WATER LOSS DISCUSSION UPDATES

Water Resources and Water Field

Water Committee
January 12, 2022

TIMELINE

Water Audit Reporting in California				
Year Introduced	**Framework**	**Targeted Water Suppliers**	**Required**	**Validation**
2009	CUWCC Best Management Practice 1.2	Signatories of the CUWCC's Memorandum of Understanding	No	None
2014	Senate Bill 1420	All Urban Water Suppliers	Yes	None
2015	Senate Bill 555	Retail Urban Water Suppliers	Yes	Yes

Senate Bill 555

1. By 2017, Requires a submittal of annual validated water loss audit report to DWR on October 1 going forward.
2. By 2020, Requires SWRCB to adopt performance standards for the volume of water losses (still not adopted as of Nov 2021).
3. By 2028, Retailers must report on meeting water loss performance standard.

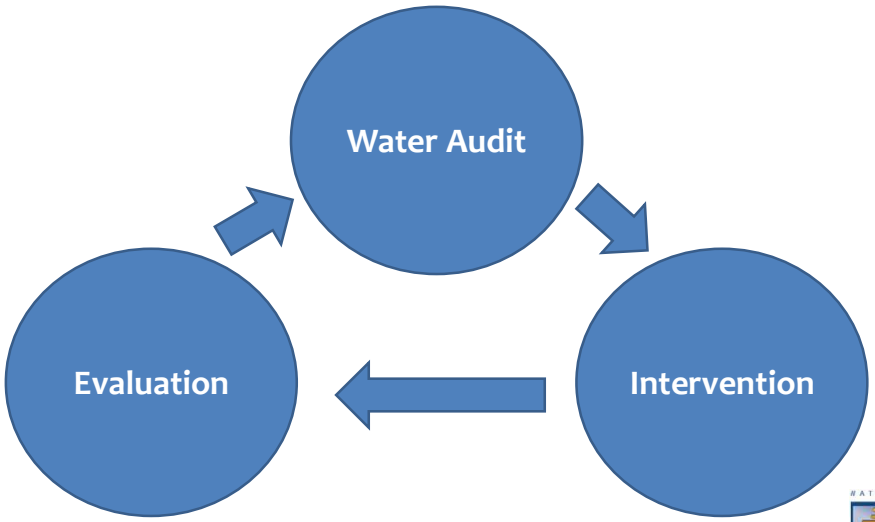
WATER LOSS PROGRAM CONSIDERATIONS

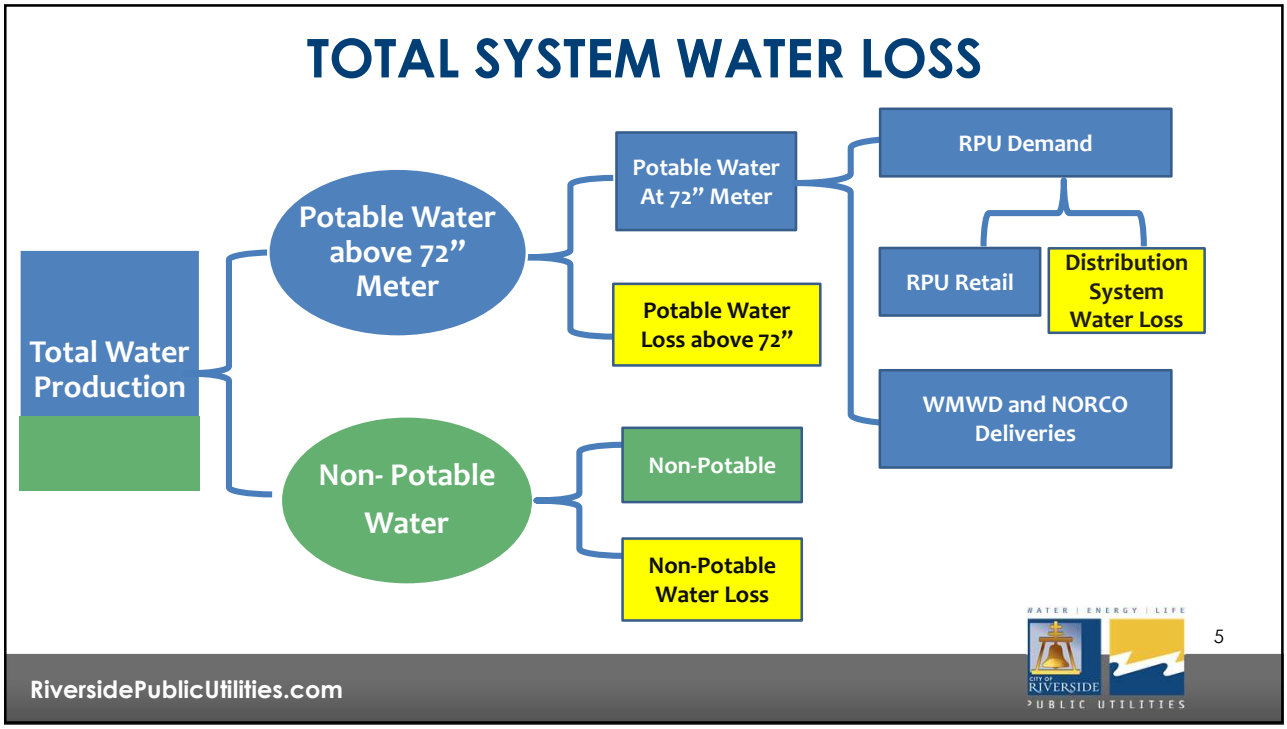
Uncertainty Remains

Constant refinement and ongoing study of data sources:

1. Production volumes
2. Consumption volumes
3. Meter inaccuracy, fire hydrant use, and status of underground pipeline conditions.

