Tri-City-Sewage Disposal Plant, 1933

WATER AND POWER
MISSION STATEMENT

Pasadena Water and Power (“PWP”) is committed to providing safe and reliable water and power with superior customer service at reasonable rates.

PROGRAM DESCRIPTION

PWP is a community-owned utility that supplies water and electricity to residents and businesses in Pasadena and outlying areas. PWP’s priorities include the following:

- Provide citizens with the highest quality water and electric services at competitive rates;
- Promote energy efficiency and water conservation through extensive public outreach, education, and rebate programs; and
- Support the City’s environmental goals to secure sustainable resources and reduce the environmental impacts of water and power procurement.

DEPARTMENTAL RELATIONSHIP TO CITY COUNCIL GOALS

Ensure Public Safety: Safe and reliable water and power supply is essential to public safety. PWP continues its commitment to delivering high quality water by monitoring, sampling, and testing in accordance with all applicable laws and regulations. Through the ongoing implementation of the Water Distribution System Master Plan, the water infrastructure is continually maintained and improved to ensure water quality and adequate fire flow.

Similarly, implementation of the Electric Distribution System Master Plan outlines ongoing investment in upgrades and improvements that ensure the safety and reliability of the underground and overhead electrical infrastructure. PWP also complies with the reliability standards of the North American Electric Reliability Corporation (“NERC”), and has maintained the Reliable Public Power Provider (“RP3”) “Diamond” designation from the American Public Power Association (“APPA”) for providing the highest degree of reliable, safe, electric services.

An electric distribution system inspection program that is consistent with California Public Utilities Commission Order 165 has been implemented. This program further ensures safety for employees and the public, and enhances the reliability and useful life of the power distribution system.

PWP also continues to focus on improving emergency response capabilities and customer communication throughout the utility.

Improve, Maintain, and Enhance Public Facilities and Infrastructure:
PWP builds, maintains, and operates necessary infrastructure to produce, secure, and reliably deliver water and power to residents and businesses in Pasadena, and to neighboring communities in its service territory. The City Council-adopted Master Plans and Integrated Resource Plans (“IRP”) guide, respectively, investment in water and power distribution systems, and resource development and procurement. PWP continues to make efficient use of Pasadena’s natural resources while enhancing and improving the environment.

Maintain Fiscal Responsibility and Stability:
PWP is committed to improving efficiencies and facilitating appropriate management decisions related to costs. Decision support systems are continually being evaluated and improved to ensure that necessary information is
always available, while long-term historical trends and future-oriented financial plans are employed to support any necessary strategic changes.

Increase Conservation and Sustainability:
PWP’s activities directly impact 6 of the 21 Urban Environmental Accords action items including energy efficiency, renewable resources, greenhouse gas ("GHG") emissions, water conservation, tree canopy, and clean vehicles.

Support and Promote the Quality of Life and the Local Economy:
Reliable and competitively-priced water and electric services provide a core foundation that supports Pasadena’s quality of life and local economy. PWP’s focus on customer service and the strategic marketing of programs and services further supports these goals.

FISCAL YEAR 2018 ACCOMPLISHMENTS
Pasadena Water and Power accomplished the following during FY 2018:

POWER DIVISION

Resources:
• Adopted energy storage targets in response to AB 2514, which requires utilities to develop and adopt targets every three years. After detailed analysis, PWP determined that energy storage is neither cost-effective nor needed at this time and therefore set the target at 0 MW;
• Completed the RFP process and awarded a services contract for the development of the 2018 IRP. The new plan will be SB 350-compliant and developed with robust community outreach over the next 8-10 months. Completion is expected by the end of calendar year (CY) 2018;
• Adopted a revised Renewable Portfolio Standard ("RPS") Procurement Plan and Enforcement Program to reflect the SB 350 requirement of 50.0 percent RPS by 2030 and other updates;
• To comply with SB 350 requirements, awarded a long-term contract for renewable resources comprised of portfolio categories 1 and 2 resources;
• Entered into a one-year Transmission Services Agreement ("TSA") with the Los Angeles Department of Water and Power ("LADWP") to import power from the Hoover Dam;
• In collaboration with other city departments, implemented an Electric Vehicle ("EV") task force to encourage the conversion of the City fleet from gas to electric vehicles. Also developing a robust program to accelerate EV adoption and charging infrastructure in Pasadena;
• Registered in the Low Carbon Fuel Standard ("LCFS") program established by the California Air Resources Board ("CARB"). The program uses a market-based cap-and-trade approach to lowering transportation-related GHG emissions through use of electricity and renewable fuels;
• Achieved an RPS of over 32.5 percent in CY 2017;
• Reduced GHG emissions by approximately 40.0 percent compared to 1990 levels;
• Prepared and submitted the GHG emissions report to the California Air Resources Board ("CARB") for 2016 emissions;
• Obtained City Council approval to amend the 2015 IRP to include the repair of Gas Turbine ("GT") 2. A construction permit application has been submitted to CARB; and
• Designed and installed a system incorporating Liqui-Cel technology in GT-5 which removes oxygen from the boiler feed water and greatly reduces the potential for corrosion.
Infrastructure:
- Provided new or upgraded electric service to approximately 750 residential and 50 commercial customers, and installed approximately 24 new private property vaults;
- Completed the Hill Avenue Utility Underground District project;
- Completed private property conversions and overhead infrastructure removal for the Alpine Street Utility Underground District project;
- Repaired or replaced approximately 20 underground vaults and 30 pull boxes;
- Replaced approximately 50 power poles, 9 miles of conductors, 80 distribution transformers, and 33 switches;
- Completed the Phase II replacement of the 34-11 sub-transmission line and upgraded its protection system;
- Completed partial remediation of 34-16 and LA-St. John sub-transmission lines;
- Completed replacement five 17 kV substation circuit breakers;
- Completed battery system replacement for 10 substations;
- Upgraded approximately seven Distribution Automation (“DA”) devices;
- Installed three new underground Resettable Underground Interrupters (“RFI”); seven Smart Fault Indicator Systems; an Overhead Re-closer; and an Advanced Automatic Transfer Switch;
- Installed new Satec Power Quality meters at the PWP RSC/RSD Receiving Station for the LA South and LA North 34.5 kV sub-transmission lines;
- Installed a new 5-way solid-dielectric switch for the La Loma Bridge;
- Completed the installation of the West and Northeast Fiber Optic Network Overbuild;
- Extended the Fiber Optic Network to the T.M. Goodrich City radio tower;
- Upgraded and maintained the Power Geographic Information System (“GIS”);
- Installed approximately five capacitor banks on the distribution system;
- Upgraded circuit breaker control system for two capacitor banks and one 34 kV sub-transmission line (34-12);
- Completed the arc flash protection system and power quality meter upgrade for Villa Substation Unit 2;
- Began construction for the oil containment system at the Del Mar substation;
- Completed construction of the seismic anchoring system at the Santa Anita substations and begin design of anchoring systems for Chester and Villa substations, and T.M. Goodrich receiving station;
- Completed a physical security assessment for electric distribution system facilities;
- Completed Phase I of the construction of a backup Dispatch Center;
- Began the development of a new Master Plan;
- Updated the City’s Regulation 21 Electric Service Requirement;
- Completed partial 4 kV circuit conversion on the G-6, S-3, H-2, and H-3 circuits;
- Extended a 17 kV circuit into the Hastings Ranch area;
- Competed civil construction for expansion of the electric distribution system in Paloma Street, San Rafael Avenue, and Nithsdale Road;
- Completed construction of the security wall at the T.M. Goodrich substation;
- Established a System Planning Engineering Section in the organizational structure;
- Received the Tree Line USA Award for power line clearance practices for the 16th consecutive year; and
- Maintained APPA’s prestigious Reliable Public Power Provider (“RP3”) “Diamond” designation for providing the highest degree of reliable and safe electric service.
WATER DIVISION

Resources and Water Quality:
- Began operation of the Sunset Disinfection Facility which will enable processing that will better match the blend of imported water from the Metropolitan Water District of Southern California (“MWD”);
- Completed construction of a temporary bridge and began environmental studies for the Arroyo Seco Canyon Project which proposes to increase the spreading of water runoff and improve the habitat in the Arroyo Seco;
- Finalized a funding agreement for $1.9 million with the U.S. Bureau of Reclamation for the Non-potable Water Project. The initial $450,000 has been received and is funding pre-construction costs such as design, environmental evaluations, and permitting;
- In compliance with AB 746, PWP lead-tested 35 Pasadena Unified School District and private schools, and 4 preschools;
- Completed the U.S. Environmental Protection Agency’s (“EPA”) mandated triennial residential lead and copper water quality testing; and
- Issued an RFP to select a consultant to conduct a comprehensive evaluation and update of the Water System and Resources Plan. The current legacy plans will ultimately be updated into a single comprehensive long-term water resource and operations plan that will be developed in collaboration with public stakeholders. Estimated City Council adoption in 2020;

Infrastructure:
- Continued the implementation of the Water Distribution System Master Plan and recommendations in the Water IRP;
- Maintained PWP’s Geographic Information System (“GIS”) to improve management of water infrastructure assets;
- Completed the preliminary design for needed improvements at Sunset Reservoir No. 1;
- Replaced 2,650 water meters to improve billing accuracy and reduce the labor costs associated with repeat readings;
- Designed the Arroyo Booster Station upgrades in preparation for construction with anticipated completion in 2019;
- Completed the design for Woodbury well electrical upgrades. Also began a preliminary design assessment of Garfield well;
- Began design of the new “Explorer” well, which will enhance groundwater cleanup at the Monk Hill sub-basin. Estimated to begin construction in FY 2020;
- Adequate pipeline pressure and services were provided to complete approximately sixty customer-driven development projects;
- Replaced approximately two miles of aging water mains as part of the ongoing Water Main Replacement Program; and
- Replaced fifty service connections and ten water meter boxes and vaults, and repaired/ replaced steel plates as part of the continued Water Meter Vault Replacement Program.

