CITY OF REDLANDS

MUNICIPAL UTILITIES/PUBLIC WORKS COMMISSION

SPECIAL MEETING AGENDA

MONDAY, APRIL 15, 2024

STEVE STOCKTON
Chairperson

CHANDRASEKAR 'CV' VENKATRAMAN
Vice Chairperson

ROBERT MEALS
Commissioner

PAUL NORWOOD
Commissioner

THOMAS BREITKREUZ
Commissioner

DAVID GARCIA
Commissioner

ADEKUNLE OJO
Commissioner

4:00 PM Open Public Meeting
City Council Chambers
Civic Center
35 Cajon Street
Redlands, California

JOHN R. HARRIS
Municipal Utilities & Engineering Director

GOUTAM K. DOBEY
City Engineer

FERNANDO MATA
Wastewater Utility Manager

PAUL MARISCAL
Water Utility Manager

JUNG PARK
Laboratory Manager

Anyone desiring to speak on an agenda item at this meeting may do so during the consideration of that item. Due to time constraints and the number of persons wishing to give oral testimony, public comments will be limited to three (3) minutes.

- *To provide comment, simply raise your hand to speak*

The following comprises the agenda for the special meeting of the Municipal Utilities/Public Works Commission of the City of Redlands.

In compliance with the Americans with Disabilities Act, if special assistance is needed to participate in this meeting, contact Goutam Dobey of Municipal Utilities/Engineering Department at (909) 798-7584 x2. Notification 48 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting. (28 CFR 35.102-35.104 ADA Title II) NOTE: Any writings or documents distributed to a majority of the Municipal Utilities/Public Works Commission regarding an open session agenda item less than 72 hours before this meeting are available for public inspection at: www.cityofredlands.org/municipal-utilitiespublic-works-commission, the Municipal Utilities & Engineering Department at 35 Cajon Street, Suite 15A, or calling (909) 798-7698.

CITY OF REDLANDS

MUNICIPAL UTILITIES/PUBLIC WORKS COMMISSION
SPECIAL MEETING AGENDA
MONDAY, APRIL 15, 2024

A. ATTENDANCE & CALL TO ORDER

B. PUBLIC COMMENT
(Any person wishing to provide public comment may do so at this time.)

C. APPROVAL OF MINUTES
- **a. March 18 MUPWC Special Meeting Minutes**

D. COMMUNICATIONS
- **a. Director's Report**
- **b. Proposed Water and Wastewater Rate Increases**

E. OLD BUSINESS
- **a. Solid Waste Rates Presentation & Possible Recommendation to City Council**

F. COMMISSIONER ANNOUNCEMENTS, REPORTS ON ACTIVITIES, AND/OR REQUEST FOR FUTURE AGENDA ITEMS

G. ADJOURNMENT – Next Meeting is June 3, 2024 @ 4:00 pm

ATTACHMENTS:
1. **Draft Minutes of March 18, 2024 Special Meeting**
2. **Director's Report**
3. **Raftelis Rate Study**
4. **Solid Waste Rates Staff Report**

DRAFT
(for MUPWC review on 4/15)

MINUTES

Special meeting of the City of Redlands Municipal Utilities/Public Works Commission on March 18, 2024 at 4:00 PM in the Council Chambers at the Civic Center, 35 Cajon Street. The meeting was an in-person meeting.

A. ATTENDANCE & CALL TO ORDER

Present:	Steve Stockton, Chairperson Adekunle Ojo, Vice Chairperson (joined at 4:02 PM) David Garcia, Commissioner Chandrasekar 'CV' Venkatraman, Commissioner Thomas Breitkreuz, Commissioner Robert Meals, Commissioner Paul Norwood, Commissioner
City Council Liaison:	Mario Saucedo, City Council Member
Staff:	Goutam Dobey, City Engineer; Johana Silva, Commission Liaison/Associate Engineer; Fernando Mata, Wastewater Utility Manager; Jungjoon Park, Joint Utilities Laboratory Manager; Chris Boatman, Assistant City Manager; Tabitha Crocker, Facilities and Community Services Director; Louie Miranda, Solid Waste Manager; Salomon Abdel-Aziz, Management Analyst
Guest Speakers:	Jordon Muratsuchi, R3 Consulting Group, Inc.

Chairman Stockton called the meeting to order at 4:00 PM.

B. PUBLIC COMMENT

Dennis Bell shared his feedback, highlighting that City residents are closely monitoring the committee's actions and assessing the potential financial implications of utility rate increases. He expressed his concern regarding the perceived haste in deliberating water and wastewater rates.

C. APPROVAL OF MINUTES

a. December 4, 2023 Regular Meeting Minutes

On the motion by Commissioner Meals, seconded by Vice Chair Ojo, the minutes of the regular meeting of December 4, 2023, were approved with Commissioners CV, Garcia and Norwood abstaining.
Vote: 4 – 0 Passed

b. February 5, 2024 Regular Meeting Minutes

On the motion by Commissioner CV, seconded by Commissioner Norwood, the minutes of the regular meeting of February 5, 2024, were approved with Commissioner Meals abstaining.
Vote: 6 – 0 Passed

D. NEW BUSINESS

a. Solid Waste Rates Presentation & Possible Recommendation to City Council

Mr. Boatman introduced the FSC staff present and provided an overview of the in-house landfill operations, covering staff, routes, equipment, commodities collected, and regulatory obligations. He then introduced Jordon Muratsuchi from R3 Consulting Group, Inc., the firm chosen to conduct the study. This study is focused on comprehending the city's financial status and assessing possible rate modifications.

Mr. Muratsuchi presented the background of the solid waste rates study, emphasizing the program's role in Redlands' waste management and the necessity of rate revenues. The presenter highlighted the necessity of rate increases due to expenses surpassing revenues, with a projected depletion of the Solid Waste Service Fund by Summer 2025. Factors contributing to this include the replacement of aged collection vehicles, construction of new landfill cells, compliance with SB 1383 organics mandate, rising labor costs, inflation, and future costs for Zero Emission Vehicles (ZEVs) to meet new California Air Resource Board (CARB) requirements.

Four draft rate increase options were presented, with two options aimed at sustaining a minimum fund balance above 10% while tackling the financial pressures experienced by the Solid Waste Service Fund. The remaining two options are crafted to entail the minimum rate increase necessary, leading to a depletion of the fund balance near zero over a period of time. These options varied in the timing and percentage of rate increases. Mr. Boatman clarified that there are options available which initiate the rate increase in 2025. This adjustment is prompted by the Utilities Advisory Committee's ongoing deliberations on water and wastewater rates, allowing for the possibility of staggering the rate increases rather than implementing them all simultaneously for the customer. The presentation included a comparative analysis of the proposed rate increases to neighboring cities.

The next steps outlined in the presentation included R3 Consulting Group, Inc. preparing a draft 5-year rate study report based on feedback and analysis. Additional meetings with the commission are planned, along with a 45-day Proposition 218 noticing period to inform ratepayers about the proposed rate increases. Finally, a Public Hearing at a City Council meeting will be held to adopt the new rates based on the findings of the Rate Study.

A question arose if most of the increase in expenses is due to new state requirements. Mr. Boatman clarified that the drivers are the length of time since the late rate increase in 2017, SB 1383, and capital expenses including a flare updated. The commission asked if non-compliance can be explored in the rate model and implications to direct costs. Discussion ensued regarding cost sensitivity to consumers at different price rates and the impacts of privatizing waste management. Chairman Stockton proposed exploring a scenario involving Option 3 (funds dipping near zero and starting in 2024), but changing all rate increases below 10 percent.

It was determined that the discussion will resume during the next commission meeting scheduled for April 15th.

E. ADJOURNMENT – Next regular meeting is April 15, 2024 at 4:00 PM

There being no further business the meeting adjourned at 5:15 PM. The next meeting of the City of Redlands Municipal Utilities/Public Works Commission is scheduled for April 15, 2024.

City of
REDLANDS
Incorporated 1888
Municipal Utilities & Engineering Department

JOHN R. HARRIS
Director

MEMORANDUM

TO: Adekunle Ojo, Municipal Utilities/Public Works Commission Chair

FROM: John R. Harris, Municipal Utilities & Engineering Department Director

DATE: April 8, 2024

SUBJECT: April 15, 2024 Director's Report

Hello and thank you for serving the Redlands community as a Municipal Utilities/Public Works Commissioner (MUPWC)! City of Redlands Municipal Code Chapter 2.38 establishes the responsibilities of the MUPWC as follows:

"The commission is a resource for the City Council and City staff and buffer with the general public. In its advisory capacity, the commission shall be knowledgeable of all public works, utilities and engineering programs. The commission shall, through the individual and collective expertise of its members, provide advice to the Public Works and Municipal Utilities Departments regarding the public acceptability of proposed plans, programs and projects."

Upcoming City Council Meeting Agenda Items

- Sewer Pipeline Project Bid Rejection (April 16)
- DIF Adoption (April 16)
- Riverside County Cooperative Agreement – Live Oak Canyon Road (April 16)
- On-Call Fence Repair Agreement (April 16)
- General Pump Company Agreement (April 16)
- Water/Wastewater Rates – Proposition 218 Kick-Off (May 7)
- Laboratory Services Bid Rejection (May 7)
- Well Siting Evaluation Agreement (May 7)
- Crafton Hills Community College MOU Termination (May 21)
- AMI Project Extension (May 21)
- SB-1 Project List Adoption (June 4)
- WWTP Consultant Support Agreement (June 18)
- Laboratory Facility Final Engineering Agreement (June 18)

City Grove Irrigation Update

Engineering plans to extend a recycled water distribution pipeline south of I-10 on California Street are being developed in-house and are nearly complete. Once finalized, the plans will have to be reviewed and approved by CalTrans to receive permits for construction. The goal of this project is to transition the City's California Grove and West Gateway Grove from potable water irrigation to recycled water irrigation. This will be the first expansion of the recycled water distribution system south of I-10.

WWTP P2 Project Update

Parsons Engineering completed and submitted all WWTP Improvement Project Phase 2 documents in December 2023. MUED staff and SWRCB staff participated in a kick-off meeting for the acceptance and use of a $45M State Revolving Fund (SRF) loan to construct these improvements. We learned that the timeline for development of a Financing Agreement, which includes additional technical, environmental, and legal reviews, is approximately two (2) years. MUED staff has provided all requested documentation and continues to work closely with SWRCB staff to expedite this process. The project engineering plans are complete.

Water Meter Replacement Project

MUED is implementing a multi-year project to replace all potable and non-potable water meters within the Redlands service area. Ferguson Waterworks was selected to supply and install the water meters, meter box lids, and Automated Metering Infrastructure (AMI) water meter hardware for use in the future. Ferguson recently completed Phase 2 of the project, which focused on residential and large diameter commercial water meter replacements and AMI hardware retrofits. The water savings value associated with the completion of Phase 2 will be evaluated during the next year.

In July 2022, MUED staff submitted a BOR grant application to partially fund the three (3) remaining project phases. BOR recently approved this funding request and will provide approximately $2.7M to complete the project. MUED staff submitted a BABA waiver request, which was approved in March 2024, to purchase and install Neptune water meters since no known AMI capable water meter manufacturers meet the BABA requirements. On September 5, 2023, the City Council awarded a new contract to Ferguson for the third and final phase of this project, which consolidates phases 3 – 5 into a single phase. The cost to complete this final project phase is approximately $6.7M, of which approximately $2.7M will be reimbursed by BOR. Water meters have been ordered and many have already been delivered. These water meter replacements will begin soon. A project location map is provided as Attachment "B".

PMP Update

Matich Corporation submitted the lowest responsive and responsible bid for the FY 23/24 project. City Council awarded Matich a Construction Contract for approximately $4.4M on February 6,

2024. The project is underway and is currently on-schedule and below-budget. A project location map is provided as Attachment "C".

LED Streetlight Conversion Project Update

The FCS Department's Street Light Conversion Project is complete and the Tanko Lighting closure report is provided as Attachment "D". FCS will track and analyze electrical power cost savings in the future.

Caltrans/SBCTA Projects

Please visit the following agency websites for specific project details:

Caltrans District 8 - https://dot.ca.gov/caltrans-near-me/district-8/district-8-current-projects

SBCTA - https://www.gosbcta.com/projects/

I will continue to provide project updates and summaries for potentially impactful projects within Redlands and nearby areas.

SR-38 is currently open to traffic in both directions.

Q3 Capital Improvement Project Update

The MUPWC is charged with, among other things, "*annually reviewing the City CIP under the purview of the Public Works and Municipal Utilities Departments*" (Municipal Code 2.38.030). However, during the December 7, 2020 MUPWC meeting, the Commission asked the MUED staff to provide quarterly CIP updates. A summary and status of CIP projects is provided in Attachment "E". Highlights of current projects are provided below:

1. Multi-Year Well Rehabilitation & Booster Pump Replacements – Five (5) potable water wells and two (2) non-potable water wells are being rehabilitated in FY 23/24. This work is prioritized to occur during our typical low water demand season. The rehabilitation of three (3) of these seven (7) wells is complete and four (4) wells are currently being rehabilitated. All wells will be returned to service before the end of 2024. Following is a short list of specific groundwater wells scheduled for rehabilitation with this project:

    1. Church Street Well (potable)
    2. Mentone #2 Well (potable)
    3. Airport #2 Well (potable)
    4. Mill Creek 2A Well (potable)
    5. Rees Well (potable)
    6. Mill Creek #4 Well (non-potable)
    7. Redlands Heights Well (non-potable)

2. Tate WTP Raw Water Influent Pipeline Engineering – This project is underway and Carollo Engineers recently submitted the 90% design plans for review. MUED staff reviewed these plans and submitted comments back to Carollo.
3. Hinckley WTP Sludge Press Engineering – This project is underway and Dudek recently submitted the 60% design plans for review. MUED staff reviewed these plans and submitted comments back to Dudek.
4. Well Perchlorate Treatment Evaluation – This project is underway and Dudek is developing 30% design plans and recently submitted a Preliminary Design Report for review. A recent detection of PFAS will not require design revisions.
5. Automated Metering Infrastructure (AMI) – Ferguson Enterprises was awarded a contract to install twenty-six (26) gateway collector stations throughout the City to remotely read water meters. To date, seven (7) gateways have been installed and are now operational.
6. Phase II & III Water Distribution SCADA Upgrade - Materials have been ordered. Installations began recently and will continue into 2024.
7. Sewerline Replacement Project – The FY 22/23 project was completed in March 2024.

As always, feel free to contact me anytime to discuss MUED issues, programs, projects, or concerns.

John R. Harris
jharris@cityofredlands.org
(909) 725-1963

Attachments:

A – Acronym List
B – Citywide Water Meter Replacement Project Phase 3 Location Map
C – FY 23/24 PMP Location Map
D – Tanko Lighting Closure Report
E - CIP Status List
F – Raftelis Rate Study

ACRONYMS

AACE	Association for the Advancement of Cost Engineering
AF	Acre-Feet
AFD	Acre-Feet per Day
AFY	Acre-Feet per Year
ADD	Average Day Demand
AMI	Advanced Metering Infrastructure
AMR	Automated Meter Reader
APWA	American Public Works Association
ASCE	American Society of Civil Engineers
ASL	Above Sea Level
AWWA	American Water Works Association
BABA	Build America Buy American
BOD	Biological Oxygen Demand
BOR	Bureau of Reclamation
BVMWC	Bear Valley Mutual Water Company
CalOSHA	California Division of Occupational Safety and Health Agency
CalWARN	California's Water/Wastewater Agency Response Network
CCR	Consumer Confidence Report
CIP	Capital Improvement Program
Cogen	Cogeneration
CPUC	California Public Utilities Commission
CWC	Crafton Water Company
DDW	Division of Drinking Water
DIF	Development Impact Fees
DLR	Detection Limit for Purposes of Reporting
DOE	Department of Energy
DU	Dwelling Unit
EDU	Equivalent Dwelling Unit
EOPC	Engineer's Opinion of Probable Cost
EPA	Environmental Protection Agency
EPS	Extended Period Simulation
ERNIE	Emergency Response Network of the Inland Empire
ES	Equalizing Storage
EVWD	East Valley Water District
FCS	Facilities and Community Services Department
FPS	Feet Per Second

FSS	Fire Suppression Storage
FY	Fiscal Year
GC	Groundwater Council
GIS	Geographical Information System
GPCD	Gallons per capita day
GPD	Gallons per day
GPM	Gallons per minute
Hinckley WTP	Horace P. Hinckley Water Treatment Plant
HP	Horsepower
HSIP	Highway Improvement Safety Program
I-10	Interstate 10
I-210	Interstate 210
MCL	Maximum Contaminate Level
MDD	Maximum Day Demand
MG	Million Gallons
MGD	Million Gallons per Day
mg/L	Milligrams per Liter
MUED	Municipal Utilities and Engineering Department
NPW	Non-Potable Water
NTU	Nephelometric Turbidity Unit
O&M	Operations and Maintenance
OS	Operational Storage
PFAS	Per- & Polyfluoroalkyl Substances
PHD	Peak Hour Demand
PMP	Pavement Management Program
PPM	Parts Per Million
PRS	Pressure Reducing Stations
PSI	Pounds per Square Inch
PW	Potable Water
RW	Recycled Water
SAR	Santa Ana River
SB	Stand-by Storage
SBBA	San Bernardino Basin Area
SBV	San Bernardino Valley (formerly San Bernardino Valley Municipal Water District)

SCADA	Supervisory Control and Data Acquisition
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SGMA	Sustainable Groundwater Management Act
SOC	Synthetic Organic Compounds
SOP	Standard Operating Procedure
SWP	State Water Project
SWRCB-DDW	State Water Resources Control Board – Division of Drinking Water
Tate WTP	Henry Tate Water Treatment Plant
TBD	To be determined
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
TTHM	Trihalomethanes
U.S.	United States
UWMP	Urban Water Management Plan
VOC	Volatile Organic Compounds
WD	Water Distribution
WP	Water Production
WSCP	Water Shortage Contingency Plan
WSMP	Water System Master Plan
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

FY23/24 Meter Routes

Potable Water Meter Change-Out CIP

- Route 24 - 282
- Route 25 - 492
- Route 26 - 329
- Route 27 - 344
- Route 28 - 301
- Route 31 - 271
- Route 32 - 268
- Route 33 - 314
- Route 34 - 324
- Route 45 - 159
- Route 47 - 254
- Route 48 - 221
- Route 51 - 341
- Route 52 - 355
- Route 53 - 310
- Route 54 - 335
- City of Redlands

