

Water/Energy Nexus Program

Program Summary for Government Partnerships Task Force

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Energy Efficiency Programs
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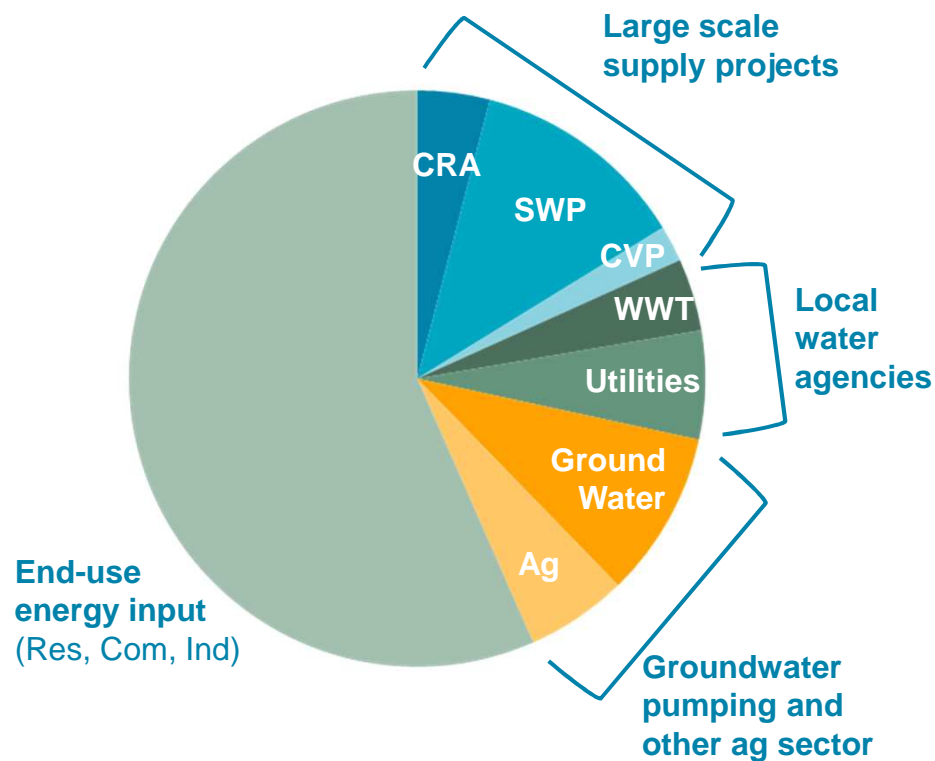
Agenda

- **Energy for water in PG&E's territory**
 - High level view of Water/Energy Nexus
 - Saving energy, saving water
 - End use sectors
- **Program alignment with water/energy nexus**
 - Technologies and programs in portfolio, sectors addressed
- **Areas of interest and emerging technologies projects**
 - Projects for irrigation systems
 - Partnerships with water agencies
 - Cost effectiveness procedures



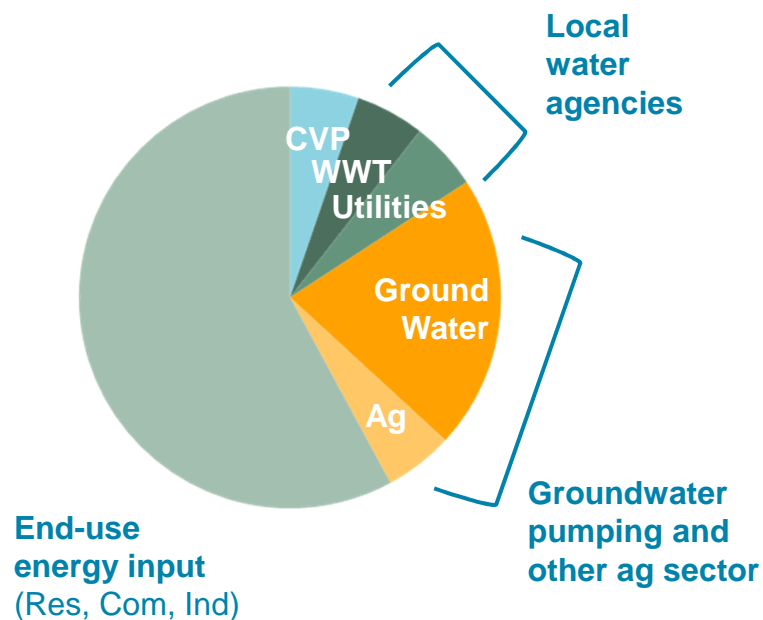
Breakdown of Water-Related Electricity

CA Statewide: Annual Electricity Demand Associated with Water Consumption¹



Total: ~54,000 GWh/yr

PG&E Territory: Electricity Associated with Water Includes More Ag and Less Embedded Energy



