



Public Benefits Update

Energy Efficiency and Water Conservation Programs

Board of Public Utilities
January 23, 2017

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LEGISLATIVE HISTORY - ENERGY

1. **Assembly Bill 1890** (Brulte, 1996) requires 2.85% of electric revenue funds for rebates, low income, research and development and renewable energy
2. **Senate Bill 1037** (Kehoe, 2005) report energy efficiency savings to the California Energy Commission annually
3. **Assembly Bill 2021** (Levine, 2006) establish a 10-year energy savings targets on a triennial basis. RPU has set 10-year EE goal of 1% of retail energy sales
4. **Assembly Bill 2227** (Bradford, 2012) requiring 10-year target review on a 4-year basis
5. **Senate Bill 350** (De Leon, 2015) requires the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030



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LEGISLATIVE HISTORY - WATER

1. **Senate Bill X7-7** (Steinberg, 2009) requires 20% reduction in urban per capita water use in California by December 31, 2020
2. **Executive Order B-29-15** (Governor Brown, 2014) RPU mandated 28% reduction in potable water consumption by State Water Resources Control Board
3. **Executive Order B-37-16** (Governor Brown, 2016) RPU reduction goal of 28% reduced to 25% and prohibited watering lawns within 48 hours of rain and irrigating ornamental turf on public street medians
4. **Implementing Executive Order B-37-16 (Current, Under Draft)** *Making Water Conservation a California Way of Life*. Establish long-term water conservation measures and improved planning for more frequent and severe droughts.



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BACKGROUND PUBLIC BENEFITS SURCHARGE

2.85% Public Benefits Charge on Electric Revenue

Collects Approximately \$8 – \$9 Million Dollars Annually to fund:

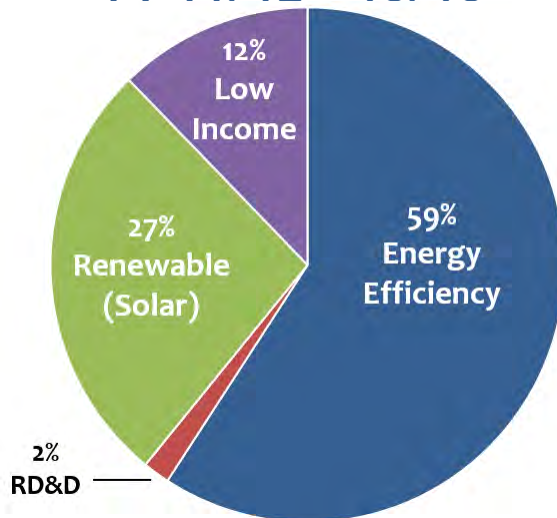
1. Residential and Commercial Energy Efficiency Programs
2. Renewable Energy Programs/Projects
3. Low-Income Assistance Programs
4. Research, Demonstration and Development (RD&D)



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PUBLIC BENEFIT FUND ALLOCATION FY 11/12 – 15/16



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ENERGY EFFICIENCY PROGRAMS

Offered targeted public benefits programs since the 1970's when the oil crisis first brought energy efficiency to the forefront both nationally and locally

Over the ensuing years, Riverside has developed and marketed various programs in partnership with its customers



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ENERGY EFFICIENCY PROGRAMS

32 Residential Programs

- Air Conditioning
- Energy Star
- Pool Pump
- Refrigerator Recycling
- Weatherization
- Tree Power
- Solar
- Whole House

33 Commercial Programs

- Air Conditioning
- Energy Star
- Lighting Incentives
- Weatherization
- Energy Management Systems
- PC Power Management
- Thermal Energy Storage
- Motor Incentives
- Shade Tree
- Solar



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ENERGY EFFICIENCY PROGRAMS

Since 2011:

Rebates Processed

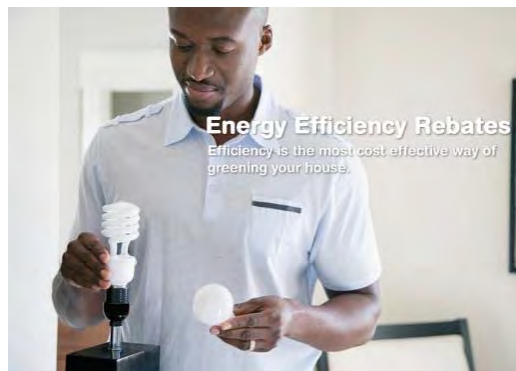
Residential: 103,000

Commercial: 9,750

Energy Savings

Residential: 26,000,000 kWh

Commercial: 61,742,000 kWh



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RENEWABLE ENERGY

SB1 – Solar Energy

1. \$25,000,000 available over a ten year period to fund solar rebates
2. Solar Rebate Program approved by City Council in January 2008



Solar Results to Date

1. \$17.3 million spent on commercial and residential rebates
2. 1,845 rebates issued
3. 11 MW under SB1 program



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LOW-INCOME ASSISTANCE PROGRAMS

Sharing Households Assist Riverside's Energy (SHARE)

\$150 Annual Credit

Annually – \$900,000 allocated to over 5,800 customers

Reliability Charge Refund

Includes Senior Citizens

FY 15/16 – 502 Participants

Energy Savings Assistance Program (ESAP)

Residential energy efficiency direct installation program

340 Participants (2013 – Present)



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RESEARCH, DEMONSTRATION AND DEVELOPMENT (RD&D)

Energy Innovation Grant Program

1. Supports energy research at local institutions of higher learning (renewable energy, energy storage)
2. UC Riverside – Study of PV, Battery Storage and EV Chargers
3. California Baptist University – Solar Powered HVAC

Custom Energy Technology Grant Program

1. Awarded for research, development and demonstration of energy efficiency and renewable energy projects that are unique to a business or manufacturing process
2. Pacific Energy – Battery Storage and Solar



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PURPOSE OF REBATE PROGRAMS

1. Incentivize Energy Conservation
2. Reduce Cost for Energy
3. Encourage Renewable Energy
4. Reduce Pollution
5. Demand Response
6. Offset Utility Energy Costs
7. New Technology
8. Economic Benefits – Job Creation



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ENERGY PROGRAM DEVELOPMENT

Staff Evaluates 4 Main Factors During New Program Development :

1. Customer Market Needs
2. Greatest Energy Savings
3. Technological Advances
4. Cost Effectiveness at Portfolio Level



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ENERGY PROGRAM DEVELOPMENT

RPU's rebate programs reach customers at all levels of participation

Upstream Program:

Wholesale Manufacturing and Supplier Level

- RPU's Upstream HVAC Program

Midstream Program:

Retail Store Level

- RPU's LED Instant Rebate Program



Downstream Program:

Rebate Application Process

- RPU's Traditional Rebate Programs

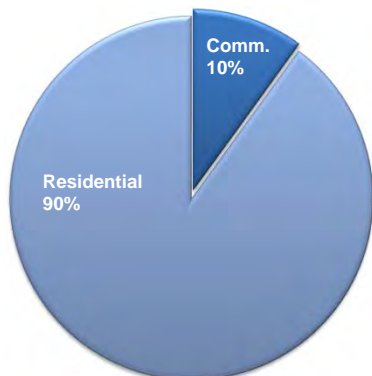


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ENERGY SAVINGS BY SECTOR

RPU Customer Base

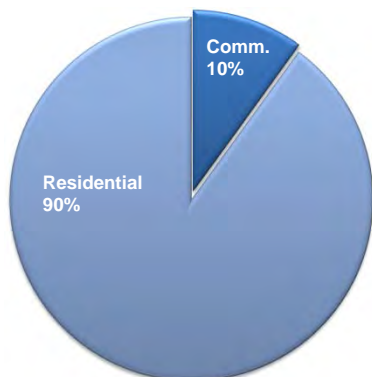


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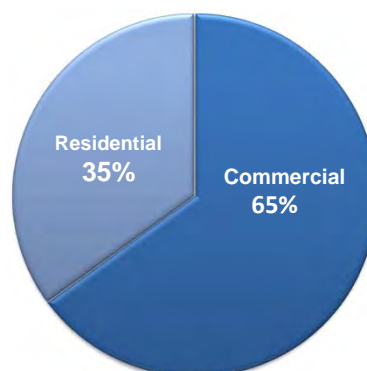
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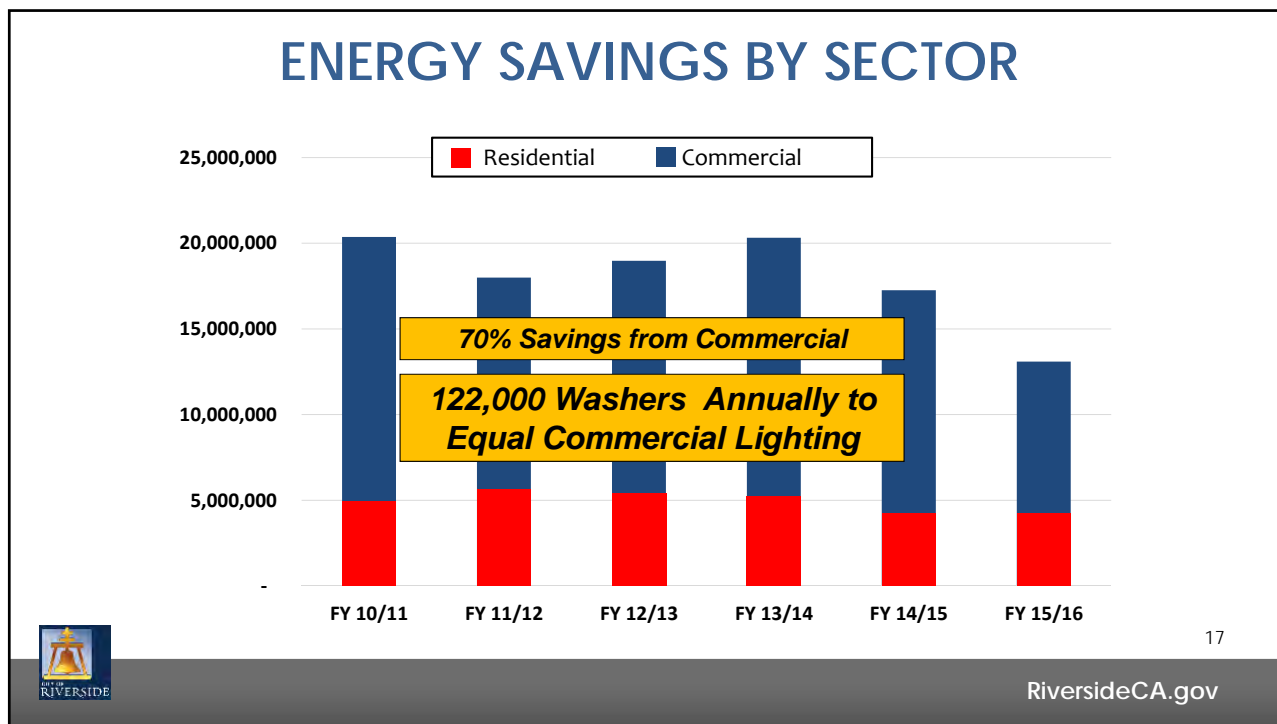


RPU Base-Load



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DIRECT INSTALLATION PROGRAMS

Strong Market Need

27% of RPU's kWh savings comes from DI programs

Commercial

1. Small Business Direct Install Program
2. Keep Your Cool Program

Residential

1. Energy Savings Assistance Program (ESAP)
2. Multifamily / Mobile Home Program

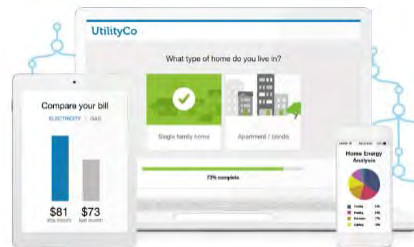
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CUSTOMER ENGAGEMENT PROGRAMS

1. Enhance interaction between utility and its customers
2. Verifiable energy savings by educating customers on efficient use
3. Target specific customers with applicable programs through customer segmentation
4. Promote existing rebate programs