Total = 4899

0 0.25 0.5 Miles

City of REDLANDS

June 14, 2022

FY23_24Potable.mxd

Route 25
Route 24
Route 47
Route 26
Route 28
Route 27
Route 45
Route 48
Route 31
Route 32
Route 34
Route 33
Route 51
Route 52
Route 53
Route 54

CENTRAL AVE
PALMETTO AVE
MARIGOLD AVE
SAN BERNARDINO AVE
LUGONIA AVE
NEVADA ST
ALABAMA ST
MOUNTAIN VIEW AVE
REDLANDS BLVD
CALIFORNIA ST
MISSION RD
TENNESSEE ST
BARTON RD
BEAUMONT AVE
BROOKSIDE AVE
OLIVE AVE
CENTER ST
CAJON ST
CYPRESS AVE
FERN AVE
PALM AVE
SAN MATEO ST
HIGHLAND AVE
CRESCENT AVE
TERRACINA BLVD
ELIZABETH ST
GARDEN ST
SAN TIMOTEO CANYON RD
ALESSANDRO RD
PIONEER AVE
TEXAS ST
CHURCH ST
ORANGE ST
UNIVERSITY ST
6TH ST
JUDSON ST
COLTON AVE
CITRUS AVE
DEARBORN ST
WABASH AVE
OPAL AVE
CRAFTON AVE
MENTONE BLVD
5TH AVE
FORD ST
SAND CANYON RD
YUCAIPA BLVD
OUTER HWY
ALTA VISTA DR
SUNSET DR

FY24/25 Meter Routes

Potable Water Meter Change-Out CIP

- Route 35 - 325
- Route 36 - 278
- Route 37 - 357
- Route 38 - 261
- Route 41 - 339
- Route 42 - 255
- Route 43 - 275
- Route 55 - 341
- Route 56 - 350
- Route 57 - 351
- Route 58 - 249
- Route 61 - 343
- Route 62 - 359
- Route 63 - 455
- Route 64 - 442
- City of Redlands

Total = 4980

0 0.25 0.5 Miles

City of REDLANDS

June 14, 2022

FY24_25Potable.mxd

PALMETTO AVE
MARIGOLD AVE
PIONEER AVE
SAN BERNARDINO AVE
LUGONIA AVE
TEXAS ST
ORANGE ST
CHURCH ST
UNIVERSITY ST
JUDSON ST
MENTONE BLVD
NEVADA ST
ALABAMA ST
CALIFORNIA ST
6TH ST
COLTON AVE
REDLANDS BLVD
TENNESSEE ST
BROOKSIDE AVE
OLIVE AVE
CAJON ST
FORD ST
DEARBORN ST
WABASH AVE
OPAL AVE
CRAFTON AVE
CITRUS AVE
5TH AVE
SAND CANYON RD
MISSION RD
BARTON RD
BEAUMONT AVE
SAN MATEO ST
SAN FERNANDO AVE
CYPRESS AVE
PALM AVE
CENTER ST
HIGHLAND AVE
GARDEN ST
TERRACINA BLVD
CRESCENT AVE
SAN TIMOTEO CANYON RD
ALESSANDRO RD
YUCAIPA BLVD
AVENUE E
OUTER HWY
ALTA VISTA DR
SUNSET DR

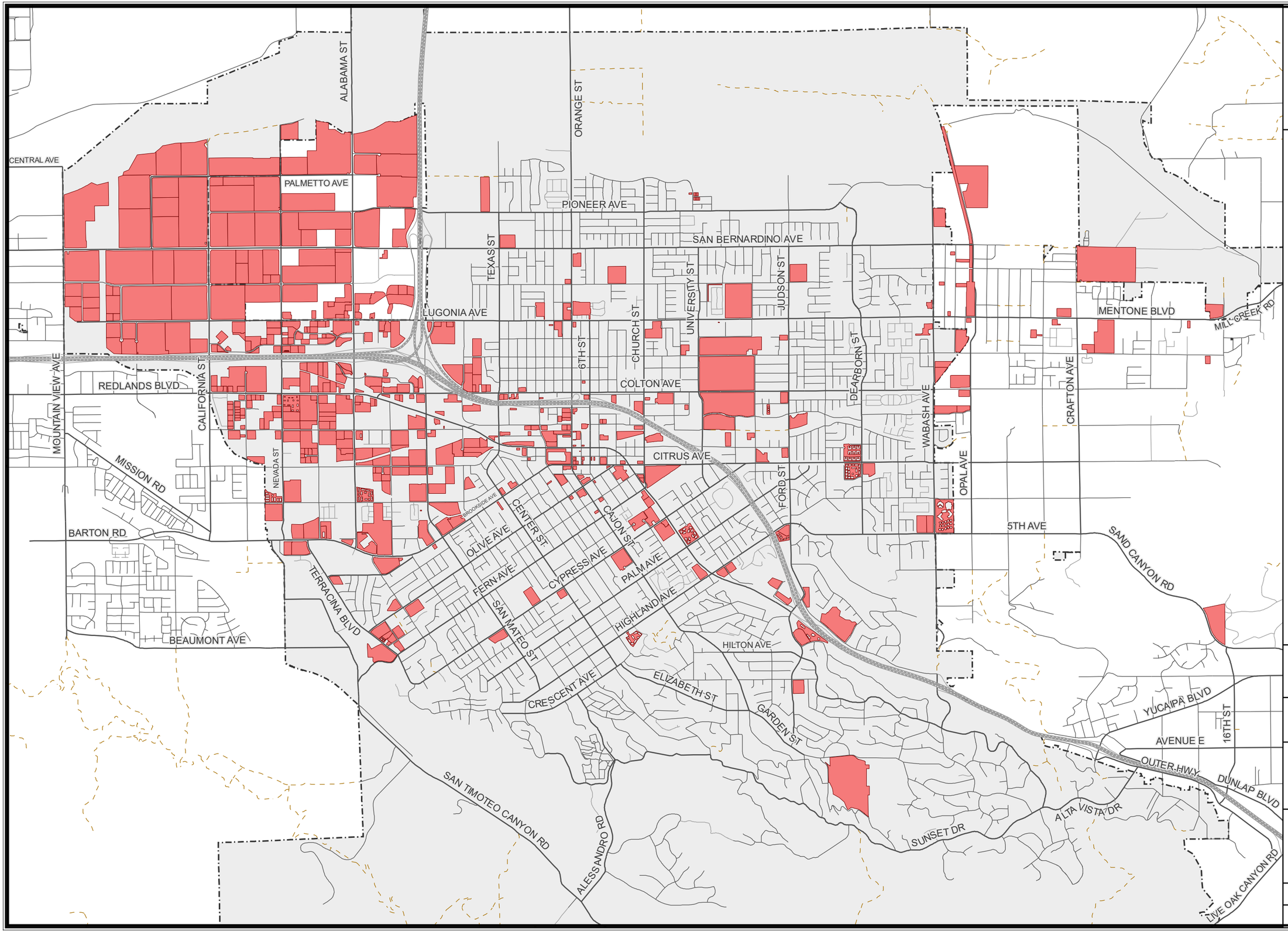
Route 62
Route 61
Route 63
Route 64
Route 37
Route 41
Route 35
Route 38
Route 42
Route 36
Route 43
Route 56
Route 57
Route 55
Route 58

FY25/26
Fire Protection

Potable Water Meter
Change-Out CIP

Fire Protection

City of Redlands

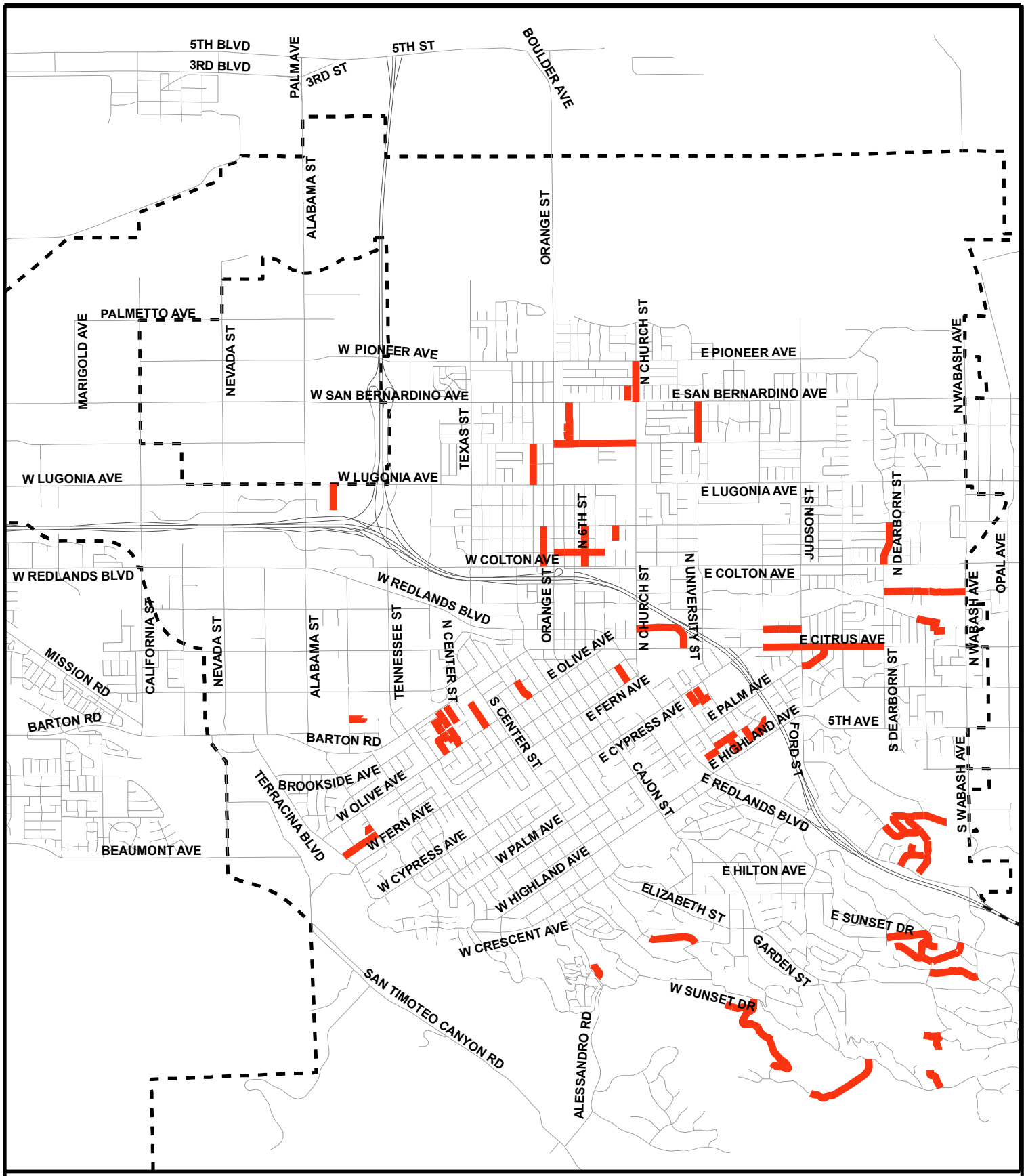


0 0.5 1
Miles

City of REDLANDS

May 24, 2021

FY25_26Potable_FirePro.mxd



PMP 2023 STREET RESURFACING PROJECT LOCATION MAP

City of REDLANDS "A City That Works"

City of Redlands, CA
LED Streetlight Conversion Project Final Reporting

Submitted by:
Jason Tanko
Tanko Streetlighting, Inc.
220 Bayshore Boulevard
San Francisco, CA 94124

Submitted to:
Mike Foster
Field Services Coordinator, City of Redlands
35 Cajon Street, Suite 222
Redlands, CA 92373

July 12, 2023

CONTENTS

TankoLighting
www.tankolighting.com | 220 Bayshore Blvd | San Francisco, CA 94124 | P 415.254.7579 | F 415.822.3626

A. COVER LETTER

Submitted to:
Mike Foster
Field Services Coordinator, City of Redlands
35 Cajon Street, Suite 222
Redlands, CA 92373
RE: City of Redlands Project Closeout

Dear Mr. Foster,

Tanko Lighting is providing the final documents to the City of Redlands for the Streetlight Implementation Project.

We have provided to you the following deliverables:

Deliverable	Date Provided
GIS Final Deliverable	7/12/23
Final Post-Install Financial Analysis	7/12/23
Lamp Change Submission	5/12/23

Please let us know if there are any outstanding issues or final steps to complete, otherwise we will consider this project closed.

Regards,

Jason Tanko
CEO
Tanko Lighting
415.254.7579
jason@tankolighting.com

B. LED CONVERSION OVERVIEW

The City of Redlands recently completed the city-wide installation of 4,395 LED fixtures. Commissioning was conducted for each fixture during install with no outstanding issues. Tanko Lighting submitted rate change requests to Southern California Edison (SCE) and should be reflected on your billing shortly.

The City of Redlands LED conversion included the following fixtures and materials:

LED Description	Part Number	Quantity
28W GE Cobra Head, Type II Wide, 3000K, Gray	ERLC-0-04-B5-30-A-GRAY	2069
29W GE Cobra Head, Type IV, 3000K, Gray	ERL1-0-04-D5-30-A-GRAY	146
46W GE Cobra Head, Type III, 3000K, Gray	ERLC-0-06-C5-30-A-GRAY	823
46W GE Cobra Head, Type IV, 3000K, Gray	ERL1-0-06-D5-30-A-GRAY	11
87W GE Cobra Head, Type III, 3000K, Gray	ERL1-0-11-C5-30-A-GRAY	293
87W GE Cobra Head, Type III, 3000K Black	ERL1-0-11-C5-30-A-BLACK	63
12W Green Creative PAR38 Lamp, 3000K	12PAR38DIM/830FL40/N	1
27W Keystone Power Select Screw-In Lamp, Mogul Base, 3000K	KT-LED27PSHID-EX39-830-D/G4	696
36W Keystone Power Select Screw-In Lamp, Mogul Base, 3000K	KT-LED36PSHID-EX39-830-D/G4	281
80W RAB X17 Ultra Economy 3-Way Field Adjustable Flood Light, Slipfitter Mount, 3000K, Bronze	X17XFU-80-SF	12
Sun-Tech P Series Solid State Photocontrol 105-305V	PX124-1.5-PTW	3492
Utility Metals 2 inch x 10 inch Side Tenon Bracket, Black	ST2-10-BLK	63
Keystone Step Down Auto-Transformer 480V to 277V, Maximum Load 250VA	KTAT-250-480-277/A	22
Keystone Step Down Auto-Transformer 480V to 277V, Maximum Load 375VA	KTAT-375-480-277	10
Express 1.4” x 6” Rectangle Anodized Aluminum Pole Tags with Sub Surface Image. Thickness: 0.020”. Matte finish. Barcode included	Drawing # Tanko-001	5249

TankoLighting
www.tankolighting.com | 220 Bayshore Blvd | San Francisco, CA 94124 | P 415.254.7579 | F 415.822.3626

Not included in the list above are spare fixtures and materials.

The product cutsheets for the installed fixtures and materials are included as Appendix A.

The final financial summary for the City of Redland's LED conversion is included as Appendix B.

C. UTILITY SUBMISSION

Lamp Change Submission:

Tanko submitted the Lamp Change requests for all converted fixtures on May 12, 2023. The records are expected to be updated to LED over the course of a few billing cycles. The City of Redland's lamp change was submitted to:

Christian Torres
Key Accounts, Advisor
Customer Engagement Division (CED), Local Government & Public Sector
Southern California Edison
Office: 909-942-8306 Cell: 626-513-6792
Christian.Torres@sce.com

D. WARRANTY CONTACT INFORMATION

Materials Warranty:

In the event of a failure, please contact the respective manufacturer's warranty representative listed below. The warranty length varies based on manufacturer and is listed for your reference.

Manufacturer	Contact Information
GE Current Cobra Heads – 10-year warranty Non-Cobra Head Fixtures – 5-year warranty	Amy Lawrence Lighting Technical Specialist Graybar 215-495-3005 amy.lawrence@graybar.com
Sun-Tech Photocells – 6-year warranty	JoAnne Micale Strategic Account Manager Sunrise Technologies, Inc. Phone: 508-821-1597 ext 1123 Direct: 774-406-5332 jmicale@sun-tech.biz

APPENDICES

Appendix A: Product Cutsheets
Appendix B: Final Financial Analysis
Appendix C: Environmental Disposal Documentation

TankoLighting
www.tankolighting.com | 220 Bayshore Blvd | San Francisco, CA 94124 | P 415.254.7579 | F 415.822.3626

Appendix A

Product Cutsheets

Evolve®

LED Roadway Lighting

ERLC-ERL1-ERL2

GE current
a Daintree company

Evolve® LED Roadway Lighting

Cobra Head (ERLC)

Project Name _____

Date _____ Type _____

Notes _____

The **Evolve**® LED Roadway ERLC Luminaire is optimized utilizing advanced LED reflective optical system for local, collector and major roadways. The modern design incorporates the heat sink directly into the unit for heat transfer to prolong LED life.

CONSTRUCTION

Housing:	Aluminum die cast enclosure casting integral heat sink for maximum heat transfer
Lens:	Impact resistant tempered glass
Paint:	Corrosion resistant powder paint, ≥ 2.0 mil thickness (RAL & custom colors available) Standard = Black, Dark Bronze, Gray, White Optional = Coastal Finish
Weight:	8.5 lbs (5.6 kgs)

OPTICAL SYSTEM

Lumens:	2,000 - 7,000
Distribution:	Type II Narrow, II/III[3], III, V
Efficacy:	110-143 LPW
CCT:	2700K, 3000K, 4000K & 5000K
CRI:	≥ 70

ELECTRICAL

Input Voltage:	120-277V (no 347-480V)
Input Frequency:	50/60Hz
Power Factor:	≥ 90% at rated watts
Total Harmonic Distortion:	≤ 20% at rated watts

SURGE PROTECTION*

Standard	Optional
☐ 10kV/5kA	☐ Secondary 10kV/5kA (R Option) or ☐ Secondary 20kV/10kA (T Option)

*Per ANSI C136.2-2018

LUMEN MAINTENANCE

Projected Lxx per IES TM-21-11 at 25°C

Lumen Codes	Distributions	LXX(10K) @ Hours		
		25,000 HR	50,000 HR	60,000 HR
02 ,03, 04, 05	A5, B5, C5	L97	L93	L92
06	A5, B5, C5	L96	L91	L89
07	A5, B5, C5	L95	L89	L87

Lumen Codes	Distributions	LXX(10K) @ Hours		
		25,000 HR	50,000 HR	60,000 HR
02 ,03, 04, 05	V4	L96	L93	L93
06	V4	L94	L90	L88

Note: Projected Lxx based on LM80 (≥ 10,000 hour testing). Accepted Industry tolerances apply to initial luminous flux and lumen maintenance measurements.

