino County population. At the turn of the 21st century, the MWA region accounted for only 16.0% of the San Bernardino County population. Movement to the MWA region grew significantly in the early 2000s, specifically in its incorporated cities and towns. The average year-over-year growth for San Bernardino County between 2000 and 2010 was 1.9%, lower than Adelanto (5.9%), Apple Valley (2.5%), Hesperia (3.6%), and Victorville (5.8%). However, in the last ten years, these growth levels have flattened out. Between 2011 and 2019, average year-over-year growth in the county was 0.8%, lower than Adelanto (1.1%) and Victorville (1.0%).

Statewide population trends have been revised down in accordance with changes in birth rates and migration patterns. San Bernardino County is no different, but the MWA region has many advantages that could attract migrants given the right economic opportunities. This section explores the housing supply and affordability patterns of the MWA region, as well as how its economic indicators shape up future population estimates.

In terms of home prices, the MWA region is one of the most affordable areas in Southern California. While San Bernardino's home values are already far lower than neighboring counties, the incorporated cities and towns of the MWA service areas offer even lower home prices. In fact, as of December 2019, all of the incorporated cities and towns offer home prices below $300,000, while the county average hovers well above that.

HOME PRICES IN SAN BERNARDINO COUNTY AND MWA INCORPORATED CITIES/TOWNS

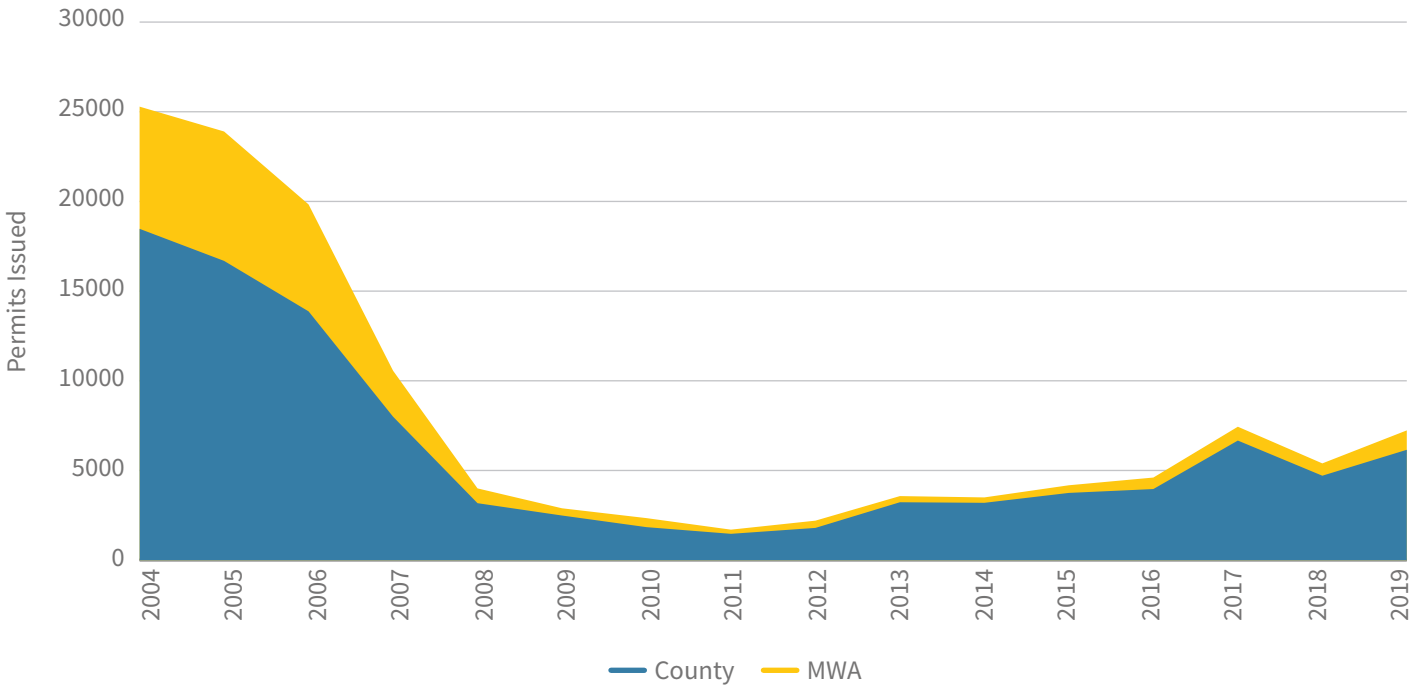
	Dec-2019 Value ($, 000s)	1-Year % Growth	9-Year % Growth
San Bernardino County	360.6	3.3%	89.7%
Hesperia	279.3	3.5%	119.5%
Apple Valley	265.9	3.3%	95.4%
Victorville	264.6	4.1%	116.0%
Adelanto	235.8	4.1%	139.0%
Yucca Valley	215.5	6.9%	80.0%
Barstow	144.6	3.3%	107.5%

Source:Zillow; Analysis by The Center for Economic Forecasting

Growth in home prices in the incorporated cities and towns of the MWA service area has been significant. Between December 2010 and 2019, home values doubled in four of the incorporated cities and towns in the MWA service area (Hesperia, Victorville, Adelanto, and Barstow), and of the six incorporated cities, only Yucca Valley's home value growth between 2010 and 2019 was lower than the San Bernardino County average. More recently, home value growth in the MWA service area has generally been higher than the San Bernardino County average, with only Barstow and Apple Valley on the same level as the county at 3.3%. The increase in home value growth over the past ten years is indicative of both increased demand for housing in the MWA service area, and of the tight available supply.