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PROGRAMS FOR UNIQUE CUSTOMER SECTORS

Commercial Customer Sectors

1. Food Service Audit Program
2. Key Account Energy Efficiency Program (KEEP)

Proposed Programs for Unique Customer Sectors

1. Grocery Stores
2. Hotel/Motels



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SELECT PROGRAMS WITH GREATEST ENERGY SAVINGS

Based Riverside's Climate Zone/Region

Air Conditioning Programs

1. Achieves greater kWh savings than coastal communities
2. Created Thermal Energy Storage Program – IceBear



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ENERGY EFFICIENCY & DEMAND RESPONSE AS A RESOURCE

Energy Efficiency as a utility-sector resource

1. Avoided energy and capacity costs
2. Reduced energy costs to customers
3. Avoided GHG emissions
4. Meets SB 350 Goals through Integrated Resource Plans (IRP)

Demand Response as a utility-sector resource

1. Third-party aggregation of large electric customers
2. Thermal Energy Storage Program – Ice Bear



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COST EFFECTIVENESS OF PROGRAMS

Residential Programs					Commercial Programs				
	\$ Spent towards Rebates	Annual kWh Savings	\$ per Annual kWh	Cost to Conserve Energy (Approx. Lifetime Savings)		\$ Spent towards Rebates	Annual kWh Savings	\$ per Annual kWh	Cost to Conserve Energy (Approx. Lifetime Savings)
FY 10/11	\$4,310,072	4,995,712	\$0.86	\$0.05	FY 10/11	\$2,689,656	15,369,168	\$0.17	\$0.01
FY 11/12	\$3,299,467	5,874,992	\$0.56	\$0.07	FY 11/12	\$3,095,415	12,115,061	\$0.25	\$0.02
FY 12/13	\$3,020,700	5,656,761	\$0.53	\$0.06	FY 12/13	\$2,496,021	13,319,737	\$0.19	\$0.08
FY 13/14	\$1,345,158	5,209,365	\$0.26	\$0.02	FY 13/14	\$2,134,827	15,107,131	\$0.14	\$0.12
FY 14/15	\$1,689,619	4,333,366	\$0.39	\$0.06	FY 14/15	\$2,025,982	12,923,880	\$0.15	\$0.07
FY 15/16	\$1,525,213	4,815,214	\$0.31	\$0.06	FY 15/16	\$2,424,870	8,275,924	\$0.29	\$0.11
Total	\$15,190,229	30,885,410	\$0.48	\$0.05	Total	\$14,866,771	77,110,901	\$0.20	\$0.07



COST EFFECTIVENESS OF PROGRAMS

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Residential: \$0.48
Commercial: \$0.20
Portfolio Measure Costs (1st Year): \$0.34
Portfolio Measure Costs (Lifetime): \$0.06



ENERGY PROGRAM REPORTING

1. CEC requires verifiable energy savings
2. POU's collectively use the Technical Reference Manual (TRM) through California Municipal Utilities Association
3. Savings submitted to CEC March 15th each year

