EPA Region 9 Sustainable Water Infrastructure and Climate Change Initiative

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Today’s presentation will cover...

- The Water/Climate Change Crisis
- EPA Region 9’s Reaction
- Water-Energy Nexus
- Region 9 Sustainable Water Infrastructure and Climate Change Initiative
- Highlight of the State Revolving Fund Programs and Opportunities
- Brief mention of WaterSense Program and Low Impact Development ideas
# The Problem

## U.S. Drinking Water and Wastewater Systems Challenges

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Water Scarcity</strong></td>
<td>A minimum of 36 states are anticipating local, regional, or statewide water shortages by 2013.</td>
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<td><strong>Climate Change</strong></td>
<td>Changing precipitation patterns, shrinking snow packs, increasing runoff, rising sea levels, and greater saltwater intrusion will likely result in significant adaptation efforts to maintain water resource and infrastructure services.</td>
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<td><strong>Increasing Population</strong></td>
<td>Between 1950 and 2000, U.S. population nearly doubled while the demand on public supply systems more than tripled. Increased demands are depleting aquifers at rates exceeding their recharge.</td>
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<td><strong>Energy Uncertainty</strong></td>
<td>Fewer sources of conventional fuels and increasingly expensive extraction costs are driving up oil prices, destabilizing the economy and causing global shortages and uncertainty for utility operating budgets.</td>
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<td><strong>Aging Infrastructure</strong></td>
<td>Repairing, replacing, and upgrading aging infrastructure will cost between $300 billion to $1 trillion over the next 20 years.</td>
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Our Water Division formed the Sustainable Infrastructure Office in February 2008.

This Office houses all the major water infrastructure programs and has greatly improved coordination between them...matched funding sources with our priorities.

Programs include: State Revolving Fund, Sustainable Infrastructure, U.S./Mexico Border Infrastructure, Congressional Earmark Programs.
Sustainable Infrastructure (SI) and Climate Change Priorities

- Energy and Water Efficiency
- Renewable Energy Production
- Low Impact Development
- Green Jobs
- Coordination with state and federal agencies to identify sources of SI funding
Guiding Principle:
The Water-Energy Nexus

Saving Water and Energy Saves Money and Reduces Greenhouse Gas Emissions!
## The Water-Energy Nexus

<table>
<thead>
<tr>
<th>California</th>
<th>U.S.</th>
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<tr>
<td>~20% of electricity</td>
<td>~3% of national energy consumption</td>
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<tr>
<td>~30% of natural gas</td>
<td>~56 billion kWh</td>
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<td>~88 billion gallons of diesel</td>
<td>~45 million tons of GHG</td>
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<td>~4,000 kWh per million gallons in Northern CA</td>
<td>~30-50% of municipal energy use</td>
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<tr>
<td>~12,700 kWh per million gallons in Southern CA</td>
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</table>
Promoting our 4 Steps to Sustainability Process

Step 1: BENCHMARK your energy use

Step 2: Perform an energy AUDIT

Step 3: IMPLEMENT audit recommendations

Step 4: Share your successes and REPEAT, for continuous improvement

Priority – Energy Efficiency
Promoting our 4 Steps to Sustainability Process

1. **Benchmark** w/ ENERGYSTAR Portfolio Manager

2. **Audit** (SRF project, electricity provider, DOE, contractors)

3. **Implement Audit Recommendations** (SRF projects, Develop EMS and Energy Management Programs, capital and operational improvements, renewable energy projects)

4. **Repeat**
• Promoting our 4 Steps to Sustainability Process

Outreaching and implementing EPA’s Energy Management Guidebook for Water and Wastewater Utilities with Workshops in CA (2), AZ (1), HI (4), and NV (Fall 2010 in Las Vegas)

*pdf version available on our website
Priority – State/Fed Coordination

• Coordination with State Agencies – State Revolving Fund (SRF) Programs

  • There are both Drinking Water and Clean Water SRF programs for every state...in CA
    • CA Drinking Water SRF – CA Dept of Public Health
    • CA Clean Water SRF – State Water Resources Control Board
• Coordination with State Agencies – State Revolving Fund (SRF) Programs

• The SRF programs can fund nearly all aspects of energy and water efficiency improvements for a water or wastewater utility