TOTAL PERMITS

MWA VS SAN BERNARDINO COUNTY



Source: CIRB; Analysis by The Center for Economic Forecasting

In 2004, at the pre-Recession peak of housing permit activity, San Bernardino County issued over 18,400 permits, of which 36.9% came from the MWA incorporated towns and cities. Fast forward to 2019, and county's permit issuance is down to just over 6,150, while only 17.5% of them originate from MWA incorporated towns and cities. In fact, the MWA service area issued more housing permits in 2004 than the total issued by the region between 2010 and 2019. Nonetheless, things are slowly starting to pick up. In 2019, a total of 1,081 home permits were issued in the MWA service area, the highest annual figure in twelve years.

Compared to the county overall, economic activity, specifically consumption and spending, has been slow in the MWA service area over the past few years. Between 2009 and 2019, taxable sales in San Bernardino County grew by 76.6%. In comparison, incorporated cities in the MWA service area have lagged behind. At 77.1%, Hesperia is the only city to have achieved a growth rate higher than the county, while Barstow and Yucca Valley had significantly lower growth rates at 19.1% and 31.0% respectively. This indicates that most regions of the MWA service area are not yet experiencing the spending patterns associated with most of San Bernardino County, or Southern California as a whole.

PRE-COVID TAXABLE SALES | SAN BERNARDINO COUNTY AND MWA INCORPORATED CITIES/TOWNS

Region	2019 Taxable Sales ($, Millions)	10-year % Growth
County Total	41,770.3	76.6
Victorville	2,040.4	54.1
Hesperia	889.7	77.1
Barstow	619.5	19.1
Apple Valley	602.5	40.0
Yucca Valley	327.4	31.0
Adelanto	177.0	50.9

Source: California Department of Tax and Fee Administration ; Analysis by The Center for Economic Forecasting

In terms of taxable sales, early damage from COVID-19 has been worse in the MWA service area's incorporated cities relative to San Bernardino County. San Bernardino's taxable sales declined by 5.4% between the first quarter of 2019 and the first quarter of 2020, while certain MWA incorporated cities such as Apple Valley, Barstow, and Hesperia saw drops of 31.2%, 20.3%, and 18.0% respectively. The least damage was seen in Yucca Valley, where taxable sales fell by 16.6% in year-over-year terms, still more than five times the decline seen by the county.

COVID TAXABLE SALES IMPACT

Region	Q1-2020 Taxable Sales ($, Millions)	1-year % Growth
County Total	9,120.1	-5.4
Victorville	387.3	-18.2
Hesperia	168.7	-18.0
Barstow	117.6	-20.3
Apple Valley	103.3	-31.2
Yucca Valley	66.5	-16.6
Adelanto	43.6	-6.5

Source: California Department of Tax and Fee Administration; Analysis by The Center for Economic Forecasting

CONCLUSION

The outlook on population growth across most areas in California has been revised downwards as the trend becomes clear that there are fewer births and less people moving into the state – especially domestically. This pattern is also seen in regional demographic forecasts. The MWA service area has a lot to offer, specifically affordable housing in a region where affordability is scarce. However, given the overall sociodemographic trends – lower home prices will not be enough to accelerate population growth.

While population forecasts in the MWA service area have been revised down compared to previous iterations, the region's population growth is nonetheless expected to outpace those of both San Bernardino County and California between 2020 and 2060, driven primarily by strong increases in larger cities such as Victorville and Hesperia.

APPENDIX A

MWA SERVICE AREA TOTAL AND MWA INCORPORATED CITIES/TOWNS FORECASTS

Year	MWA Service Area Total	Adelanto	Apple Valley	Barstow	Hesperia	Victorville	Yucca Valley
1990	266,232	6,751	46,159	24,260	50,705	50,579	16,442
2000	321,264	17,895	54,240	22,699	62,740	64,165	16,855
2010	453,649	31,760	69,144	22,757	90,170	115,913	20,656
2011	457,776	31,786	69,770	22,939	90,968	117,447	20,920
2012	462,455	31,351	70,319	23,251	91,597	119,992	21,077
2013	467,393	31,904	70,643	23,571	91,714	122,329	21,222
2014	470,748	33,282	71,016	23,574	91,728	123,106	21,222
2015	473,810	33,791	71,765	23,663	92,459	123,465	21,543
2016	477,940	34,367	72,234	23,875	93,173	124,600	21,672
2017	481,932	35,192	72,412	24,037	94,233	125,338	21,859
2018	484,593	35,162	72,891	24,075	95,127	125,782	21,905
2019	487,923	35,136	73,464	24,150	96,362	126,543	22,050
2020	492,319	35,811	74,205	24,193	97,846	127,696	22,230
2025	533,170	39,238	78,616	24,497	107,564	148,196	23,128
2030	567,855	41,958	82,169	24,813	115,845	165,513	23,887
2035	592,849	44,242	84,990	25,115	122,562	176,241	24,551
2040	614,931	46,159	87,601	25,390	128,858	185,270	25,136
2045	634,934	47,770	89,923	25,630	134,578	193,580	25,651
2050	653,017	49,125	91,967	25,840	139,698	201,298	26,105
2055	669,424	50,269	93,791	26,025	144,324	208,430	26,505
2060	684,247	51,238	95,409	26,185	148,478	214,977	26,858
2065	697,603	52,062	96,843	26,326	152,196	220,954	27,169