RATINGS

Operating Temperature:	-40°C to 50°C
Vibration:	3G per ANSI C136.31-2018
LM-79:	Testing in accordance with IES Standards
EMI:	Title 47 CFR Part 15 Class A
RoHS:	Complies with the material restrictions of RoHS

CONTROLS

Dimming:	Standard - 0-10V ☐ Optional - DALI (Option U) ☐
Sensors:	Photo Electric Sensors (PE) available LightGrid Compatible

WARRANTY

☐ 5 Year (Standard) ☐ 10 Year (Optional)

GE current
a Daintree company

UL 1598 for WET LOCATIONS · IP66 · IK08 · CONTROLS ENABLED

Not all product variations listed on this page are DLC qualified. Visit www.designlights.org/search to confirm qualifications.

Evolve® LED Roadway Lighting

Cobra Head (ERLC)

Catalog Logic

Project Name ____________________
Date ____________ Type ____________
Notes ____________________

ERLC

_ _ _ _   _   _ _   _ _   _ _   _   _ _ _ _   _ _ _

PROD. ID	VOLTAGE	LUMENS	DISTRIBUTION	CCT	CONTROLS PER ANSI C136.41	COLOR	OPTIONS
E = Evolve	0 = 120-277[1]	02[2]	A5 = II Narrow	27 = 2700K[4]	A = 7-Pin Receptacle	BLCK = Black	B = Tether
R = Roadway	8 = 120-240	03	B5 = Type II/III[3]	30 = 3000K[4]	D = 7-Pin Receptacle with Shorting Cap	DKBZ = Dark Bronze	C1 = Captive Door
L = Local		04	C5 = Type III	40 = 4000K	E = 7 Pin Receptacle with Long Life non-Dimming PE Control	GRAY = Gray	F = Fusing
C = Compact	1 = 120	05	V4 = Type V	50 = 5000K		WHTE= White	G = Internal Bubble Level
	2 = 208	06			Note: 0-10V control standard unless DALI Option "U" requested		L = Tool-Less Entry
	3 = 240	07					M1 = MagnaPak[8]
	4 = 277						R = Secondary 10kV/5kA SPD
							T = Secondary 20kV/10kA SPD
							U = DALI Programmable[5]
							V1 = Field Adjustable Module[1,7]
							Y = Coastal Finish[6]
							XXX = Special Options

1 Not Available with Fusing
2 Lumen choice only offered for 120-240V
3 See ISO plots of the B5 Distribution
4 Select 2700K or 3000K CCT for IDA approved units
5 Compatible with LightGrid
6 Recommended for installations within 750 feet from coast. Lead time varies, check with factory.
7 Not available with DALI "U" option
8 Option M1 provides for MagnaPak – 40 Fixtures per MagnaPak Container. Single Pack box is standard

SUGGESTED HID REPLACEMENT

- Approximately 2,000 - 7,000 lumens to replace 50-100W HPS Cobra-head

Note: actual replacement lumens may vary based upon mounting height, pole spacing, design criteria, etc.

Previous	Optical Pattern	Latest	New Optical Pattern
A3	Type II Narrow	A5	Type II Narrow
B3	Type II Wide	B5	Type II/III
C3	Type III	C5	Type III
N/A	Type V	V4	Type V

The information above is designed to provide a guideline to select the correct luminaire for a roadway application. The best and most accurate way to ensure the proper design is by doing a lighting layout.

GE current
a Daintree company

Not all product variations listed on this page are DLC qualified.
Visit www.designlights.org/search to confirm qualifications.

Evolve® LED Roadway Lighting

Cobra Head (ERLC)

Spec Tables

Project Name _____

Date _____ Type _____

Notes _____

LUMEN OUTPUT	DIST.	LUMENS			WATTAGE	BUG RATINGS		
		4000K/5000K	3000K	2700K	120-277V	4000K/5000K	3000K	2700K
02	A5	2000	1940	1760	15	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B5	2000	1940	1760	15	B1-U0-G1	B1-U0-G1	B1-U0-G1
	C5	2000	1940	1760	15	B1-U0-G1	B1-U0-G1	B1-U0-G1
	V4	1990	1950	1890	15	B1-U0-G0	B1-U0-G0	B1-U0-G0
03	A5	3000	2910	2640	22	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B5	3000	2910	2640	22	B1-U0-G1	B1-U0-G1	B1-U0-G1
	C5	3000	2910	2640	22	B1-U0-G1	B1-U0-G1	B1-U0-G1
	V4	3100	3030	2950	23	B1-U0-G0	B1-U0-G0	B1-U0-G0
04	A5	4000	3880	3520	28	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B5	4000	3880	3520	28	B1-U0-G1	B1-U0-G1	B1-U0-G1
	C5	4000	3880	3520	28	B1-U0-G1	B1-U0-G1	B1-U0-G1
	V4	4030	3940	3840	32	B2-U0-G0	B2-U0-G0	B2-U0-G0
05	A5	5000	4850	4400	36	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B5	5000	4850	4400	36	B1-U0-G1	B1-U0-G1	B1-U0-G1
	C5	5000	4850	4400	36	B1-U0-G2	B1-U0-G2	B1-U0-G1
	V4	5200	5090	4950	43	B2-U0-G1	B2-U0-G1	B2-U0-G1
06	A5	6000	5820	5280	46	B2-U0-G2	B1-U0-G1	B1-U0-G1
	B5	6000	5820	5280	46	B1-U0-G2	B1-U0-G2	B1-U0-G2
	C5	6000	5820	5280	46	B1-U0-G2	B1-U0-G2	B1-U0-G2
	V4	6350	6220	6050	55	B2-U0-G1	B2-U0-G1	B2-U0-G1
07	A5	7000	6790	6160	56	B2-U0-G2	B2-U0-G2	B2-U0-G2
	B5	7000	6790	6160	56	B1-U0-G2	B1-U0-G2	B1-U0-G2
	C5	7000	6790	6160	56	B1-U0-G2	B1-U0-G2	B1-U0-G2

For additional information on ERLC IES files, please click one of the following links:

Non-Shielded Shielded

GE current
a Daintree company

Evolve® LED Roadway Lighting

Cobra Head (ERLC)

Photometric Plots

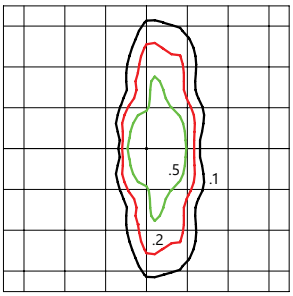
Project Name _____

Date _____ Type _____

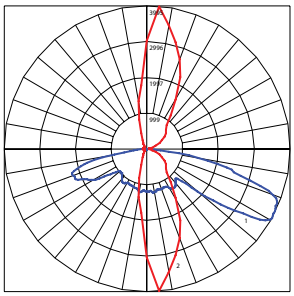
Notes _____

ERLC
Type II Narrow

5,000 Lumens
4000K
ERLC_05A540___.IES



- Mounting Height at 30′
- Initial Footcandle at Grade

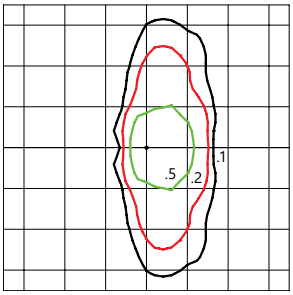


— Vertical plane at max Cd horiz. angle
— Horizontal cone at max Cd vert. angle

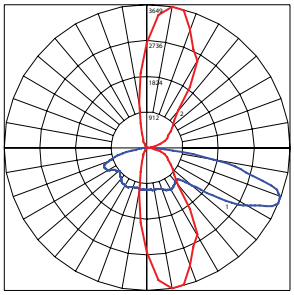
ERLC
Type II/III[3]

5,000 Lumens
4000K
ERLC_05B540___.IES

[3] This optic is designed to address a Roadway Photometric Application and may classify as Type II or III.



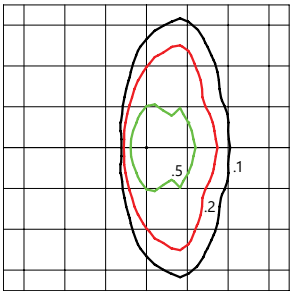
- Mounting Height at 30′
- Initial Footcandle at Grade



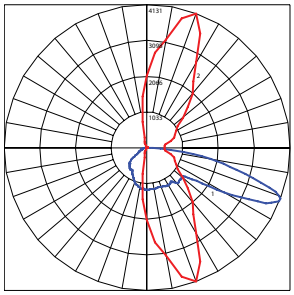
— Vertical plane at max Cd horiz. angle
— Horizontal cone at max Cd vert. angle

ERLC
Type III

5,000 Lumens
4000K
ERLC_05C540___.IES



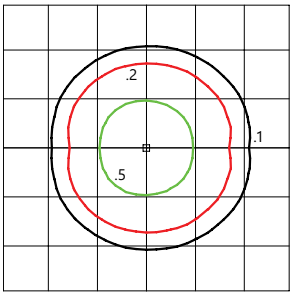
- Mounting Height at 30′
- Initial Footcandle at Grade



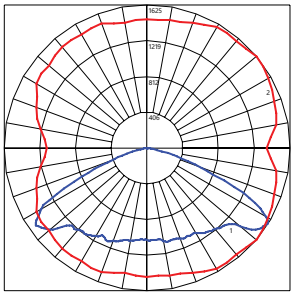
— Vertical plane at max Cd horiz. angle
— Horizontal cone at max Cd vert. angle

ERLC
Type V

5,200 Lumens
4000K
ERLC_05V440___.IES



- Mounting Height at 30′
- Initial Footcandle at Grade



— Vertical plane at max Cd horiz. angle
— Horizontal cone at max Cd vert. angle

GE current
a Daintree company

Evolve® LED Roadway Lighting

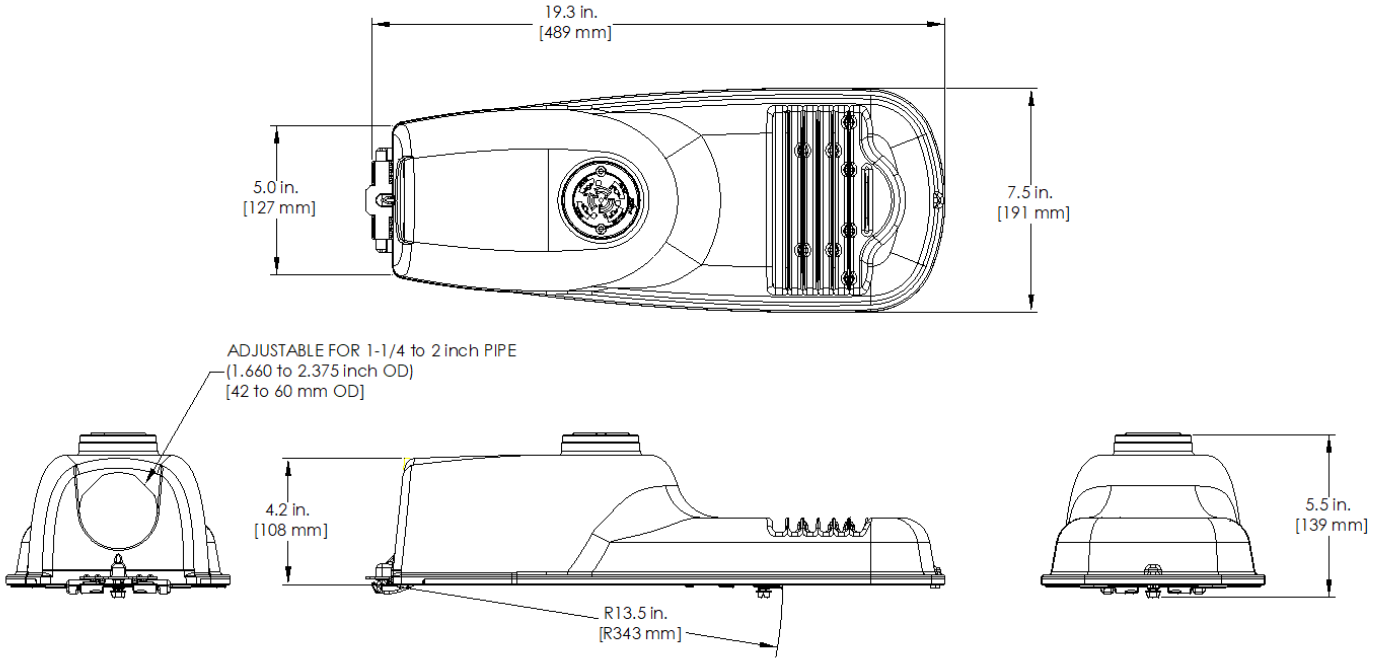
Cobra Head (ERLC)

Mounting & Accessories

Project Name _____

Date _____ Type _____

Notes _____



MOUNTING

- Adjustable for 1.25 to 2 in. nominal mounting pipe
- Integral diecast mounting pipe stop
- Slipfitter with +/- 5 degrees of leveling adjustment

EFFECTIVE PROJECTED AREA

- 0.3 sq ft max (0.029 sq m)

WEIGHT

- Approximate net weight: 8.5 lbs (3.8 kgs)

ACCESSORIES

SAP Number	Part Number	Description
93029237	PED-MV-LED-7	ANSI C136.41 Dimming PE, 120-277V
93029238	PED-347-LED-7	ANSI C136.41 Dimming PE, 347V
93029239	PED-480-LED-7	ANSI C136.41 Dimming PE, 480V
28299	PEC0TL	Standard 120-277V
XXXXXX	PECHTL	Standard 347-480V
73251	SCCL-PECTL	Shorting Cap

See pages 22 & 23 for more detailed information on ERLC Shields.

NETWORKED LIGHTING CONTROL

Current's **LightGrid™** Outdoor Lighting Control System is designed for Street and Roadway Applications. It enables remote monitoring, control, and asset management of a single fixture or a group of fixtures through a web enabled Central Management System.

GE current
a Daintree company

Evolve®

LED Roadway Lighting

ERLC-ERL1-ERL2

GE current
a Daintree company

Evolve® LED Roadway Lighting

Cobra Head (ERL1)

Project Name _____

Date _____ Type _____

Notes _____

The **Evolve**® LED Roadway ERL1 Luminaire is optimized utilizing advanced LED reflective optical system for local, collector and major roadways. The modern design incorporates the heat sink directly into the unit for heat transfer to prolong LED life.

CONSTRUCTION

Housing:	Aluminum die cast enclosure casting integral heat sink for maximum heat transfer
Lens:	Impact resistant tempered glass
Paint:	Corrosion resistant powder paint, ≥ 2.0 mil thickness *(RAL & custom colors available)* Standard = Black, Dark Bronze, Gray, White Optional = Coastal Finish
Weight:	12.4 lbs (5.6 kgs)

OPTICAL SYSTEM

Lumens:	2,000 - 15,700
Distribution:	Type II ,III, IV, Type II Narrow and Type II Enhanced Backlight
Efficacy:	111-140 LPW
CCT:	2700K, 3000K, 4000K and 5000K
CRI:	≥70

ELECTRICAL

Input Voltage:	120-277V or 347-480V
Input Frequency:	50/60Hz
Power Factor:	≥ 90% at rated watts
Total Harmonic Distortion:	≤ 20% at rated watts

SURGE PROTECTION*

Standard	Optional
☐ 10kV/5kA	☐ Secondary 10kV/5kA (R Option) or ☐ Secondary 20kV/10kA (T Option)

*Per ANSI C136.2-2018

LUMEN MAINTENANCE

Projected Lxx per IES TM-21-11 at 25°C

Lumen Codes	Distributions	LXX(10K) @ Hours		
		25,000 HR	50,000 HR	60,000 HR
02 ,03, 04, 05, 06	A5, B5, C5, D5, E5	L96	L94	L93
07, 08	A5, B5, C5, D5, E5	L99	L98	L98
09	A5, B5, C5, D5, E5	L98	L97	L96
10	A5, B5, C5, D5, E5	L94	L87	L84
11	A5, B5, C5, D5, E5	L93	L85	L82
12	A5, B5, C5, D5, E5	L96	L95	L94
13	A5, B5, C5, D5, E5	L96	L94	L93
14	A5, B5, C5, D5, E5	L95	L92	L91
15	A5, B5, C5, D5, E5	L93	L88	L86
16	A5, B5, C5, D5, E5	L91	L85	L83

Note: Projected Lxx based on LM80 (≥ 10,000 hour testing). Accepted Industry tolerances apply to initial luminous flux and lumen maintenance measurements.