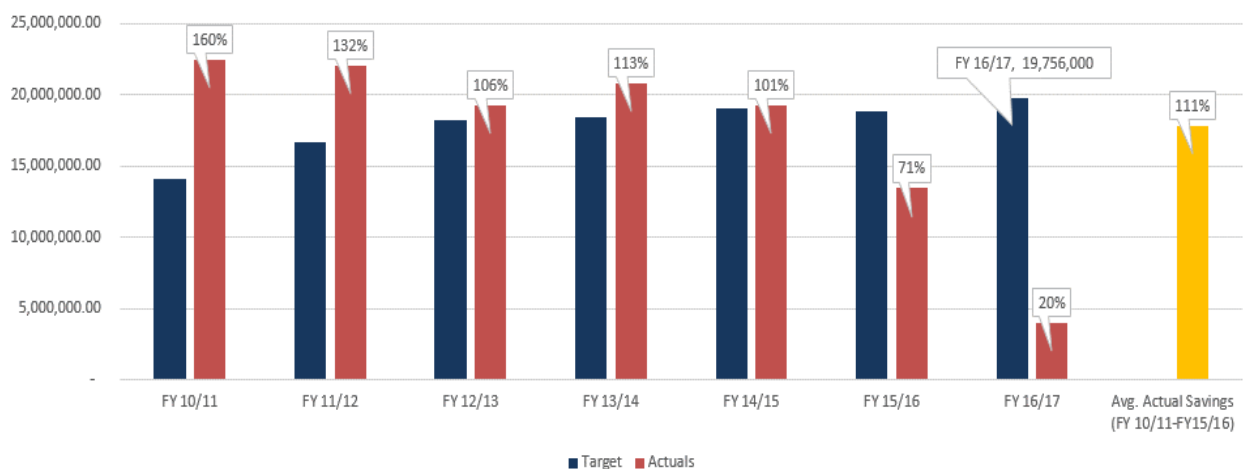


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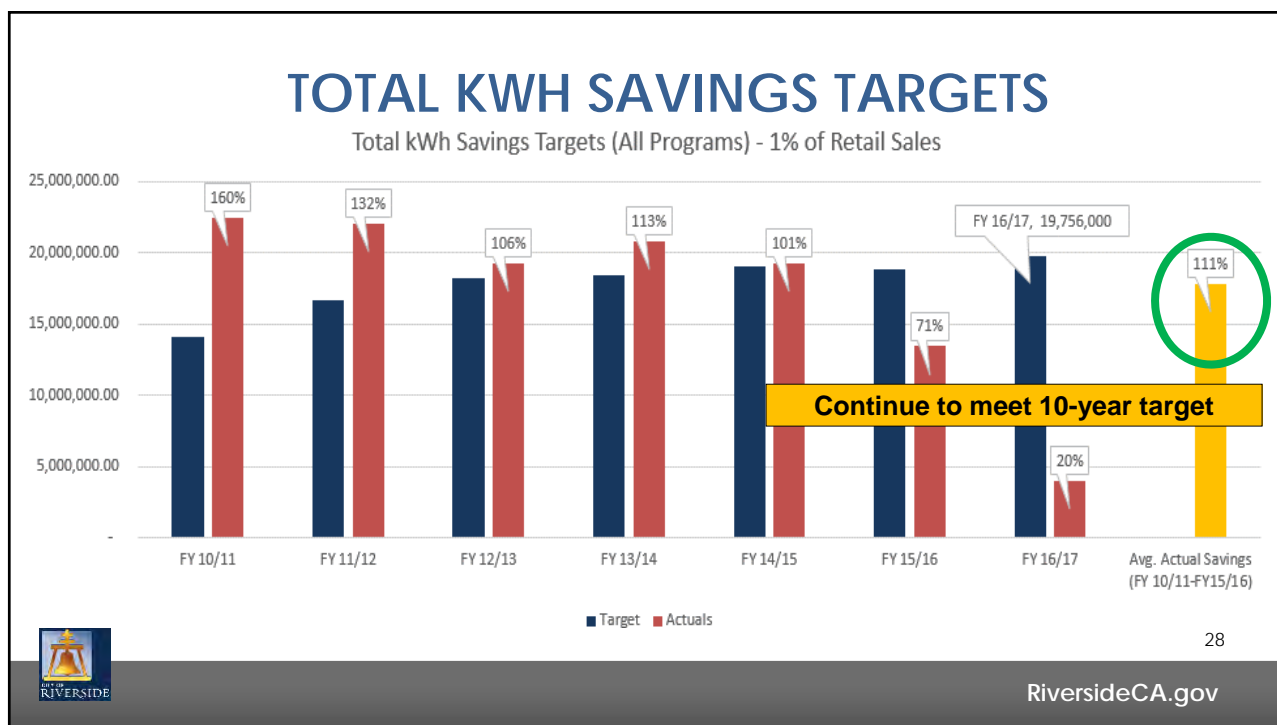
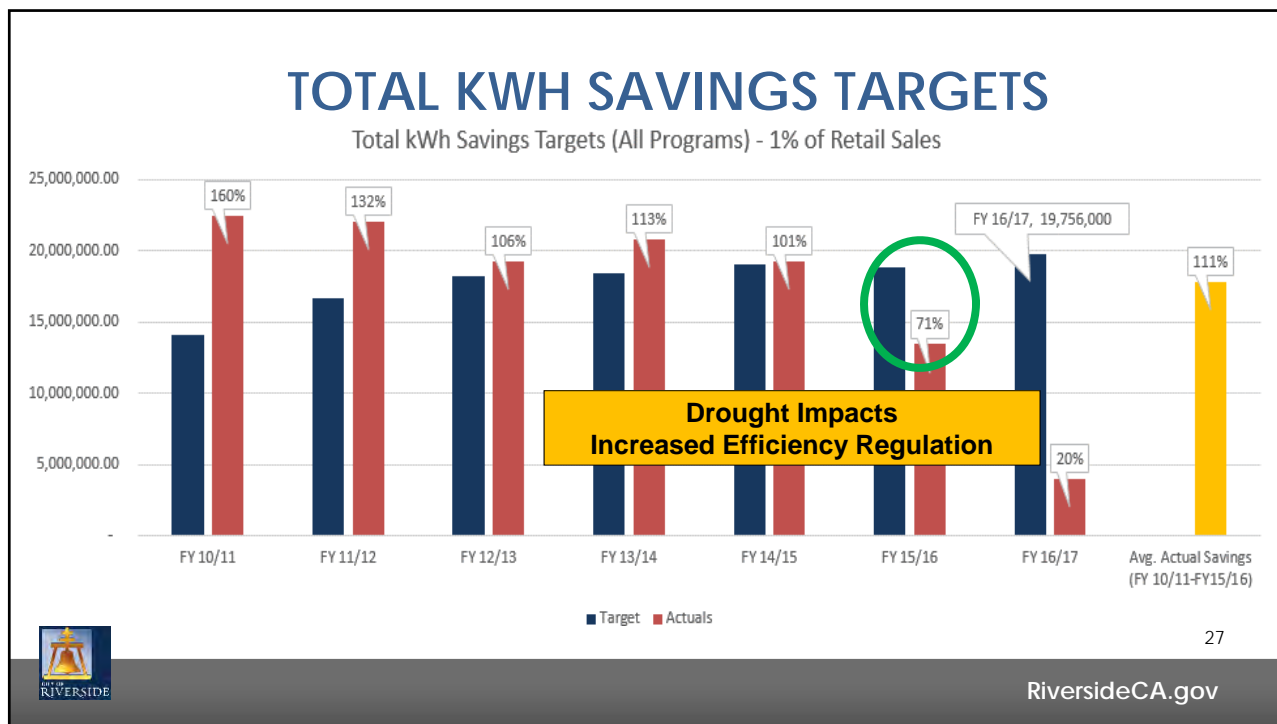
TOTAL KWH SAVINGS TARGETS