Forecast by The Center for Economic Forecasting

APPENDIX B

MWA SUB AREA FORECASTS

Year	Alto	Alto Transition Zone	Baja	Centro	Este	Morongo	Oeste
1990	165,100	17,468	5,782	35,046	5,167	31,001	5,501
2000	222,012	14,636	5,035	33,392	5,822	31,375	7,838
2010	334,862	23,366	4,729	34,167	7,370	38,177	10,595
2011	338,235	23,514	4,779	34,470	7,448	38,623	10,707
2012	341,966	23,530	4,821	34,884	7,514	38,937	10,802
2013	345,491	23,905	4,874	35,331	7,596	39,277	10,920
2014	347,856	24,486	4,911	35,424	7,654	39,415	11,003
2015	350,137	24,704	4,925	35,546	7,676	39,788	11,034
2016	353,161	25,019	4,966	35,858	7,740	40,069	11,127
2017	355,998	25,403	5,005	36,113	7,800	40,399	11,213
2018	358,116	25,466	5,041	36,239	7,857	40,580	11,295
2019	360,879	25,528	5,067	36,376	7,897	40,822	11,353
2020	364,694	25,826	5,073	36,432	7,906	41,022	11,366
2025	401,345	28,025	5,146	36,913	8,020	42,191	11,530
2030	432,258	29,848	5,226	37,422	8,145	43,247	11,709
2035	454,174	31,218	5,294	37,888	8,251	44,163	11,861
2040	473,548	32,379	5,357	38,315	8,349	44,980	12,002
2045	491,137	33,393	5,416	38,698	8,441	45,714	12,135
2050	507,071	34,285	5,471	39,040	8,526	46,370	12,256
2055	521,557	35,070	5,521	39,345	8,604	46,957	12,369
2060	534,661	35,763	5,568	39,620	8,677	47,483	12,475
2065	546,475	36,376	5,612	39,866	8,745	47,956	12,572

Forecast by The Center for Economic Forecasting

APPENDIX C

MWA WATER PURVEYOR FORECASTS

Year	Liberty Utilities - Apple Valley Water Company	Bighorn-Desert View Water Agency	City of Adelanto Water District	County Service Area 64	County Service Area 70 J	Golden State Water Company – Barstow System
1990	37,228	1,200	6,751	5,353	3,328	29,905
2000	45,207	2,892	17,895	7,595	5,652	29,337
2010	57,847	3,839	31,760	9,075	9,467	30,173
2011	58,372	3,880	31,781	10,552	9,566	30,435
2012	58,831	3,914	31,346	10,666	9,650	30,811
2013	59,106	3,957	31,899	10,792	9,750	31,211
2014	59,419	3,987	33,277	10,871	9,821	31,277
2015	60,042	3,998	33,786	10,907	9,851	31,388
2016	60,435	4,032	34,362	10,998	9,933	31,664
2017	60,587	4,063	35,186	11,077	10,013	31,887
2018	60,988	4,093	35,156	11,151	10,087	31,986
2019	61,466	4,114	35,130	11,212	10,143	32,103
2020	62,081	4,118	35,811	11,244	10,162	32,154
2025	65,745	4,178	39,238	11,691	10,356	32,574
2030	68,699	4,243	41,958	12,099	10,554	33,017
2035	71,045	4,298	44,242	12,390	10,721	33,427
2040	73,215	4,349	46,159	12,646	10,876	33,801
2045	75,146	4,397	47,770	12,884	11,021	34,135
2050	76,847	4,441	49,125	13,103	11,153	34,432
2055	78,364	4,482	50,269	13,304	11,275	34,697
2060	79,710	4,520	51,238	13,490	11,387	34,934
2065	80,904	4,555	52,062	13,661	11,491	35,145

Forecast by The Center for Economic Forecasting

Year	Helendale Community Services District	Hesperia Water District	Hi-Desert Water District	Joshua Basin County Water District	Phelan Pinon Hills Community Services District	Victorville Water District
1990	3,273	50,976	19,060	7,515	9,688	54,539
2000	4,704	62,592	19,198	8,062	13,770	69,095
2010	6,180	89,742	23,760	9,534	19,423	122,051
2011	6,245	90,536	24,145	9,635	19,628	123,649
2012	6,301	91,163	24,330	9,720	19,803	126,246
2013	6,369	91,280	24,511	9,826	20,018	128,649
2014	6,418	91,294	24,536	9,901	20,171	129,475
2015	6,436	92,022	24,866	9,929	20,229	129,852
2016	6,490	92,732	25,023	10,012	20,398	131,040
2017	6,541	93,787	25,236	10,090	20,557	131,829
2018	6,588	94,676	25,307	10,164	20,706	132,321
2019	6,622	95,905	25,469	10,216	20,813	133,115
2020	6,629	97,380	25,653	10,227	20,836	134,273
2025	6,725	107,045	26,600	10,375	21,136	154,831
2030	6,830	115,279	27,414	10,536	21,465	172,220
2035	6,919	121,959	28,124	10,673	21,744	183,018
2040	7,001	128,221	28,751	10,800	22,003	192,113
2045	7,078	133,910	29,306	10,919	22,245	200,486
2050	7,149	139,001	29,796	11,029	22,469	208,262
2055	7,215	143,602	30,231	11,131	22,676	215,447
2060	7,276	147,734	30,615	11,225	22,869	222,044
2065	7,333	151,431	30,956	11,313	23,048	228,069

