# Hidden Reservoirs: Addressing Water Loss in Texas

Texas urgently needs to address water loss. The state's economy and population continue to grow and Texas' water supply is finite. Increasing weather extremes threaten longer and deeper droughts.

In order to have sufficient water to meet the needs of a growing, drying Texas, we need to ensure as much water as possible is reaching its intended destination.

If Texas utilities take action to address water loss, the need for many expensive and contentious water supply projects can be reduced, delayed, or eliminated.

## HOW MUCH WATER IS BEING LOST?

Our analysis indicates that, as of 2020, Texas utilities are losing at least 572,000 acre-feet per year. This corresponds to an average of about 51 gallons of water per service connection every day.

Estimated losses in 2020 were enough water to meet the total annual municipal needs of the cities of Austin, Fort Worth, El Paso, Laredo, and Lubbock *combined*. That's a lot of water.

The good news? A moderate and cost-effective amount of water loss mitigation could cut those losses *in half* and deliver more than *double* the volume of water that proposed new reservoirs are projected to provide by 2030.

## 572k af/year

Texas utilities are losing at least 572,000 acre-feet of water per year — more than the total 2020 annual water needs of the cities of Austin, Fort Worth, El Paso, Laredo, and Lubbock combined.

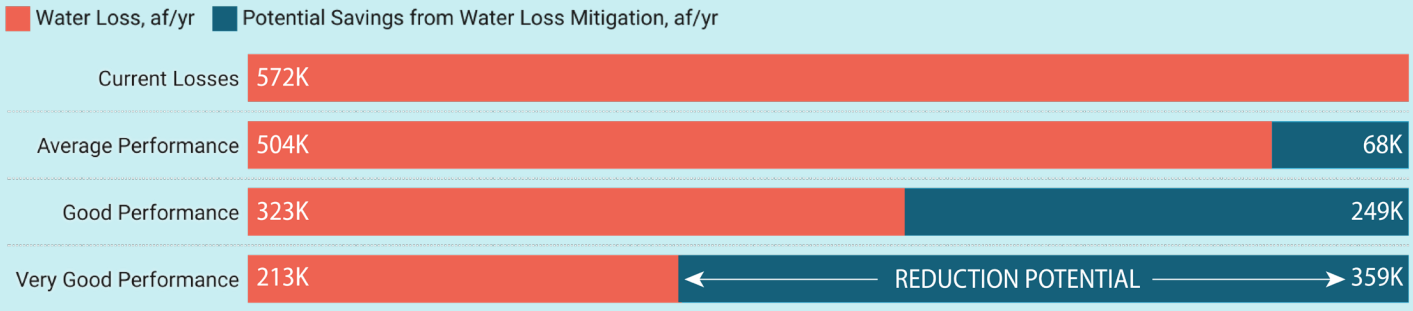
## 51 gallons/conn/day

Each service connection in Texas loses an average of 51 gallons of water every day. Utilities serving populations over 100,000 have an even higher average loss of 55 gallons per connection per day.

## 249k af/yr savings

Achieving a 75th percentile performance level — i.e. achieving water loss performance equivalent to or better than 75% of peer utilities — could save Texas about 249,000 acre-feet per year. A 90th percentile performance could save about 359,000 af/yr.

## Estimated Water Loss and Potential Savings in 2020

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# Water Loss by Utility Size in 2020

| Size Category | Population Served | # of Utilities | Total Retail Population | % of Population | Total Retail Connections | % of Connections | Estimated Total Water Losses (af/yr) | % of Water Losses | Estimated Avg Water Losses (g/c/d) |
|---|---|---|---|---|---|---|---|---|---|
| Very Large | Greater than 100,000 | 41 | 14.2M | 49% | 4.5M | 45% | 277K | 48% | 55 |
| Large | Between 25,000-100,000 | 105 | 5M | 17% | 1.8M | 18% | 96K | 17% | 47 |
| Medium | Between 10,000-25,000 | 228 | 3.5M | 12% | 1.2M | 12% | 70K | 12% | 50 |
| Small | Less than 10,000 | 3.6K | 6.5M | 22% | 2.4M | 24% | 129K | 23% | 47 |
| All | | 4K | 29.2M | | 10.1M | | 572K | | (Average) 51 |

## HOW MUCH WATER COULD BE SAVED?

A 'Frontier Analysis' approach that accounts for the many factors influencing an individual utilities' water loss rate indicates that if each utility mitigated its losses to the current Average Performance Level in its peer group, Texas' total water loss would decrease from at least 572,000 acre-feet per year to about 504,000 acre-feet per year — a modest savings of 68,000 acre-feet per year. If each utility mitigated losses to the Good Performance Level (i.e., achieving water loss performance better than 75% of peer utilities), the savings would be much larger — nearly 250,000 acre-feet per year. Mitigation to the Very Good Performance Level (90th percentile) would save about 359,000 acre-feet per year. Overall, Texas could save an extraordinary amount of water by achieving water loss levels already realized by the better-performing utilities in the state.