ITERATIVE PROCESS




TOTAL SYSTEM WATER LOSS
Total Water Production
Potable Water above 72" Meter
Non- Potable Water
Potable Water At 72" Meter
Potable Water Loss above 72"
Non-Potable
Non-Potable Water Loss
RPU Demand
RPU Retail
Distribution System Water Loss
WMWD and NORCO Deliveries
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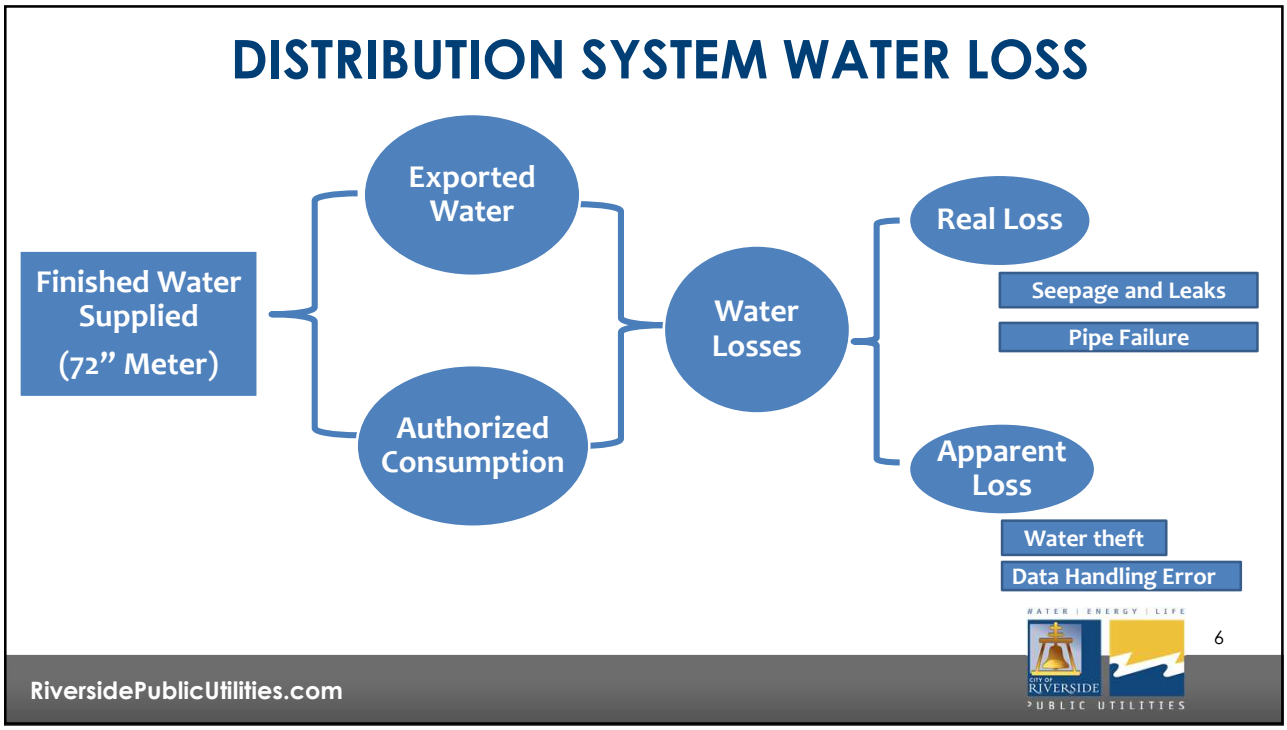
DISTRIBUTION SYSTEM WATER LOSS