CONSERVATION, DISTRIBUTED RESOURCES, AND CUSTOMER PROGRAMS

Power:
- Continued to promote new income-qualified service offerings including free energy and water retrofits; turf removal services; and refrigerator replacements;
- Continued to provide solar rebates through the Pasadena Solar Initiative, reaching 8.8 MW of installed solar as of June 2017. After helping transform the market, Pasadena rebate program concluded on December 31, 2017;
Continued to provide energy efficiency incentives and direct installation services to a broad cross section of residential and commercial customers; and

Continued to exceed goals for cumulative energy-savings.

Projected FY 2018 results include:
- Over 13.5 GWh of cost-effective first-year energy savings; and
- 1.5 MW of additional solar installations.

**Water:**

- In partnership with the Housing Division’s Maintenance Assistance for Homeowners ("MASH"), expanded the Landscape Direct Install Program which provides low-income residential customers with the removal of existing turf and the free direct installation of a water-efficient landscaping and efficient irrigation;
- Expanded the Laundry-to-Landscape ("L2L") Greywater Program to provide the direct installation of L2L systems for low-income customers. These systems save participating homeowners water and money by providing the option of irrigating landscape with reused clothes washer water;
- Through a $1.2 million grant received from the California Department of Water Resources, expanded the Water and Energy Direct Install Program (WeDIP) which features the direct installation of energy and water efficiency retrofits for small commercial businesses located in Pasadena’s Disadvantaged Community Area ("DAC");
- Completed the Fire Station Demonstration Gardens at five Pasadena Fire Stations. Garden features include water efficient landscapes, drought tolerant and native plants, drip irrigation, rain water harvesting, and mulch;
- Continued to aggressively promote water conservation and provide generous incentives for the installation of water efficiency devices; and
- Continued the Level One Water Shortage, which limits watering to 1 day in the winter season (Nov-March), and 3 days in the summer season (April-Oct).

**MANAGEMENT AND ADMINISTRATION**

**Legislative and Regulatory:**

- Tracked and monitored nearly 250 state legislative bills and over 40 regulatory proceedings related to California GHG emission reductions, renewable energy requirements, energy efficiency, electric vehicles, net energy metering, regionalization of California’s electric grid, natural gas pipeline safety, water quality, drought response, and water tax/public goods charge;
- Closely monitored legislation related to natural gas pipeline safety, drought, and water conservation issues;
- Tracked and monitored two federal legislative bills and policy issues related to water supply infrastructure, drought relief, and municipal finance; as well as various environmental and energy regulations advanced at both the Environmental Protection Agency ("EPA") and the Federal Energy Regulatory Commission ("FERC");
- Submitted comments on AB 1110 (Ting) regarding the Power Content Label ("PCL") appearance; specifically, recommended changes to the proposed addition of GHG intensity values;
- Maintained compliance with over 450 evolving NERC standards with 1200+ requirements through monitoring, self-certification, and improved policies and procedures;
- Completed the registration of a Transmission Planner function with the Western Electricity Coordinating Council ("WECC") in compliance with NERC and WECC reliability standards;
- Completed an internal compliance audit of NERC and WECC reliability standards; and
- Provided comments on two NERC and FERC-proposed initiatives, standards, and definitions.
Finance, Administration, and Customer Service:
- Completed operating and capital budgets that ensure constant utility reliability and excellent customer service;
- Developed, recommended, and evaluated an overall financial strategy to support PWP’s business strategies and maximize the value of the utility;
- Completed an independent assessment of PWP’s Energy Portfolio Risk Management program. Findings were presented to the Municipal Services Committee and City Council March 2018;
- Filed the 2018 update to PWP’s Transmission Revenue Balancing Adjustment account with FERC;
- In collaboration with the Southern California Public Power Authority (“SCPPA”), issued an RFP for energy scheduling and trading, settlements, credit and risk management, and related services;
- Ensured compliance with the Energy and Credit Risk Management policy including the requirement that the utility’s financial exposure is limited to the amount of its reserves;
- Ensured that the utility complied with mandated wholesale energy market requirements and maintained participation in the market;
- Completed and published PWP’s FY 2017 Annual Report;
- Processed over 400 annual purchase orders valued at about $10 million;
- Continued to actively participate on the Enterprise Resource Planning (“ERP”) Operations and Innovation Team to assess performance of the new ERP system and develop future goals and priorities;
- Answered more than 94,000 customer calls;
- Produced and mailed over 521,800 bills and almost 92,000 final notices;
- Processed 198,200 Interactive Voice Response (“IVR”) / Interactive Web Response (“IWR”) credit card transactions, a 6.0 percent increase over the prior year;
- Conducted 764,000 electric and water meter reads with 99.0 percent accuracy;
- Processed over 11,000 online requests to start, stop, and disconnect service – an increase of almost 38.0 percent over prior year;
- Completed over 27,100 field service orders to start, stop, disconnect, or reconnect utility services;
- Maintained bad debt expense below 0.5 percent;
- On schedule to conduct full scale testing of the upgraded RouteSmart meter reading software after completion of the Water Encoder Receiver Transmitter (“ERT”) replacement project in late FY 2018/early FY 2019;
- Continued to upgrade medium commercial meters for conversion to the MV-90 data system to enhance load data analysis. This project will continue throughout FY 2018; and
- Awarded a contract and began conducting a needs assessment to replace the existing Customer Information System.