## HOW DOES THIS COMPARE TO THE WATER TEXAS NEEDS?

If all water utilities achieve the Good Performance Level, the aggregate water savings across the state would be greater than the total increase in municipal water needs projected for the 2020 decade in the 2022 State Water Plan.

These comparisons provide an order-of magnitude signal on the contribution water loss mitigation could make in the water demand and water supply gap.

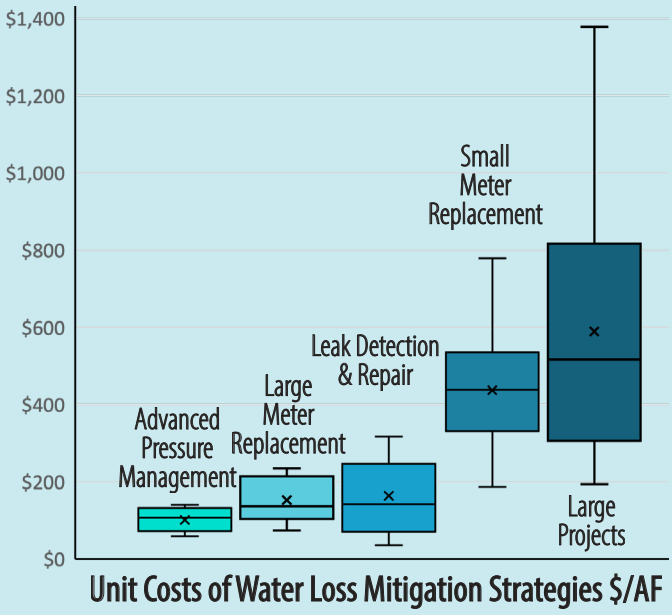
The analysis results are particularly compelling in certain sectors. In very large utilities that serve more than 100,000 people, achieving a Good Performance Level could provide *double* the municipal needs for the 2020 decade. This is critical given this sector serves over 50% of the Texas population.

## MITIGATING WATER LOSS IS COST-EFFECTIVE

The cost of many water loss mitigation approaches compares very favorably to various supply-side water management strategies such as seawater desalination and major new reservoirs.