Finished Water Supplied (72" Meter)
Exported Water
Authorized Consumption
Water Losses
Real Loss
Seepage and Leaks
Pipe Failure
Apparent Loss
Water theft
Data Handling Error
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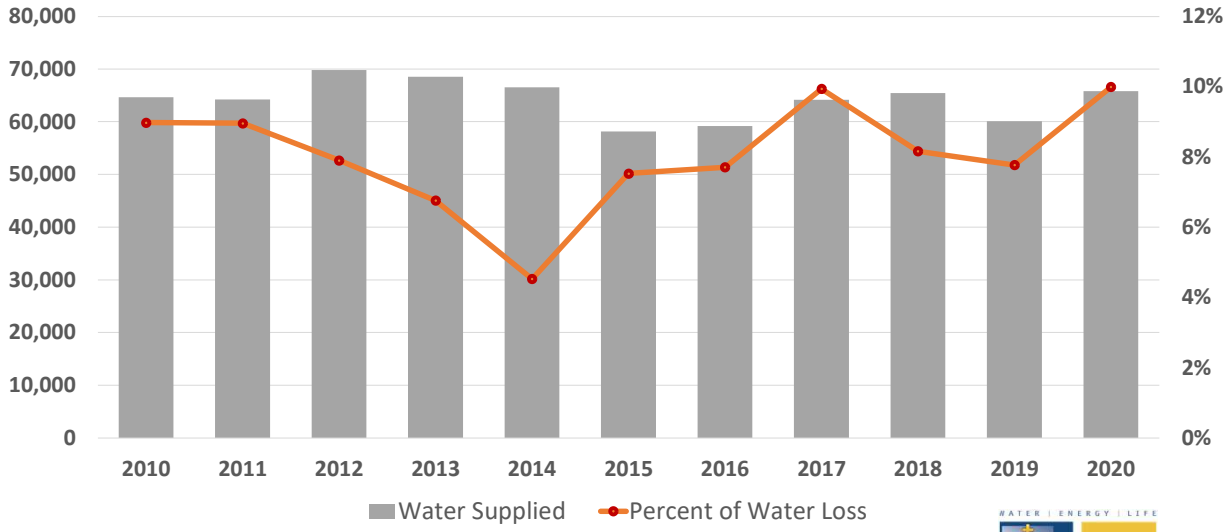
WATER LOSS TRACKING



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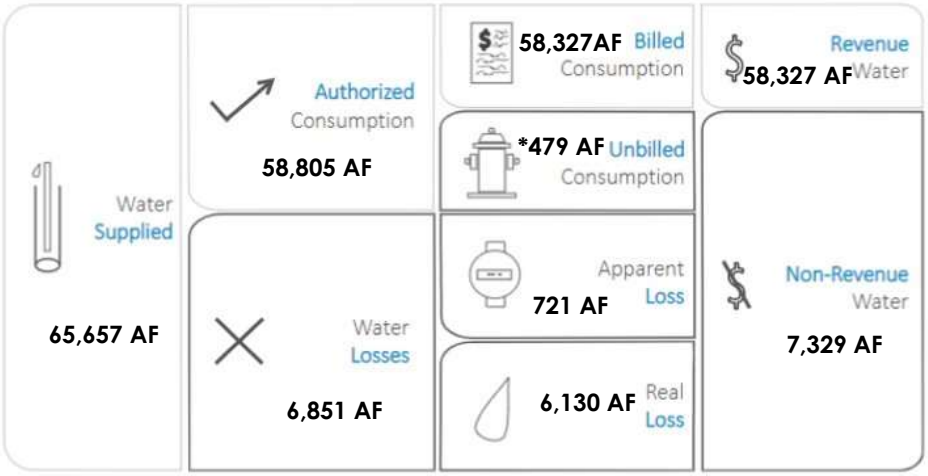
THE WATER BALANCE (2020 WATER AUDIT)