Forecast by The Center for Economic Forecasting

UC RIVERSIDE | School of Business
CENTER FOR ECONOMIC FORECASTING & DEVELOPMENT

MOJAVE WATER AGENCY

POPULATION FORECAST | 2020 EDITION

Mojave Water Agency

F

AWWA Water Audits

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: San Bernardino County Service Area 70 J - Oak Hills (3610125)
Reporting Year: 2018 7/2017 - 6/2018

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

						Pcnt:	Value:	
Volume from own sources:	5	1,657.110	acre-ft/yr	3				acre-ft/yr
Water imported:	n/a	0.000	acre-ft/yr					acre-ft/yr
Water exported:	n/a	0.000	acre-ft/yr					acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 1,657.110 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

			Pcnt:	Value:	
Billed metered:	7	1,464.750	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	n/a	0.000	acre-ft/yr			
Unbilled unmetered:	5	4.143	acre-ft/yr		4.143	acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: 1,468.893 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) 188.217 acre-ft/yr

Apparent Losses

			Pcnt:	Value:	
Unauthorized consumption:		4.143	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	3	14.795	acre-ft/yr	1.00%	acre-ft/yr
Systematic data handling errors:		3.662	acre-ft/yr	0.25%	acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 22.600 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 165.617 acre-ft/yr

WATER LOSSES: 188.217 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 192.360 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	154.0	miles
Number of active AND inactive service connections:	9	3,275	
Service connection density:		21	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	3	85.0	psi

COST DATA

Total annual cost of operating water system:	10	$2,938,930	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$2.65	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	5	$608.62	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 60 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Customer metering inaccuracies
3: Variable production cost (applied to Real Losses)

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: San Bernardino County Service Area 70 J - Oak Hills (3610125)
Reporting Year: 2018 | 7/2017 - 6/2018

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 60 out of 100 ***

System Attributes:

	Apparent Losses:	22.600	acre-ft/yr
+	Real Losses:	165.617	acre-ft/yr
=	**Water Losses:**	**188.217**	acre-ft/yr
?	Unavoidable Annual Real Losses (UARL):	126.10	acre-ft/yr
	Annual cost of Apparent Losses:	$26,088	
	Annual cost of Real Losses:	$100,798	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	11.6%	
	Non-revenue water as percent by cost of operating system:	4.4%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	6.16	gallons/connection/day
	Real Losses per service connection per day:	N/A	gallons/connection/day
	Real Losses per length of main per day*:	960.09	gallons/mile/day
	Real Losses per service connection per day per psi pressure:	N/A	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	165.62	acre-feet/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	1.31	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software: Water Balance

WAS v5.0

Water Audit Report for:	San Bernardino County Service Area 70 J - Oak Hills (3610125)	
Reporting Year:	2018	7/2017 - 6/2018
Data Validity Score:	60	

Own Sources (Adjusted for known errors): *1,657.110*

Water Imported: *0.000*

System Input: *1,657.110*

Water Exported: *0.000*

Water Supplied: *1,657.110*

Authorized Consumption: *1,468.893*

- **Billed Authorized Consumption**: *1,464.750*
  - **Billed Metered Consumption (water exported is removed)**: *1,464.750*
  - **Billed Unmetered Consumption**: *0.000*
- **Unbilled Authorized Consumption**: *4.143*
  - **Unbilled Metered Consumption**: *0.000*
  - **Unbilled Unmetered Consumption**: *4.143*

Water Losses: *188.217*

- **Apparent Losses**: *22.600*
  - **Unauthorized Consumption**: *4.143*
  - **Customer Metering Inaccuracies**: *14.795*
  - **Systematic Data Handling Errors**: *3.662*
- **Real Losses**: *165.617*
  - **Leakage on Transmission and/or Distribution Mains**: *Not broken down*
  - **Leakage and Overflows at Utility's Storage Tanks**: *Not broken down*
  - **Leakage on Service Connections**: *Not broken down*

Billed Water Exported

Revenue Water: 0.000

Revenue Water: 1,464.750

Non-Revenue Water (NRW): *192.360*

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: San Bernardino County Service Area 70 J - Oak Hills (3610125)
Reporting Year: 2019 | 7/2018 - 6/2019

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

					Pcnt:	Value:	
Volume from own sources:	7	1,543.420	acre-ft/yr	3			acre-ft/yr
Water imported:	n/a	0.000	acre-ft/yr				acre-ft/yr
Water exported:	n/a	0.000	acre-ft/yr				acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 1,543.420 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

			Pcnt:	Value:	
Billed metered:	7	1,322.640	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	n/a	0.000	acre-ft/yr			
Unbilled unmetered:	5	3.859	acre-ft/yr		3.859	acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: 1,326.499 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) 216.921 acre-ft/yr

Apparent Losses

			Pcnt:	Value:	
Unauthorized consumption:		3.859	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	3	13.360	acre-ft/yr	1.00%	acre-ft/yr
Systematic data handling errors:		3.307	acre-ft/yr	0.25%	acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 20.525 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 196.396 acre-ft/yr