RATINGS

Operating Temp:	-40°C to 50°C
Vibration:	3G per ANSI C136.31-2018
LM-79:	Testing in accordance with IES Standards
EMI:	Title 47 CFR Part 15 Class A
RoHS:	Complies with the material restrictions of RoHS

CONTROLS

Dimming:	Standard-0-10V ☐ Optional-DALI (Option U) ☐
Sensors:	Photo Electric Sensors (PE) available LightGrid Compatible

WARRANTY

☐ 5 Year (Standard) ☐ 10 Year (Optional)

GE current
a Daintree company

UL 1598 for WET LOCATIONS · IP65 · IK08 · CONTROLS ENABLED

Evolve® LED Roadway Lighting

Cobra Head (ERL1)

Catalog Logic

Project Name ____________________

Date ____________ Type ____________

Notes ____________________

ERL1

_ _ _ _   _   _ _   _ _   _ _   _   _ _ _ _   _ _ _

PROD. ID	VOLTAGE	LUMENS	DISTRIBUTION[3]	CCT	CONTROLS PER ANSI C136.41	COLOR	OPTIONS
E = Evolve	0 = 120-277[1,2]	02[2]	A5 = Type II Narrow	27 = 2700K[4]	A = 7-Pin Receptacle	GRAY = Gray	A = 4 Bolt Slipfitter[5]
R = Roadway	H = 347-480[1]	03	B5 = Type II	30 = 3000K[4]	D = 7-Pin Receptacle with Shorting Cap	BLCK = Black	B = Tether
L = Local	1 = 120	04	C5 = Type III	40 = 4000K	E = 7-Pin Receptacle with non-dimming Long Life PE	DKBZ = Dark Bronze	F = Fusing
1 = Single Module	2 = 208	05	D5 = Type IV	50 = 5000K	**Note:** 0-10V standard	WHTE = White	G = Internal Bubble Level
	3 = 240	06	E5 = Type II Enhanced Back Light				I = Optional IP66 Optical Enclosure
	4 =277	07					L = Tool-Less Entry
	8 = 120-240[1,11]	08					R = Secondary 10kV/5kA SPD
	5 = 480	09					T = Secondary 20kV/10kA SPD
	D = 347	10					U = DALI Programmable[6,7]
		11					V1 = Field Adjustable Module[10]
		12					X = Single Pack[8]
		13					Y = Coastal Finish[9]
		14					XXX = Special Options
		15					
		16					

1 Fusing requires discrete voltage.
2 02 Lumen Level, Voltage options 1, 2, 3 and 8 only
3 Nominal IES Type and classing subject to typical variation, individual units may differ
4 Select 2700K or 3000K CCT for IDA approved units
5 Lead time varies, contact Factory
6 Compatible with LightGrid
7 Not available in 347V, 480V or 347-480V for Lumen Output Levels 08-16
8 Option provides single pack box per fixture. Standard packaging = 23 units per MagnaPak Container
9 Recommended for installations within 750 feet from coast. Lead time varies, check with factory.
10 Not available with DALI "U" option
11 Only available with 02 Lumen Code

SUGGESTED HID REPLACEMENT

Approximately 2,000-3,000 lumens to replace 50W-70W HPS Cobra-head
Approximately 4,000-5,000 lumens to replace 100W HPS Cobra-head
Approximately 7,000-9,000 lumens to replace 150W HPS Cobra-head
Approximately 9,000-12,000 lumens to replace 200W HPS Cobra-head
Approximately 12,000-16,000 lumens to replace 250W HPS Cobra-head

Note: actual replacement lumens may vary based upon mounting height, pole spacing, design criteria, etc.

GE current
a Daintree company

Evolve® LED Roadway Lighting

Cobra Head (ERL1)

Spec Tables

Project Name _____

Date _____ Type _____

Notes _____

LUMEN OUTPUT	DIST.	TYPICAL INITIAL LUMENS			WATTAGE		BUG RATINGS		
		5000K/ 4000K	3000K	2700K	120V 277V	347V 480V	5000K/4000K	3000K	2700K
02	A5	2000	1900	1900	15*	N/A	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B5						B1-U0-G1	B1-U0-G1	B1-U0-G1
	C5						B1-U0-G1	B0-U0-G1	B0-U0-G1
	D5						B0-U0-G1	B0-U0-G1	B0-U0-G1
	E5						B1-U0-G1	B1-U0-G1	B1-U0-G1
03	A5	3000	2900	2800	22	26	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B5						B1-U0-G1	B1-U0-G1	B1-U0-G1
	C5						B1-U0-G1	B1-U0-G1	B1-U0-G1
	D5						B1-U0-G1	B1-U0-G1	B1-U0-G1
	E5						B1-U0-G1	B1-U0-G1	B1-U0-G1
04	A5	4000	3900	3800	29	33	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B5						B1-U0-G1	B1-U0-G1	B1-U0-G1
	C5						B1-U0-G1	B1-U0-G1	B1-U0-G1
	D5						B1-U0-G1	B1-U0-G1	B1-U0-G1
	E5						B1-U0-G1	B1-U0-G1	B1-U0-G1
05	A5	5000	4900	4700	37	39	B1-U0-G1	B1-U0-G1	B1-U0-G1
	B5						B1-U0-G1	B1-U0-G1	B1-U0-G1
	C5						B1-U0-G1	B1-U0-G1	B1-U0-G1
	D5						B1-U0-G1	B1-U0-G1	B1-U0-G1
	E5						B2-U0-G2	B1-U0-G1	B1-U0-G1
06	A5	6000	5800	5700	46	49	B2-U0-G2	B2-U0-G2	B2-U0-G2
	B5						B1-U0-G1	B1-U0-G1	B1-U0-G1
	C5						B1-U0-G2	B1-U0-G2	B1-U0-G2
	D5						B1-U0-G2	B1-U0-G2	B1-U0-G2
	E5						B2-U0-G2	B2-U0-G2	B2-U0-G2
07	A5	7000	6700	6200	50	51	B2-U0-G2	B2-U0-G2	B2-U0-G2
	B5						B1-U0-G2	B1-U0-G2	B1-U0-G1
	C5						B1-U0-G2	B1-U0-G2	B1-U0-G2
	D5						B1-U0-G2	B1-U0-G2	B1-U0-G2
	E5						B2-U0-G2	B2-U0-G2	B2-U0-G2
08	A5	8000	7600	7100	59		B2-U0-G2	B2-U0-G2	B2-U0-G2
	B5						B2-U0-G2	B2-U0-G2	B1-U0-G2
	C5						B1-U0-G2	B1-U0-G2	B1-U0-G2
	D5						B1-U0-G2	B1-U0-G2	B1-U0-G2
	E5						B2-U0-G2	B2-U0-G2	B2-U0-G2
09	A5	9000	8600	8000	68		B2-U0-G2	B2-U0-G2	B2-U0-G2
	B5						B2-U0-G2	B2-U0-G2	B2-U0-G2
	C5						B1-U0-G2	B1-U0-G2	B1-U0-G2
	D5						B1-U0-G2	B1-U0-G2	B1-U0-G2
	E5						B2-U0-G2	B2-U0-G2	B2-U0-G2

NOTE: * 120-240V only

For additional information on ERL1 IES files, please click one of the following links:

Non-Shielded Shielded

GE current
a Daintree company

Evolve® LED Roadway Lighting

Cobra Head (ERL1)

Spec Tables

Project Name _____

Date _____ Type _____

Notes _____

LUMEN OUTPUT	DIST.	TYPICAL INITIAL LUMENS			WATTAGE		BUG RATINGS		
		5000K/ 4000K	3000K	2700K	120V 277V	347V 480V	5000K/4000K	3000K	2700K
10	A5	10000	9600	8900	76		B2-U0-G2	B2-U0-G2	B2-U0-G2
	B5						B2-U0-G2	B2-U0-G2	B2-U0-G2
	C5						B2-U0-G2	B2-U0-G2	B1-U0-G2
	D5						B1-U0-G2	B1-U0-G2	B1-U0-G2
	E5						B3-U0-G3	B2-U0-G2	B2-U0-G2
11	A5	11000	10500	9700	87		B3-U0-G3	B3-U0-G3	B2-U0-G2
	B5						B2-U0-G2	B2-U0-G2	B2-U0-G2
	C5						B2-U0-G2	B2-U0-G2	B2-U0-G2
	D5						B2-U0-G2	B2-U0-G2	B1-U0-G2
	E5						B3-U0-G3	B3-U0-G3	B3-U0-G3
12	A5	12000	11500	11100	93		B3-U0-G3	B3-U0-G3	B3-U0-G3
	B5						B2-U0-G2	B2-U0-G2	B2-U0-G2
	C5						B2-U0-G2	B2-U0-G2	B2-U0-G2
	D5						B2-U0-G2	B2-U0-G2	B2-U0-G2
	E5						B3-U0-G3	B3-U0-G3	B3-U0-G3
13	A5	13000	12400	12000	102		B3-U0-G3	B3-U0-G3	B3-U0-G3
	B5						B2-U0-G2	B2-U0-G2	B2-U0-G2
	C5						B2-U0-G3	B2-U0-G2	B2-U0-G2
	D5						B2-U0-G2	B2-U0-G2	B2-U0-G2
	E5						B3-U0-G3	B3-U0-G3	B3-U0-G3
14	A5	14000	13400	13000	110		B3-U0-G3	B3-U0-G3	B3-U0-G3
	B5						B2-U0-G2	B2-U0-G2	B2-U0-G2
	C5						B2-U0-G3	B2-U0-G3	B2-U0-G3
	D5						B2-U0-G2	B2-U0-G2	B2-U0-G2
	E5						B3-U0-G3	B3-U0-G3	B3-U0-G3
15	A5	15000	14400	13900	121		B3-U0-G3	B3-U0-G3	B3-U0-G3
	B5						B3-U0-G3	B2-U0-G2	B2-U0-G2
	C5						B2-U0-G3	B2-U0-G3	B2-U0-G3
	D5						B2-U0-G2	B2-U0-G2	B2-U0-G2
	E5						B3-U0-G3	B3-U0-G3	B3-U0-G3
16	A5	15700	15000	14600	129		B3-U0-G3	B3-U0-G3	B3-U0-G3
	B5						B3-U0-G3	B3-U0-G3	B2-U0-G2
	C5						B2-U0-G3	B2-U0-G3	B2-U0-G3
	D5						B2-U0-G3	B2-U0-G3	B2-U0-G2
	E5						B3-U0-G3	B3-U0-G3	B3-U0-G3

For additional information on ERL1 IES files, please click one of the following links:

Non-Shielded Shielded

GE current
a Daintree company

Evolve® LED Roadway Lighting

Cobra Head (ERL1)

Photometric Plots

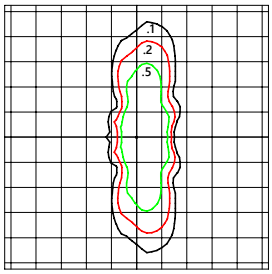
Project Name _____

Date _____ Type _____

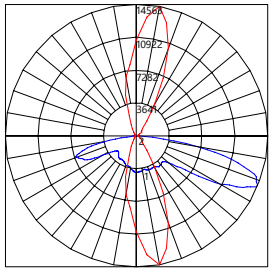
Notes _____

ERL1
Type II Narrow

15700 Lumens
5000K
ERL1_16A550___.IES



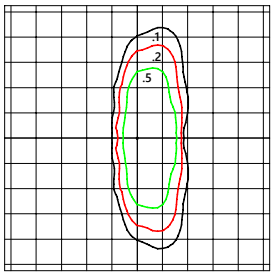
• Mounting Height at 30'
• Initial Footcandle at Grade



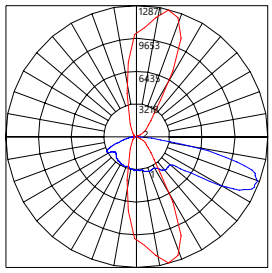
— Vertical plane at max Cd horiz. angle 80°
— Horizontal cone at max Cd vert. angle 68°

ERL1
Type II Wide

15700 Lumens
5000K
ERL1_16B550___.IES



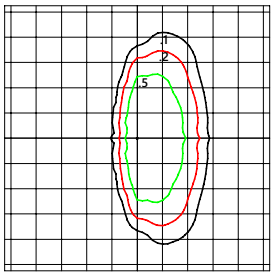
• Mounting Height at 30'
• Initial Footcandle at Grade



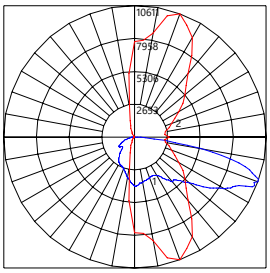
— Vertical plane at max Cd horiz angle 75°
— Horizontal cone at max Cd vert. angle 70°

ERL1
Type III

15700 Lumens
5000K
ERL1_16C550___.IES



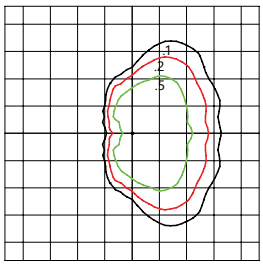
• Mounting Height at 30'
• Initial Footcandle at Grade



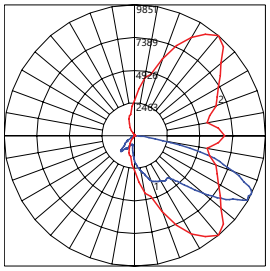
— Vertical plane at max Cd horiz angle 70°
— Horizontal cone at max Cd vert. angle 70°

ERL1
Type IV Short

15700 Lumens
5000K
ERL1_16D550___.IES



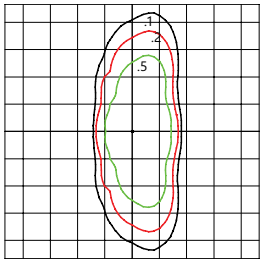
• Mounting Height at 40'
• Initial Footcandle at Grade



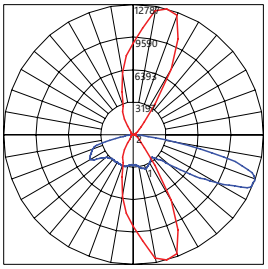
— Vertical plane at max Cd horiz angle 50°
— Horizontal cone at max Cd vert. angle 63°

ERL1
Type II Medium

15700 Lumens
5000K
ERL1_16E550___.IES



• Mounting Height at 40'
• Initial Footcandle at Grade



— Vertical plane at max Cd horiz angle 75°
— Horizontal cone at max Cd vert. angle 69°

ISO illuminate diagrams and polar plots are representative of the SKUs illustrated. Refer to IES files for SKU specific information.

GE current
a Daintree company

Evolve® LED Roadway Lighting

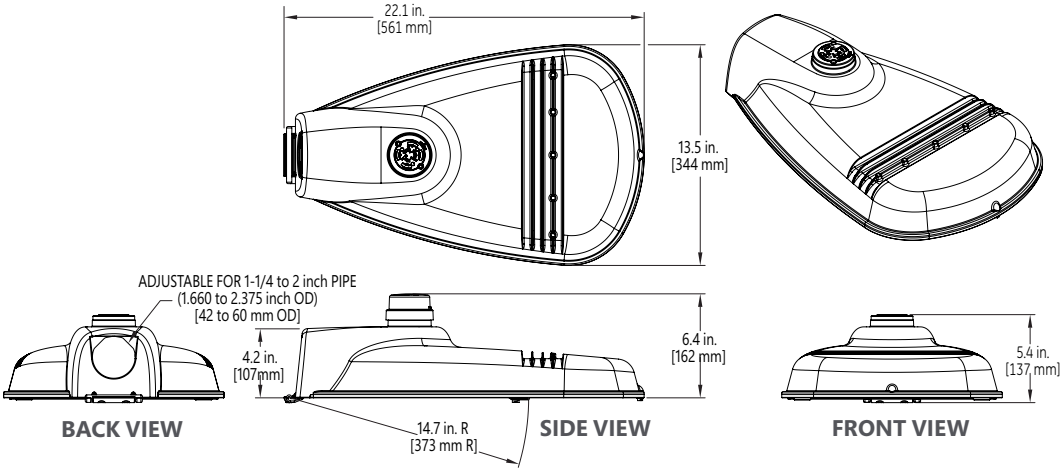
Cobra Head (ERL1)

Mounting & Accessories

Project Name _____

Date _____ Type _____

Notes _____



MOUNTING

- Adjustable for 1.25 to 2 in. nominal mounting pipe (1.660 to 2.375 inch OD)
- Integral diecast mounting pipe stop
- Slipfitter with +/- 5 degrees of leveling adjustment

EFFECTIVE PROJECTED AREA

- 0.5 sq ft max (0.046 sq m)

WEIGHT

- 12.4 lbs (5.6 kgs)

ACCESSORIES

SAP Number	Part Number	Description
93029237	PED-MV-LED-7	ANSI C136.41 Dimming PE, 120-277V
93029238	PED-347-LED-7	ANSI C136.41 Dimming PE, 347V
93029239	PED-480-LED-7	ANSI C136.41 Dimming PE, 480V
28299	PEC0TL	Long Life PE 120-277V
93147530	PECHTL	Long Life PE 347-480V
73251	SCCL-PECTL	Shorting Cap

NETWORK LIGHTING CONTROLS

Current's **LightGrid™** Outdoor Lighting Control System is designed for Street and Roadway Applications. It enables remote monitoring, control, and asset management of a single fixture or a group of fixtures through a web enabled Central Management System.

GE current
a Daintree company

Project Name:	Type:
Part Number:	Date:

GREENCREATIVE

VALUE SELECT PAR FAMILY

FEATURES

- Suitable to replace 50W, 75W, 120W halogen
- Smooth dimming with existing dimmers*
- Compact size 1:1 halogen form factor
- Narrow & flood beam angles
- Suitable for use in wet locations
- Operating temperature: -4°F / -20°C to +95°F / +35°C
- Rated Lifetime (L70): 25,000hrs
- 3 years limited warranty

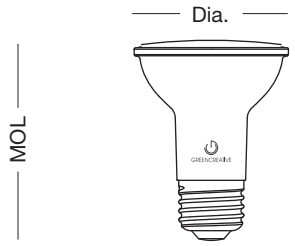
SPECIFICATIONS

Product	Model	Equiv.	Wattage (W)	CCT	Lumens	Efficacy (LPW)	Input Voltage	Beam Angle	CBCP (cd)	CRI	Dim.*	Power Factor	Base	Fixture Rating	ES
34933	5.5PAR20DIM/830NF25/N	50W	5.5	3000K	525	95	120V	25°	1180	82	Yes	0.7	E26	Non-Enclosed	√
34934	5.5PAR20DIM/830FL40/N	50W	5.5	3000K	525	95	120V	40°	595	82	Yes	0.7	E26	Non-Enclosed	√
34935	5.5PAR20DIM/840NF25/N	50W	5.5	4000K	525	95	120V	25°	1180	82	Yes	0.7	E26	Non-Enclosed	√
34936	5.5PAR20DIM/840FL40/N	50W	5.5	4000K	525	95	120V	40°	595	82	Yes	0.7	E26	Non-Enclosed	√
34937	10PAR30DIM/830NF25/N	75W	10	3000K	950	95	120V	25°	2910	82	Yes	0.7	E26	Non-Enclosed	√
34938	10PAR30DIM/830FL40/N	75W	10	3000K	950	95	120V	40°	1315	82	Yes	0.7	E26	Non-Enclosed	√
34939	10PAR30DIM/840NF25/N	75W	10	4000K	950	95	120V	25°	2910	82	Yes	0.7	E26	Non-Enclosed	√
34940	10PAR30DIM/840FL40/N	75W	10	4000K	950	95	120V	40°	1315	82	Yes	0.7	E26	Non-Enclosed	√
34941	10PAR30SNDIM/830NF25/N	75W	10	3000K	950	95	120V	25°	2910	82	Yes	0.7	E26	Non-Enclosed	√
34942	10PAR30SNDIM/830FL40/N	75W	10	3000K	950	95	120V	40°	1315	82	Yes	0.7	E26	Non-Enclosed	√
34943	10PAR30SNDIM/840NF25/N	75W	10	4000K	950	95	120V	25°	2910	82	Yes	0.7	E26	Non-Enclosed	√
34944	10PAR30SNDIM/840FL40/N	75W	10	4000K	950	95	120V	40°	1315	82	Yes	0.7	E26	Non-Enclosed	√
34945	13.5PAR38DIM/830NF25/N	120W	13.5	3000K	1280	95	120V	25°	5385	82	Yes	0.7	E26	Non-Enclosed	√
34946	12PAR38DIM/830FL40/N	120W	12	3000K	1150	95	120V	40°	2235	82	Yes	0.7	E26	Non-Enclosed	√
34947	13.5PAR38DIM/840NF25/N	120W	13.5	4000K	1280	95	120V	25°	5385	82	Yes	0.7	E26	Non-Enclosed	√
34948	12PAR38DIM/840FL40/N	120W	12	4000K	1150	95	120V	40°	2235	82	Yes	0.7	E26	Non-Enclosed	√

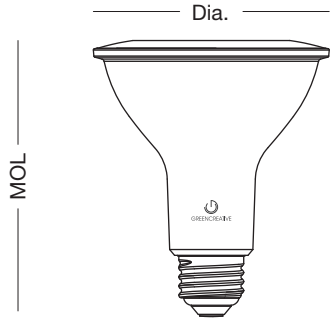
* This lamp might not be compatible with all dimmers. Please visit www.greencreative.com for compatibility information.

