WATER | ENERGY | LIFE

RIVERSIDE PUBLIC UTILITIES

Board Memorandum

BOARD OF PUBLIC UTILITIES **DATE:** JANUARY 23, 2017

ITEM NO: 8

SUBJECT: **ENERGY EFFICIENCY AND WATER CONSERVATION PROGRAMS UPDATE**

ISSUES:

Receive an update on the Riverside Public Utilities' Energy Efficiency and Water Conservation Programs.

RECOMMENDATION:

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

LEGISLATIVE HISTORY:

Electric:

Assembly Bill (AB) 1890 (Brulte, 1996) requires that 2.85% of electric revenue be utilized to fund public benefits programming and must be used in at least one of four areas: demand side management (energy efficiency), renewable energy, low-income assistance, or research, development, and demonstration.

Senate Bill (SB) 1037 (Kehoe, 2005) sets ambitious energy conservation policies and goals requiring publicly owned utilities (POU's) to report annually kilowatt hour (kWh) savings to the California Energy Commission (CEC) and to its customers.

AB 2021 (Levine, 2006) requires all California POU's beginning in 2007, and every three years thereafter, to identify all potentially achievable cost-effective energy efficient savings and establish annual targets for energy savings and demand reduction over a ten-year period.

AB 2227 (Bradford, 2012) changed the frequency of the energy efficiency ten-year target setting requirements of AB 2021 from once every three years to once every four years.

SB 350 (De Leon, 2015) establishes annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas by January 1, 2030. The bill requires local POU's to establish annual targets for energy efficiency savings and demand reduction consistent with this goal.

Water:

Senate Bill (SB) X7 -7 (2009) requires the state to achieve a 20% reduction in urban per capita water use in California by December 31, 2020. The state is required to make incremental progress towards this goal by reducing per capita water use by at least 10% on or before December 31, 2015.

Executive Order B-29-15 (2014) – The State Water Resources Control Board imposed restrictions to achieve a statewide 25% reduction in potable urban water usage. Riverside Public Utilities (RPU) was mandated, by the State, to reduce its potable water consumption by 28%.

Executive Order B-37-16 (May 2016) – Recognizing persistent yet less severe drought conditions throughout California, on May 18, 2016, the State Water Board adopted an emergency water conservation regulation that replaces the 2014 emergency regulation. Through this action, RPU's reduction goal of 28% was reduced to 25%. This action, made permanent, prohibited practices that waste potable water such as watering lawns within 48 hours of measurable precipitation and irrigating ornamental turf on public street medians.

Implementing Executive Order B-37-16 (Current, Under Draft) – Executive Order B-37-16, signed by Governor Brown on May 9, 2016, builds on that success to establish long-term water conservation measures and improved planning for more frequent and severe droughts. The centerpiece of the Executive Order is a requirement for the State's 410 urban water suppliers to meet new water use targets. Rather than measuring water savings as a percentage reduction from a chosen baseline, the new standards will take into account the unique climatic, demographic and land-use characteristics of each urban water agency's service area. This approach represents a fundamental shift to a conservation framework that is more durable and that can be applied equitably and uniformly across the enormous variation in local conditions in California. The new targets will ensure all urban water is used efficiently and will facilitate conservation measures such as conversion to California-friendly landscapes, replacement of inefficient fixtures and appliances, and reductions in system leakage.

Other aspects of the proposed conservation framework will:

1. Provide greater consistency among water suppliers statewide in the elements of Urban Water Management Plans, Water Shortage Contingency Plans, and Agricultural Water Management Plans; and continue work with counties to improve drought planning in small communities and rural areas;

2. Enable water suppliers to customize their water management strategies and plan implementation to regional and local conditions;

3. Empower water suppliers to take a place-based response to water shortages caused by drought or other water emergencies, while planning for longer drought cycles; and

4. Incentivize and set standards for the use of new technologies and practices to reduce leaks.

The May 2016 regulation that will be in effect from June 2016 through January 2017 requires locally developed conservation standards based upon each agency's specific circumstances. It replaces the prior percentage reduction-based water conservation standard with a localized "stress test" approach. These standards require local water agencies to ensure a three-year supply assuming three more dry years like the ones the state experienced from 2012 to 2015. Water agencies that would face shortages under three additional dry years will be required to meet a conservation standard equal to the amount of shortage. RPU is currently meeting the three-year "stress test" requirements and is therefore currently being held to a 0% reduction goal.