*Includes 423 AF of estimated volume of water for fire suppression

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BENCHMARKS

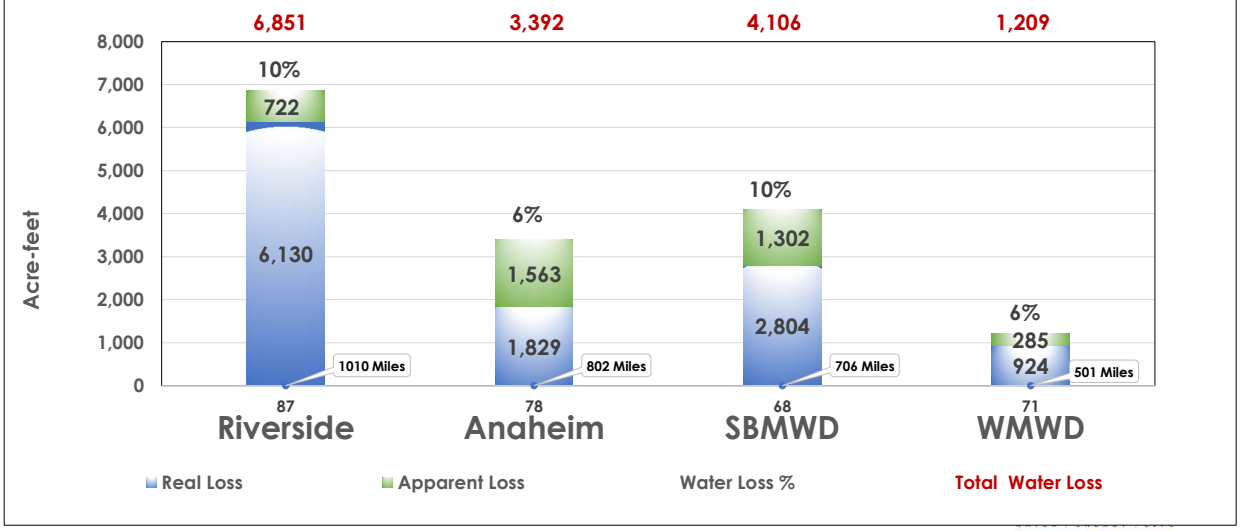
1. Three neighboring agencies
2. Volume, Value, and Data Quality

2020 Validated Water Audit

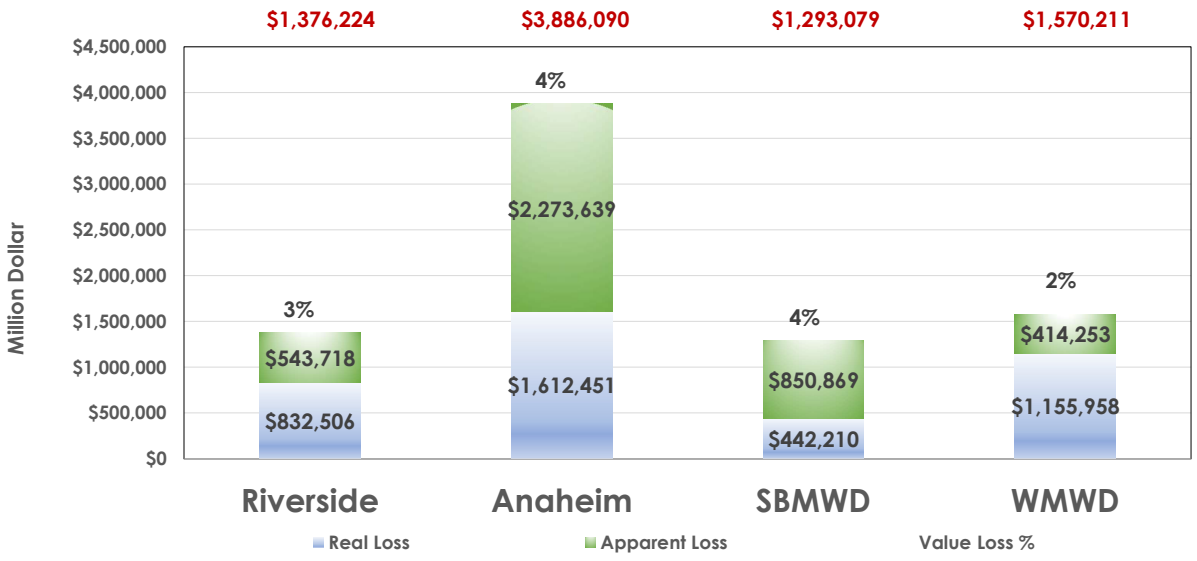
Agency	Total Water Supplied (AF)	Total Cost	Water Audit Validity Score	Variable Production Cost ($/AF)	Retail Unit Cost ($/CCF)	Length of mains (Miles)
Riverside	65,657	$ 46,065,683	87	$ 136	$ 1.73	1,010
Anaheim	56,418	$ 97,565,860	78	$ 881	$ 3.34	802
SBMWD	40,159	$ 32,685,822	68	$ 158	$ 1.50	706
WMWD	19,903	$ 71,140,053	71	$ 1,251	$ 3.34	501

