Case Studies of Electricity & Water Conservation by SCE Customers

Second Forum on Energy and Water Sustainability
University of California Santa Barbara Bren School of Environmental Management

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2013 Environment and Resource Sustainability Vision

Providing safe, reliable, economic and sustainable electricity for today and future generations.
SCE Environmental Resource Productivity

Increase Resource Productivity from Operations
- Transport & Transportation
- Facility
- Supply Chain
- Salvage, Reuse, Recycle & Waste
- Chemicals
- Land Stewardship
- IT
- Employee Involvement

Fuel Mix and RPS

Transmission

Distribution

Line Loses

End-Use

Energy Efficiency

Demand-Side Management
Energy Efficiency

- SCE’s customers are the nation's leaders in reducing electricity use through energy efficiency programs
  - Customer response to SCE’s energy efficiency programs during the past five years has saved 5 billion kWh
    - Enough energy to power 500,000 homes for an entire year
    - Reduced GHG emissions by more than 2 million tons
      - Equivalent of removing 250,000 cars from the road
  - During the next two years, SCE forecasts its customers will...
    - Save an additional 2 billion kWh
    - Reduce GHG emissions by another 1 million tons
Energy Efficiency – Options for Water Customers

• Free pump efficiency testing and *new* pump retrofit incentives
• Free facility energy efficiency surveys and audits
• Incentive & rebate programs

Success Story

Rancho California Water District

• Completed 17 pump retrofit projects earning the District $121,000 in incentives earned with SCE’s Agricultural/Pumping Energy Efficiency Program (AEEP)
• Over 1.4 million kWh saved annually and $140,000 in avoided annual energy costs
  - Equivalent to over 1.4 million pounds in reduced greenhouse gases
• 12 projects yet to be completed that are projected to save an additional 2.7 million kWh and receive over $193,000 in incentives
Energy Efficiency – Options for Water Customers

Expanded Customer Technology Application Center (CTAC) class offerings specifically for water sector

- Enhanced and expanded Annual SCE Water Conference

- *New* Managing Energy in Water & Wastewater Facilities
  - Offered in partnership with the University of Wisconsin-Madison, College of Engineering

- *New* Improving Pump Plant Efficiency to Lower Energy Cost
  - Permanent pumping efficiency exhibit

- *New* State-of-the-Art SCADA Systems
  - ½ day introduction and full-day advanced classes
Energy Efficiency – Options for Water Customers

“Power” your water conservation programs
- Leverage existing SCE/utility energy efficiency rebates to deliver greater results

  - Connectionless steamers
    - Collaboration between Metropolitan Water District and Irvine Ranch Water District (IRWD)

  - High efficiency ice machines
    - IRWD and West Basin Municipal Water District
The Importance of Demand Response

Demand Response programs help SCE meet increasing customer peak loads, allowing us to postpone or refrain from building new power plants and transmission lines. This reduces costs and increases environment and resource efficiency.
Demand Response – Options for Water Customers

- Utilize the Technical Assistance & Technology Incentive (TA&TI) Program
  - Provides free demand response site assessments
  - Offers financial incentives for installing eligible demand response (DR) equipment
  - Gives you increased flexibility to participate in demand response programs that provide additional energy-saving incentives

- Determine which DR program works best for your operations
  - More program choices to accommodate a variety of needs

Success Story

Newhall County Water District

- $97,000 in TA&TI incentives for SCADA upgrades
- Over $26,000 earned in 2007 by participating in 21 Demand Bidding Program events at 3 sites

⇒ www.sce.com/casestudies/municipality

Riel Johnson, Director of Operations, and Stephen L. Cole, General Manager, Newhall County Water District
Keeping Water In It’s Place – High Performance Concrete

High Performance Concrete <environment & resource efficiency>

1. Increased strength
2. Increased durability
3. Less brittle (better suited for seismically active areas)
4. Low water permeability
5. Lower GHG emissions
Using High Performance Concrete To Reduce Water Volume
Reducing Vault Water Intrusions Using High Performance Concrete
Summary – “Putting the Pieces Together”

1. Every drop and every kWh counts
   - Water and power are inseparable; Efficiency of both is essential
2. More efficient use of electricity for moving water means:
   - Better capacity to cope with shortages
   - Better return on your water dollar
3. Drinking Water and Sewage Systems – High Performance Concrete
   - Minimize water loss by better design, construction & monitoring;
   - Minimize water intrusion by design, construction & monitoring
4. Learn from the successes of others
   - Form an Energy Team
   - Develop a Long-Term Energy Action Plan
   - Establish system for continual improvement

Resource: www.caleep.com
In Conclusion:

Water related electricity (Environment & Resource) efficiency is driven by:

1. Decreased water flows
2. Increased pumping efficiency

Or:

3. Shift time of use (i.e., ‘Demand Response’)

We need to manage both our infrastructure and behavior to optimize our efficiency