This presentation premiered at WaterSmart Innovations

watersmartinnovations.com
LIGHTS, CAMERA, ACTION PLAN: THE LOS ANGELES WATER LOSS TASK FORCE

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LADWP – The Nation’s Largest Public Utility

- 473 square miles
- 4 million people served
- 7,327 miles of mains
- 737,583 services
- 113 Pressure Zones
- 60,804 Hydrants
- 430 million gallons of water delivered per day
Sources of Supply

Bay Delta

Sierra Nevada Mountains

State Water Project

LA Aqueduct

Colorado River Aqueduct

Local Groundwater, Stormwater, Conservation & Recycling
Why are we doing this project?

- 2013 Water Loss Audit and Component Analysis study recommendations
- State Regulatory Requirements
- Minimize production costs / maximize revenue collection

Saving Water Saves money and property loss!!!
## Performance Indicators

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Fiscal Year</th>
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<tbody>
<tr>
<td></td>
<td>10/11</td>
<td>11/12</td>
<td>12/13</td>
<td>13/14</td>
<td>14/15</td>
<td>15/16</td>
<td>Ave</td>
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<tr>
<td>Non-Revenue Water</td>
<td>LADWP</td>
<td>5.2%</td>
<td>8.2%</td>
<td>4.5%</td>
<td>5.6%</td>
<td>5.8%</td>
<td>7.9%</td>
<td>6.2%</td>
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<tr>
<td></td>
<td>WADI Average</td>
<td>20%</td>
<td>21%</td>
<td>24%</td>
<td>24%</td>
<td>23%</td>
<td>22%</td>
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<tr>
<td>Infrastructure Leakage Index (ILI)</td>
<td>LADWP</td>
<td>1.26</td>
<td>2.40</td>
<td>1.00</td>
<td>1.42</td>
<td>1.22</td>
<td>1.81</td>
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<tr>
<td></td>
<td>WADI Average</td>
<td>3.49</td>
<td>3.03</td>
<td>3.61</td>
<td>3.61</td>
<td>3.26</td>
<td>3.30</td>
<td>3.38</td>
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<tr>
<td>Real Losses / Connection (gals)</td>
<td>LADWP</td>
<td>23</td>
<td>44</td>
<td>18</td>
<td>26</td>
<td>23</td>
<td>33</td>
<td>24.5</td>
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<tr>
<td></td>
<td>WADI Average</td>
<td>59</td>
<td>56</td>
<td>70</td>
<td>70</td>
<td>65</td>
<td>64</td>
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WADI = Water Audit Data Initiative, American Water Works Association
Real Loss Component Analysis Results

- Majority is background leakage:
  - Pressure management
  - Infrastructure renewal and rehabilitation
- Some potential to reduce hidden losses:
  - Active leak detection
- Reported breaks:
  - Reduce leak response time
Economically Feasible Real Loss Control
Action Plan

Action Plan Categories
1. System Input Volume
2. Database Management
3. Meter Testing and Replacement
4. Leak Detection and Prevention
5. Unmetered and Unauthorized Use
1. System Input Volume

Recommendations:

- Reevaluate which meters should be used for accurate system input volume tracking
- Improve supply meter accuracy
- Install meters on remaining unmetered supply sources
Track Volumes Closer to Distribution System

Well Field

Well Head Meter

Well Head Meter

Well Head Meter

Well Head Meter

Inlet Meter

Forebay

Outlet Meter

LADWP POTABLE DISTRIBUTION SYSTEM
Supply Meter Calibration Program

• Develop calibration program for 32 production meters and 20 pressure transducers, cells, floats and totalizers

• Researching feasibility of volumetric or comparative testing
Install Supply Meters

- LA-25 (99 inch dia.)
  - Connection with Metropolitan Water District (MWD)
  - Add full profile insertion magnetic meter
  - Leverage existing corrosion protection project
  - Cost estimated at $250K
2. Database Management

Recommendations:

- Centralize multiple meter and leak databases
- Improve leak reporting practices
- Address discrepancies between different databases
Database Consolidation and Access

SCADA Control Systems

LAWSDAC
Supports Transmission Operations

TOCC
Water Quality Control

LAAFP
LA Filtration Plant Operational Control

Owens Valley SCADA
Operational Control for Out-of-City Stations

Consolidated Access

OTS
Operational Technology System
Develop Mobile Leak Reporting Demonstration Project

- Real-time communication to management
- Improve customer outage communication
- Eliminate paper reporting
- Improve loss estimates
3. Meter Testing and Replacement

Recommendations:

• Replace worst performing meters
• Prioritize meter replacement and analysis
Improve Customer Small Meter Testing

• 1,326 meters tested in FY16/17
• Small meters 96% of total stock
• 98% overall accuracy
4. Leak Detection and Prevention

Recommendations:

• Implement pressure management
• Reduce average time to locate and repair leaks
• Implement active leak detection programs
Current Process for Monitoring Pressure

- Manual operation
- Less accurate
- Short-duration
- Data is not available in real-time
Pressure Monitoring Pilot Program

- Pilot began in December 2016
- Worked with vendor to develop logger that can be installed on hydrant’s auxiliary nut
- Pressure recorders were installed at four locations
Benefits from Live Pressure Monitoring

- Customer Inquiries: Improve response time and cost
- Hydraulic modeling
- Water Loss Task Action Plan (Lower pressure in the 13 leakiest zones)
- Leak detection (Live alerts, email & computer)
- Identify opportunities to lower system pressure
Pilot Project Objectives

- Verify Accuracy and Effectiveness
- Evaluate Ease of Use
- Evaluate Large Scale Deployment

Evaluate Multiple Technologies

- Phase 1: Fixed leak detection and monitoring (2017)
- Phase 2: Manual Leak Survey (2018)
5. Unmetered and Unauthorized Consumption

Recommendations:

• Implement measures to improve tracking of theft activities
• Implement measures to improve estimates of authorized unmetered uses
Add AMR/AMI to Fire Services

- 2013 Water Loss Study found significant consumption on fire services
- Planning to pilot AMR/AMI on these services
Tracking Unmetered Uses

• Fire Fighting Methodology
  – Based on fire engine pump hours

• Main Flushing Methodology
  – Based on annual pipe installations
Thank You!

Visit our website at: www.ladwp.com/waterconservation