DISCUSSION:

PUBLIC BENEFITS ENERGY SURCHARGE BACKGROUND:

RPU currently offers a wide variety of rebate programs and services to residential and commercial electric customers through the use of Public Benefit Funds outlined within AB 1980. The Public Benefits Surcharge imposes a state mandated 2.85% minimum charge on all electric sales to implement programs within the four areas approved categories. The average residential RPU customer pays approximately $3.00 per month for this surcharge, which collectively represents approximately $8 – $9 million in funding annually. The expenditures of Riverside's Public Benefit Surcharge fund is entirely at the discretion of the locally

elected governing body, which for Riverside is the City Council, so long as they fit within the four categories included in AB 1890 as shown below:

1. Residential and Commercial Energy Efficiency Programs
2. Renewable Energy
3. Low-Income Assistance Programs
4. Research, Demonstration and Development Programs

Public Benefit Fund expenditure allocations in each category over the past five years are shown below:

Category (Fiscal Years 2011/12 – 2015/16)	Expenditure ($)	% of Entire Budget
Residential and Commercial Energy Efficiency Programs	$23,057,272	59%
Renewable Energy (Solar)	$10,482,634	27%
Low-Income Assistance Programs (SHARE, ESAP, Reliability Refund)	$4,766,802	12%
Research, Demonstration and Development (RD&D)	$656,253	2%
Total	**$38,962,961**	**100%**

1. Residential and Commercial Energy Efficiency Programs
Historically, Riverside had 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.

RPU currently offers a wide variety of residential and commercial energy efficiency rebate programs to achieve the mandated goals of AB 1890. The success of public benefit programs and meeting kWh savings goals is ultimately dependent on the interest and ability of customer's participation in RPU's programs. Since 2011, staff has processed over 103,000 residential and 9,750 commercial rebate incentives, respectively. RPU currently offers 35 Residential (Attachment 1) and 33 Commercial (Attachment 2) energy efficiency programs ranging from energy star products, lighting, weatherization, air conditioning and direct installation programs. Since 2011, RPU has collectively saved nearly 88,000,000 kWh by spending just over $23 million dollars on these programs to support energy efficiency, which is equivalent to powering just under 10,000 average Riverside homes annually or avoidance of constructing a ten megawatt peaker-plant.

Since 2012, RPU has been recognized locally and nationally for the efficient and innovative use of Public Benefits funds for programs such as the Whole House Program, Small Business Direct Installation Program, and Southern California Gas Company Inter-Utility Partnership by Department of Energy, California Municipal Utilities Association, Inland Empire Economic Partnership and California Association for Local Economic Development.

2. Renewable Energy

RPU created the Solar Rebate program in response to the requirements of SB-1 Solar Energy in January 2008. SB-1 required RPU to make available approximately $25 million over a ten-year period to fund solar rebates for commercial and residential customers. The solar rebate program is funded entirely through Public Benefit Funds. RPU allocates $2.5 million per year split between residential and commercial customers. The solar rebate program, as currently approved, will sunset on December 31, 2017, unless extended by the City Council or the State Legislature. To

date, RPU has spent $17.3 million on 1,845 commercial and residential solar rebates, which equates to 11 megawatts of customer generated solar energy in Riverside.

3. Low-Income Assistance Programs

Sharing Households Assist Riverside's Energy (SHARE) is a low-income assistance program that credits up to $150 toward electric deposit or bill payment assistance for qualified low-income applicants annually. Qualified customers are defined as earning less than 150% of Federal Poverty Guidelines. Annually, RPU serves over 5,800 low-income customers and spends nearly $900,000 through the SHARE program.

Additionally, RPU offers financial assistance to low-income residents and seniors with disabilities with a Reliability Charge refund on their monthly bill. In Fiscal Year 2015-16, a total of 502 customers participated in this program. Customers can apply annually for this refund to receive this assistance.

Lastly, RPU's low-income customers can participate in the Energy Savings Assistance Program (ESAP), a direct installation program that offers lighting efficiency upgrades, HVAC tune-ups, smart power strips, a new energy efficient refrigerator and refrigerator recycling. The program began in 2013 when RPU partnered with The Southern California Gas Company (SoCal Gas) to take a comprehensive utility approach to upgrades within the home. The program serves both electric and gas customers with measures that cost affectively assist more customers. Since 2013, the ESAP program served 340 low-income customers and in Fiscal Year 2015-16 only, ESAP served 120 customer with energy efficiency upgrades in their home.

