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On the Ground Experience, Water Partnering with Energy

Elizabeth Lovsted, P. E.
Senior Civil Engineer

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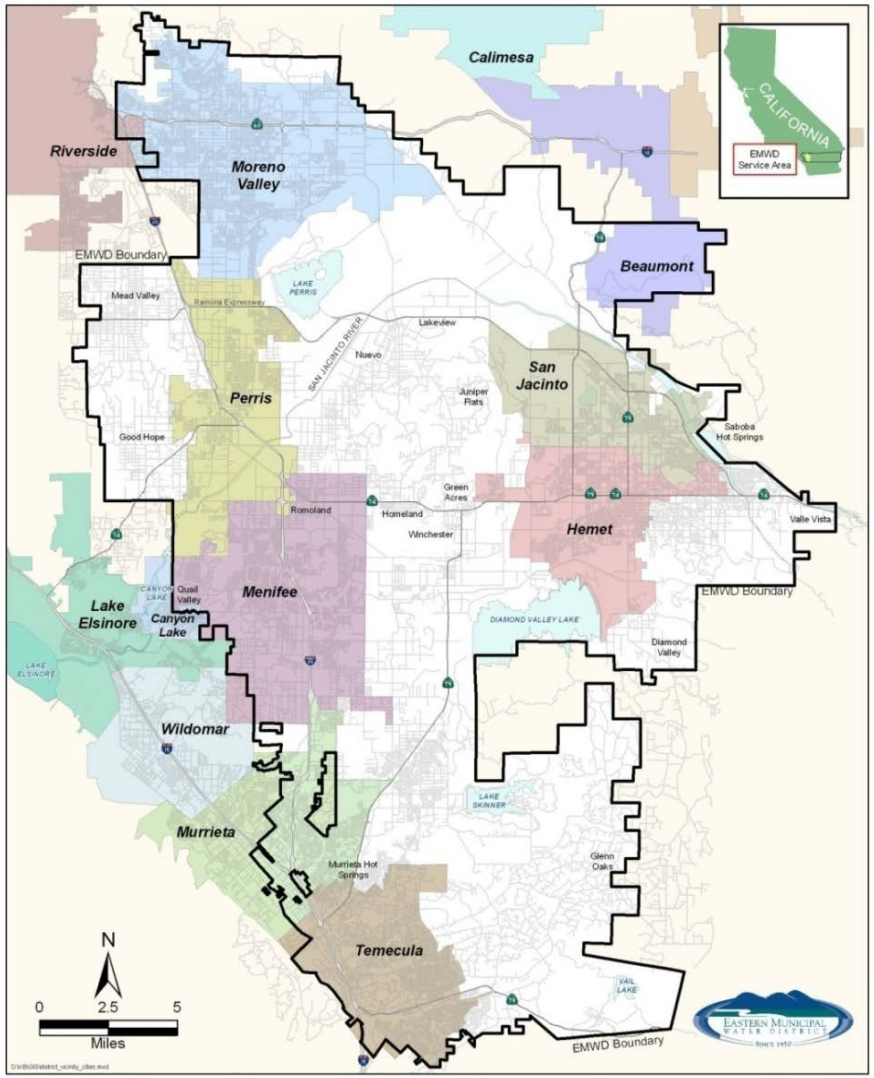
Today's Discussion

- Overview of Eastern Municipal Water District (EMWD)
- Importance of Energy Efficiency
- Water Conservation Measures
- High Efficiency Clothes Washers Direct Install Program
- Next Steps