Buildings and Technology:
- Continued to assess and reorganize the layout of PWP’s materials warehouse to improve accuracy and efficiency of storage and the retrieval of inventory;
- Began conducting a primary data center infrastructure hardware lifecycle refresh and building a secondary center, with estimated completion in early FY 2019. The hyper-converged infrastructure at two locations will provide business continuity and minimize downtime;

FISCAL YEAR 2019 ADOPTED BUDGET

Operating and Capital Budget:
PWP is experiencing significant budgetary challenges due to continuous changes in the electric and water industries. The impacts of distributed energy generation and battery storage for electricity are placing pressure on revenues due to reduced retail sales and require that PWP’s electric rates remain competitive with new
alternative resources. Local water supplies are constrained by California’s drought conditions and water quality requirements. Increasing regulation and legislative actions create upward pressure on costs to produce and deliver affordable and reliable energy and water. PWP will continuously review its fiscal strategy, priorities and opportunities to increase revenues and reduce expenses in order to maintain a balanced budget to deliver reliable water and power and continue the support of vital city services.

**Power Fund:**
The Power Fund budget is based on a projected retail revenue increase of about $0.3 million, which is mainly due to a projected increase in sales in summer months for FY 2019. This increase is offset by an anticipated decrease of 0.1 percent in retail sales. Net Income is expected to be impacted by current regulations and initiatives, higher General Fund transfers, purchased power costs, Internal Service Charges, and depreciation expenses.

**Water Fund:**
The Water Fund budget is based on a projected retail revenue increase of about $1.2 million, which is mainly due to an anticipated increase in retail sales. Net Income is expected to be impacted by higher cost of services and supplies, internal service charges and depreciation expense.

**Personnel**
The FY 2019 Adopted Budget is comprised of a total of 418.0 Full Time Equivalents (“FTEs”), which is 7.0 FTEs more than FY 2018 Revised Budget. A total of 9.0 new FTE positions are added in FY 2019 mainly for the implementation of the Customer Information System (“CIS”) replacement project. The increase is partially offset by elimination of 2.0 vacant positions in the Power Operating Fund.

**YEAR-OVER-YEAR BUDGET CHANGES**

**Power Operating Fund**
- Cap and Trade Retail Revenues increased by about $2.7 million caused by an increase in sale of compliance allowances in the Limited Use Holding Account (Cap & Trade);
- Operating Transfer In increased by about $1.1 million because of an increase in reimbursement from the Underground Utility Fund for expenditures related to Underground Capital Projects;
- Investment Earnings decreased by about $1.1 million mainly from the Stranded Investment Reserve and Intermountain Power Project (“IPA”) Notes Receivable;
- Miscellaneous Revenues increased by about $0.5 million primarily due to reimbursement from Southern California Gas Company for the Home Improvement Program;
- FY 2019 Personnel costs increased by approximately $1.0 million caused by the increase of 6.2 new FTEs added mainly for the implementation of the CIS replacement project and increase in Public Employees’ Retirement System (“PERS”) cost. Of the 6.2 FTEs, 4.4 FTEs are allocated to the Operating Fund in sections of Customers Services, Information Technology, and Power Delivery. The remaining 1.8 FTEs are allocated to the Capital Fund in Information Technology and Power Delivery sections. The FTE increases are partially offset by elimination of 2.0 vacant FTEs from Power Delivery and Power Supply sections and defunding 1.0 vacant FTE in General Manager section;
- Services and Supplies increased by about $2.4 million mainly due to cost increases in long-term purchased power based on a higher IPP budget, other contract services, contract maintenance and insurance. These increases are offset by cost decreases in utility rebates, gas and fuel and purchased transmission;
- Equipment expense decreased by approximately $0.4 million as a result of a reduction of planned purchase of new and/or replacement vehicles and equipment;
- Internal Service Charges increased by about $0.1 million primarily due to cost increases of IT related services;
Debt Service decreased by approximately $0.4 million caused by a decrease in interest expense;
- Depreciation expense increased by about $1.0 million mainly due to an increase in completion of capital projects in FY 2018;
- Warehouse Stores Issues increased by about $0.6 million because of an anticipated increase in inventory issuances; and
- The General Fund Transfer increased by about $0.9 million as a result of a projected increase in retail revenues in FY 2018.