4. Research, Demonstration and Development (RD&D) Programs

RPU continues to invest in RD&D programs through partnerships with both businesses and local higher education institutions. RPU has expended over $1 million in Public Benefit Funds over the last ten-years through its Energy Innovation Grant Program to support energy research at local institutions of higher learning. Energy Innovation Grants are available to public or private universities within RPU's service territory for the purpose of research, development and demonstration of energy efficiency, renewable energy, energy storage, strategic energy research and electric transportation. To date, RPU has awarded UC Riverside grant funding for a study of photovoltaic solar, battery storage systems and electric vehicle chargers at the distribution system level as well as California Baptist University to study solar powered HVAC equipment.

Additional RD&D funding is provided to local commercial customers under the Custom Energy Technology Grant Program. These grants awarded for research, development and demonstration of energy efficiency and renewable energy projects are unique to a business or manufacturing process that can demonstrate energy savings, demand reduction or renewable power generation. RPU has recently collaborated on such grant projects with local businesses on battery storage and thermal energy storage.

RPU also participates in SCPPA directed RD&D efforts and will continue to explore future RD&D opportunities as they occur on a case by case basis. Staff will also come back to the RPU Board with a report specifically regarding grant programs at a later date.

ENERGY PROGRAM DEVELOPMENT:

In addition to regulatory mandates, RPU staff determines new programs due to customer market needs, new technology advances and greatest kWh savings potential.

RPU's rebate programs reach customers at all levels of participation. This includes reaching customers upstream at the wholesale distribution and supplier level as an energy efficient commercial air conditioning

program, midstream at the retail store level as a LED instant rebate program and downstream focusing on incentives paid through an application process once an energy efficiency project is completed. To proactively target unique customer segments that are harder to reach through traditional incentive models, RPU created direct installation programs for small to medium size businesses as well as low income, mobile home and multifamily households. In addition, Council has recently approved the creation of a new customer engagement program for energy efficiency to enhance the interaction between the utility and its customers by providing them the resources to manage their utility account and therefore drive kWh savings and customer satisfaction. The customer engagement program will also significantly enhance RPU's ability for target messaging to specific customers through segmentation and data analytics. This program is targeted towards both energy and water customers.

Staff also created a Commercial Food Service program in partnership with SoCal Gas Company to assist our restaurants and commercial food service facilities by identifying opportunities that may reduce their utility consumption. Finally, staff is currently researching the potential for additional programs that can further engage in energy and water conservation within the grocery store and hotel/motel customer segments.

RPU's customer base plays a major role in determining program offerings. RPU commercial customers represent only 10% of the total customer base however, the combined energy load of all commercial customers represents approximately 66% of the total utility consumption. As a result, RPU has dedicated significant program resources to assist the commercial customer segment in achieving energy efficiency goals. Additionally, RPU receives more than half of the annual kWh savings claimed from commercial lighting and Direct Installation Programs. Examples include high efficiency lighting rebates, High Intensity Discharge (HID) fixture upgrades as well as RPU's Small Business Direct Installation and Keep Your Cool Direct Installation Programs. These continue to be an important component of the overall program portfolio regarding both customer satisfaction and kWh savings.

New technology advances in lighting are key drivers to developing new and creative rebate programs. To capitalize on the growth of new LED lighting products in the marketplace, RPU created a LED retail buy-down program designed to encourage customers to replace less efficient lighting products in their homes and businesses with state-of-the-art LED lighting products.

In addition, RPU incentivizes customers who purchase products above code or the baseline consumption such as Energy Star appliances or variable speed pool pumps. For example, the current code requires that a new pool pump needs to be replaced with at least a two-speed pump; however, RPU incentivizes customers through our rebate program that choose more efficient products, such as a variable speed or variable flow pump instead.

RPU staff reviews potential programs for their greatest kWh savings in our climate zone and region. For example, offering an air conditioning rebate in Riverside's climate territory realizes greater kWh savings than that of Northern California climates or nearby coastal communities where A/C load realizes less kWh savings. In Fiscal Year 2014-15, RPU increased rebate amounts for the residential HVAC Replacement program for 16 SEER or higher rated units to incentivize customers to install more efficient HVAC equipment. As a utility located in Climate Zone 10, HVAC load is a major energy efficiency target and peak demand reduction measure. RPU also created a new Thermal Energy Storage Program with Ice Energy's Ice Bear product as a demand response resource during peak summer load.