1. Updated by Navigant for CEC 2006 and CPUC 2009 studies



Three Levels of Water/Energy Efficiency



Type of measure	Example opportunities
1. Energy savings <i>associated with water</i>	<ul style="list-style-type: none">• Efficient water heater
2. <i>Combined water and energy savings for end user</i>	<ul style="list-style-type: none">• Low flow showerhead
3. <i>Water conservation only (upstream/ embedded energy)</i>	<ul style="list-style-type: none">• High efficiency toilet



PG&E Water/Energy Program Examples

PG&E portfolio addresses several areas of water/energy

	Deemed EE Products (Prescriptive Savings)	Custom EE Products (Calculated Savings)	Demand Response & Distributed Gen
Residential	Clothes washers Water heaters	N/A	Solar water heating
Commercial	Ozone laundry Low flow faucet aerators Steam Traps	Waste water treatment Condensing boilers Steam leaks	Water utility auto-DR Wastewater plant self gen
Industrial	Pipe Insulation Boilers and steam systems	Pump VFDs	Pressure reduction turbines
Agricultural	Low flow sprinkler nozzles Sprinkler to drip conversion	Pump Efficiency Program	Ag Pump auto-DR



Rebates/incentives determined based on facility level energy savings (not embedded)



Policy activity targeting the Nexus

Variety of recent activity: pilot projects and research work

CPUC 2013-2014 Program Guidance

“We direct the IOUs to propose 2013-2014 efforts (either through limited, water sector focused pilot programs or through targeted efforts within the existing calculated savings programs) on leak-loss detection and remediation and pressure management services for water entities that are IOU customers.”

PG&E 2013-2014 Compliance Filing

“PG&E’s expanded activities will focus on documenting water savings, water delivery system efficiency improvements including leak repair, closer coordination with water and waste water agencies, and expanded energy audits.”



PG&E Water/Energy Emerging Tech Projects

Water Agency Partnership Opportunities

- **Embedded Energy Variability:** Analysis of EBMUD system data to assess spatial/temporal trends in energy intensity (Partnership with UC-Davis)
- **Water Agency Efficiency:** Develop template for targeted efficiency evaluations that can provide water and energy recommendations (CalPoly SLO)



Sprinkler and Drip Irrigation Innovation

- **Combined Irrigation System Evaluations:** Combined approach to pump efficiency, pressure management and irrigation distribution uniformity (CSU-Fresno)
- **Low Pressure Irrigation Design:** Lab and field analysis testing of low pressure emitter, filter, and valve performance (CalPoly SLO)



Ag Water Management and Education

- **CSU Fresno Ag Water & Energy Center:** Creation of a center for education and demonstration activities related to agricultural water/energy issues

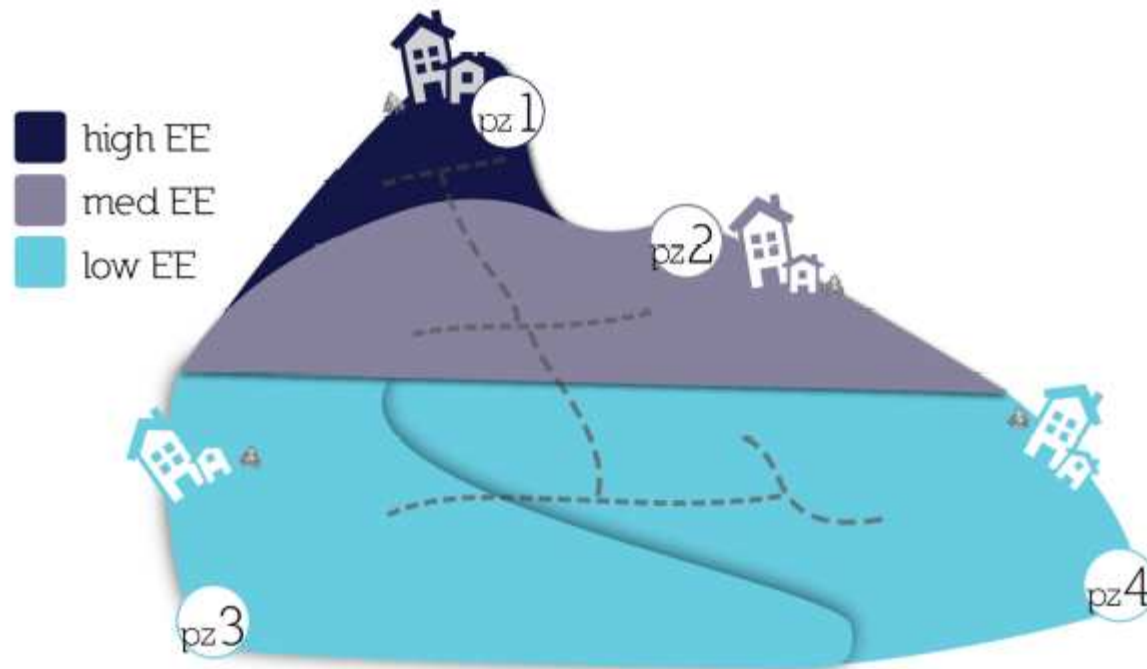




Water conservation and embedded energy

PROJECT UPDATE

EBMUD Embedded Energy Research (UC Davis)