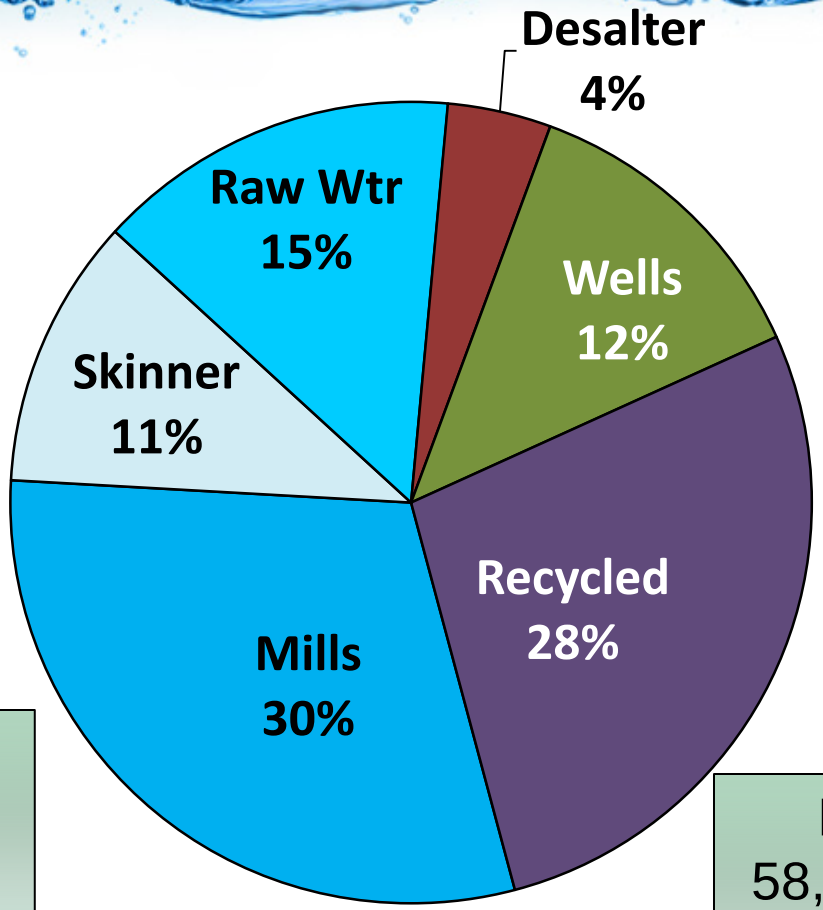
Overview of EMWD

- Established in 1950
- Agency serving:
  - Water / wastewater / recycled
  - Wholesale and retail
- Member agency – Metropolitan Water District of Southern California (MWD)
- 542 square mile service area
- Population: 755,000
- 135,000 retail connections



EMWD Current Water Supply Portfolio

- Investments in local resources reduces reliance on imported water
- Mixed portfolio of higher energy (SWP and desalting) and lower energy supplies (wells)