ENERGY EFFICIENCY AND DEMAND RESPONSE AS A RESOURCE:

Energy efficiency is a critical element of the resource planning process for generation, transmission, distribution and demand-side management resources. The primary reason for pursuing energy efficiency as a utility-sector resource is the long-term stream of benefits to the utility (e.g., avoided energy and capacity costs), to participating customers (e.g., reduced energy costs), and to society at large (e.g., avoided emissions and avoided adverse health impacts). Therefore, RPU Customer Relations and Power Resources Divisions have begun reviewing all efficiency programs collectively to determine the avoided

cost of pursuing additional electric resources. In addition, SB 350 requires the state to achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas end uses by 2030, as well as to increase California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard (RPS) eligible resources, including solar, wind, biomass, geothermal, and others. To help ensure these goals are met and the greenhouse gas emission reductions are realized, energy efficiency and demand response programs must be fully incorporated into our Integrated Resource Planning process. This planning process will detail how RPU can meet their customers resource needs, reduce greenhouse gas emissions and ramp up the deployment of clean energy resources.

Over the years, RPU has had sufficient resources to meet summer seasons demands through wholesale power procurement and use of RPU's internal generation asset such as Riverside Energy Resource Center peaker plants. RPU staff is now looking at potential benefits of demand response as a tool for customers to reduce their peak load through programs such as a third party aggregation for large customers whose load profile meets demand response requirements. In Fiscal Year 2014/15, RPU launched a new Thermal Energy Storage Pilot Program that replaces old HVAC equipment with new energy efficient equipment installed concurrently with Ice Energy's Ice Bear thermal energy storage. This pilot program also included approximately one megawatt of demand response capability by direct load control of these Ice Bear enabled HVAC systems during peak energy demand periods.

Staff reviews the cost of energy efficient measures to determine overall program benefit to the utility. The energy efficient measures are determined dividing the cost of the measure by the total kWh savings the measure yields. RPU's commercial programs offer the greatest energy savings (77,110,901 kWh) per dollar spent ($14,866,771), which results in the average price per kWh saved for commercial energy efficiency portfolio programs ($0.19/kWh) significantly lower than residential ($0.49/kWh) (see charts below). RPU's Key Account program is a tool to achieving these goals by leveraging relationships and partnerships with the business community. Although RPU sees greater participation within the residential sector (126,651 applications) compared to commercial (10,518), this is strictly due to larger numbers of residents than businesses within the service territory. Staff balances high-cost programs that may have a greater customer benefit with low-cost programs to meet resource and program goals.

Staff reviews the "Cost to Conserve Energy" over the lifetime of particular measures for assessing the benefit and cost effectiveness of energy efficiency programs and for forecasting loads in resource planning. Lifetime savings is the length of time that a specific energy efficiency measure or activity saves energy over the life of measure.

	Residential Programs				
	# of Rebates Processed	$ Spent towards Rebates	Annual kWh Savings	$ per Annual kWh	Cost to Conserve Energy (Approx. Lifetime Savings)
FY 10/11	23,117	$4,310,072	4,995,712	$0.86	$0.05
FY 11/12	20,409	$3,299,467	5,874,992	$0.56	$0.07
FY 12/13	20,999	$3,020,700	5,656,761	$0.53	$0.06
FY 13/14	20,796	$1,345,158	5,209,365	$0.26	$0.02
FY 14/15	22,691	$1,689,619	4,333,366	$0.39	$0.06
FY 15/16	18,639	$1,525,213	4,815,214	$0.31	$0.06
Total	**126,651**	**$15,190,229**	**30,885,410**	**$0.48**	**$0.05**

	Commercial Programs				
	# of Rebates Processed	**$ Spent towards Rebates**	**Annual kWh Savings**	**$ per Annual kWh**	**Cost to Conserve Energy (Approx. Lifetime Savings)**
FY 10/11	768	$2,689,656	15,369,168	$0.17	$0.01
FY 11/12	1,071	$3,095,415	12,115,061	$0.25	$0.02
FY 12/13	1,498	$2,496,021	13,319,737	$0.19	$0.08
FY 13/14	1,535	$2,134,827	15,107,131	$0.14	$0.12
FY 14/15	1,441	$2,025,982	12,923,880	$0.15	$0.07
FY 15/16	4,205	$2,424,870	8,275,924	$0.29	$0.11
Total	**10,518**	**$14,866,771**	**77,110,901**	**$0.20**	**$0.07**

ENERGY PROGRAM REPORTING:

Per state mandates such as SB 1037, AB 2021 & AB 2227, RPU has set ambitious energy efficiency goals and adopted an aggressive ten-year energy efficiency goal equivalent to 1% of retail electric sales and has achieved these savings from 2010 to 2016. Today, RPU's accumulated savings since 2010 is 111% of the ten-year goal (exceeds the ten-year goal by 11%) with a total of 120,468,322 kWh saved.