WATER LOSSES: 216.921 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 220.780 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	154.0	miles
Number of active AND inactive service connections:	9	3,322	
Service connection density:		22	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	3	85.0	psi

COST DATA

Total annual cost of operating water system:	10	$3,543,802	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$3.02	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	5	$588.65	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 67 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Customer metering inaccuracies
3: Variable production cost (applied to Real Losses)

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: San Bernardino County Service Area 70 J - Oak Hills (3610125)
Reporting Year: 2019 | 7/2018 - 6/2019

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 67 out of 100 ***

System Attributes:

	Apparent Losses:	20.525	acre-ft/yr
+	Real Losses:	196.396	acre-ft/yr
=	**Water Losses:**	**216.921**	acre-ft/yr
?	Unavoidable Annual Real Losses (UARL):	126.77	acre-ft/yr
	Annual cost of Apparent Losses:	$27,001	
	Annual cost of Real Losses:	$115,609	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	14.3%	
	Non-revenue water as percent by cost of operating system:	4.1%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	5.52	gallons/connection/day
	Real Losses per service connection per day:	N/A	gallons/connection/day
	Real Losses per length of main per day*:	1,138.52	gallons/mile/day
	Real Losses per service connection per day per psi pressure:	N/A	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	196.40	acre-feet/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	1.55	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software: Water Balance

WAS v5.0

Water Audit Report for:	San Bernardino County Service Area 70 J - Oak Hills (3610125)	
Reporting Year:	2019	7/2018 - 6/2019
Data Validity Score:	67	

Own Sources (Adjusted for known errors): *1,543.420*

Water Imported: *0.000*

System Input: *1,543.420*

Water Exported: *0.000*

Water Supplied: *1,543.420*

Authorized Consumption: *1,326.499*

Billed Authorized Consumption: *1,322.640*

Billed Water Exported: *1,322.640*

Billed Metered Consumption (water exported is removed): *1,322.640*

Billed Unmetered Consumption: *0.000*

Unbilled Authorized Consumption: *3.859*

Unbilled Metered Consumption: *0.000*

Unbilled Unmetered Consumption: *3.859*

Water Losses: *216.921*

Apparent Losses: *20.525*

Unauthorized Consumption: *3.859*

Customer Metering Inaccuracies: *13.360*

Systematic Data Handling Errors: *3.307*

Real Losses: *196.396*

Leakage on Transmission and/or Distribution Mains: *Not broken down*

Leakage and Overflows at Utility's Storage Tanks: *Not broken down*

Leakage on Service Connections: *Not broken down*

Revenue Water: 0.000

Revenue Water: 1,322.640

Non-Revenue Water (NRW): 220.780

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: San Bernardino County Service Area 70 J - Oak Hills (3610125)
Reporting Year: 2020 7/2019 - 6/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<---------- Enter grading in column 'E' and 'J' ---------->

						Pcnt:	Value:	
Volume from own sources:	5	1,566.810	acre-ft/yr	3				acre-ft/yr
Water imported:	n/a	0.000	acre-ft/yr					acre-ft/yr
Water exported:	n/a	0.000	acre-ft/yr					acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 1,566.810 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	7	1,381.810	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	n/a	0.000	acre-ft/yr			
Unbilled unmetered:	5	3.917	acre-ft/yr		3.917	acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: 1,385.727 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) 181.083 acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		3.917	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	3	13.958	acre-ft/yr	1.00%		acre-ft/yr
Systematic data handling errors:	5	3.455	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 21.329 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 159.754 acre-ft/yr

WATER LOSSES: 181.083 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 185.000 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	154.0	miles
Number of active AND inactive service connections:	9	3,361	
Service connection density:		22	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	3	85.0	psi

COST DATA

Total annual cost of operating water system:	10	$2,698,276	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$3.06	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	6	$543.55	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 61 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Customer metering inaccuracies
3: Billed metered

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: San Bernardino County Service Area 70 J - Oak Hills (3610125)
Reporting Year: 2020 | 7/2019 - 6/2020

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 61 out of 100 ***

System Attributes:

	Apparent Losses:	21.329	acre-ft/yr
+	Real Losses:	159.754	acre-ft/yr
=	**Water Losses:**	**181.083**	acre-ft/yr
?	Unavoidable Annual Real Losses (UARL):	127.33	acre-ft/yr
	Annual cost of Apparent Losses:	$28,430	
	Annual cost of Real Losses:	$86,834	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	11.8%	
	Non-revenue water as percent by cost of operating system:	4.4%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	5.67	gallons/connection/day
	Real Losses per service connection per day:	N/A	gallons/connection/day
	Real Losses per length of main per day*:	926.10	gallons/mile/day
	Real Losses per service connection per day per psi pressure:	N/A	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	159.75	acre-feet/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	1.25	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software: Water Balance

WAS v5.0

Water Audit Report for:	San Bernardino County Service Area 70 J - Oak Hills (3610125)	
Reporting Year:	2020	7/2019 - 6/2020
Data Validity Score:	61	

Own Sources (Adjusted for known errors)
1,566.810

Water Imported
0.000

Water Exported
0.000

Water Supplied
1,566.810

Water Losses
181.083

Authorized Consumption
1,385.727

Billed Authorized Consumption
1,381.810

Unbilled Authorized Consumption
3.917

Apparent Losses
21.329

Real Losses
159.754

Billed Water Exported

Billed Metered Consumption (water exported is removed)
1,381.810

Billed Unmetered Consumption
0.000

Unbilled Metered Consumption
0.000

Unbilled Unmetered Consumption
3.917

Unauthorized Consumption
3.917

Customer Metering Inaccuracies
13.958

Systematic Data Handling Errors
3.455

Leakage on Transmission and/or Distribution Mains
Not broken down

Leakage and Overflows at Utility's Storage Tanks
Not broken down

Leakage on Service Connections
Not broken down

Revenue Water
1,381.810

Non-Revenue Water (NRW)
185.000

G

SB X7-7 Forms

SB-X7 Compliance Form

Appendix G Table 1. SB X7-7 Table 2 Method for Population Estimates

Optional subtitle goes here.