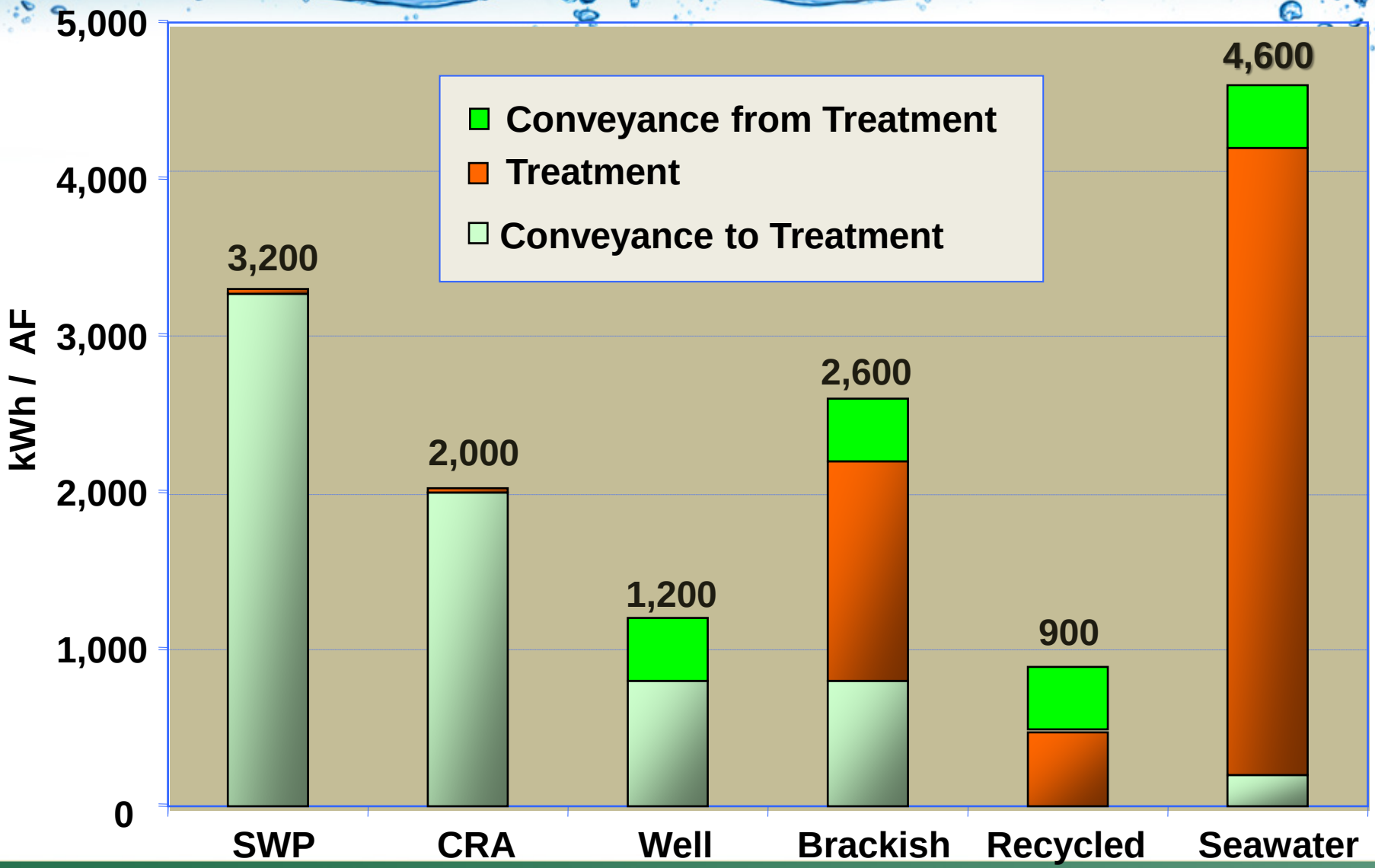


Imported
73,000 AF
56%

Local
58,000 AF
44%

Mills= Henry J Mills Treatment Plant, Skinner = Robert A. Skinner Treatment Plant; Raw Wtr = Imported from MWD, locally treated

Typical Embedded Energy Values for Water Supply Options



Costs of Energy

- Typically the second largest cost of any water/wastewater budget
- EMWD projected 2013/14 costs:
  - Electricity: $12,500,000
  - Natural Gas: $2,100,000
- 15% increase in electricity costs from Southern California Edison in 2013 with more to come

Managing Water and Energy

Energy

- Low TDS Imported (SWP)
- Brackish Desalting
- Ocean Desalination

Energy

- Local well production
- Recycled water
- Water Use / Energy Efficiency

Balancing Tools:

- Renewable Energy Self Generation
- Energy Efficiency Programs
- Water Use Efficiency