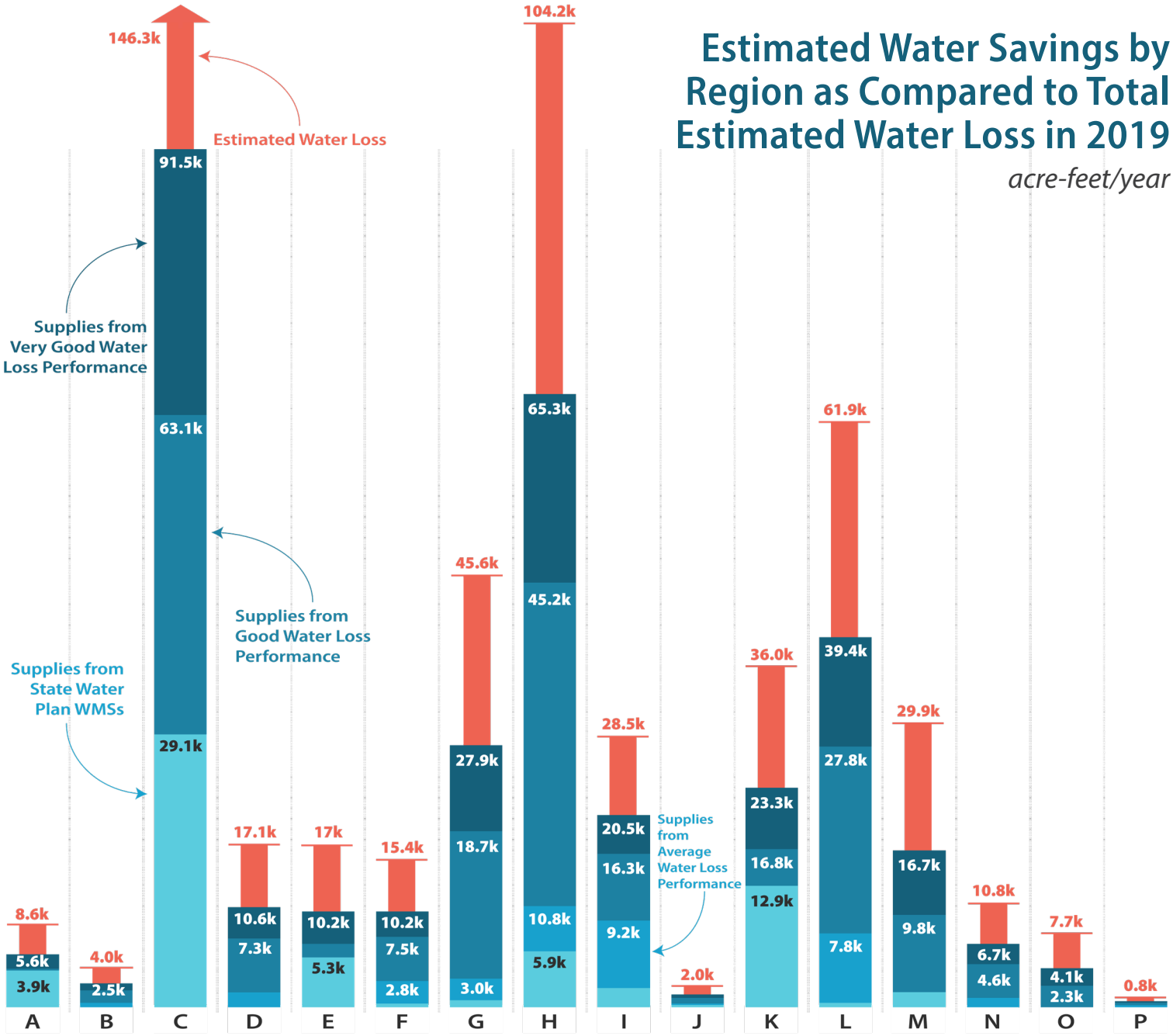
For example, our analysis of acoustic active leakage detection and repair in three large US cities shows a cost between $50 to $350 per acre-foot. In contrast, many supply-side projects in the 2022 State Water Plan could cost significantly more for the 2020 decade (see Table 7-6 of the 2022 State Water Plan, p112).

In addition, there are many federal, state, local, and private funding sources available for projects that mitigate water loss. We outline existing and emerging options in our full report.

