



2021 Water Loss Audit

Presentation to
Public Works Commission
October 13, 2022



Water Loss Audit Update

- SB 555, October 2015 – requires all water agencies to submit a Water Loss Audit Report to DWR annually by October 1
- Audit reports must be validated by a state-certified validator
- Water Loss Audit summaries from past five years must be included in the Agency's Urban Water Management Plan (every five years, next due 2026)
- Audit reports must be consistent with terminology and reporting methods recognized by AWWA



Water Loss Audit Update

AWWA MANUAL M36 WATER BALANCE

System Input Volume	Authorized Consumption	Billed Authorized Consumption	Billed Water Exported	Revenue Water
			Billed Metered Consumption	
			Billed Unmetered Consumption	
	Water Losses	Unbilled Authorized Consumption	Unbilled Metered Consumption	Non-revenue Water
			Unbilled Unmetered Consumption	
		Apparent Losses	Unauthorized Consumption	
			Customer Metering Inaccuracies	
			Systematic Data Handling Errors	
		Real Losses	Leakage on Transmission and Distribution Mains	
			Leakage and Overflows at Utility's Storage Tanks	
Leakage on Service Connections up to point of Customer Metering				



Water Loss Audit Update

TABLE 1 - Water Loss Audit Comparison – 2021 vs. 2020

	2020	Percent of Water Supplied	2021	Percent of Water Supplied
Water Supplied (AF)	9,582.9		9,627.1	
Billed Metered (AF)	8,961.7	93.5%	9,037.9	93.9%
Unbilled Unmetered (AF)	8.8	0.09%	9.4	0.10%
Authorized Consumption (AF)	8,970.6	93.6%	9,047.3	94.0%
Water Losses (AF)				
Water Losses (AF)	612.4	6.4%	579.8	6.0%
Apparent Losses (AF)	136.9	1.4%	138.0	1.4%
Real Losses (AF)	475.5	5.0%	441.8	4.6%
Non-Revenue Water (AF)	621.4	6.5%	589.2	6.1%
Total Annual Cost of Operations				
Total Annual Cost of Operations	\$35,945,097		\$37,735,980	
Customer Retail Unit Cost (per 1000 gal)	\$12.31		\$10.08	
Variable Production Cost (per AF)	\$1,351.07		\$1,388.96	



Water Loss Audit Update

City of Beverly Hills Non-Revenue Water



Average Non-revenue water since reporting started = 5.6%



Water Loss Audit Update

MWD Member Agency Cities	Non-Revenue Water as % of Volume of Water Supplied				
	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>
City of Beverly Hills	7.6%	4.4%	2.6%	6.5%	6.1%
City of Anaheim	5.5%	6.0%	3.6%	6.6%	5.1%
City of Burbank	4.3%	3.7%	5.5%	5.9%	4.3%
City of Fullerton	7.8%	6.6%	2.6%	3.7%	3.3%
City of Glendale	4.7%	4.0%	1.7%	4.0%	3.0%
City of Long Beach*	3.4%	2.2%	2.2%	5.3%	8.7%
City of Los Angeles*	9.7%	8.2%	8.8%	7.2%	6.4%
City of Pasadena	8.3%	5.1%	6.3%	9.2%	n/a
City of San Fernando	11.5%	11.5%	7.6%	8.7%	6.8%
City of Santa Ana*	4.0%	4.9%	5.2%	5.8%	4.6%
City of Santa Monica	-0.8%	-2.6%	-3.7%	0.8%	-0.8%
City of Torrance	5.8%	1.6%	4.1%	5.5%	3.8%

*Fiscal Year

n/a = not available

Q&A





Water Loss Audit Update

AWWA Free Water Audit Software: WAS v5.0
System Attributes and Performance Indicators American Water Works Association.
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Water Audit Report for:
Reporting Year:

System Attributes and Performance Indicators from AWWA Water Audit Software v5.0

System Attributes:

Apparent Losses:	<input type="text" value="137.954"/>	acre-ft/yr
+ Real Losses:	<input type="text" value="441.798"/>	acre-ft/yr
= Water Losses:	<input type="text" value="579.752"/>	acre-ft/yr
<input type="checkbox"/> Unavoidable Annual Real Losses (UARL):	<input type="text" value="194.58"/>	acre-ft/yr
Annual cost of Apparent Losses:	<input type="text" value="\$453,122"/>	
Annual cost of Real Losses:	<input type="text" value="\$613,640"/>	Valued at Variable Production Cost

Return to Reporting Worksheet to change this assumption

Performance Indicators:

Financial: {

- Non-revenue water as percent by volume of Water Supplied:
- Non-revenue water as percent by cost of operating system: Real Losses valued at Variable Production Cost

Operational Efficiency: {

- Apparent Losses per service connection per day: gallons/connection/day
- Real Losses per service connection per day: gallons/connection/day
- Real Losses per length of main per day*:
- Real Losses per service connection per day per psi pressure: gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): acre-feet/year

Infrastructure Leakage Index (ILI) [CARL/UARL]:

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