VALUE SELECT PAR FAMILY

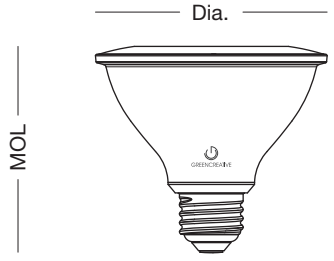
DIMENSIONS & WEIGHT



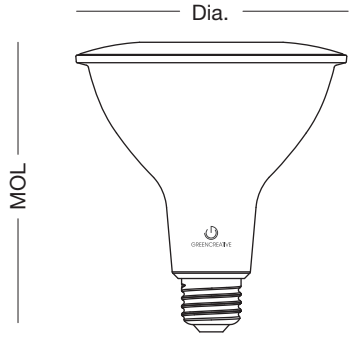
Model	Base	MOL	Dia.	Weight
5.5PAR20DIM/830NF25/N	E26	3-3/16"	2-1/2"	0.09lb
5.5PAR20DIM/830FL40/N	E26	3-3/16"	2-1/2"	0.09lb
5.5PAR20DIM/840NF25/N	E26	3-3/16"	2-1/2"	0.09lb
5.5PAR20DIM/840FL40/N	E26	3-3/16"	2-1/2"	0.09lb



Model	Base	MOL	Dia.	Weight
10PAR30DIM/830NF25/N	E26	4-3/8"	3-3/4"	0.26lb
10PAR30DIM/830FL40/N	E26	4-3/8"	3-3/4"	0.21lb
10PAR30DIM/840NF25/N	E26	4-3/8"	3-3/4"	0.26lb
10PAR30DIM/840FL40/N	E26	4-3/8"	3-3/4"	0.21lb



Model	Base	MOL	Dia.	Weight
10PAR30SNDIM/830NF25/N	E26	3-3/8"	3-3/4"	0.26lb
10PAR30SNDIM/830FL40/N	E26	3-3/8"	3-3/4"	0.21lb
10PAR30SNDIM/840NF25/N	E26	3-3/8"	3-3/4"	0.26lb
10PAR30SNDIM/840FL40/N	E26	3-3/8"	3-3/4"	0.21lb

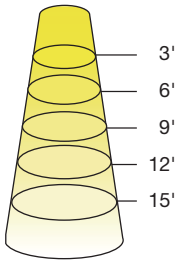


Model	Base	MOL	Dia.	Weight
13.5PAR38DIM/830NF25/N	E26	5-1/8"	4-3/4"	0.39lb
12PAR38DIM/830FL40/N	E26	5-1/8"	4-3/4"	0.32lb
13.5PAR38DIM/840NF25/N	E26	5-1/8"	4-3/4"	0.39lb
12PAR38DIM/840FL40/N	E26	5-1/8"	4-3/4"	0.32lb

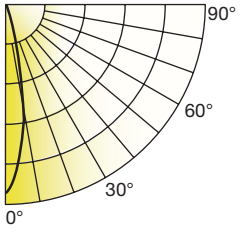
VALUE SELECT PAR FAMILY

ILLUMINANCE & CANDELA DISTRIBUTION

5.5PAR20DIM/830NF25/N

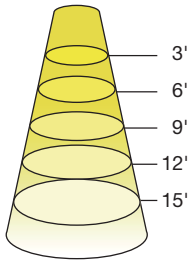


Diameter	Footcandles
1.3	131
2.7	33
4.0	15
5.3	8
6.7	5

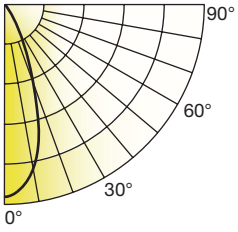


Degree	Candela
0	1180
5	1088
15	511
25	188
35	83
45	31

5.5PAR20DIM/830FL40/N

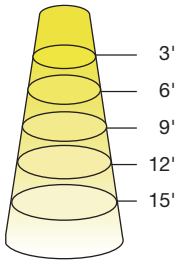


Diameter	Footcandles
2.2	66
4.4	17
6.6	7
8.7	4
10.9	3

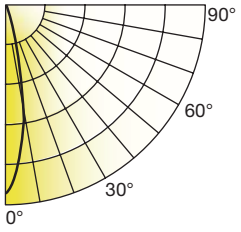


Degree	Candela
0	595
5	339
15	249
25	104
35	48
45	24

10PAR30DIM/830NF25/N

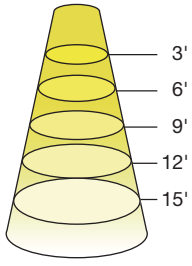


Diameter	Footcandles
1.3	323
2.7	81
4.0	36
5.3	20
6.7	13

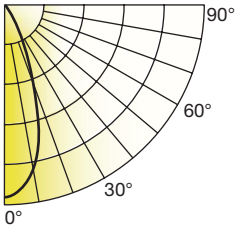


Degree	Candela
0	2910
5	2857
15	1908
25	920
35	429
45	175

10PAR30DIM/830FL40/N



Diameter	Footcandles
2.2	146
4.4	37
6.6	16
8.7	9
10.9	6

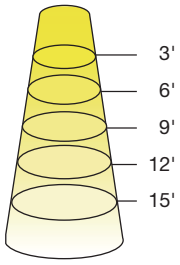


Degree	Candela
0	1315
5	1227
15	395
25	162
35	72
45	35

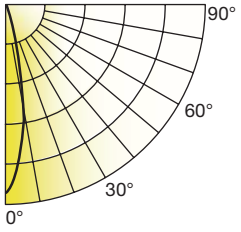
VALUE SELECT PAR FAMILY

ILLUMINANCE & CANDELA DISTRIBUTION

10PAR30SNDIM/830NF25/N

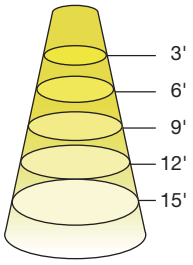


Diameter	Footcandles
1.3	323
2.7	81
4.0	36
5.3	20
6.7	13

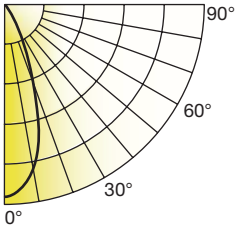


Degree	Candela
0	2910
5	2857
15	1908
25	920
35	429
45	175

10PAR30SNDIM/830FL40/N

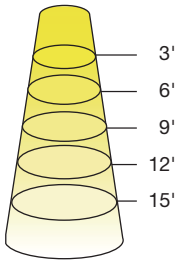


Diameter	Footcandles
2.2	146
4.4	37
6.6	16
8.7	9
10.9	6

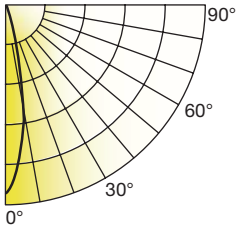


Degree	Candela
0	1315
5	1227
15	395
25	162
35	72
45	35

13.5PAR38DIM/830NF25/N

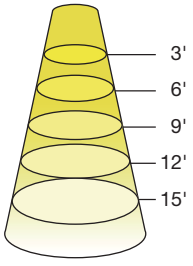


Diameter	Footcandles
1.3	598
2.7	150
4.0	66
5.3	37
6.7	24

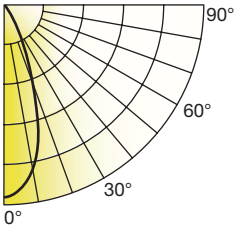


Degree	Candela
0	5385
5	4920
15	1450
25	465
35	214
45	76

12PAR38DIM/830FL40/N



Diameter	Footcandles
2.2	248
4.4	62
6.6	28
8.7	16
10.9	10



Degree	Candela
0	2235
5	2240
15	1514
25	547
35	202
45	50

For other CCT use the following multiplier: 4000K 1.00

KT-LED27PSHID-EX39-8XX-D /G4

HID REPLACEMENT LED LAMP

DESCRIPTION

27W HID Replacement LED Lamp | Power Select | 80 CRI | IP64

LAMP TYPE: HID Replacement LED

BASE TYPE: EX39 (Mogul)

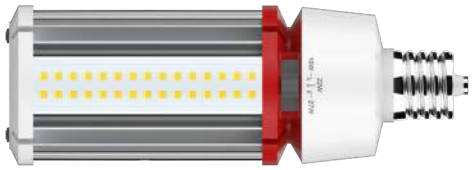
SELECTABLE WATTAGE: 27W, 22W, 18W

COLOR TEMPERATURE: 3000K, 4000K, 5000K

METAL HALIDE EQUIVALENT: 100W

COLOR RENDERING INDEX (CRI): >80

WARRANTY: 5 Years



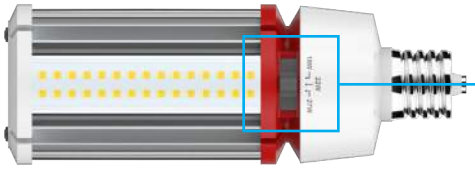
PRODUCT FEATURES

- Replacement for conventional metal halide lamp
- Environmentally friendly: No mercury used
- Instant startup
- Integral driver eliminates the need for external driver or ballast; includes 4kV surge protection
- Step dimmable with Power Select Switch. See below image.
- 50,000+ hour lifetime
- Operating temperature: –30°C/–22°F to 45°C/113°F
- Suitable for use in fully enclosed fixtures
- Minimum lamp compartment dimensions: 6.0" × 6.0" × 7.3"
- UL listed
- IP64 rated; integrated heat sink quickly dissipates heat and guides water intrusion out of the lamp

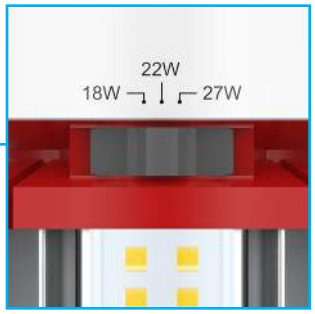
ELECTRICAL AND PERFORMANCE SPECIFICATIONS

Keystone Catalog Number	Input Voltage	Selectable Power	CCT	Lumens	Efficacy	Base Type	CRI	PF
KT-LED27PSHID-EX39-830-D /G4	120–277V	27W	3000K	3645	135 lm/W	EX39	>80	≥90
		22W		2970	135 lm/W			
		18W		2430	135 lm/W			
KT-LED27PSHID-EX39-840-D /G4	120–277V	27W	4000K	3780	140 lm/W	EX39	>80	≥90
		22W		3080	140 lm/W			
		18W		2520	140 lm/W			
KT-LED27PSHID-EX39-850-D /G4	120–277V	27W	5000K	3915	145 lm/W	EX39	>80	≥90
		22W		3190	145 lm/W			
		18W		2610	145 lm/W			

SELECTABILITY



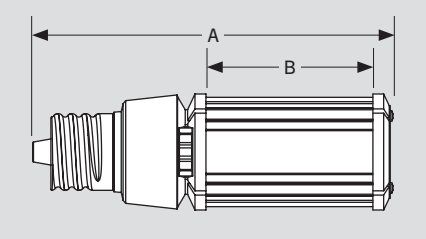
Power Select Switch

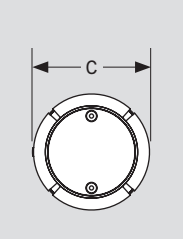


KT-LED27PSHID-EX39-8XX-D /G4

HID REPLACEMENT LED LAMP

PHYSICAL CHARACTERISTICS





LAMP DIMENSIONS

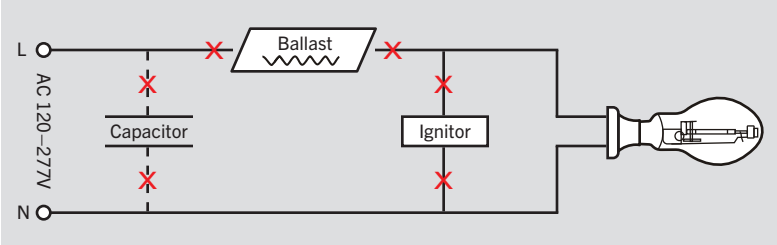
A (Body Length)	7.18"
B (Illuminated Length)	3.72"
C (Diameter)	2.32"

BASE TYPE: EX39 (Mogul)

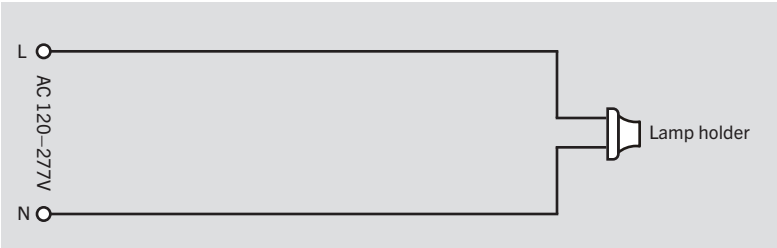
WIRING INSTRUCTIONS

STEP 1
Disconnect power. Disconnect and remove existing ballast, capacitor, and/or ignitor (where applicable) from fixture.

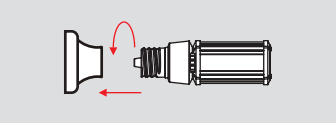
Note: Follow all federal and local regulations when disposing of lamps and removed components.

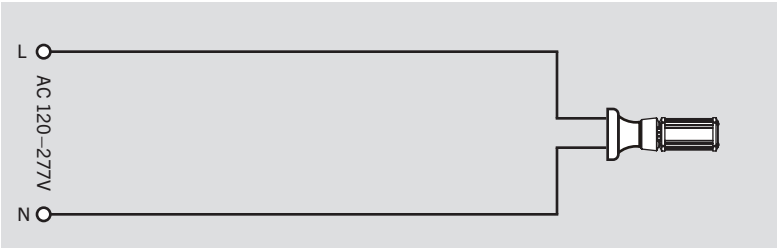


STEP 2
Rewire for line voltage to the lamp socket.

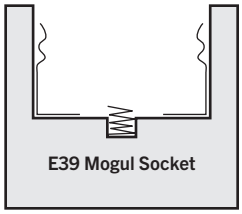


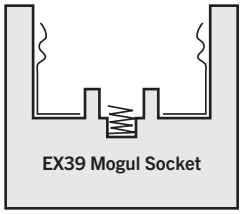
STEP 3
Install new LED replacement lamp. Ensure lamp is operating properly when power is turned on.





EX39-based lamps will work in *both* **E39** and **EX39** sockets.