**Water Operating Fund**
- Non-Operating Revenues decreased by about $1.7 million due to decreases of $1.5 million from Proposition 84 Integrated Regional Water Management grant funding in FY 2018, $0.2 million from investment bond earnings and $0.2 million in reimbursement of groundwater treatment services from Jet Propulsion Laboratory (“JPL”). The decreases were partially offset by increase of about $0.2 million in miscellaneous grants from the State of California;
- FY 2019 Personnel costs increased by about $0.5 million as a result of the increase of 2.8 new FTEs added for the implementation of the CIS replacement project and increase in PERS cost. Of the 2.8 new FTEs, 2.1 FTEs are allocated to the Operating Fund in sections of Customer Services and Information Technology. The remaining 0.7 FTE is allocated to the Capital Fund in Information Technology section;
- Services and Supplies increased by approximately $0.3 million primarily because of cost increases in direct installation rebates, contract maintenance, and materials and supplies;
- Equipment expense decreased by approximately $0.4 million due to reduction of planned purchase of new and/or replacement vehicles and equipment;
- Internal Service Charges increased by about $0.1 million mostly because of cost increases of IT related services;
- Debt Service decreased by approximately $0.2 million caused by decrease in interest expense;
- Depreciation expense increased by about $1.7 million as a result of an increase in completion of capital projects in FY 2018; and
- The reimbursement of cost of services provided by General Fund to Water Fund is about the same as last year based on a cost of services study conducted by the City.

**FUTURE OUTLOOK**

During FY 2019, PWP will undertake major reviews and updates of the Integrated Resource Plans and capital Master Plans for both the Water and Power utilities. Given the reality of budgetary constraints, the updated plans will determine how PWP establishes and funds priorities for procuring energy and water and the necessary level of capital investment to meet the priorities. To stabilize revenues, PWP is actively engaged in the development and production of new products and services, including Electric Vehicle charging infrastructure and the electrification of components of transportation and commercial enterprises. Replacement of the Customer Information System will be the initial phase of investment in automation and operational technology solutions to improve efficiencies and service to customers. PWP expects significant ongoing challenges to manage industry changes, higher costs and customer demands.

**Power System:**
At the end of CY 2017, PWP met the City’s RPS goal of 32.5 percent - exceeding the State requirement of 27.0 percent. Approximately 32.5 percent of PWP’s retail sales were met with RPS-eligible renewable energy resources.

SB 350, signed into law in 2015, mandates 50.0 percent RPS by 2030, 40.0 percent GHG reduction (compared to 1990 levels) by 2030, and development of an IRP. PWP has initiated the IRP process by hiring a consultant and creating a work plan and development will include robust community outreach and a stakeholder process. The
IRP will provide the analysis need to address future resources needs including participation in the Intermountain Power Plant (“IPP”) Renewal Project. It will also address the role of transportation electrification impacts on DACs as well as other mandates.

The FY 2019 Power Delivery Capital Improvement Program (“CIP”) includes ongoing work to provide new and upgraded electric services; civil and electrical design and construction; electrical design and construction to extend 17 kV distribution circuits and to upgrade various 4kV distribution circuits to 17 kV; ongoing replacement of substation batteries, circuit breakers, underground cables, power poles, transformers and switches; ongoing replacement, reinforcement and repair of underground infrastructure - including vaults and pull boxes; construction of an oil containment system at the Del Mar substation; seismic upgrades at Santa Anita, Villa, and Chester substations; completion of the Alpine Street Utility Underground District project.

Upcoming Power Delivery facilities and technology projects include completion of Phase II of the backup Dispatch Center project; ongoing work to expand the fiber optic network; upgrade of protection/control relays for four sub-transmission lines and ten 17 kV feeders; ongoing work to automate distribution circuits; and specifications development for a work order/asset management system. Ongoing maintenance will continue for the SCADA, GIS, and OMS systems.

The Power Delivery Master Plan (“PDMP”) project, which will begin in FY 2019, will feature a comprehensive analysis of the electrical distribution system and development of a plan to improve the long-term viability of the system. The updated plan will drive future Power Delivery priorities related to system expansion, emerging technologies, regulatory changes, and operational methods and practices.

As always, timely response to customer requests for new or upgraded service will continue to be a priority, as will the development and implementation of training programs for engineering and field personnel.

**Water System:**
The FY 2019 Water System Capital Improvement Plan continues to support the goals outlined in the Water System Master Plan, and focuses on the replacement of Pasadena's aging water infrastructure to improve water pressure for fire suppression, water quality, supply reliability, security, and sustainability. Also, through its meter and vault replacement programs, PWP plans to replace 2,550 aging meters and 10 vaults during the year - with the overall program goal of replacing 37,000 city meters over the course of fifteen years.