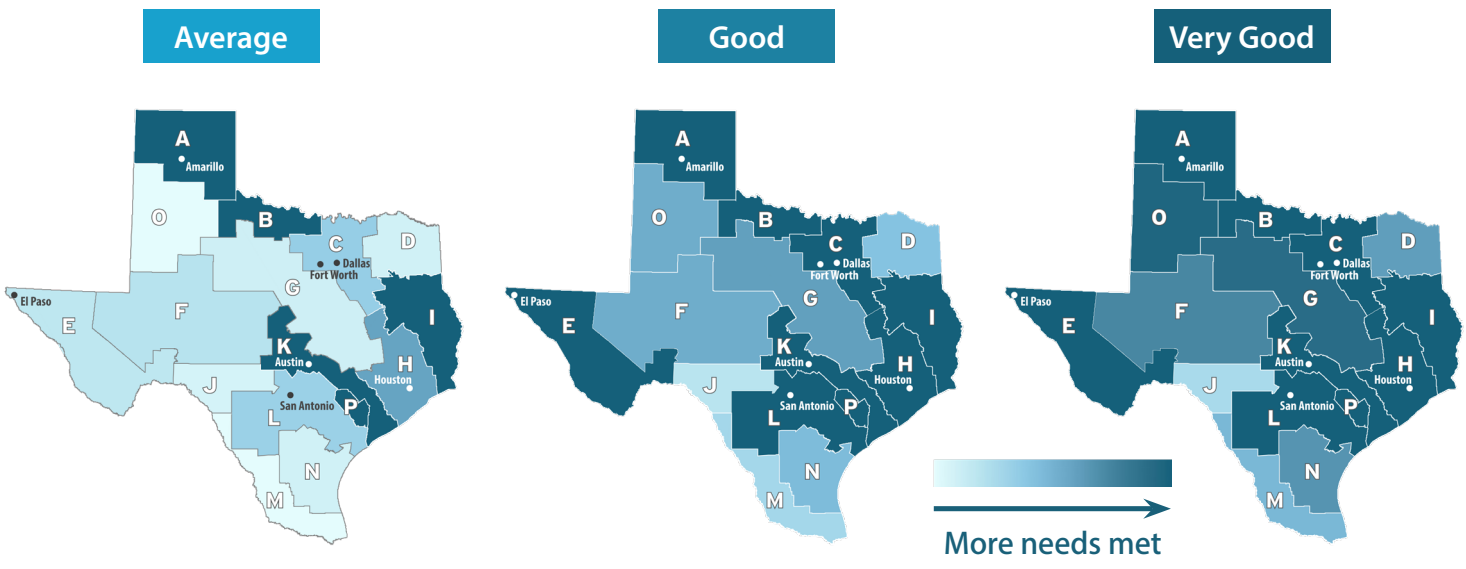


# Estimated Water Savings by Region as Compared to Total Estimated Water Loss in 2019

*acre-feet/year*




# Potential Water Savings from Water Loss Mitigation Compared to 2020 Municipal Needs



## LEGISLATIVE RECOMMENDATIONS

### Prioritize Financial Assistance for Utilities with the Highest Water Losses

The Legislature should direct TWDB to better enable utilities to mitigate water losses. This could be accomplished by placing a short-term priority on utilities with above-average water losses (50th percentile) for financial investments, followed by emphasis on investments in utilities above the Good Performance Level (75th percentile).

### Provide Additional Funding for TWDB Staff

The Legislature should approve and appropriate funds for additional TWDB conservation and planning staff to better equip the agency to meet the growing needs of Texas utilities. Additional staff would allow greater emphasis on data accuracy, technical assistance for utilities, and continued outreach on water conservation best practices.

## TWDB RECOMMENDATIONS

### Further Prioritize Data Accuracy

TWDB should require Level 1 Validation of Water Loss Audits to improve the accuracy of those audits. Validation is the process of examining water audit inputs to improve accuracy and document the uncertainty associated with the water audit data. Accurate Water Loss Audits inform utility decision making and can lead to better water loss mitigation. TWDB has begun work in this direction by conducting a Level 1 Validation pilot study and has included a Level 1 Validation program in the 2023 DWSRF Intended Use Plan.

### Update Water Loss Thresholds & Report on HB 3605 Implementation

TWDB should update water loss thresholds used to determine compliance with HB 3605 (83R) every five years using water loss audit data. TWDB should also report amounts invested in water loss mitigation and the projected water savings ensued from grants or loans consistent with HB 3605 implementation. HB 3605 requires communities to invest in mitigating their water loss in excess of the threshold set by TWDB when seeking state funding for water supply projects, making it an important tool for addressing water loss.

### Further Prioritize Transparency & Accountability

TWDB should provide a report, with recommendations, to the Legislature and Governor every five years on the results of the most recent water loss audits submitted by utilities.

### Increase Technical & Financial Assistance to Utilities for Water Loss Projects

TWDB should provide more grants or principal loan forgiveness for underperforming and low-income utilities; provide loans at a lowered interest rate; or provide other financial incentives to utilities with above-average water loss.

### Provide Regional Water Planning Groups Tools to Develop Water Loss Strategies

TWDB should provide guidance on how to use water loss data to inform the development of water management strategies to mitigate water loss in the Regional Water Planning process. Water management strategies are developed by Regional Water Planning Groups to address municipal water supply needs. Water loss mitigation should be considered in advance of supply-side strategies.

### Develop Accurate Costs for Water Loss in Regional Water Planning

TWDB should update the costing tool regional water planning groups are required to use for water management strategy analysis, as implementation costs for strategies included in the State Water Plan help drive decision-making for water supply investments.

## STATE AND REGIONAL WATER PLANNING RECOMMENDATIONS

### Include Water Loss as a Water Management Strategy

Regions that have not recommended water management strategies to mitigate water loss should do so in the upcoming 2026 Regional Water Plans. Water management strategies must be included in the State Water Plan in order to be eligible for SWIFT financing — currently 11 of 16 regions include water loss mitigation as a strategy in their plans.

## UTILITY RECOMMENDATIONS

### Properly Value Water Losses

Utilities should thoroughly evaluate the financial impact of water loss and consider the near- and long-term costs of not addressing water loss when planning for and making investments. When weighing the cost-benefit of investing in mitigation of water loss, utilities should account for the predicted financial benefits of deferring or even eliminating future water supply projects.

### Continuously Invest in Resilient Infrastructure

Utilities should make regular ongoing investments to address water loss and access financial assistance programs, including new federal funding opportunities to do so. These investments should be guided by data-driven water loss mitigation planning informed by regular water audits, validation, and program refinement.

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