KT-LED27PSHID-EX39-8XX-D /G4

HID REPLACEMENT LED LAMP

ORDERING INFORMATION

ORDER CODE	PACK QTY.	UPC	EASY CODE
KT-LED27PSHID-EX39-830-D /G4	16	843654138183	FMR-87
KT-LED27PSHID-EX39-840-D /G4	16	843654138190	GHX-31
KT-LED27PSHID-EX39-850-D /G4	16	843654138206	XIW-50

CATALOG NUMBER BREAKDOWN

KT-	LED	27	PS	HID-	EX39-	8XX-	D	/G4
1	2	3	4	5	6	7	8	9	10

1 Keystone Technologies
2 LED Lamp
3 Wattage
4 Power Select
5 Lamp Type
6 Base Type
7 80 CRI
8 Color Temperature
9 Direct Drive
10 Fourth Generation

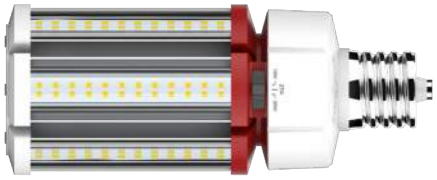
KT-LED36PSHID-EX39-8XX-D /G4

HID REPLACEMENT LED LAMP

DESCRIPTION

36W HID Replacement LED Lamp | Power Select | 80 CRI | IP64

LAMP TYPE: HID Replacement LED
BASE TYPE: EX39 (Mogul)
SELECTABLE WATTAGE: 36W, 27W, 18W
COLOR TEMPERATURE: 3000K, 4000K, 5000K
METAL HALIDE EQUIVALENT: 150W
COLOR RENDERING INDEX (CRI): >80
WARRANTY: 5 Years



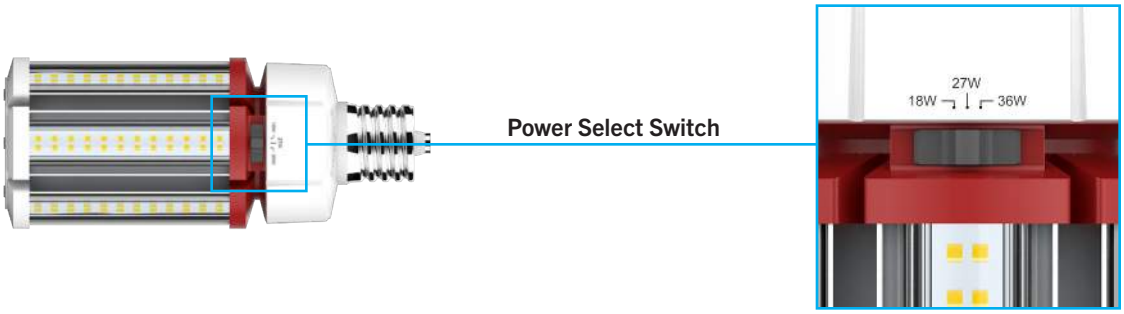
PRODUCT FEATURES

- Replacement for conventional metal halide lamp
- Environmentally friendly: No mercury used
- Instant startup
- Integral driver eliminates the need for external driver or ballast; includes 4kV surge protection
- Step dimmable with Power Select Switch. See below image.
- 50,000+ hour lifetime
- Operating temperature: –30°C/–22°F to 45°C/113°F
- Suitable for use in fully enclosed fixtures
- Minimum lamp compartment dimensions: 8.0" × 8.0" × 9.0"
- UL listed
- IP64 rated; integrated heat sink quickly dissipates heat and guides water intrusion out of the lamp

ELECTRICAL AND PERFORMANCE SPECIFICATIONS

Keystone Catalog Number	Input Voltage	Selectable Power	CCT	Lumens	Efficacy	Base Type	CRI	PF
KT-LED36PSHID-EX39-830-D /G4	120–277V	36W	3000K	4860	135 lm/W	EX39	>80	≥90
		27W		3645	135 lm/W			
		18W		2430	135 lm/W			
KT-LED36PSHID-EX39-840-D /G4	120–277V	36W	4000K	5040	140 lm/W	EX39	>80	≥90
		27W		3780	140 lm/W			
		18W		2520	140 lm/W			
KT-LED36PSHID-EX39-850-D /G4	120–277V	36W	5000K	5220	145 lm/W	EX39	>80	≥90
		27W		3915	145 lm/W			
		18W		2610	145 lm/W			

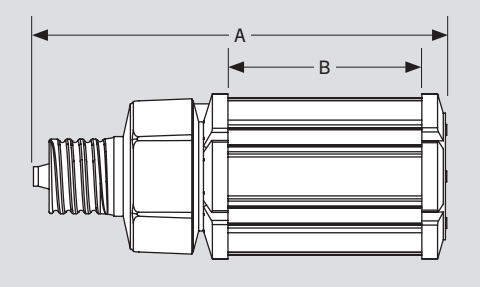
SELECTABILITY

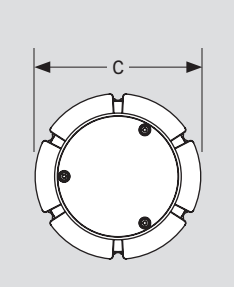


KT-LED36PSHID-EX39-8XX-D /G4

HID REPLACEMENT LED LAMP

PHYSICAL CHARACTERISTICS





LAMP DIMENSIONS

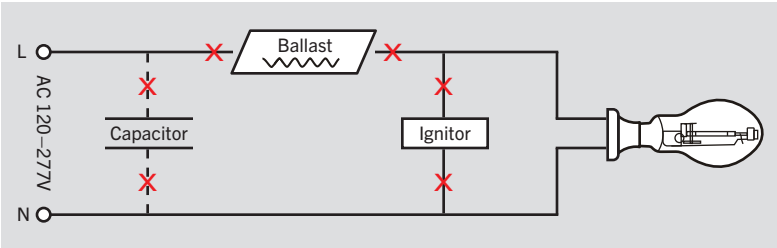
A (Body Length)	8.31"
B (Illuminated Length)	4.41"
C (Diameter)	3.35"

BASE TYPE: EX39 (Mogul)

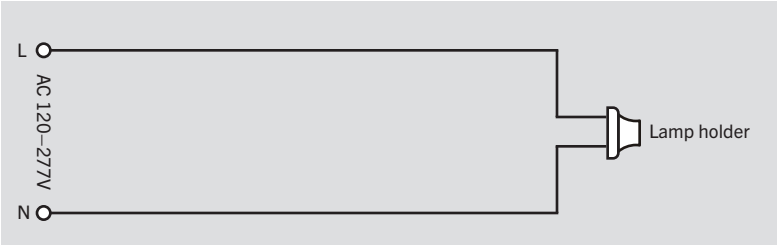
WIRING INSTRUCTIONS

STEP 1
Disconnect power. Disconnect and remove existing ballast, capacitor, and/or ignitor (where applicable) from fixture.

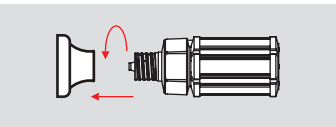
Note: Follow all federal and local regulations when disposing of lamps and removed components.

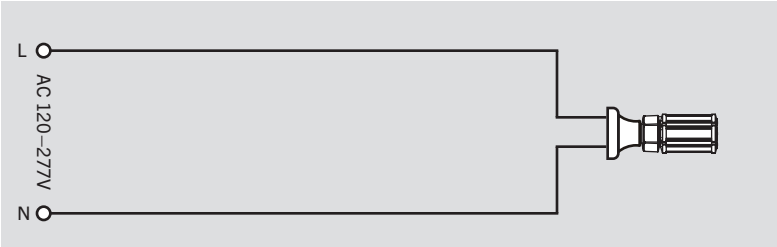


STEP 2
Rewire for line voltage to the lamp socket.

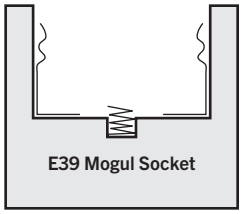


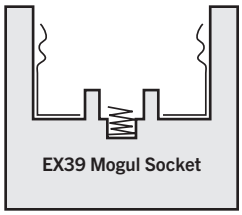
STEP 3
Install new LED replacement lamp. Ensure lamp is operating properly when power is turned on.





EX39-based lamps will work in *both* **E39** and **EX39** sockets.





KT-LED36PSHID-EX39-8XX-D /G4

HID REPLACEMENT LED LAMP

ORDERING INFORMATION

ORDER CODE	PACK QTY.	UPC	EASY CODE
KT-LED36PSHID-EX39-830-D /G4	16	843654138244	WWA-55
KT-LED36PSHID-EX39-840-D /G4	16	843654138251	WNB-83
KT-LED36PSHID-EX39-850-D /G4	16	843654138268	GBU-61

CATALOG NUMBER BREAKDOWN

KT-	LED	36	PS	HID-	EX39-	8	XX-	D	/G4
1	2	3	4	5	6	7	8	9	10

1 Keystone Technologies
2 LED Lamp
3 Wattage
4 Power Select
5 Lamp Type
6 Base Type
7 80 CRI
8 Color Temperature
9 Direct Drive
10 Fourth Generation

X17 Ultra-Economy Floodlight

3-Way Adjustable:


15W/25W/35W


30W/50W/60W & 40W/60W/80W


50W/75W/105W & 70W/100W/140W


100W/150W/205W & 175W/250W/330W

2-Way Adjustable:


15W-35W


60W-80W


105W-140W

Power Adjustable :


250W-350W-450W

100,000 HOURS

3-WAY ADJUSTABLE (15W-330W)

2-WAY ADJUSTABLE (15W-140W)

POWER ADJUSTABLE (250W-450W)

WET RATED

PROJECT:

DATE:

TYPE:

PREPARED BY:

KEY FEATURES

* X17 Ultra-economy floodlight comes in three different types:

(A) 3-way adjustable:

Selectable CCT: **(3000K/4000K/5000K)**

Selectable wattages: **15W/25W/35W, 30W/50W/60W, 40W/60W/80W 50W/75W/105W, 70W/100W/140W, 100W/150W/205W, 175W/250W/330W**

Selectable photocell that can be turned on and off

(B) 2-way adjustable:

Selectable CCT: **(3000K/4000K/5000K)**

Available wattages: **15W, 35W, 60W, 80W, 105W & 140W**

Selectable photocell that can be turned on and off

(C) Power Adjustable:

Selectable wattages: **250W/350W/450W**

Available CCT: **4000K & 5000K**

Standard twist-lock photocell

* Voltage ratings: **120-277V. 480V** only available from **140W-450W.**
* Suitable for **wet locations**

TECHNICAL SPECIFICATIONS

COMPLIANCE

UL Listed
Suitable for wet locations

DLC Listed
DLC Premium listed

IP Rating
Ingress protection rating of IP65 for dust and water

PERFORMANCE

Lifespan
100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations

LED CHARACTERISTICS

LEDs
Long-life, high-efficacy, surface-mount LEDs

Color Uniformity
RAB's range of Correlated Color Temperature follows the guidelines of the American National Standards for Specifications for the Chromaticity of Solid State Lighting (SLL) Products, ANSI C78.377-2017.

CONSTRUCTION

Cold Weather Starting
Minimum starting temperature is -40°C (-40°F)

Maximum Ambient Temperature
Suitable for use in up to 40°C (104°F)

Housing
Precision die-cast aluminum

Mounting
Robust knuckle mount with 180°; adjustable swivel arm. Tilt angle in 10° increments. (Available only on 15W to 80W models)

Slipfitter with 180° pivot available for mounting on 2 3/8" tenon.

Heavy-duty Trunnion mount with stainless steel hardware.

Lens
Tempered glass

Reflector
Polycarbonate

Green Technology
Mercury and UV free. RoHs-compliant components.

Finish
Formulated for high durability and long-lasting color.

NEMA Beam
NEMA Beam Spread of 7H x 7V

TECHNICAL SPECIFICATIONS (CONTINUED)

ELECTRICAL

Drivers (3-way adjustable)

Constant Current, Class 2, 120-277V, 50/60 Hz

35W: 120V: 0.35A, 208V: 0.20A, 240V: 0.16A, 277V: 0.14A
60W: 120V: 0.60A, 208V: 0.35A, 240V: 0.30A, 277V: 0.25A
80W: 120V: 0.80A, 208V: 0.50A, 240V: 0.40A, 277V: 0.35A
105W: 120V: 0.87A, 208V: 0.60A, 240V: 0.50A, 277V: 0.38A
140W: 120V: 1.17A, 208V: 0.75A, 240V: 0.65A, 277V: 0.54A
205W: 120V: 1.77A, 208V: 1.10A, 240V: 0.79A, 277V: 0.85A
330W: 120V: 2.79A, 208V: 1.80A, 240V: 1.60A, 277V: 1.21A

Constant Current, Class 2, 480V, 50/60Hz

140W: 480V: 0.32A
205W: 480V: 0.46A
330W: 480V: 0.73A

Drivers (2-way adjustable)

Constant Current, Class 2, 120-277V, 50/60 Hz

15W: 120V: 0.15A, 208V: 0.08A, 240V: 0.07A, 277V: 0.06A
35W: 120V: 0.35A, 208V: 0.20A, 240V: 0.16A, 277V: 0.14A
60W: 120V: 0.60A, 208V: 0.35A, 240V: 0.28A, 277V: 0.24A
80W: 120V: 0.80A, 208V: 0.45A, 240V: 0.40A, 277V: 0.32A
105W: 120V: 1.00A, 208V: 0.60A, 240V: 0.50A, 277V: 0.42A
140W: 120V: 1.40A, 208V: 0.75A, 240V: 0.65A, 277V: 0.55A

Constant Current, Class 2, 480V, 50/60Hz

140W: 480V: 0.40A

ELECTRICAL

Drivers (Power adjustable)

Constant Current, Class 2, 120-277V, 50/60 Hz

450W: 120V: 3.67A, 208V: 2.40A, 240V: 2.10A, 277V: 1.64A

Constant Current, Class 2, 480V, 50/60Hz

450W: 480V: 0.96A

Driver includes wiring for 0-10V dimming systems. Dim as low as 10%.

OTHER

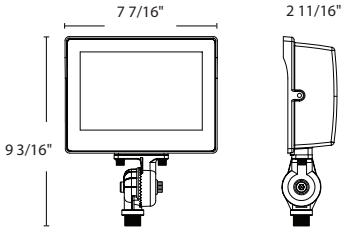
Warranty

The RAB 5-year, limited warranty covers light output, driver performance and paint finish. RAB's warranty is subject to all terms and conditions found at rablighting.com/warranty.

DIMENSIONS : X17 XFU 3-WAY FIELD ADJUSTABLE

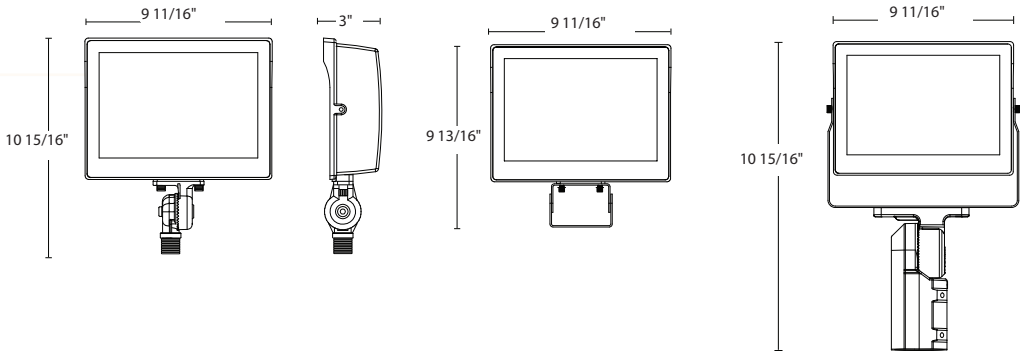
X17 15W-35W

Weight: 2.7 lb



X17 60W-80W

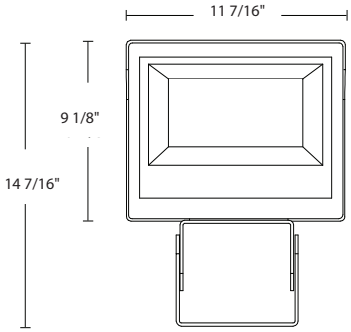
60W-Weight: 4.9 lb
80W-Weight: 5.1 lb

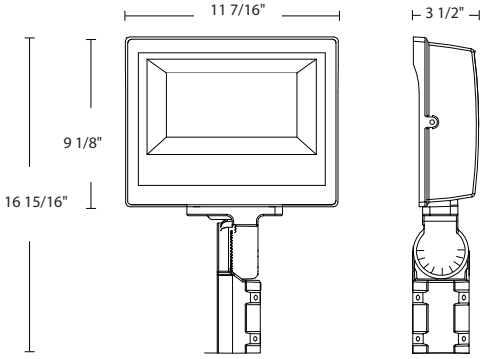


DIMENSIONS : X17 XFU 3-WAY FIELD ADJUSTABLE (CONTINUED)

X17 105W-140W

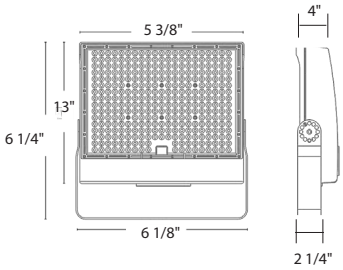
105W- Weight: 9.3 lb
140W-Weight: 10 lb

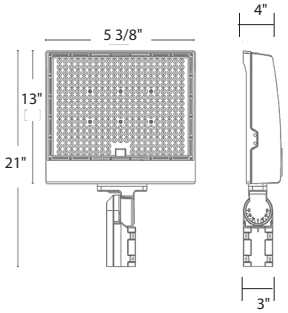




X17 205W-330W

Weight: 18.9 lb

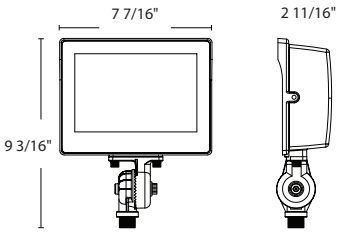




DIMENSIONS : X17 FA 2-WAY ADJUSTABLE

X17 15W-35W

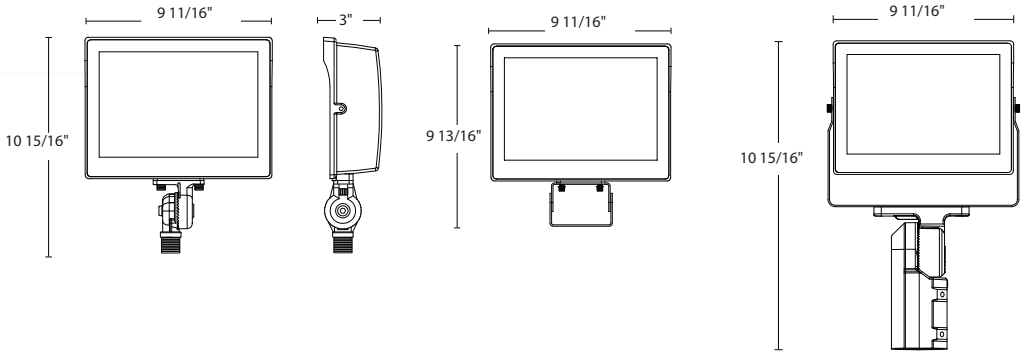
Weight: 2.7 lb



DIMENSIONS : X17 FA 2-WAY ADJUSTABLE (CONTINUED)