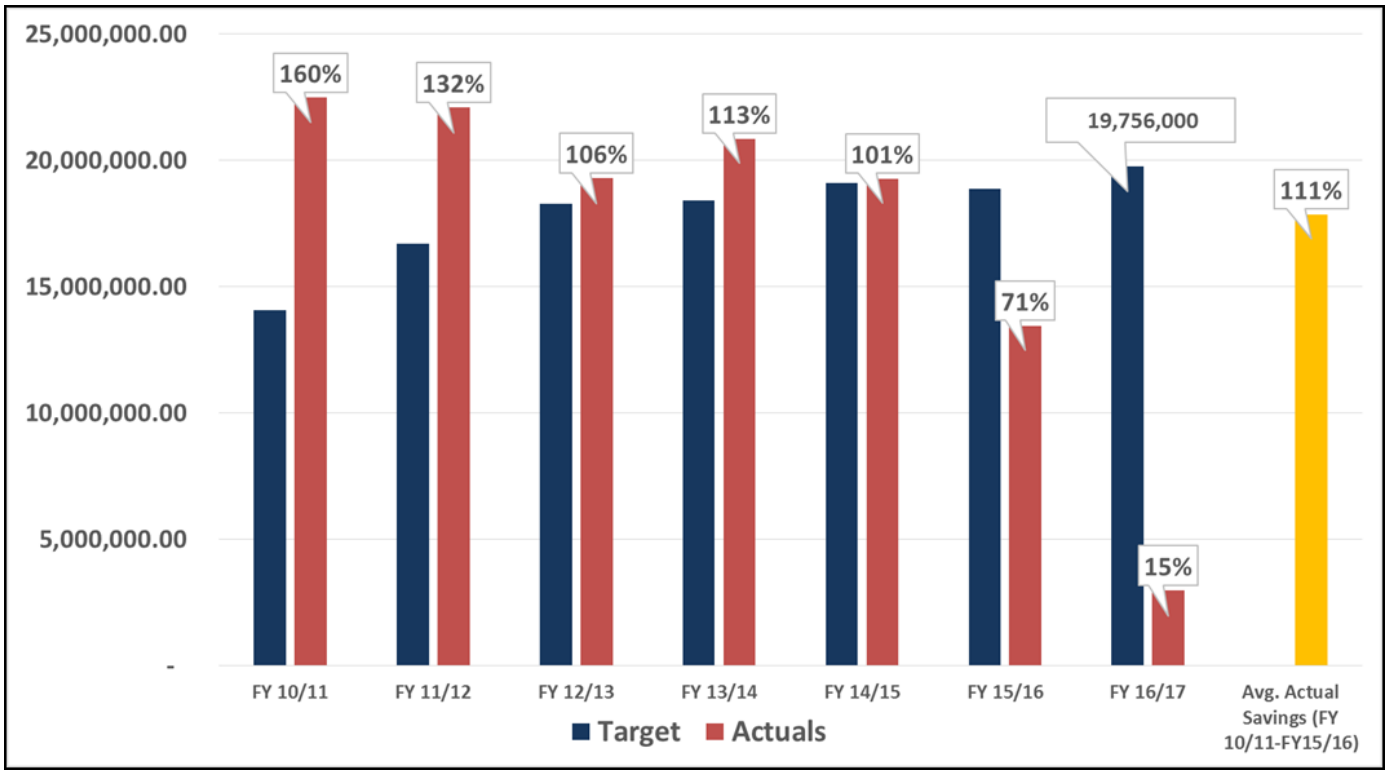
Since the adoption of SB 1037 in 2005, POU's have invested in the development of tools and resources for accurately reporting the results of energy efficiency programs through a partnership between Southern California Public Power Authority (SCPPA), California Municipal Utilities Association (CMUA) and the Northern California Power Agency (NCPA). The California POU's hired a consultant that created a reporting tool known as E3 for reporting kWh savings to the State Energy Commission. The deemed savings in the E3 model for each energy efficiency measure initially relied on Investor Owned Utility data called the Database for Energy Efficient Reporting (DEER). In subsequent years, POU's moved to a more updated model developed by ERS called the Technical Reference Manual (TRM), which is now the primary source for deemed energy savings used for calculating and reporting annual and lifetime program performance. The TRM provides the methods, formulas, and default assumptions for estimating energy savings and peak demand impacts from energy efficiency measures and projects. Energy savings are then submitted to the CEC on March 15th based on the data collected in the E3 reporting tool. In accordance with CEC guidelines, POU's report energy savings based upon first year kWh savings of the measure reported.