CCF: 100 cubic feet
Variable production cost (applied to Real Losses)
Retail unit cost (applied to Apparent Losses)

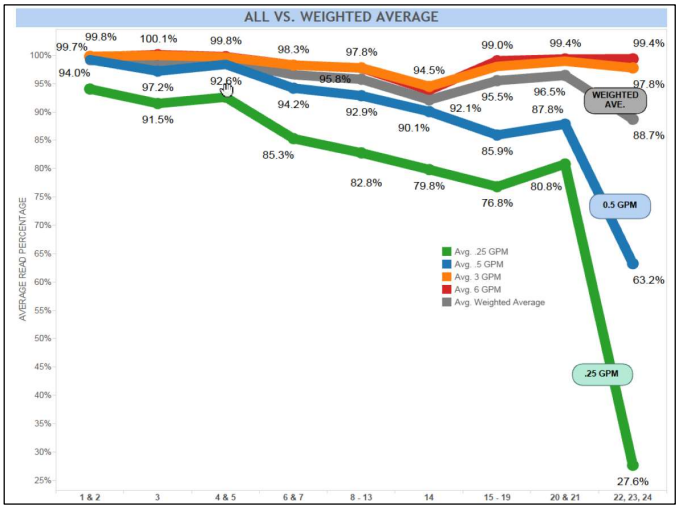
NON REVENUE WATER COMPONENTS BY VOLUME (ACRE-FEET)



NON REVENUE WATER COMPONENTS BY VALUE ($)



SMALL METER STUDY - 2016



Meter Study (2" and smaller)

1. In 2016, Water Field launched a study of 500 meters in a single neighborhood.
2. Meters were removed and bench tested at (4) different flow rates.
3. Meters varied in age
4. Study focused on how different flow rates were affected by age of the meter.
5. Study shows a significant decline in ability to accurately measure all flows at 20 years of age.

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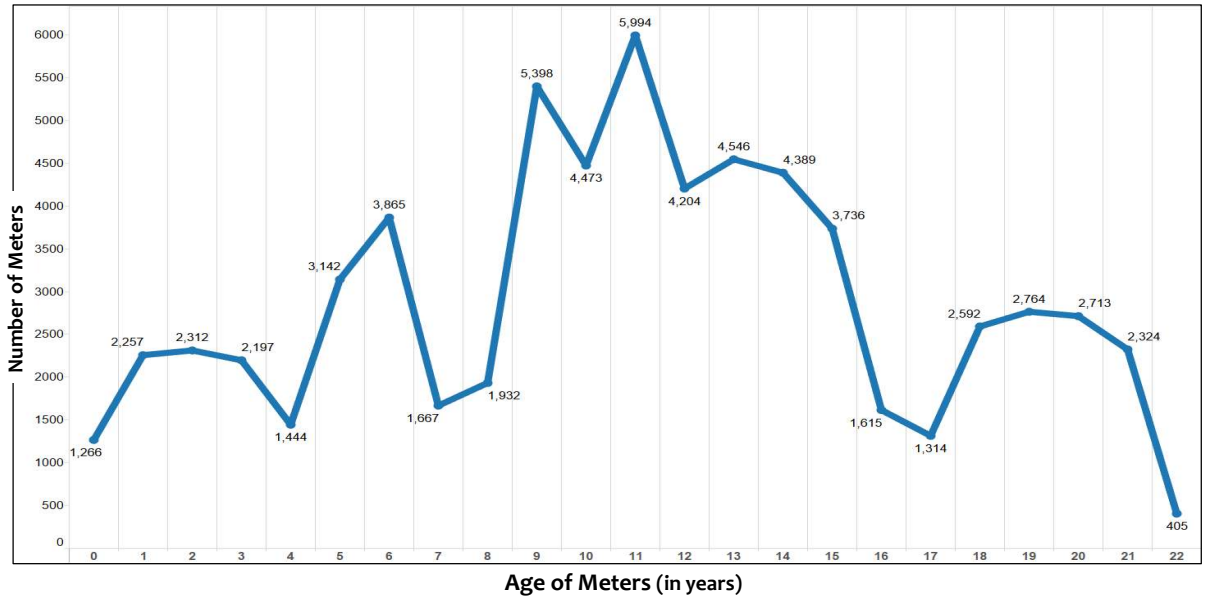
SMALL WATER METERS BY AGE