Total kWh Savings Targets (All Programs) - 1% of Retail Sales



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OUR LEADERSHIP

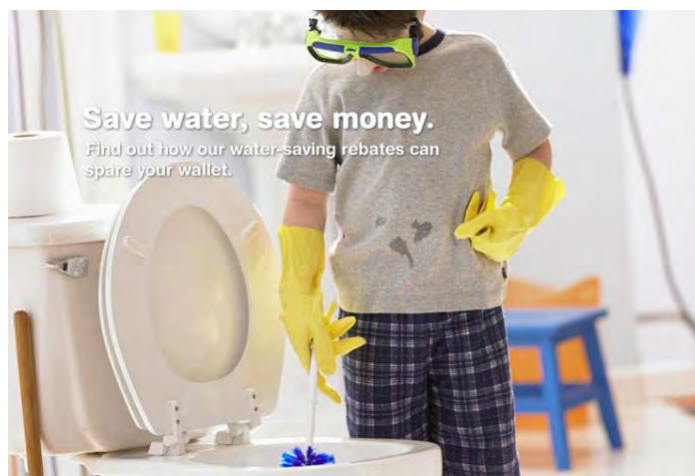
1. Whole House Program
2. Tree Power Program
3. Direct Installation Programs for Business
4. Southern California Gas Company Inter-Utility Partnership