	METHOD FOR POPULATION ESTIMATES
X	1. Department of Finance (DOF) or American Community Survey (ACS)
	2. Persons-per-Connection Method
	3. DWR Population Tool
	4. Other DWR recommends pre-review

Appendix G Table 2. SB X7-7 Table 3 Service Area Population

Optional subtitle goes here.

YEAR	POPULATION
2020 COMPLIANCE YEAR POPULATION	
2020	11,244

Appendix G Table 3. SB X7-7 Table 4 Annual Gross Water Use

Optional subtitle goes here.

BASELINE YEAR *FROM SB X7-3*	VOLUME INTO DISTRIBUTION SYSTEM *FROM SB X7-4A*	DEDUCTIONS					ANNUAL GROSS WATER USE
		EXPORTED WATER	CHANGE IN DISTRIBUTION SYSTEM STORAGE (+/-)	INDIRECT RECYCLED WATER *FROM SB X7-4B*	WATER DELIVERED FOR AGRICULTURAL USE	PROCESS WATER *FROM SB X7-4D*	
2020 COMPLIANCE YEAR - GROSS WATER USE							
2020	**2,701**			**0**		**-**	**2,701**

Appendix G Table 4. SB X7-7 Table 4A Volume Entering the Distribution System(s): Source 1

The Supplier's Own Source

Name of Source:	Groundwater Free Production Allowance		
BASELINE YEAR FROM SB X7-3	**VOLUME ENTERING DISTRIBUTION SYSTEM**	**METER ERROR ADJUSTMENT (+/-)**	**CORRECTED VOLUME ENTERING DISTRIBUTION SYSTEM**
2020 COMPLIANCE YEAR - WATER INTO DISTRIBUTION SYSTEM			
2020	2,701		2,701

Appendix G Table 5. SB X7-7 Table 4C Process Water Deduction Eligibility

Select Only One	
No	**CRITERIA 1 - INDUSTRIAL WATER USE IS EQUAL TO OR GREATER THAN 12% OF GROSS WATER USE. COMPLETE SB X7-4-C.1 BELOW.**
No	**CRITERIA 2 - INDUSTRIAL WATER USE IS EQUAL TO OR GREATER THAN 15 GPCD. COMPLETE SB X7-4-C.2 BELOW.**
No	**CRITERIA 3 - NON-INDUSTRIAL USE IS EQUAL TO OR LESS THAN 120 GPCD. COMPLETE SB X7-4-C.3 BELOW.**
No	**CRITERIA 4 - DISADVANTAGED COMMUNITY. COMPLETE SB X7-4-C.4 BELOW.**

Appendix G Table 6. SB X7-7 Table 5 Gallons Per Capita Per Day (GPCD)

BASELINE YEAR FROM SB X7-3	SERVICE AREA POPULATION FROM SB X7-3	ANNUAL GROSS WATER USE FROM SB X7-4	DAILY PER CAPITA WATER USE (GPCD)
2020 COMPLIANCE YEAR GPCD			
2020	11,244	2,701	214

Appendix G Table 7. SB X7-7 Table 9 2020 Compliance

ACTUAL 2020 GPCD	2020 INTERIM TARGET GPCD	OPTIONAL ADJUSTMENTS (IN GPCD)					2020 GPCD (ADJUSTED IF APPLICABLE)	DID SUPPLIER ACHIEVE TARGETED REDUCTION FOR 2020?
		EXTRAORDINARY EVENTS	WEATHER NORMALIZATION	ECONOMIC ADJUSTMENT	TOTAL ADJUSTMENTS	ADJUSTED 2020 GPCD		
214	0				0	-	-	YES

SB-X7 Verification Forms

Appendix G Table 1. SB X7-7 Table 1 Baseline Period Ranges

Optional subtitle goes here.

BASELINE	PARAMETER	VALUE	UNITS
10- TO 15-YEAR BASELINE PERIOD	2008 total water deliveries	2,141	Acre Feet (AF)
	2008 total volume of delivered recycled water	0	Acre Feet (AF)
	2008 recycled water as a percent of total deliveries	0	Percent
	Number of years in baseline period1, [2]	10	Years
	Year beginning baseline period range	1996	
	Year ending baseline period range3	2005	
5-YEAR BASELINE PERIOD	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range4	2007	

[1]If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.

[2]The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.

[3]The ending year must be between December 31, 2004 and December 31, 2010.

[4]The ending year must be between December 31, 2007 and December 31, 2010.

Appendix G Table 2. SB X7-7 Table 2 Method for Population Estimates

Optional subtitle goes here.

