BETTER BUILDING CHALLENGE

Better Plants Challenge

U.S. Department of Energy
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Los Angeles Department of Water and Power
Our Water System infrastructure:
- Service Area (473 sq. miles)
- Residents served 4 million
- About 697,100 water service accounts
- About 7,260 miles of distribution mains
- 114 local tanks / reservoirs
- 9 LAA reservoirs
- 88 pump stations
- 421 pressure regulator stations
- 23 chlorination stations
- 7 fluoridation stations
- 60,400 fire hydrants
- 1 Filtration Plant
- 1 Ultraviolet Plant
Sources of Water for Los Angeles

Bay Delta

Sierra Mountains

State Water Project

LA Aqueduct

Colorado River Aqueduct

Local Groundwater, Stormwater, Conservation & Recycling
Overview:
- Organization goals or desired outcome
- Barriers/Challenges
- Approach
- Execution
- Measuring success
- Outcome
Los Angeles Aqueduct Filtration Plant

- Oxygen Plant
- Lighting
- Flash Mixers
- VFD’s
- Shade Balls
Cryogenic
- Twin 900hp compressors (4160V)
- 4 hour typical startup time
- Maintenance intensive
- Operated manually
- 30 years old (Life expectancy 26 years)

VSA (Vacuum Swing Adsorption)
- Twin 250hp blowers (480V)
- 10-minute startup time
- Minimal Maintenance
- Fully Automated

Savings:
- Annual Cost Savings: $322k
- Decrease in energy consumption: 44%
Lighting:
- 3000+ LED bulbs
- Annual Cost Savings: Min $57K
- **44% decrease in energy consumption**

Flash Mixers:
- Original
  - 4 100hp motors
  - Paddle wheel mixing
- New
  - 4 50hp pumps
  - 4 50hp backup units
  - Jet mixing
- Annual Cost Savings: $186K
- **49% decrease in energy consumption**

Variable Frequency Drives:
- Upgrading 16 obsolete VFD’s
  - 12 qty (30hp)
  - 4 qty (200hp)
To Date:

- 96 Million Balls
- $34.5 Million ($0.36 each)
- Protects water quality
- Saves 300 MG/Year
- Reduces Chlorine usage by 95%
- Annual Cost Savings: $17k
- 67% decrease in energy consumption
Locations:
- Admin Buildings \ Work Yards
- Treatment Facilities
- Pump Stations

Analytical Tools:
- Sustainability Software
- Water/Energy nexus
Work Facilities:
- Cooling system
- Solar
- LED Lighting
- Drought tolerant landscaping

Stations:
- Energy efficient pumps and motors
- Optimizing equipment selection
- Time of day pumping
Web Access to track facility load usage
- Easy to use sustainability dashboard
- Key performance indicators
- Historical usage tracking
- Drill down to monthly and daily usage
- Temperature integration
- Energy Star data requirements
- Export capabilities
Historical Usage Energy Tracker

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<tr>
<th>Month</th>
<th>Demand</th>
<th>Energy</th>
<th>$/kWh</th>
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<tr>
<td>Mar 2016 *</td>
<td>4,276.8 kWh</td>
<td>1,901,000 kWh</td>
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<td>Feb 2016</td>
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<td>Jan 2016</td>
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<td>Oct 2015</td>
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Facilities kW: 5,045.8 kW
What is Water Nexus?

- Energy Intensity (EI) of LADWP water supplies
- Water Supply Mix
- Water Supply Management plan
- Historical energy and carbon footprint
- Projected energy and carbon footprint
Includes treatment, and excludes 2,429 kwh/AF LAA hydropower
TODAY

FYE 2011-2015 Average
Total: 550,130 AFY

- LAAFP 29%
- MWD 57%
- Groundwater 12%
- Recycled Water 2%

FUTURE*

FYE 2040
Total: 675,700 AFY

- LAAFP 42%
- MWD 11%
- Groundwater 24%
- Conservation SWC Reuse 16%
- Recycled Water 7%

*Estimated from the 2015 Urban Water Management Plan
Future supply condition does not reflect 118,034 AF of existing conservation.
Questions?