If a specific measure cannot be found in the TRM, RPU can use the E3 default data based on DEER data or a verified utility work paper or appropriate engineering manual calculation can serve as back-up documentation to justify claimed kWh savings. Items not found in the TRM are then entered into the EE Reporting Tool as a custom measure with these kWh savings documents as back-up.

Additionally, AB 2227 further requires each POU to identify ten-year energy efficiency targets that are cost effective on a four year basis. RPU last set these targets in 2013 and is now participating in another potential study for the next ten-year targets. To approach this goal setting in a cohesive and cost effective manner, CMUA, NCPA and SCPPA joined to collaborate and select a consultant to development the ten-year model of energy efficiency projections. Navigant Consulting Inc. was retained and bases these

targets upon several factors including technical potential, economic potential, cumulative market potential, and incremental market potential for the residential, commercial, industrial, and agricultural customer segments. This statewide model used in this potential study is referred to as the Energy Efficiency Resource Assessment Model. RPU staff will bring these new targets before Board for approval in the early part of 2017.

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



ENERGY PROGRAM INSPECTION AND COMPLIANCE:

As part of customer engagement efforts, RPU consistently performs inspections of residential and commercial rebate applications.

1. An onsite inspection rate of 10% for all residential program participants, performed by RPU staff and contractors;

2. A pre- and post-inspection of 100% of commercial rebate participants, including a review of historical energy usage, energy-saving calculations and post measure bill analysis;

3. Contract with engineering firms to verify claimed energy savings on large, complex or technical commercial projects before issuing a rebate incentive;

4. Audits and installations performed by third-party contractors for RPU direct installation programs have high inspection rates that are performed by both the contractor and RPU staff; and

5. All residential and commercial solar PV installations are field inspected and verified by city personnel for program compliance, system inter-connection standards and rated production output.

PUBLIC BENEFITS ENERGY IMPLEMENTATION PLAN OVERVIEW:

The Public Benefits Program budget is approved by RPU Board and City Council, bi-annually within the overall utility budget during the two-year budget process. All programs are listed individually in the Public Benefits Programs and Services budget.

On May 1, 2001, City Council approved the Administration of the Public Benefits Implementation Plan (Attachment 3), which gives authority to the RPU General Manager to approve modifications to existing Program Guidelines that are in accord with AB 1890. In addition, the City Council authorized the RPU General Manager to approve fund transfers between programs that have already been approved by City Council without further Board or City Council approval. The Public Benefits Program budget is approved each year by RPU Board and City Council as one Division within the overall Utility budget in May of each year. All line items in Public Benefits Programs and Services budget are listed.

The Public Benefits Implementation plan assists program efficiency by giving RPU the flexibility to administer all programs effectively. For example, it is extremely difficult to forecast customer participation from one year to the next since customer response and market conditions drive programs. This approved process allows RPU staff to determine minor changes to a program as well as allocate funding from a program with lower participation to a program with higher participation levels in order to meet savings goals and customer satisfaction. These changes are often line item transfers authorized by RPU's General Manager from one program fund to another, as long as the transfers do not exceed the overall Public Benefits budget authority as approved by Board and Council in the two-year budget.

WATER CONSERVATION SURCHARGE BACKGROUND:

On May 25, 2004, the City Council adopted the ten-year Water Conservation Surcharge to serve the growing need for water conservation in the City of Riverside. On April 22, 2014, the City Council approved the extension of the Water Conservation Surcharge for an additional ten years. The Water Conservation Surcharge is a 1.5% charge on all water sales for residential and commercial customers and it is listed as an individual line item on the monthly utility bill. The average residential RPU customer pays $0.70 per month for this surcharge which, collectively, represents $750,000 – $950,000 for the fund annually. The Water Conservation Surcharge is utilized for:

1. Conservation, education, and water use efficiency programs:
    a. Turf Removal
    b. Water Saving Devices
    c. Direct Installation Programs of water efficiency measures
2. Research, development, and demonstration programs to advance science and technology on water conservation

As the Water Conservation Surcharge fund was phased in from 2004-2006, it took several years before RPU accumulated sufficient funding to begin effective water conservation programming. Although many conservation activities have been undertaken since the 1990s, water conservation programming began in earnest in 2007. In November 2009, the Governor and State Legislature approved Senate Bill (SB) x7-7 mandating urban water suppliers to lower per capita water usage 20% by the year 2020. In response to this legislation, RPU used the Water Conservation Surcharge fund to increase offerings of water conservation programs to its customers, implement direct installation programs, increase marketing, education and promotion efforts, and create grants and research funding opportunities for local universities.

The table below shows the Water Conservation Surcharge fund expenditures in each category during Fiscal Year 2011/12 – Fiscal Year 2015/16:

Category (FY 2011/12 – FY 2015/16)	Expenditure ($)	% of Entire Budget
Turf Removal	$5,610,182	73%
Water Saving Devices	$574,524	7.5%
Direct Installation Programs	$1,407,862	18.5%
Research, Demonstration and Development (RD&D)	$50,000	1%
Total	**$7,642,568**	**100%**

WATER PROGRAM DEVELOPMENT:

RPU develops its water conservation programs in a very similar manner as described in the Energy Efficiency Program Development section contained in this report. As described in that section, RPU's customer base plays a major role in determining program offerings to its customers. Unlike the electric customer base, RPU water customers are split 60% residential and 40% commercial. With residential customers representing the majority of the City's water consumption, RPU has directed the majority of its water conservation programs to serve the residential customer base.

RPU also works closely with Western Municipal Water District to both create programs such as FreeSprinklerNozzles.com and to apply for Member Agency Allocation Funding though Metropolitan Water District. Over the past five years, RPU has increased its programmatic funding by $5 million as a result of leveraging outside capital in response to the drought. This Member Agency Allocation Funding has increasingly played a major role in RPU's ability to offer water conservation programs as the drought has had a dramatic negative impact on the Water Reclamation Surcharge Fund's annual revenue. Due to the large drop in retail sales as a result of the drought, the Water Reclamation Surcharge Fund suffered a 26% reduction from Fiscal Year 2013-14 to 2015-16.

RPU considers the water conserved through its conservation efforts to be a resource. Due to this philosophy, when new programs are being developed or evaluated, RPU looks at the avoided cost of purchasing water through Metropolitan Water District (MWD) as the benchmark resource cost. The purchase of imported water from MWD costs RPU approximately $1,000 per acre foot. RPU will typically pursue programs if the cost per acre foot saved is less than purchasing imported water. During the past five years, RPU has successfully created a portfolio of water conservation measures that save RPU $220/AF as compared to the purchase of imported water. The exception to this rule came during the drought when RPU expanded its turf removal program due to state mandated water consumption reduction targets and receipt of outside funding to expand the program.

WATER EFFICIENCY PROGRAMS:

When water conservation programming began in 2007, RPU only offered minimal rebate opportunities for its customers who wanted to save water. Since then, RPU has worked closely with its customer base to provide rebate opportunities that were both desired by the community and benefited RPU's (SB) x7-7 mandated reduction in usage of 20% by the year 2020 (Attachment 4). Due to an increase in programmatic offerings and the community's willingness to participate in RPU's water conservation programs has led to a total of 30,230,245,578 gallons of water saved over the past five years, which is equivalent to 4,500 Olympic swimming pools. RPU utilizes the Water Conservation Surcharge to fund programmatic offerings such as:

1. Turf Removal

2. Water Saving Devices

3. Direct Installation Programs of water efficiency measures

4. Research, Demonstration & Development Programs

The table below summarizes the activities of these program groups over the past five years of activity:

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

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	1540	$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**	**$780 (avg.)**	**($220)/AF**	**2,856,061**

* 1 Acre Foot = 325,851 gallons
** Imported Water Cost = Approximately $1,000/AF

1. Turf Removal

The Artificial Turf Program encouraged water conservation practices by incentivizing RPU water customers who elected to remove their turf grass and replace it with artificial turf. This program was offered for through Fiscal Year 2014-15, but due to the potential environmental impacts it was not funded for Fiscal Year 2015-16 at the request of RPU Board and City Council.