	METHOD FOR POPULATION ESTIMATES
	1. Department of Finance (DOF) or American Community Survey (ACS)
	2. Persons-per-Connection Method
X	3. DWR Population Tool
	4. Other DWR recommends pre-review

Appendix G Table 3. SB X7-7 Table 3 Service Area Population

YEAR		POPULATION
	10 TO 15 YEAR BASELINE POPULATION	
YEAR 1	1996	4,680
YEAR 2	1997	4,910
YEAR 3	1998	5,172
YEAR 4	1999	5,496
YEAR 5	2000	5,894
YEAR 6	2001	6,257
YEAR 7	2002	6,653
YEAR 8	2003	7,276
YEAR 9	2004	7,907
YEAR 10	2005	8,655
YEAR 11		
YEAR 12		
YEAR 13		
YEAR 14		
YEAR 15		
	5 YEAR BASELINE POPULATION	
YEAR 1	2003	7,276
YEAR 2	2004	7,907
YEAR 3	2005	8,655
YEAR 4	2006	9,381
YEAR 5	2007	9,571
	2020 COMPLIANCE YEAR POPULATION	
2020		10,162

Appendix G Table 4. SB X7-7 Table 4 Annual Gross Water Use

BASELINE YEAR *FROM SB X7-3*		VOLUME INTO DISTRIBUTION SYSTEM *FROM SB X7-4A*	DEDUCTIONS					ANNUAL GROSS WATER USE
			EXPORTED WATER	CHANGE IN DISTRIBUTION SYSTEM STORAGE (+/-)	INDIRECT RECYCLED WATER *FROM SB X7-4B*	WATER DELIVERED FOR AGRICULTURAL USE	PROCESS WATER *FROM SB X7-4D*	
10 TO 15 YEAR BASELINE - GROSS WATER USE								
YEAR 1	1996	1,187			0		-	1,187
YEAR 2	1997	1,174			0		-	1,174
YEAR 3	1998	1,030			0		-	1,030
YEAR 4	1999	1,334			0		-	1,334
YEAR 5	2000	1,668			0		-	1,668
YEAR 6	2001	1,490			0		-	1,490
YEAR 7	2002	1,781			0		-	1,781
YEAR 8	2003	1,820			0		-	1,820
YEAR 9	2004	2,133			0		-	2,133
YEAR 10	2005	1,933			0		-	1,933
YEAR 11	0	0			0		-	0
YEAR 12	0	0			0		-	0
YEAR 13	0	0			0		-	0
YEAR 14	0	0			0		-	0
YEAR 15	0	0			0		-	0
							10 - 15 YEAR BASELINE AVERAGE GROSS WATER USE:	**796**
5 YEAR BASELINE - GROSS WATER USE								
YEAR 1	2003	1,820			0		-	1,820
YEAR 2	2004	2,133			0		-	2,133
YEAR 3	2005	1,933			0		-	1,933
YEAR 4	2006	2,115			0		-	2,115
YEAR 5	2007	2,199			0		-	2,199
							5 YEAR BASELINE AVERAGE GROSS WATER USE:	**669**
2020 COMPLIANCE YEAR - GROSS WATER USE								
2020		1,617			0		-	1,617

Appendix G Table 5. SB X7-7 Table 4A Volume Entering the Distribution System(s): Source 1

Supplier's Own Water Source

NAME OF SOURCE:		Groundwater Free Production Allowance		
BASELINE YEAR *FROM SB X7-3*		VOLUME ENTERING DISTRIBUTION SYSTEM	METER ERROR ADJUSTMENT (+/-)	CORRECTED VOLUME ENTERING DISTRIBUTION SYSTEM
		10 TO 15 YEAR BASELINE - WATER INTO DISTRIBUTION SYSTEM		
YEAR 1	1996	905		905
YEAR 2	1997	905		905
YEAR 3	1998	804		804
YEAR 4	1999	804		804
YEAR 5	2000	804		804
YEAR 6	2001	804		804
YEAR 7	2002	804		804
YEAR 8	2003	754		754
YEAR 9	2004	711		711
YEAR 10	2005	660		660
YEAR 11	0			0
YEAR 12	0			0
YEAR 13	0			0
YEAR 14	0			0
YEAR 15	0			0
		5 YEAR BASELINE - WATER INTO DISTRIBUTION SYSTEM		
YEAR 1	2003	754		754
YEAR 2	2004	711		711
YEAR 3	2005	660		660
YEAR 4	2006	609		609
YEAR 5	2007	609		609
		2020 COMPLIANCE YEAR - WATER INTO DISTRIBUTION SYSTEM		
2020		559		559

Appendix G Table 6. SB X7-7 Table 4A Volume Entering the Distribution System(s): Source 2

Supplier's Own Water Source

NAME OF SOURCE:		Imported Water (Above FPA)		
BASELINE YEAR *FROM SB X7-3*		VOLUME ENTERING DISTRIBUTION SYSTEM	METER ERROR ADJUSTMENT (+/-)	CORRECTED VOLUME ENTERING DISTRIBUTION SYSTEM
10 TO 15 YEAR BASELINE - WATER INTO DISTRIBUTION SYSTEM				
YEAR 1	1996	282		282
YEAR 2	1997	269		269
YEAR 3	1998	226		226
YEAR 4	1999	530		530
YEAR 5	2000	864		864
YEAR 6	2001	686		686
YEAR 7	2002	977		977
YEAR 8	2003	1,066		1,066
YEAR 9	2004	1,422		1,422
YEAR 10	2005	1,273		1,273
YEAR 11	0			0
YEAR 12	0			0
YEAR 13	0			0
YEAR 14	0			0
YEAR 15	0			0
5 YEAR BASELINE - WATER INTO DISTRIBUTION SYSTEM				
YEAR 1	2003	1,066		1,066
YEAR 2	2004	1,422		1,422
YEAR 3	2005	1,273		1,273
YEAR 4	2006	1,506		1,506
YEAR 5	2007	1,590		1,590
2020 COMPLIANCE YEAR - WATER INTO DISTRIBUTION SYSTEM				
2020		1,058		1,058