Best alignment with PG&E programs where energy intensity is highest

- Characterizing embedded energy “hot spots”
- Determining energy savings associated with water savings



Water conservation and embedded energy

PROJECT UPDATE

Framework for Water Agency Audits (CalPoly)



Consistent audit tools and data will help PG&E develop and target new programs

- Validating approach at pilot municipalities
- Develop template for targeted efficiency evaluations



Water conservation and embedded energy

PROGRAM UPDATE

Residential Clothes Washer Rebate (PG&E + Water Agency Partners)

YOUR LOCAL water AGENCY

PG&E

Your water agency and Pacific Gas and Electric Company have teamed up to provide you with: **UP TO \$125** CASH BACK ON A CLOTHES WASHER

Qualified washers must be purchased and installed between January 1, 2013 and December 31, 2013

GET 2 REBATES WITH 1 APPLICATION

The clothes washers program could be a template for future joint programs

- Improved volume through coordination
- Simplicity plus value for customers

Q&A

Further questions, please contact Sam Newman
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PG&E Energy Efficiency Channels

Sectors where water usage occurs:

- Water utilities
- Wastewater treatment
- Ag producers
- Food processing
- Industrial
- Residential
- Multifamily
- Large commercial
- Small commercial

PG&E energy efficiency channels:

- Direct sales
- Midstream/upstream
- Trade alliances
- 3rd party partners
- Government partners

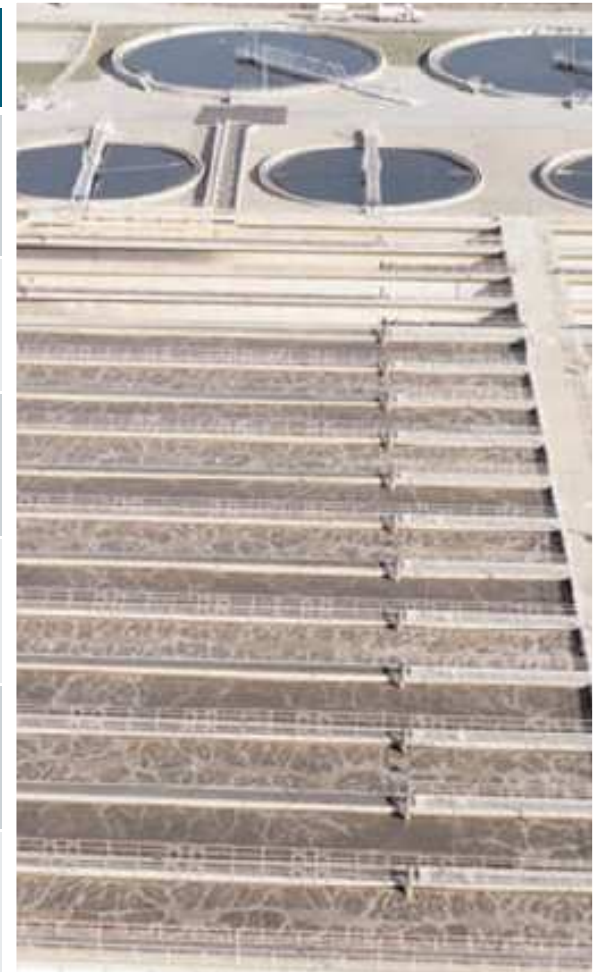
Example Programs:

- Customized retrofit/new construction
- Appliance retailers
- Various opportunities provided by Trade Pro partners
- Wastewater program
- Ozone laundry program
- Food processing program
- Local government partnerships



PG&E Solutions for Water & Wastewater facilities

Service offering	Description
Energy Audits	Analysis of energy usage and identify potential energy savings opportunities
Energy Efficient Retrofits	Rebates and Incentives for installing energy efficient measures and processes
Energy Efficient New Construction	Resources and incentives for energy efficient design and construction
Demand Response	Incentives for voluntary, temporary load reduction during peak demand periods
Solar and other Self-Generation	Rebates for installation of qualified generation systems
On Bill Financing (OBF)	No-interest loans available to eligible customers for energy efficient retrofit projects that are repayable through PG&E bills



PG&E also offers additional services such as Pricing Plans and Benchmarking that enable customers to understand their energy usage and rates to determine any changes to the facility operation and/or pricing plans



Potential partnership opportunities

- New appliance rebate programs using joint funding from water and energy utilities
- Combined energy and water audits for end users
- Bundled efficiency upgrades, possibly including financing
- Messaging and marketing
- Water savings as energy efficiency: Agency Conservation programs, leak loss remediation