The Waterwise Landscape Program encourages RPU customers to reduce their outdoor water consumption by removing their turf grass and replacing it with native or low water use plants. The "More Color, Less Water" approach has reduced the outdoor water consumption of RPU customers as well as promoted a variety of aesthetic approaches for turf replacement. As a leader in the Inland Empire, RPU began offering its turf removal program in 2008. Although the Turf Removal Program has produced significant water savings, it is RPU's most expensive water conservation measure and was supplemented in Fiscal Year 2014-15, during the drought, with outside agency funding that is no longer available. Turf removal should not be relied upon as the backbone of RPU's water conservation efforts but does help support the overall water conservation portfolio and demonstrates the importance of efficient outdoor water use. During the last five years of this program, RPU customers have saved 1,268,002,000 gallons of water by their participation.

2. Water Saving Devices

RPU provides incentives to its water customers who install qualifying water measures. These programs include High Efficiency Toilets, High-Efficiency Clothes Washers, Weather Based Irrigation Controllers, High Efficiency Nozzles and FreeSprinklerNozzles.com. During the past five years of these programs, RPU customers have saved 1,168,780,000 gallons of water by their participation.

3. Direct Installation of Water Efficiency Measures

To encourage hard to reach and high water use customers to reduce their consumption, RPU created two direct installation programs. As a member of Western Municipal Water District

(WMWD), RPU partnered with WMWD to conduct two direct installation programs: High Efficiency Toilets and High Efficiency Urinal Flush Valves. These programs were directed towards RPU customers who had high indoor water consumption such as student housing for the local universities.

Since 2011, RPU has offered its Smart Irrigation Program (SIP) to both residential and commercial customers. SIP was developed to target customers who have large outdoor water consumption. Customers who participate in SIP receive Weather Based Irrigation Controllers and High Efficiency Toro Precision Series Nozzles. Since program inception, RPU customers have saved 585,355,000 gallons of water by their participation.

4. Research Demonstration and Development

The Water Innovations Grant Program provides support for local universities as they make advancements in water conservation techniques and procedures. Applicants may propose an original, innovative solution to a significant water issue and provide a clear potential benefit to California water ratepayers in one of these target areas: Landscape water use efficiency, Indoor water use efficiency, Industrial process efficiency, Water reclamation and re-use, Water use-related environmental research or Strategic water research. RPU has awarded one Water Innovations Grant in the amount of $50,000.

WATER PROGRAM REPORTING:

Currently, RPU tracks its water conservation activity for internal purposes only as there has been no requirement to submit annual water conservation statistics to any outside agency. RPU is however, required to assess the reliability of its water sources over a 20-year planning horizon, and report its progress on 20% reduction in per-capita urban water consumption by the year 2020, as required in the Water Conservation Bill of 2009 SBX7-7. The 20% compliance target by 2020 was set to 213 gallons per-capita per day and RPU is currently tracking below this target at 180 gallons per-capita per day.

RPU is required to submit its Urban Water Management Plan every five years to the Department of Water Resources (DWR). DWR staff then reviews the submitted plans to make sure they have completed the requirements identified in the Water Code, Sections §10608– 10656, then submits a report to the Legislature summarizing the status of the plans.

The next generation of water efficiency and conservation set forth in Executive Order B-37-16 will fulfill the first directive of the California Water Action Plan, to "Make Conservation a California Way of Life." Improved water efficiency will also support the State's ambitious climate change goals by reducing energy use and greenhouse gas emissions associated with water use and by building resilience to future droughts. The Executive order contains four interrelated objectives:

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

To accomplish this task, RPU will be required to begin reporting the amount of conservation achieved, and any enforcement efforts. The rulemaking will start at the end of 2016 and run through 2017.

RPU also leverages the embedded energy savings contained within its water to support the AB 2021 energy efficiency savings goal of 1% of retail sales. Embedded energy is the amount of energy required to pump, treat and transport water to the end user. This is typically referred to as the Water/Energy Nexus.

For every gallon saved through water conservation activities, RPU can report the embedded energy saving during its annual SB 1037 report to the California Energy Commission. In the last five years, RPU has saved 2,886,000 kWh as a result of its water conservation efforts.

FISCAL IMPACT:

There is no fiscal impact with the receipt of this update.

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Attachments:

1. Residential Electric Rebate Programs Description
2. Commercial Electric Rebate Programs Description
3. Public Benefits Implementation Plan
4. Residential and Commercial Water Rebate Programs Description
5. Presentation