Upgrades to the Arroyo booster station are expected to be completed in FY 2019 while design and environmental documentation for the demolition and replacement of Sunset Reservoir No. 1 will continue through the year. In addition, design and environmental documentation completion is expected for the new “Explorer” groundwater well located in the Monk Hill sub-basin as well as repairs and electrical upgrades to Garfield well and preliminary design of Woodbury wells updates

Nitrate levels in the Monk Hill sub-basin groundwater wells will continue to be monitored and assessment of treatment options will begin.

In order to improve emergency water system maintenance preparedness and better support fire protection efforts, PWP plans to acquire a portable standby generator that can provide temporary power to the power plant and key booster pumps or wells during an emergency.

Work will continue on two major water resource projects during the year. Design, permitting, and funding efforts will continue for Phase 1 of the Non-potable Water Project which could provide up to 10.0 percent of Pasadena’s water supply at full buildout. Also, the Arroyo Seco Canyon Project (revised scope) and the
associated Environmental Impact Report ("EIR") are expected to begin and continue into FY 2020. This project will improve the area’s habitat through increased spreading of water runoff in the Arroyo Seco. The Non-potable Water and Arroyo Seco projects are both subject to funding challenges.

PWP will continue preparing the new Water Systems and Resources Plan ("WSRP"), which combines the 2002 Water Master Plan and the 2011 Integrated Resources Plan into one long-term resource planning and operations document. The WSRP is a comprehensive evaluation of the water system that ensures adequate production and distribution of water in existing and future conditions, and provides integrated resource planning for new water supply resources.

The Water Division continues to develop compliance strategies to keep up with the ever-changing state and federal water quality requirements. Future capital improvements to the water supply and delivery infrastructure may result from further changes to those requirements.

**Water Conservation:**
In support of long-term water conservation efforts, Pasadena continues on a Level 1 Water Shortage Plan, which restricts watering to one day in the winter season (November-March) and three days in the summer season (April-October). Southern California has experienced an exceptionally dry winter in FY 2018, and although state water supplies are currently sufficient due to heavy prior-year rainfall, it is critical to build resilience for future droughts and maintain the conservation successes which Pasadena residents have achieved. PWP will continue to encourage customers to reduce water usage by offering enhanced incentives, public education workshops, public school programs, and online instructional videos. PWP has also secured grant funding to enhance conservation program offerings in FY 2018 and FY 2019.

**Public Benefits:**
PWP will continue to streamline and modernize programs to improve customer experience, aggressively evaluate and market programs to achieve broad participation and maximize results, and increase participation in low-income programs and services. At the current funding level, PWP expects to meet all energy efficiency goals in FY 2019 and beyond.

**Legislative Programs:**
In recent years, the California Legislature has proposed hundreds of utility-related bills each legislative session. PWP anticipates an increase in this trend due to a growing focus on environmental protection, water conservation, transportation electrification, and wildfire mitigation. Water, energy, and environmental policy issues are generally very technical in nature and legislators rely heavily on the technical expertise of regulatory agencies to develop policies and procedures for implementation, compliance, and enforcement of these laws. In essence, an increase in utility legislation results in a corresponding increase in regulatory proceedings that also require monitoring and advocacy such as participation in hearings and submission of written comments. PWP continues to prioritize action items based on urgency and relevancy.

**Financial Programs:**
PWP will continue to focus on its financial health and stability by implementing appropriate measurements, controls, and procedures while maintaining a contribution to the City’s General Fund to support vital public services.

PWP will continue to monitor and recommend electric and water rate adjustments to support operating and capital plans in an environment of continual change. The economic impacts of new regulations and initiatives associated with GHG, distributed generation, demand reduction, feed-in tariff, smart grid and metering, electric
vehicle programs, time-of-use rates assessment, and the development and purchase of renewable resources will continue to impact the Power Fund.

Other priorities include replacing the current utility billing system with a more robust and state-of-the-art system that will allow more flexibility in creating and changing rates as regulatory policies change. PWP is currently evaluating options following a needs assessment that was conducted in FY 2018.