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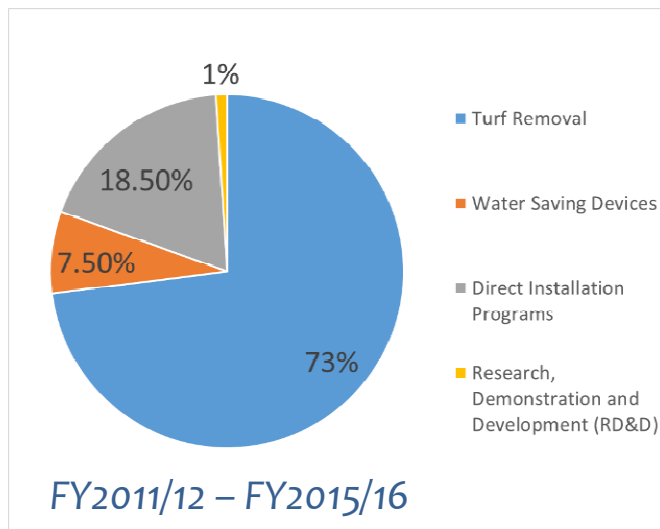
WATER CONSERVATION SURCHARGE



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WATER CONSERVATION SURCHARGE ALLOCATION

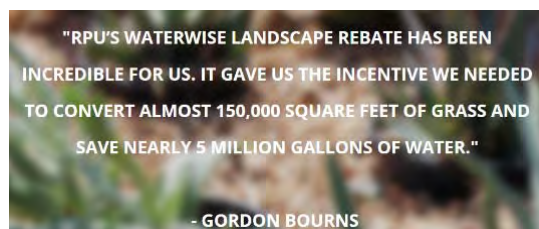


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PURPOSE OF REBATES

1. Incentivize Water Conservation & Technology
2. Reduce City-wide water consumption
3. Encourage water conservation best practices
4. Water savings considered a resource



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WATER EFFICIENCY PROGRAMS

Commercial Rebate Programs

WaterWise Landscape Incentives

Residential Rebate Programs

1. High-Efficiency Clothes Washers
2. Weather-Based Irrigation Controller
3. Free Sprinkler Nozzles
4. High Efficiency Sprinkler Nozzles
5. High Efficiency Toilets
6. WaterWise Landscape Rebate

Direct Installation Programs (Commercial and Residential)

Smart Irrigation Program



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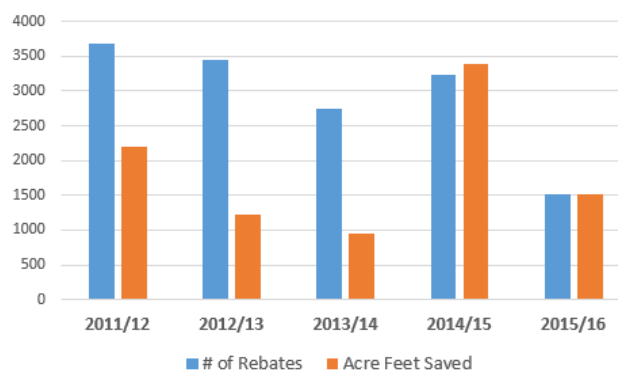
WATER EFFICIENCY PROGRAMS

Since 2011:

Rebates Processed – 14,622

Water Saved – 9,278 Acre Feet*

*(Lifetime Savings)



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WATER EFFICIENCY PROGRAMS

4 Categories of Water Conservation Programs:

1. Turf Removal
2. Water Saving Devices
3. Direct Installation Programs of water efficiency measures
4. Research Demonstration & Development

Fiscal Year 2011/12 – 2015/16 (Lifetime Savings)