Appendix G Table 7. SB X7-7 Table 4C Process Water Deduction Eligibility

Select Only One	
No	**CRITERIA 1 - INDUSTRIAL WATER USE IS EQUAL TO OR GREATER THAN 12% OF GROSS WATER USE. COMPLETE SB X7-4-C.1 BELOW.**
No	**CRITERIA 2 - INDUSTRIAL WATER USE IS EQUAL TO OR GREATER THAN 15 GPCD. COMPLETE SB X7-4-C.2 BELOW.**
No	**CRITERIA 3 - NON-INDUSTRIAL USE IS EQUAL TO OR LESS THAN 120 GPCD. COMPLETE SB X7-4-C.3 BELOW.**
No	**CRITERIA 4 - DISADVANTAGED COMMUNITY. COMPLETE SB X7-4-C.4 BELOW.**

Appendix G Table 8. SB X7-7 Table 5 Gallons Per Capita Per Day (GPCD)

BASELINE YEAR FROM SB X7-3		SERVICE AREA POPULATION FROM SB X7-3	ANNUAL GROSS WATER USE FROM SB X7-4	DAILY PER CAPITA WATER USE (GPCD)
10 TO 15 YEAR BASELINE GPCD				
YEAR 1	1996	4,680	1,187	226
YEAR 2	1997	4,910	1,174	213
YEAR 3	1998	5,172	1,030	178
YEAR 4	1999	5,496	1,334	217
YEAR 5	2000	5,894	1,668	253
YEAR 6	2001	6,257	1,490	213
YEAR 7	2002	6,653	1,781	239
YEAR 8	2003	7,276	1,820	223
YEAR 9	2004	7,907	2,133	241
YEAR 10	2005	8,655	1,933	199
YEAR 11	0	0	0	-
YEAR 12	0	0	0	-
YEAR 13	0	0	0	-
YEAR 14	0	0	0	-
YEAR 15	0	0	0	-
			10-15 YEAR AVERAGE BASELINE GPCD:	**220**
5 YEAR BASELINE GPCD				
YEAR 1	2003	7,276	1,820	223
YEAR 2	2004	7,907	2,133	241
YEAR 3	2005	8,655	1,933	199
YEAR 4	2006	9,381	2,115	201
YEAR 5	2007	9,571	2,199	205
			5 YEAR AVERAGE BASELINE GPCD:	**214**
2020 COMPLIANCE YEAR GPCD				
2020		10,162	1,617	142

Appendix G Table 9. SB X7-7 Table 6 Gallons Per Capita Per Day (GPCD)

SUMMARY FROM TABLE SB X7-7 TABLE 5	
2020 COMPLIANCE YEAR GPCD	142

Appendix G Table 10. SB X7-7 Table 7 2020 Target Method

Select Only One

X	**METHOD 1.** **COMPLETE SB X7-7A BELOW.**
	METHOD 2. **COMPLETE SB X7-7B,SB X7-7C, AND SB X7-7D BELOW.**
	METHOD 3. **COMPLETE SB X7-E BELOW.**
	METHOD 4. **COMPLETE METHOD 4 CALCULATOR BELOW.**

Appendix G Table 11. SB X7-7 Table 7A 2020 Target Method 1

20% REDUCTION	
10-15 YEAR BASELINE GPCD	**2020 TARGET GPCD**
220	176

Appendix G Table 12. SB X7-7 Table 7 F Confirm Minimum Reduction for 2020 Target

5 YEAR BASELINE GPCD FROM SB X7-5	MAXIMUM 2020 TARGET[1]	CALCULATED 2020 TARGET[2]	CONFIRMED 2020 TARGET
214	203	176	176

[1]Maximum 2020 Target is 95% of the 5 Year Baseline GPCD except for suppliers at or below 100 GPCD.
[2]2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.

Appendix G Table 13. SB X7-7 Table 8 2015 Interim Target GPCD

Optional subtitle goes here.

CONFIRMED 2020 TARGET FROM SB X7-7-F	10-15 YEAR BASELINE GPCD FROM SB X7-5	2015 INTERIM TARGET GPCD
176	220	198

Appendix G Table 14. SB X7-7 Table 9 2020 Compliance

Optional subtitle goes here.

ACTUAL 2020 GPCD	2020 INTERIM TARGET GPCD	OPTIONAL ADJUSTMENTS (IN GPCD)					2020 GPCD (ADJUSTED IF APPLICABLE)	DID SUPPLIER ACHIEVE TARGETED REDUCTION FOR 2020?
		EXTRAORDINARY EVENTS	WEATHER NORMALIZATION	ECONOMIC ADJUSTMENT	TOTAL ADJUSTMENTS	ADJUSTED 2020 GPCD		
142	0				0	-	-	YES