EMWD Energy Generation and Efficiency

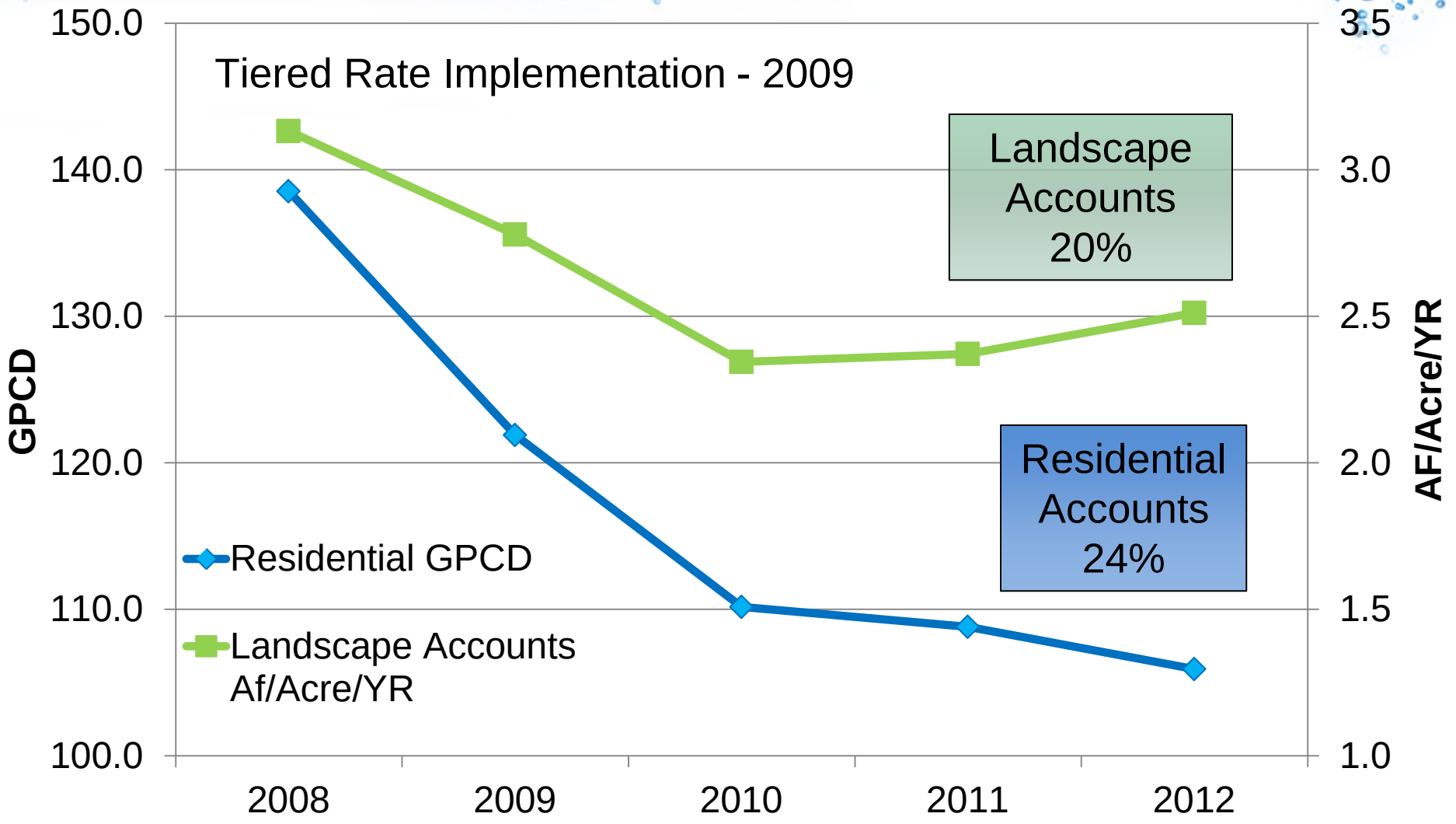
- Self –generation/management
  - Digester gas fueled engines
  - Digester gas fueled fuel cells
  - Natural gas fueled micro-turbines with waste heat recovery for AC
  - Currently in design for a 500 kw photovoltaic solar project
- Energy efficiency retrofits/projects
- Water Energy Master Plan – November 2014

