Water Loss Audit Update

• SB 555, October 2015 – requires all water agencies submit to DWR a Water Loss Audit Report annually by October 1

• Audit reports must be validated by a state-certified validator

• Water Audits must be included in the water Agency’s Urban Water Management Plan (every five years, next due 2020)

• Audit reports must be consistent with terminology and reporting methods recognized by AWWA
### AWWA M36 WATER BALANCE

<table>
<thead>
<tr>
<th>System Input Volume</th>
<th>Authorized Consumption</th>
<th>Billed Authorized Consumption</th>
<th>Billed Water Exported</th>
<th>Revenue Water</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Billed Metered Consumption</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Billed Unmetered Consumption</td>
<td></td>
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</tr>
<tr>
<td>Water Losses</td>
<td>Unbilled Authorized Consumption</td>
<td>Unbilled Metered Consumption</td>
<td></td>
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<tr>
<td></td>
<td>Unbilled Authorized Consumption</td>
<td>Unbilled Unmetered Consumption</td>
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<tr>
<td></td>
<td>Apparent Losses</td>
<td>Unauthorized Consumption</td>
<td></td>
<td>Non-revenue Water</td>
</tr>
<tr>
<td></td>
<td>Apparent Losses</td>
<td>Customer Metering Inaccuracies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Apparent Losses</td>
<td>Systematic Data Handling Errors</td>
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<tr>
<td></td>
<td>Real Losses</td>
<td>Leakage on Transmission and Distribution Mains</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Real Losses</td>
<td>Leakage and Overflows at Utility’s Storage Tanks</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Real Losses</td>
<td>Leakage on Service Connections up to point of Customer metering</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Water Loss Audit Update

**AWWA Free Water Audit Software: System Attributes and Performance Indicators**

**Water Audit Report for:** City of Beverly Hills (CA1910156)  
**Reporting Year:** 2017  
**1/2017 - 12/2017**

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 66 out of 100 ***

#### System Attributes:

- **Apparent Losses:** 236,597 acre-feet/yr
- **Real Losses:** 521,627 acre-feet/yr
- **Water Losses:** 758,214 acre-feet/yr

- **Unavoidable Annual Real Losses (UARL):** 200,63 acre-feet/yr
- **Annual cost of Apparent Losses:** $724,668
- **Annual cost of Real Losses:** $609,310

**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: 7.6%
- Non-revenue water as percent by cost of operating system: 3.8%

**Real Losses valued at Variable Production Cost**

**Operational Efficiency:**
- Apparent Losses per service connection per day: 18.71 gallons/connection/day
- Real Losses per service connection per day: 41.25 gallons/connection/day
- Real Losses per length of main per day*: N/A
- Real Losses per service connection per day per psi pressure: 0.60 gallons/connection/day/psi

**From Above, Real Losses = Current Annual Real Losses (CARL):** 521.63 acre-feet/year

**Infrastructure Leakage Index (ILI) [CARL/UAIRL]:** 2.60

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

• Water Loss Prevention

  Real Losses

  • prioritize the investigation and repair of water main leaks, main breaks, and sheared hydrants
  • Department’s goal is to respond and shut down main breaks and sheared fire hydrants within one hour
  • Department’s goal is to investigate and repair reported distribution service leaks within 24 hours
  • Capital Improvement Programs
Water Loss Loss Prevention, cont’d

**Apparent Losses**
- AWWA M36 Water Audits
- Meter Testing/Replacement
- Review of customer meter data
- Right sizing meters
What’s a Normal Amount of Water Loss?

Benchmark to a systems theoretical minimum level of water loss (UARL).

- 1 – 2 times the UARL = very well managed system
- 2 – 3 times the UARL = doing pretty good
- 3 – 4 times the UARL = average performer
  (some easy reductions with leak detection may be possible)
- 4 – 5 times the UARL = definite room for improvement
- > 5 time the UARL = Leak detection easily justified

### Infrastructure Leakage Index

<table>
<thead>
<tr>
<th>Year</th>
<th>Index</th>
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</thead>
<tbody>
<tr>
<td>2016</td>
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