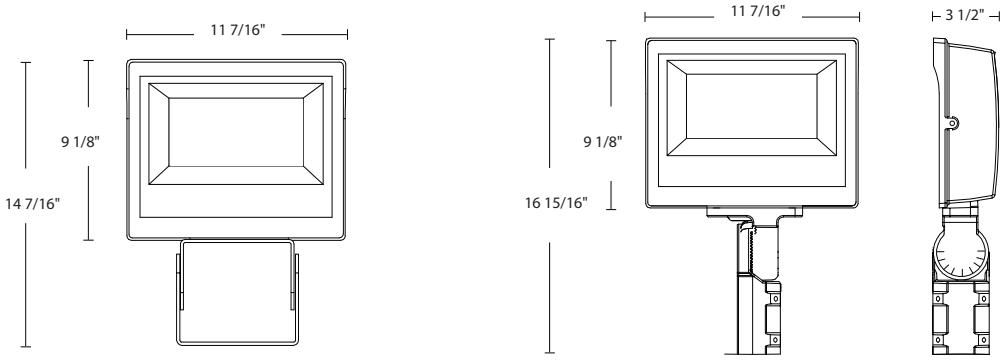
X17 60W-80W

60W-Weight: 4.9 lb
80W-Weight: 5.1 lb



X17 105W-140W

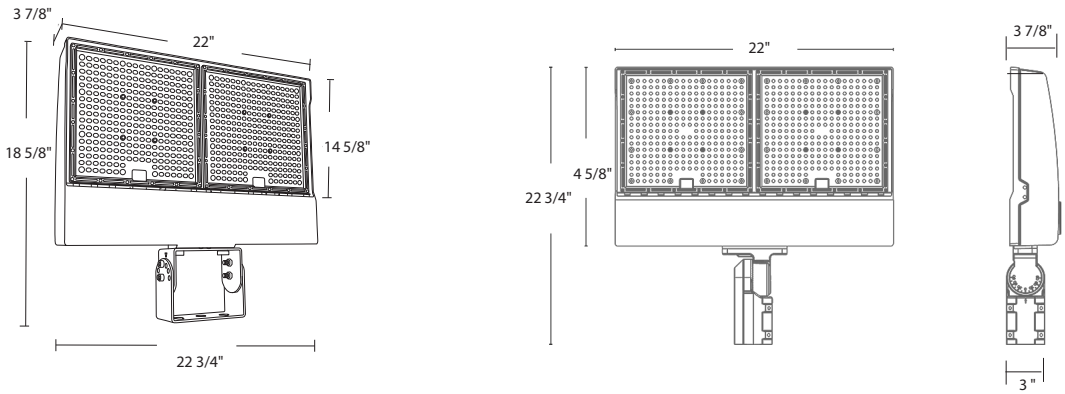
105W- Weight: 9.3 lb
140W-Weight: 10 lb



DIMENSIONS : X17 PA POWER ADJUSTABLE

X17 450W

Weight: 28.1 lb



X17 Ultra-Economy Floodlight

PERFORMANCE: X17 3-WAY FIELD ADJUSTABLE

X17 35W	3000K	4000K	5000K	3000K	4000K	5000K	3000K	4000K	5000K
Wattage	15W	15W	15W	25W	25W	25W	35W	35W	35W
Input Watts	15.4W	14.8W	15.4W	25.6W	24.8W	25.6W	35.9W	34.6W	35.9W
Lumens	1,991	2,160	2,087	3,319	3,599	3,478	4,642	5,034	4,864
Lm/W	129.3	145.9	135.5	129.6	145.1	135.9	129.3	145.5	135.4
CRI	83	85	83	83	85	83	83	85	83
Voltage Ratings	120-277V								

X17 60W	3000K	4000K	5000K	3000K	4000K	5000K	3000K	4000K	5000K
Wattage	30W	30W	30W	50W	50W	50W	60W	60W	60W
Input Watts	30W	30W	30W	50W	50W	50W	59.5W	57.2W	59.4W
Lumens	3,891	4,186	4,089	6,490	6,983	6,821	7,782	8,372	8,178
Lm/W	129.7	139.5	136.3	129.8	139.7	136.4	130.8	146.4	137.7
CRI	83	85	83	83	85	83	83	85	83
Voltage Ratings	120-277V								

X17 80W	3000K	4000K	5000K	3000K	4000K	5000K	3000K	4000K	5000K
Wattage	40W	40W	40W	60W	60W	60W	80W	80W	80W
Input Watts	41W	39.4W	41W	61.5W	59.1W	61.6W	82W	78.8W	82.1W
Lumens	5,356	5,755	5,663	8,034	8,632	8,494	10,712	11,509	11,325
Lm/W	130.7	146.1	138.0	130.7	146.1	137.9	130.7	146.1	138.01
CRI	83	85	84	83	85	84	83	85	84
Voltage Ratings	120-277V								

X17 105W	3000K	4000K	5000K	3000K	4000K	5000K	3000K	4000K	5000K
Wattage	50W	50W	50W	75W	75W	75W	105W	105W	105W
Input Watts	50W	50W	50W	75W	75W	75W	103.9W	100.3W	104.1W
Lumens	6,304	67,26	6,481	9,460	10,093	9,726	13,243	14,129	13,616
Lm/W	126.1	134.5	129.6	126.1	134.6	129.7	127.5	140.9	130.8
CRI	83	86	84	83	86	84	83	86	84
Voltage Ratings	120-277V								

X17 140W	3000K	4000K	5000K	3000K	4000K	5000K	3000K	4000K	5000K
Wattage	70W	70W	70W	100W	100W	100W	140W	140W	140W
Input Watts	70W	70W	70W	100W	100W	100W	139.3W	135.4W	140.3W
Lumens	8,947	9,579	9,336	12,782	13,983	13,337	17,894	19,158	18,672
Lm/W	127.8	136.8	133.4	127.8	139.8	133.4	127.9	141.5	133.1
CRI	83	85	84	83	85	84	83	85	84
Voltage Ratings	120-277V								

PERFORMANCE: X17 3-WAY FIELD ADJUSTABLE (CONTINUED)

X17 140W	3000K	4000K	5000K	3000K	4000K	5000K	3000K	4000K	5000K
Wattage	70W	70W	70W	100W	100W	100W	140W	140W	140W
Input Watts	70W	70W	70W	100W	100W	100W	142.6W	136.9W	142.6W
Lumens	8,980	9,982	9,277	12,828	14,260	13,253	18,292	19,532	18,898
Lm/W	128.3	142.6	132.5	128.3	142.6	132.5	128.3	142.6	132.5
CRI	83	85	84	83	85	84	83	85	84
Voltage Ratings	480V								

X17 205W	3000K	4000K	5000K	3000K	4000K	5000K	3000K	4000K	5000K
Wattage	100W	100W	100W	150W	150W	150W	205W	205W	205W
Input Watts	100W	100W	100W	150W	150W	150W	205.6W	198.2W	204.9W
Lumens	13,394	15,056	13,906	20,091	22,584	20,859	28,333	30,618	29,399
Lm/W	133.9	150.6	139.1	133.9	150.6	139.1	133.9	150.6	139.1
CRI	73	75	71	73	75	71	73	75	71
Voltage Ratings	120-277V								

X17 205W	3000K	4000K	5000K	3000K	4000K	5000K	3000K	4000K	5000K
Wattage	100W	100W	100W	150W	150W	150W	205W	205W	205W
Input Watts	100W	100W	100W	150W	150W	150W	205.6W	198.2W	204.9W
Lumens	13,563	15,107	14,076	20,345	22,661	21,114	27,882	29,944	28,838
Lm/W	135.6	151.1	140.8	135.6	151.1	140.8	135.6	151.1	140.8
CRI	73	76	74	73	76	74	73	76	74
Voltage Ratings	480V								

X17 330W	3000K	4000K	5000K	3000K	4000K	5000K	3000K	4000K	5000K
Wattage	175W	175W	175W	250W	250W	250W	330W	330W	330W
Input Watts	175W	175W	175W	250W	250W	250W	334.4W	321.7W	334W
Lumens	23,907	26,777	24,939	34,153	38,253	35,628	45,864	49,228	47,601
Lm/W	136.6	153.0	142.5	136.6	153.0	142.51	136.6	153.0	142.5
CRI	71	74	73	71	74	73	71	74	73
Voltage Ratings	120-277V								

X17 330W	3000K	4000K	5000K	3000K	4000K	5000K	3000K	4000K	5000K
Wattage	175W	175W	175W	250W	250W	250W	330W	330W	330W
Input Watts	175W	175W	175W	250W	250W	250W	328.4W	315.8W	327.7W
Lumens	24,682	27,587	25,540	35,260	39,410	36,485	46,313	49,783	47,817
Lm/W	141.04	157.64	145.94	141.04	157.64	145.94	141.0	157.6	145.9
CRI	71	74	73	71	74	73	71	74	73
Voltage Ratings	480V								

X17 Ultra-Economy Floodlight

PERFORMANCE : X17 FIELD ADJUSTABLE

X17 15W	3000K	4000K	5000K
Wattage	15W	15W	15W
Input Watts	15.5W	14.9W	15.5W
Lumens	2,097	2,259	2,194
Lm/W	135	152	142
CRI	83	85	84
Voltage Ratings	120-277V		

X17 35W	3000K	4000K	5000K
Wattage	35W	35W	35W
Input Watts	35.9W	34.6W	35.9W
Lumens	4,642	5,034	4,864
Lm/W	129	145	135
CRI	83	85	83
Voltage Ratings	120-277V		

X17 60W	3000K	4000K	5000K
Wattage	60W	60W	60W
Input Watts	59.5W	57.2W	59.4W
Lumens	7,782	8,372	8,178
Lm/W	131	146	138
CRI	83	85	83
Voltage Ratings	120-277V		

X17 80W	3000K	4000K	5000K
Wattage	80W	80W	80W
Input Watts	82W	78.8W	82.1W
Lumens	8,632	11,509	11,325
Lm/W	105	145	138
CRI	83	85	84
Voltage Ratings	120-277V		

X17 105W	3000K	4000K	5000K
Wattage	105W	105W	105W
Input Watts	103.8W	100.2W	104.1W
Lumens	13,243	14,129	13,616
Lm/W	128	141	131
CRI	83	86	84
Voltage Ratings	120-277V		

X17 140W	3000K	4000K	5000K
Wattage	140W	140W	140W
Input Watts	139.9W	135.4W	140.2W
Lumens	17,894	19,158	18,672
Lm/W	128	141	133
CRI	83	85	84
Voltage Ratings	120-277V		

X17 140W	3000K	4000K	5000K
Wattage	140W	140W	140W
Input Watts	142.6W	136.9W	142.6W
Lumens	18,292	19,532	18,898
Lm/W	128	143	133
CRI	83	85	84
Voltage Ratings	480V		

X17 Ultra-Economy Floodlight

PERFORMANCE: X17 PA POWER ADJUSTABLE

X17 450W	4000K	5000K	4000K	5000K	4000K	5000K
Wattage	250W	250W	350W	350W	450W	450W
Input Watts	250W	250W	350W	350W	439.2W	439.2W
Lumens	36,975	37,420	51,765	52,388	64951	65,733
Lm/W	147.9	149.7	147.9	149.7	147.9	149.7
CRI	72	72	72	72	72	72
Voltage Ratings	120-277V					

X17 450W	4000K	5000K	4000K	5000K	4000K	5000K
Wattage	250W	250W	350W	350W	450W	450W
Input Watts	250W	250W	350W	350W	433.8W	433.8W
Lumens	36,305	36,633	50,827	51,286	62,987	63,558
Lm/W	145.2	146.5	145.2	146.5	145.2	146.5
CRI	72	72	72	72	72	72
Voltage Ratings	480V					

ORDERING MATRIX

X17XFU

Family	Wattage	Mounting	Finish	Voltage Rating	Option
X17XFU	80	SF			
35 35W/25W/15W		BLANK Knuckle [1]	BLANK Bronze	BLANK 120-277V	BLANK No option
60 60W/50W/30W		SF Slipfitter [2]	W White [3]	/480 480V [4]	/PCT Twist-lock Photocell [5]
80 80W/60W/40W		T Trunnion [2]			
105 105W/75W/50W					
140 140W/100W/70W					
205 205W/150W/100W					
330 330W/200W/175W					

[1] Knuckle mount only on: XFU35, XFU60 & XFU80 Models
[2] Slipfitter & Trunnion not available on: XFU35 Models
[3] Not available on: XFU205 & XFU330 Models
[4] 480V only available on: XFU205 & XFU330 Models
[5] Photocell available only on: XFU205 & XFU330 Models

X17FA

Family	Wattage	Mounting	Finish	Voltage Rating
X17FA				
15 15W	BLANK Knuckle [1]	BLANK Bronze	BLANK 120-277V	
35 35W	SF Slipfitter [2]	W White	/480 480V [3]	
60 60W	T Trunnion [2]			
80 80W				
105 105W				
140 140W				

[1] Knuckle mount only on:15W-80W
[2] Slipfitter & Trunnion not available on: 15W-35W
[3] 480V only available on 140W

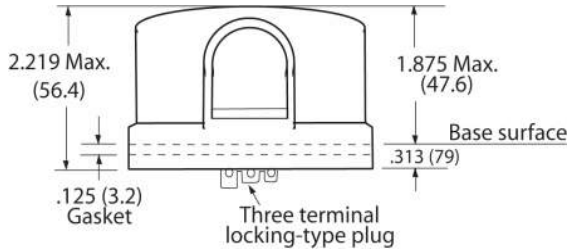
X17PA

Family	Wattage	CCT	Mounting	Finish	Voltage Rating	Option
X17PA	450					/PCT
450 250W/350W/450W	BLANK 5000K		SF Slipfitter	BLANK Bronze	BLANK 120-277V	/PCT Twist-lock Photocell
	N 4000K		T Trunnion		/480 480V	

P Series

Phototransistor sensor solid state photocontrols

"Optimum Performance Without Operational Drift"



P Series Photocontrols

P Series electronic photocontrols utilize a phototransistor light sensor. The photo sensor holds its original operating parameters throughout its life. It is not susceptible to operational "drift" caused by cadmium sulfide breakdown caused by harsh environments or breakdown caused by over heating (a condition of AC electromechanical designs). Extended life is achieved through a non-chatter load break from a low power consumption DC circuit.

Features

- Meets or exceeds ANSI C136.10
- Proven DC circuit design
- Close 1:1.5 On to Off operating ratio
- Non-chatter load break
- Electronic phototransistor light sensor maintains operational levels throughout its life
- Heavy duty construction

Benefits

- 12 year expected life
- Low power consumption and extended life from "cool" operating DC circuit
- Close ratio reduces burning hours at sunrise
- Reduced burning from consistent operating levels throughout its life
- Significantly reduced energy and maintenance costs

Specifications

Housing:	UV stabilized, impact resistant polypropylene
Base:	High temperature ABS
Contact Blades:	Solid brass, three prong, locking type
Gasket:	Cross linked polyethylene
Packaging:	Individual units are sealed in water resistant plastic
Weight:	3.0 oz. each, 20 lbs. per 100 unit carton
Size:	16" x 16" x 12" per 100 unit carton

Operating Voltage

Load Rating:	1000 Watt tungsten, 1800 VA
Life at rated load:	5,000 Operations (13.7 Years)
Power Consumption:	1.0 watts average @ 120 volts 1.6 watts average @ 208 volts 1.9 watts average @ 240 volts 2.1 watts average @ 277 volts
Moisture Resistance:	100% RH
Standard Surge Protections:	90 Joule (4,500 Amps) MOV 190 Joule (6,500 Amps) MOV 2 190 Joule (13,000 Amps) MOV 380 Joule (10,000 Amps) MOV
Operating Light Levels:	+/- 0.1 fc. from specified turn-on level 1:1.5 Average turn-on to turn-off ratio
Photosensor:	Encapsulated phototransistor
Dielectric Strength:	5,000 Volts between any current carrying part
Ambient Temperature Range:	-40°C to +70°C (-40°F to + 158°F)

Ordering Information

P120 - 1.0 - P - T - M - BR

Model #	Turn On	Photosensor	Time Delay	Surge Protection	Color
P120 (105-130V)	**1.0** fcs. On	**P** Phototransistor	_ No Delay**	_ 90J MOV**	_ Per ANSI**
P124 (105-305V)	**1.5** fcs. On		**T** 3-5 sec. Delay	**M** 190 MOV	**BR** Brown
P240 (195-305V)	**2.0** fcs On			**Y** 2 190 MOV's	**BK** Black
P480 (420-530V)	**2.5** fcs. On			**W** 380 MOV	

PX - standard grade electronics PEX - filtered phototransistor FAIL OFF Version Available

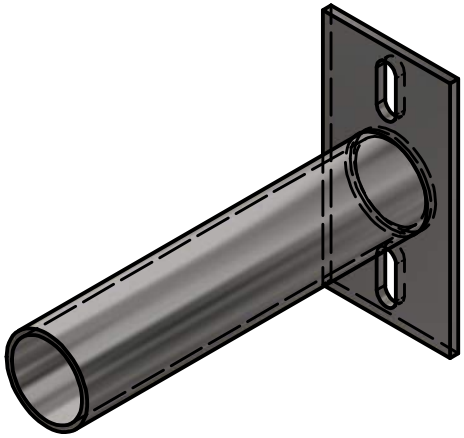
** No Letter

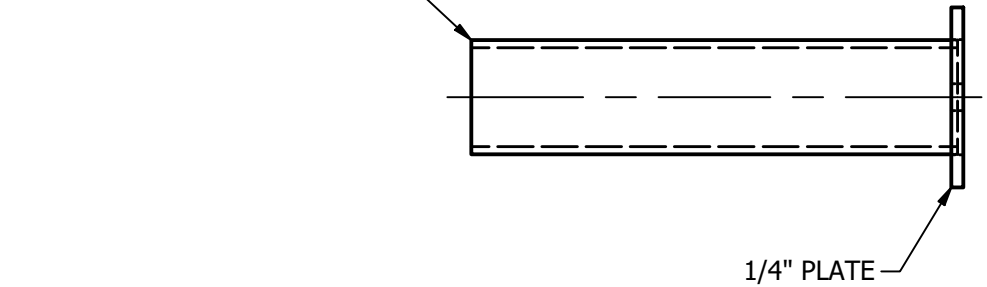
FP Outdoor Lighting Controls
Quality Electrical Products

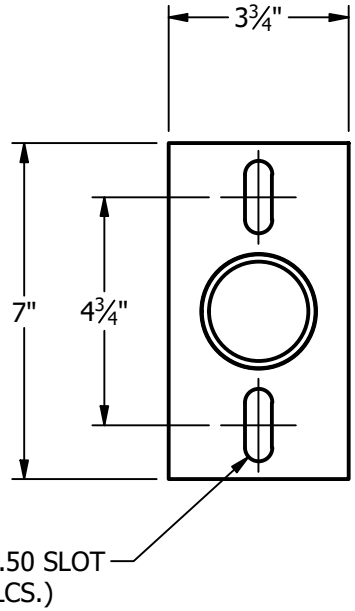
Sun - Tech
Sunrise Technologies, Inc.