Annual Production/ Savings

14,400 Mwh

4,752 Mwh

Water Use Efficiency



Energy Savings from Water Use Efficiency

	Annual Savings
• Residential o 33 gallon per capita per day reduction o 18,000 AFY	43,100 Mwh 6,400 tons/yr $C0_2e$ GHG
• Landscape o 0.6 Af/Acre/Yr o 2,360 AFY	5,600 Mwh 830 tons/yr $C0_2e$ GHG

Water Efficiency leads to real savings in energy consumption

Other Water Efficiency Programs

- Audits
- Rebates and installation programs
  - Washers
  - Irrigation Controllers
  - Nozzles
- Turf Replacement
- Education/Outreach
  - Landscape

High Efficiency Clothes Washer Program

- Install high efficiency clothes washers (HECW) in low income homes
- Four agency partnership
  - United Stated Bureau of Reclamation (USBR)
  - Southern California Gas Company (SoCal Gas)
  - MWD
  - EMWD
- Started installations in December 2010
- More than 1,700 washers install by June 2013
- Project cost: $1.2 million

USBR WaterSMART

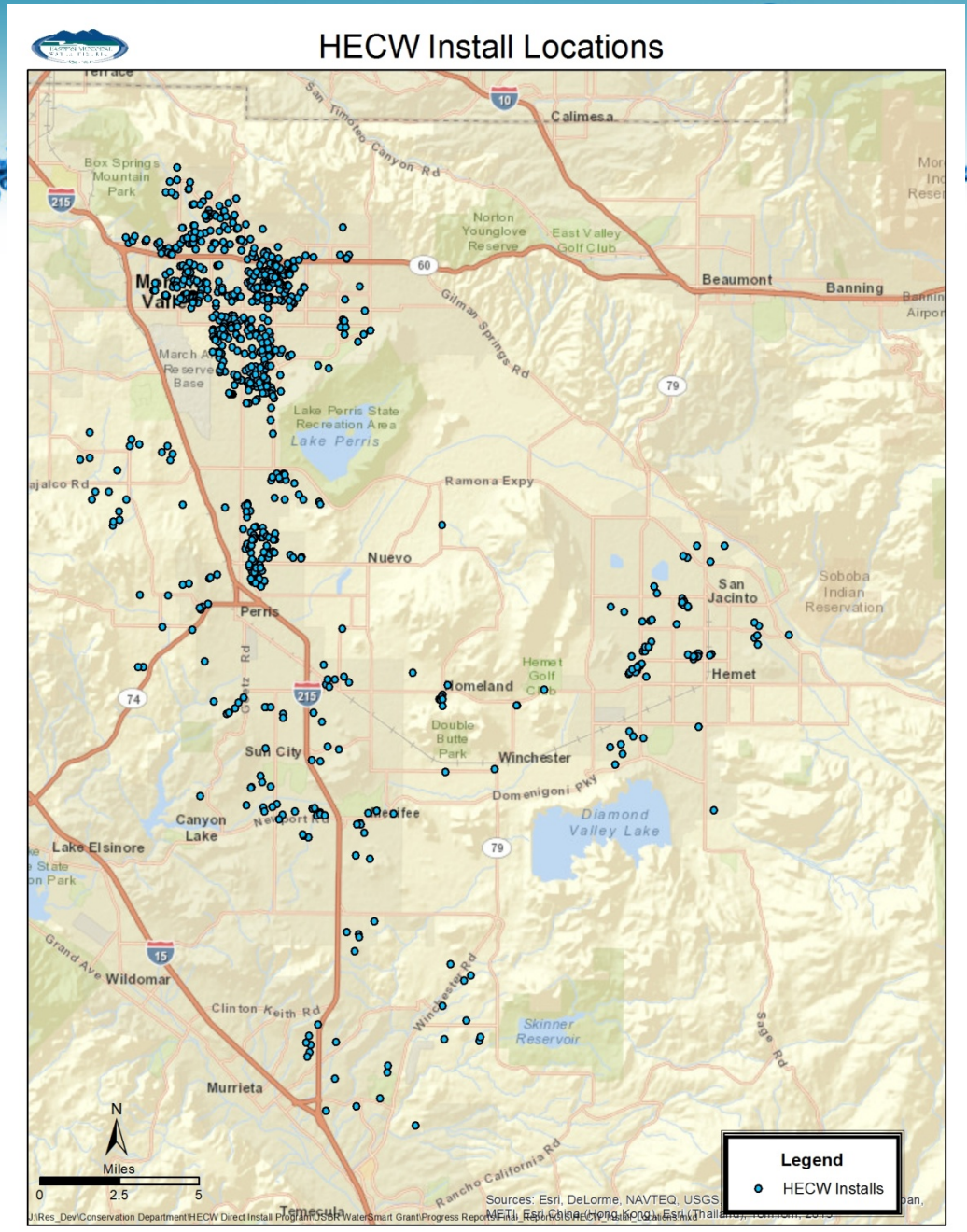
- Water and Energy Efficiency Grant
  - Conserve and use water more efficiently
  - Improve energy efficiency
- Application submitted July 2010
- Awarded $300,000
- Goals
  - Water conservation
  - Energy saving – direct and indirect