Focus will also continue on outreach efforts to encourage customers to enroll in “e-bill” and other online services, department-wide stabilization of the ERP system, and enhanced building and data security.
### SUMMARY OF APPROPRIATIONS BY EXPENSE CATEGORY

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<th>Expenditure Category</th>
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<th>FY 2018 Adopted</th>
<th>FY 2018 Revised</th>
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### SUMMARY OF APPROPRIATIONS BY DIVISION

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### SUMMARY OF APPROPRIATIONS BY FUND

<table>
<thead>
<tr>
<th>Fund</th>
<th>FY 2017 Actuals</th>
<th>FY 2018 Adopted</th>
<th>FY 2018 Revised</th>
<th>FY 2019 Adopted</th>
</tr>
</thead>
<tbody>
<tr>
<td>106 - New Years Day Genl Fund Events</td>
<td>$6</td>
<td>$24</td>
<td>$24</td>
<td>$0</td>
</tr>
<tr>
<td>401 - Light and Power Fund</td>
<td>191,939</td>
<td>201,088</td>
<td>201,326</td>
<td>207,302</td>
</tr>
<tr>
<td>402 - Water Fund</td>
<td>49,923</td>
<td>57,613</td>
<td>58,299</td>
<td>60,833</td>
</tr>
<tr>
<td>410 - Public Benefit Fund</td>
<td>7,693</td>
<td>7,922</td>
<td>7,922</td>
<td>7,662</td>
</tr>
<tr>
<td>411 - Power Capital Projects Fund</td>
<td>788</td>
<td>310</td>
<td>851</td>
<td>489</td>
</tr>
<tr>
<td>412 - Water Capital Projects Fund</td>
<td>502</td>
<td>1,008</td>
<td>1,443</td>
<td>1,051</td>
</tr>
<tr>
<td><strong>Water and Power Total</strong></td>
<td><strong>$250,851</strong></td>
<td><strong>$267,965</strong></td>
<td><strong>$269,865</strong></td>
<td><strong>$277,337</strong></td>
</tr>
</tbody>
</table>

### SUMMARY OF FTEs BY DIVISION

<table>
<thead>
<tr>
<th>Division</th>
<th>FY 2017 Actuals</th>
<th>FY 2018 Adopted</th>
<th>FY 2018 Revised</th>
<th>FY 2019 Adopted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>315.00</td>
<td>274.04</td>
<td>277.29</td>
<td>280.68</td>
</tr>
<tr>
<td>Water</td>
<td>128.00</td>
<td>131.96</td>
<td>133.71</td>
<td>137.32</td>
</tr>
<tr>
<td><strong>Water and Power Total</strong></td>
<td><strong>443.00</strong></td>
<td><strong>406.00</strong></td>
<td><strong>411.00</strong></td>
<td><strong>418.00</strong></td>
</tr>
</tbody>
</table>
### PERFORMANCE MEASURES

<table>
<thead>
<tr>
<th>Objective/Goal</th>
<th>PM #</th>
<th>Description</th>
<th>FY 2017 Actuals</th>
<th>FY 2018 Target</th>
<th>FY 2019 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Council Goal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A, B</td>
<td></td>
<td>Maintain fiscal responsibility and stability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C, D</td>
<td></td>
<td>Improve, maintain, and enhance public facilities and infrastructure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E, F</td>
<td></td>
<td>Increase conservation and sustainability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G, H, I</td>
<td></td>
<td>Improve mobility and accessibility throughout the City</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Support and promote the quality of life and the local economy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ensure public safety</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>A</td>
<td>Bad debts against billing revenue will be minimal.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maintain Fiscal Responsibility</strong></td>
<td>1</td>
<td>The Power Fund bad debt expense will not exceed .5% of total Power operating revenues.</td>
<td>0.282%</td>
<td>0.500%</td>
<td>0.500%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>The Water Fund bad debt expense will not exceed .5% of total Water operating revenues.</td>
<td>0.481%</td>
<td>0.500%</td>
<td>0.500%</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>A1-A2</td>
<td>Bad Debt Ration Calculation: total revenue against total bad debt, less bad debt recovery. Calculated monthly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>B</td>
<td>Promote a safety conscious workforce and safe work place.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maintain Fiscal Responsibility</strong></td>
<td>1</td>
<td>Minimize ergonomic injuries to less than 25% of total Water and Power workplace injuries</td>
<td>16%</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Perform proactive ergonomic evaluations of workstations for new employees that are not ergonomically arranged- 100% compliance</td>
<td>13%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>B2</td>
<td>Progress continues to be made on providing ergonomic evaluations of new employee's workstations. Staff is establishing a baseline budget and a standard procurement process for annual ergonomic equipment requirements.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>C</td>
<td>The City will continue investment in the water distribution infrastructure to maintain efficient and reliable operations.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Improve and maintain facilities &amp; infrastructure</strong></td>
<td>1</td>
<td>3 miles of mains will be upgraded each fiscal year</td>
<td>2.25</td>
<td>3.00</td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2,550 water meters will be replaced each fiscal year</td>
<td>1,295</td>
<td>2,650</td>
<td>2,550</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>C1-C2</td>
<td>Metric goals based on FY 2019 Capital Improvement Plan and infrastructure upgrades proposed in Water Master Plan.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C1</td>
<td>Main replacements delays due to specification changes made to paving requirements during RFP process.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Objective D
The City will continue investment in the electric distribution system to maintain efficient and reliable operations.