• SRF constitutes $3.5B of USEPA’s entire $10.5B budget for 2010…the largest single agency investment

• Between 2009 and 2010 (including ARRA) CA’s SRF programs have been provided with nearly $830M, and substantial programmatic changes have occurred

• New “Green” requirement and opportunities for subsidy
Coordination with State Agencies – State Revolving Fund (SRF) Programs

Types of SI projects eligible for SRF funding:

- Energy and water use audits
- Development and/or implementation of EMS and energy management programs
- Renewable energy production
- Combined heat and power
- Leak detection
- Energy efficiency improvements/upgrades
- Water efficiency upgrades/rebate programs
- Water metering/tiered rate development projects
- Low Impact Development/Green Infrastructure
Coordination with State Agencies – State Revolving Fund (SRF) Programs

- We highly recommend every water and wastewater utility to AT LEAST complete an energy audit and, if possible, follow our **4 Steps to Sustainability**
  - These projects can identify substantial operational savings with high returns on investment
  - An audit can potentially be completed free of charge, or will cost in the range of $10K to $40K
  - They help utilities develop “shovel ready” projects to be ready when funding opportunities avail themselves
  - These projects can be added on to larger water infrastructure project workplans, O&M budgets


- Coordination with State, Federal, Local Agencies

- We’re actively developing partnerships with other state and federal agencies

- Since we’re funding the same kind of projects, why not simplify sources of funding for potential recipients?

- We’re working to effectively add value to City/County sustainability efforts
Region 9: Sustainable Water Infrastructure

Saving water saves energy!

SAVING WATER AND ENERGY
Saves money & reduces greenhouse gas emissions!

EPA's Sustainable Water Infrastructure program provides technical support and financial resources to states to increase water and energy efficiency in water, wastewater, and stormwater infrastructure. See the step-by-step guide to learn how water and wastewater facilities can save water and energy and reduce greenhouse gas emissions.

This website provides water and energy efficiency information for industry, businesses, communities, homes, farms, schools, thermoelectric power generators, and water and wastewater facilities.

Sustainable Water Infrastructure News

Green Plumbers Wins 2009 EPA Region 9 Environmental Award
EPA recognized GreenPlumbers® as a recipient of Region 9's 2009 Environmental Awards program. Full story | GreenPlumbers Web Site

Arizona Wins WaterSense State Challenge Award
The state of Arizona is recognized for its efforts to use water efficiently. Feature story | WaterSense

www.epa.gov/region09/waterinfrastructure
A National Brand for Water Efficiency

WaterSense offers a simple solution for communities implementing water efficiency

- National, consistent brand
- Easy-to-recognize label
- Certified for performance and efficiency
- Ideal for identifying toilets and faucets for rebate programs**

- 280 toilets and 820 faucets have earned the label
- Landscape Designer Certification Program
- Home Certification Program
- www.epa.gov/watersense
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<tr>
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<th>2009/2010</th>
<th>2010 and Beyond</th>
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<tr>
<td><strong>Irrigation</strong></td>
<td>Irrigation Controllers</td>
<td>Moisture Sensors</td>
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<td>Drip Micro Technology</td>
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<tr>
<td><strong>Residential Plumbing</strong></td>
<td>Showerheads</td>
<td>Water Treatment Systems</td>
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<td>Water Softening Systems</td>
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<tr>
<td><strong>Commercial Plumbing</strong></td>
<td>Urinals Pre-rinse Spray Valves</td>
<td>Flushometer Valve Toilets</td>
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<tr>
<td><strong>Other</strong></td>
<td>New Homes</td>
<td>Autoclaves</td>
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<td></td>
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<td>Glassware Washers</td>
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<td>Additional Professional Certifications</td>
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If every household in Region 9 installed WaterSense labeled faucets or faucet aerators, it would save nearly 30 million gallons every day—enough water in one day to fill the manmade lake that contains the fountains at the Bellagio Hotel and Casino in Las Vegas.
Low Impact Development Ideas...
Riparian Buffers
Pocket Wetlands
Permeable Pavement
Rain Harvesting
Green Streets & Highways
Green Parking
Swales
Green Roofs
Planter Boxes
Downspout Disconnection
Rain Gardens
Urban Forestry