SoCalGas

- Administered HECW installations as part of low income assistance program
- Participant requirements:
  - Low–income (defined by SoCal Gas)
  - Minimum of four persons per household
  - Using a pre-2004 washing machine
  - Own a gas dryer
- Coordinated with EMWD staff
  - Identifying EMWD customers
  - Meeting grant targets

EMWD

- Provide Funding
  - Special Projects Fund
- Complete funding requirements (reporting, invoices, ect.)
  - MWD – Member Agency funding
  - USBR - WaterSMART
- Track Participation
- Coordinate with Gas Company
- Measure water savings



Results

- More than 1,700 washers installed within EMWD's service area
- Estimated water savings

	Annual Savings
1,700 HECW	**57.4 AFY**

- Estimated energy saving
  - Direct – energy saving for the entire washing cycle
  - Indirect – reduction in imported water deliveries

	Annual Savings
Direct	**81,600 kWh/Year**
Indirect	**154,137 kWh/Year**

Measured Savings

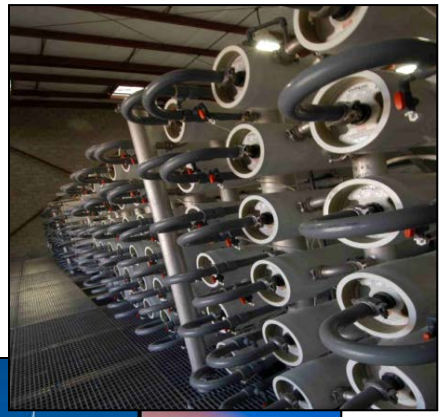
- Used billing data for participating accounts
- Selected evaluation sample
  - Excluded accounts with zero reads, less than a full year of use pre/post install
  - Measured 861 accounts
- Compared use 12 month pre and post installation
- Water use decreased by an average of 0.034 AF

Evaluating the Program

Challenges	Benefits
• Limited ability to advertise • Finding eligible customers • Funding cycles	• Water savings • Energy saving • Limited commitment of staff time • Assisting low-income customers • Establishing new partnerships • Verified savings • Cost equivalent to rebate • Free washers installed

Next Steps

- Continue to add funding to install washers
- Evaluating new partnering opportunities:
  - Showerheads
  - Aerators
  - Thermostatic shower valves
- Look for other opportunities to save water/energy
  - New homes?
  - Multifamily



EASTERN MUNICIPAL WATER DISTRICT

Contact Information

Elizabeth Lovsted
Senior Civil Engineer
(951)928-3777 ext.4307
lovstede@emwd.org