<table>
<thead>
<tr>
<th>Improve and maintain facilities &amp; infrastructure</th>
<th>FY 2017 Actuals</th>
<th>FY 2018 Target</th>
<th>FY 2019 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 5 Circuit breakers will be replaced each fiscal year</td>
<td>2</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2 10 underground vaults will be replaced or repaired each fiscal year</td>
<td>12</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>3 2 new or replacement substation switches will be installed each fiscal year</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4 3 miles of conductor will be replaced each fiscal year</td>
<td>4.08</td>
<td>3.00</td>
<td>3.00</td>
</tr>
<tr>
<td>5 20 underground switches will be replaced each fiscal year</td>
<td>9</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>6 40 distribution transformers will be replaced each fiscal year</td>
<td>26</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

### Notes
D1-D3 Measures for System Infrastructure Replacement
D2, D4 FY 2018 Forecast reflects emergency repairs, equipment failures, or other projects that were unplanned.
D4-D6 Measures for System Reliable Capacity

## Objective E
The City will encourage conservation and efficient use of energy and water.

<table>
<thead>
<tr>
<th>Increase conservation and sustainability</th>
<th>FY 2017 Actuals</th>
<th>FY 2018 Target</th>
<th>FY 2019 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Energy consumption will be reduced by 13,500 MWh</td>
<td>19,467</td>
<td>13,500</td>
<td>13,500</td>
</tr>
<tr>
<td>2 Provide water efficiency rebates or direct-installation services to at least 1,200 customers</td>
<td>1,640</td>
<td>1,500</td>
<td>1,200</td>
</tr>
<tr>
<td>3 Conservation, water reuse, and water efficiency programs will result in 450 acre-feet of annual water savings.</td>
<td>146</td>
<td>180</td>
<td>450</td>
</tr>
<tr>
<td>4 Daily per capita water consumption shall not exceed a mid-year target of 185 gallons per capita daily (&quot;GPCD&quot;) or a year-end target of 169 GPCD.</td>
<td>147</td>
<td>169</td>
<td>169</td>
</tr>
</tbody>
</table>

### Notes
E1 Lower than expected energy savings due to discontinuation of Energy Efficiency Partnering ("EEP") programs and promotions for commercial customers in 2017.
E2-E3 Based on goals set forth by Environmental Urban Accords SB X 7-7 (20 X 2020) and California Best Management Practices ("BMP")
E4 10-year average baseline from 1994-2005 is 211 gallons per capita daily.

## Objective F
The City-owned power utility will meet the Renewable Portfolio Standard ("RPS") goals identified in the Integrated Resource Plan.

<table>
<thead>
<tr>
<th>Increase conservation and sustainability</th>
<th>FY 2017 Actuals</th>
<th>FY 2018 Target</th>
<th>FY 2019 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Achieve RPS of 35% by the end of calendar year 2018 and 40% by the end of calendar year 2020.</td>
<td>32.80%</td>
<td>32.5%</td>
<td>35.0%</td>
</tr>
</tbody>
</table>
FY 2017 Actuals  FY 2018 Target  FY 2019 Target

Notes  F1  Based on 2012 City Council approved Integrated Resource Plan to reach 40% RPS by 2020.
  F1  Senate Bill 107 required 20% RPS by 2010; SBX1-2 requires 33% RPS by 2020, with 25% RPS compliance by 2016.
  F1  Senate Bill 350, enacted in October 2015, requires 50% RPS by 2030.

Objective  G  Maintain minimal interruptions to electric power delivery.

Promote quality of life & local economy

1  System Average Interruption Duration Index ("SAIDI") will be less than 120 minutes
   FY 2017 20.15  <120  <120

2  System Average Interruption Frequency Index ("SAIFI") will be less than 1 interruption per year.
   FY 2017 0.22  <1  <1

Notes  G1-G2  SAIDI and SAIFI are industry standards for measurement of system reliability.
  G1-G2  Based on Public Power Utilities average, using IEEE standard, as reported to the Energy Information Administration ("EIA")
  G1-G2  Actual reported is measurement in normal operating conditions, excluding Major Event Days ("MED")

Objective  H  Maintain minimal local power plant outages.

Promote quality of life & local economy

1  Maintain 97% generation availability of local power plant.
   FY 2018 N/A  97%  97%

Notes  H1  3 year historical average of local power plant generation availability is 95% (GT-2 excluded)
  H1  FY 2018 Forecast reflects period of transmission outages 11/13/2017 - 12/1/2017 and 2/7/2018 – 2/21/2018 on all local generation units.

Objective  I  Residential and commercial electric and water customers will receive excellent service.

Promote quality of life & local economy

1  Meter readings will be 99% accurate.
   FY 2017 99.0%  99.0%  99.0%

2  The average Call Center telephone response time will be 30 seconds of less, after the call leaves IVR.
   FY 2017 N/A  30  30

Notes  I2  Increased average response times due to staffing vacancies.