Cost of imported water = Approximately \$1,000/AF

Program Type	Funding	Participants	*Acre Feet Saved	\$ per Acre Foot	Variance from Purchasing Imported Water	Embedded Energy (kWh)
Turf Removal	\$5,610,182	732	3890	\$1,400	\$400/AF	2,063,011
Water Saving Devices	\$574,524	874	3848	\$150	(\$750)/AF	487,686
Direct Installation Programs	\$1,407,862	731	1,540	\$900	(\$100)/AF	305,364
Research, Demonstration and Development (RD&D)	\$50,000	1	n/a	n/a	n/a	n/a
Total	\$7,642,568	2,338	9,278	\$790 (avg.)	(\$220)/AF	2,856,061



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TURF REMOVAL

Turf removal programs are designed to encourage RPU customers to reduce their water consumption by removing their turf grass

Since 2011:

1. *Artificial Turf* (not currently being funded)

180 Participants
98,082,000 gallons saved

2. *WaterWise Landscape*

552 Participants
1,169,920,000 gallons saved



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WATER CONSERVATION DEVICES

Programs include High Efficiency Toilets, High-Efficiency Clothes Washers, Weather Based Irrigation Controllers, High Efficiency Nozzles and FreeSprinklerNozzles.com

Since 2011:

Devices

874 Participants

1,168,780,000 gallons saved



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DIRECT INSTALLATION PROGRAMS

Programs include High Efficiency Toilets, High Efficiency Urinal Flush Valves and Smart Irrigation Program (SIP)

Since 2011:

Participation

5,100 direct installed devices

585,355,000 gallons saved



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RESEARCH DEMONSTRATION AND DEVELOPMENT

The Water Innovations Grant Program provides support for local universities as they make advancements in water conservation techniques and procedures

Awarded Grant Participant

UC Riverside \$50,000



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WATER PROGRAM REPORTING

1. RPU tracks water conservation activity for internal purposes
2. RPU is required to submit Urban Water Management Plan every 5 years to Department of Water Resources
3. Water Conservation Bill of 2009 SBX7-7
 - Report progress on 20% reduction in per-capita urban water consumption by 2020
 - Compliance target is 213 Gallons Per-Capita Per Day (GPCD)
 - **Currently tracking at 180 GPCD**



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WATER PROGRAM REPORTING

Executive Order B-37-16 fulfills the first directive of the California Water Action Plan, to “Make Conservation a California Way of Life.”

RPU required to report conservation and enforcement efforts:

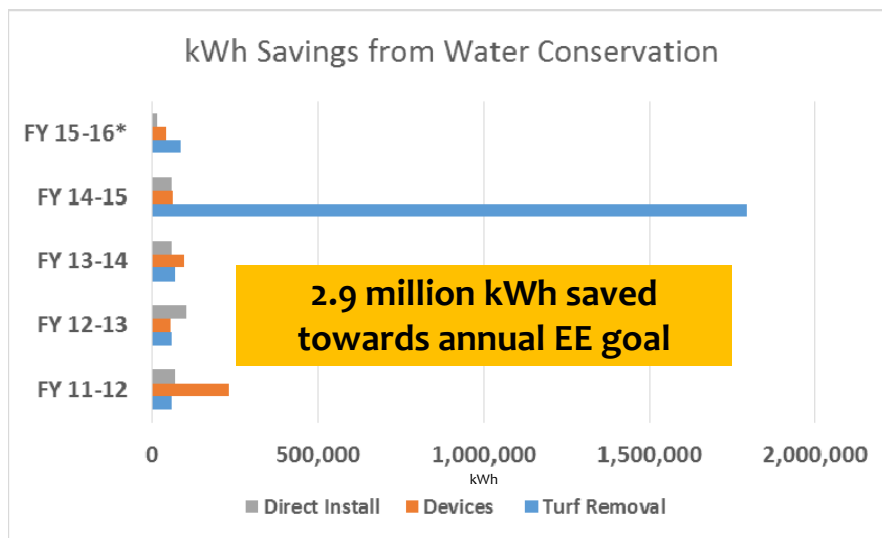
1. Using water more efficiently
2. Eliminating water waste
3. Strengthening local drought resilience
4. Improving agricultural water use efficiency and drought planning



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EMBEDDED ENERGY IN WATER CONSERVATION



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RECOMMENDATIONS

That the Board of Public Utilities receive and file this report.