SMALL METER REPLACEMENTS

Small Meter Replacement Program

1. Meters are selected for replacement based on their current age – 20+ years in age.
2. Replacement program has been coordinated with Billing Cycles, as not to disrupt Meter Reading activities or create billing issues.
3. 2011-2015 shows a larger number of replacements because of larger staffing levels within the Meter Shop.
4. To return to 2011-2015 levels of replacement, personnel would need to be increased.

YEAR	QTY REPLACED PER YEAR
2020	1,984
2019	2,771
2018	1,766
2017	1,832
2016	3,608
2015	3,482
2014	1,008
2013	3,544
2012	5,643
2011	4,502

RPU WATER LOSS CONTROL EFFORTS

What we did/are doing:

1. Planned preventive maintenance on all vertical and horizontal assets
2. All service connections are metered and subject to routine inspection, calibration and repair
3. Finished water meter replacement and calibration (72-inch Totalizer)
4. Metering and bi-annual calibration of all source inputs and exports
5. Source water and retail meter replacement programs in place
6. Systematic accounting of all water categories (potable, non potable, exchanges, wholesale)
7. Early adoption of Water Audit goals

RPU WATER LOSS CONTROL EFFORTS

What we did/are doing:

8. Annual Pipeline Replacement Program focused on system criticality.
9. Developed data collection programs for fire fighting, fire suppression testing, and construction flushing.
10. Developed and deployed Preemptive Service Laterals Replacement Program.
11. Calibrated hydraulic model of water system and deployment of GIS.
12. Alpha phase of AMI on (12) large meters completed – Beta phase of (212) large meters in development.
13. Billing System triggers for dead or dying meters

RPU WATER LOSS CONTROL EFFORTS

What we need to do more:

1. Small meter replacement – 2" and below – efforts must be increased to meet volume of meters installed in early/mid 2000's.
2. Expand Annual Pipeline Replacement Program from 2-4 miles per year, to 6-8 miles per year.
3. Expand Preemptive Service Replacement program – current funds allow 400 services/year, but nearly 20K services have been identified.
4. Improve pipe failure prediction tool.
5. Expand use of C909 PVCO pipe – decreases material costs, improved reliability in seismic zones, and solution for corrosive soil conditions.

RPU WATER LOSS CONTROL EFFORTS

What we need to do next:

1. Pilot leak detection
2. New policies to deter water theft or unauthorized consumption
3. Reduce Peak and overall system pressure
4. Locate and eliminate pressure transients
5. Complete pilot testing of AMI
6. Nighttime flow analysis
7. Develop Meter failure prediction tool.

STRATEGIC PLAN ALIGNMENT

Environmental Stewardship: Goal No. 4.2 – Sustainably manage local water resources to maximize reliability and advance water reuse to ensure safe, reliable and affordable water to our community.

High Performing Government: Goal 5.2. –Utilize technology, data, and process improvement strategies to increase efficiencies, guide decision making, and improve access to and delivery of financially sustainable City services.

Cross-Cutting Threads

RECOMMENDATION

That the Riverside Public Utilities Water Committee receive the updates on the Water Loss Discussion and direct RPU staff to bring an enhanced water loss program with associated budget to the Board of Public Utilities.