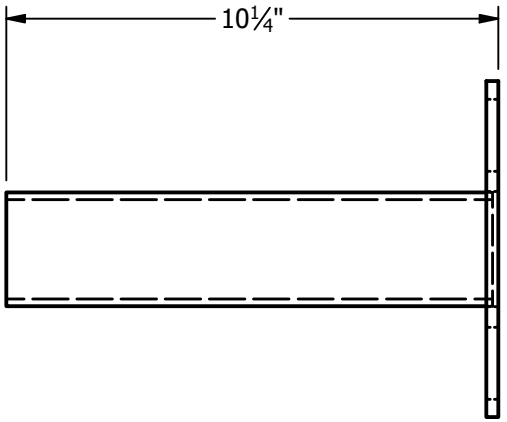
Sunrise Technologies
54 Commercial Street | Raynham, MA 02767, U.S.A.
Tel: 508-821-1597 | Fax: 508-822-0593
www.sun-tech.biz

REV		
DATE		
BY		
DESCRIPTION		









TOTAL WT. = 4.494 lbmass

TOLERANCES: UNLESS OTHERWISE SPECIFIED

FRACTIONAL	±1/8"
2 PLACE DEC.	±.03
3 PLACE DEC.	±.005
ANGULAR	± 1°

DRAWN BY: P. DAUGHERTY
APPROVED: PD
ECN:
SCALE: 1/4" = 1"
DATE: 3/16/2018

UTILITY METALS

(A DIVISION OF FABRICATED METALS LLC.)

DESCRIPTION:

2" x 10" SIDE TENON

PART NO. ST-2-10
BKT000102

DWG NO. F-8124-0

REV 0

KTAT-250-480-277 /A
STEP DOWN AUTO-TRANSFORMER

DESCRIPTION

Keystone's 480V to 277V Step-Down Auto-Transformers are designed to step down 480V to 277V single-phase power. These transformers enable consumers to utilize common universal voltage (120-277V) electronic ballasts in applications where the main facility power is 480V.

- **INPUT VOLTAGE:** 480VAC ±10%
- **INPUT FREQUENCY:** 60 Hz
- **MAXIMUM POWER:** 250 (VA) for 480V Applications
- **WARRANTY:** 5 Years

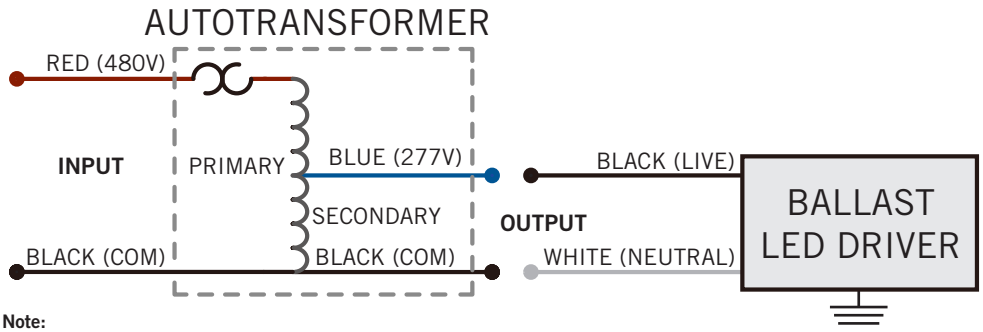
PRODUCT FEATURES

- Non-Isolated Autotransformer
- 5 Year Limited Warranty
- For Use with LED, T5, T8, CFL, or Electronic HID Ballast Operating at 277V Input Voltage
- Insulation Rating: 105ºC Class A
- UL and cUL 5085 Approved
- Thermally Protected
- No Load Power Consumption < 7W

ELECTRICAL SPECIFICATIONS

INPUT CHARACTERISTICS			OUTPUT CHARACTERISTICS			FEATURES
Input Voltage	Input Current at Max Load	Input Current at No Load	Output Voltage	Maximum Load	Maximum Output Current	Efficiency
480V	0.57A	0.16A	277V	250VA	0.90A	93%
347V	0.57A	0.11A	200V	180VA	0.90A	93%

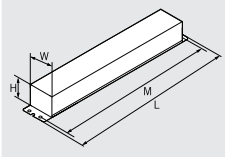
WIRING DIAGRAM



Note:
- Wiring for 3-Phase Wye (or Star) power supply, connect any two phase wires to Autotransfromer input.
- Wiring for 3-Phase Delta power supply with proper grounding, connect 480V and ground reference legs to Autotransformer input.

MECHANICAL SPECIFICATIONS

CASE DIMENSIONS



LENGTH	9.45”
WIDTH	1.70”
HEIGHT	1.20”
MOUNTING	8.86”

STANDARD LEAD LENGTHS*

BLACK (x2)	14”
BLUE	14”
RED	14”

*Consult Keystone for special lead length requirements.

Keystone Technologies, LLC • P.O. Box 246, Ambler PA 19002 • Phone (800) 464-2680 • Fax (215) 628-4412 • **www.keystoneballast.com**

KTAT-250-480-277 /A
STEP DOWN AUTO-TRANSFORMER

ORDERING INFORMATION

ORDER CODE	PACKAGING STYLE	PACK QTY.	ITEM STATUS
KTAT-250-480-277 /A-CP	Carton Pack	TBD	Active

CATALOG NUMBER BREAKDOWN

KTAT-250-480-277 /A-CP

- KTAT: Keystone Technologies Auto-Transformer
- 250: Max. Power (VA)
- 480: Input Voltage
- 277: Output Voltage
- /A: Wiring Revision
- CP: Packaging Style

KTAT-375-480-277
STEP DOWN AUTO-TRANSFORMER

5 YEAR WARRANTY

DESCRIPTION

Keystone's 480V to 277V Step-Down Auto-Transformers are designed to step down 480V to 277V single-phase power. These transformers enable consumers to utilize common universal voltage (120-277V) electronic ballasts in applications where the main facility power is 480V.

INPUT VOLTAGE: 480 or 347VAC ±10%
INPUT FREQUENCY: 50/60 Hz
MAXIMUM POWER: 375 (VA) for 480V Applications 375 (VA) for 347V Applications
WARRANTY: 5 Years

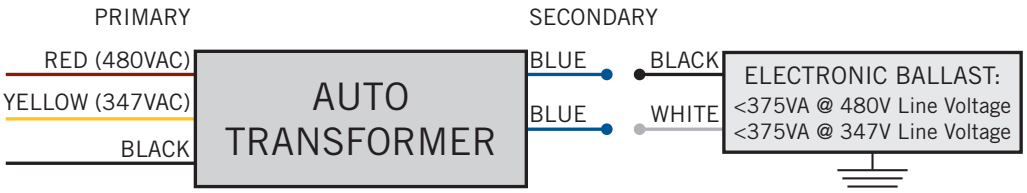
PRODUCT FEATURES

- Non-Isolated Autotransformer
- Sound Rated A
- 5 Year Limited Warranty
- For Use with T5, T8, CFL, or Electronic HID Ballast Operating at 277V Input Voltage
- Insulation Rating: 105ºC Class A
- UL and cUL 5085 Approved
- Thermally Protected

ELECTRICAL SPECIFICATIONS

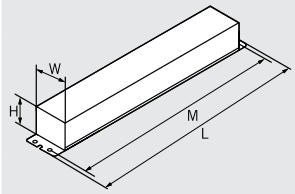
INPUT CHARACTERISTICS			OUTPUT CHARACTERISTICS		
Input Voltage	**Input Current at Max Load**	**Input Current at No Load**	**Output Voltage**	**Maximum Load**	**Maximum Output Current**
480V	0.86A	0.21A	277V	375	1.35A
347V	1.20A	0.15A	277V	375	1.35A

WIRING DIAGRAM



MECHANICAL SPECIFICATIONS

CASE DIMENSIONS



LENGTH	11.70"
WIDTH	1.63"
HEIGHT	1.20"
MOUNTING	11.10"
CASE STYLE	L21

STANDARD LEAD LENGTHS*

BLACK	14"
YELLOW	14"
BLUE	14"
RED	14"

*Consult Keystone for special lead length requirements.

Keystone Technologies, LLC • P.O. Box 246, Ambler PA 19002 • Phone (800) 464-2680 • Fax (215) 628-4412 • **www.keystoneballast.com**

Specifications subject to change. Revised 9.25.14

KTAT-375-480-277
STEP DOWN AUTO-TRANSFORMER

ORDERING INFORMATION

ORDER CODE	PACKAGING STYLE	PACK QTY.	ITEM STATUS
KTAT-375-480-277-DP	Distributor Pack	10	Quick Ship

CATALOG NUMBER BREAKDOWN

KTAT-375-480-277-DP

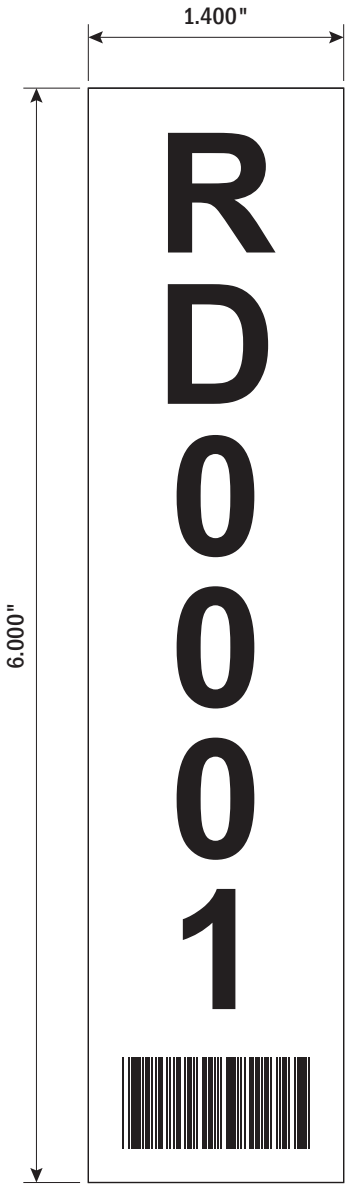
- KTAT: Keystone Technologies Auto-Transformer
- 375: Max. Power (VA)
- 480: Input Voltage
- 277: Output Voltage
- DP: Packaging Style

–PRELIMINARY PROOF–

This is a Preliminary Proof only. A Final Proof will be provided for your approval subsequent to receipt of your order.

Due to the variation of individual color monitors and printers, digital and/or printed color proofs are **NOT INTENDED FOR COLOR MATCHING PURPOSES**.

Dimensions are in inches unless otherwise specified.
* Scale is accurate when printed at ACTUAL SIZE.



Barcode reads RD0001
H.R.I. reads RD0001

PRELIMINARY

COLORS:

Black

Natural

Date	07/12/2022
Drawing #	Tanko-001
Revision #	A
*** Scale**	95%
Drawn by	SR

Appendix B

Final Financial Analysis

Summary of Financial Analysis - Redlands, CA

July 12, 2023

Project Overview	
Total Cost *(Ownership + Conversion)*	$1,348,026
20 Year Savings	**$11,184,439**
Payback Period *(Energy Savings Only)*	3.97 years
Payback Period *(Energy + Maintenance Savings)*	3.1 years

Year 1 Analysis	Existing	New	Savings
Energy Usage [kWh]	2,679,902	1,004,732	1,675,170
Utility Bill Cost	$703,934	$369,814	$334,121
Maintenance Cost	*$281,064*	$132,744	$148,320
Total	$984,998	$502,558	**$482,441**

20 Year Analysis	Existing	New	Savings
Energy Usage [kWh]	53,598,048	20,094,648	33,503,400
Utility Bill Cost	$15,499,935	$8,142,934	$7,357,002
Maintenance Cost	*$8,369,546*	$4,542,109	$3,827,437
Total	$23,869,481	$12,685,042	**$11,184,439**

Assumptions & Notes

Quantity of Lights Included in Analysis	5,528
Utility monthly meter charges are excluded from this analysis. This will not affect the City's annual savings calculations.	
Tariff Rate of Old System	LS-2 & LS-3
Tariff Rate of New System	LS-2 & LS-3
Federal Inflation Rate	4.00%
Utility Cost Inflation Rate	1.00%
Estimates are calculated using Net Future Values	

Appendix C

Environmental Disposal Documentation

SIERRA PACIFIC
ELECTRICAL CONTRACTING

2542 AVALON STREET, JURUPA VALLEY, CA 92509-2057
PHONE: (951) 784-1410 · FAX: (951) 784-4489
LICENSE # 264048 A, C-10 · DIR # 1000004626

July 7, 2023

RE: Redlands LED Conversion
City of Redlands
Sierra Pacific Job #6857

To whom it may concern,

Sierra Pacific Electrical Contracting is in the process of recycling the 4,395 street light fixtures that have been replaced with new LEDs.

Respectfully,

Jerrett Loop
Vice President
Sierra Pacific Electrical Contracting

MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

CIP PROJECTS LIST

PLANNING		Org Key	PL	Project Name	Project Phase	Progress	Consultant/Contractor	PM/Engineer	FY 2022-23	FY 2023-24
P1	WATER	501910	501019	HAWC Booster Pump Rehabilitation	PLANNING	0%				$500,000.00
P2	WATER	501910	501059	Seismic Assessment Improvements - Texas Grove Reservoir	PLANNING	0%				$2,900,000.00
P3	WATER	501910	501055	Sunset Reservoir Replacement	PLANNING	0%				$6,000,000.00
P4	WATER	501910	501058	Tate Clarifier Coating & Covers	PLANNING	0%				$2,560,000.00
P5	ARTERIAL	252400		California Street Widening at Lugonia Ave	PLANNING	0%				$800,000.00
P6	WATER	501910	501057	WTP Mechanical & Electrical Equipment Replacement	PLANNING	0%				$180,000.00
				Planning Projects - Cost Summary					$0.00	$12,940,000.00
DESIGN		**Org Key**	**PL**	**Project Name**	**Project Phase**	**Progress**	**Consultant/Contractor**	**PM/Engineer**	**Current Budget**	**Current Budget**
D1	WATER	501910	501063	2023 CIP Water Pipeline & Highline Replacement	DESIGN	60%	TKE Engineering	Goutam		$4,400,000.00
D2	WASTEWATER	521910	521030	2023 CIP Sewer Pipeline Replacement	DESIGN	99%		Johana		$3,000,000.00
D3	WATER	501910	501028	Fixed Generators - Agate, 5th, Texas & Country Club	DESIGN	100%	Brady & Associates	Paul/Veronica	$507,549.00	
D4	HSIP C10	200400	S400021	Wabash & Highland Ave Enhanced Crosswalk	DESIGN	30%		Veronica	$250,000.00	
D5	GENERAL FUND	101400	01544	Live Oak Canyon Creek & Oakmont Park Restoration	DESIGN	95%	Huitt-Zollars, Inc.	John	$1,800,000.00	
D6	WATER	501910	501040	Tate Transmission Line Replacement	DESIGN	90%	Carollo Engineers, Inc.	Paul/John	$835,549.00	$1,900,000.00
D7	NON-POTABLE	531910		WWTP Recycled Water Reservoirs Design	DESIGN	100%	Carollo Engineers, Inc.	John	$734,839.00	
D8	WATER	501910		Hinckley WTP Sludge Press	DESIGN	60%	Dudek	Paul/John	$700,000.00	
D9	ARTERIAL	252400		California Street Widening at Redlands Blvd	DESIGN	65%	CASC Engineering and Consulting	Gerard	$231,930.00	
D10	TDA	241400	S241005	2021 Transit Stop Improvement	DESIGN	95%		Veronica/Johana	$46,340.00	
D11	CRP	240400	C400005	Highland/Redlands Regional Connector - South	DESIGN	99%	KOA Consultants	Veronica	$752,600.00	
D12	ARTERIAL	252400	252001	Citrus Avenue Widening Project	DESIGN	95%		Elva	$900,000.00	
				Design Projects - Cost Summary					$6,758,807.00	$9,300,000.00
BID & AWARD		**Org Key**	**PL**	**Project Name**	**Project Phase**	**Progress**	**Consultant/Contractor**	**PM/Engineer**	**Current Budget**	**Current Budget**
				Bid & Award Project - Cost Summary					$0.00	$0.00
CONSTRUCTION		**Org Key**	**PL**	**Project Name**	**Project Phase**	**Progress**	**Contractor**	**PM/Inspector**	**Contract Amount**	**Contract Amount**
C1	GENERAL	101400	400025	2023 Citywide Sidewalk & ADA Ramp Replacement	CONST	25%	Tryco General Engineering	Elva/James		$1,000,000.00
C2	PMP	211910	211008	PMP 2023 Street Resurfacing Project	CONST	20%	Matich Corporation	Gerard/Daniel		$4,381,606.00
C3	GENERAL/PMP	101/211	211009	2023 Alley Paving Improvements	CONST	5%	Tryco General Engineering	Elva/James		$1,738,285.00
C4	WATER	501910	C501064	Water Meter Replacement (Potable/Non-potable) Project	CONST	25%	Ferguson Enterprises, LLC	John/Aaron/Chris		$6,747,257.96
C5	STORM DRAIN	405400	405003	Mission Zanja Channel Improvements Project	CONST	100%	Harbor Coating & Restoration	Gerard/Chris		$381,799.00
C6	HSIP C9	200400	F400003	Pedestrian In-Roadway Lights - Alabama/Tennessee	CONST	100%	California Professional Engineering	Veronica/Chris		$259,245.00
C7	WASTEWATER	521910	521029	2022 CIP Sewer Pipeline Replacement	CONST	100%	CEM Construction Corp	Johana/Daniel	$3,314,268.00	
C8	GENERAL/PMP/MT	101/211	211007	2022 Alley Paving Improvements	CONST	100%	Onyx Paving Company, Inc.	Elva/James	$2,082,000.00	
C9	PMP	211910	211006	PMP 2022 Street Resurfacing Project	CONST	100%	Matich Corporation	Gerard/Frannie	$4,970,068.00	
C10	WATER	501910	501062	2022 CIP Water Pipeline Replacement	CONST	100%	Tryco General Engineering	Gerard/Daniel	$4,744,111.00	
C11	WATER	501910	501006	Water System SCADA Design & Integration - Phase 2 & 3	CONST	60%	TESCO Controls, Inc.	Paul/Daniel	$5,579,420.00	
C12	WATER	501910	501006	Automated Metering Infrastructure Project	CONST	75%	Ferguson Enterprises, LLC	Paul/Aaron/Chris	$783,356.96	
				Construction Projects - Cost Summary					$21,473,223.96	$14,508,192.96
				Project Total Dollars					**$28,232,030.96**	**$36,748,192.96**

CITY OF REDLANDS

Water, Wastewater, and Non-Potable Water Financial Plan and Rate Study

FINAL REPORT / MARCH 27, 2024

RAFTELIS

RAFTELIS

March 27, 2024

John R. Harris
Municipal Utilities & Engineering Director
City of Redlands
Municipal Utilities and Engineering
35 Cajon Street
Redlands, CA 92373

Subject: Water, Wastewater, and Non-Potable Water Financial Plan and Rate Study Report

Dear Mr. Harris:

Raftelis is pleased to provide this Water, Wastewater, and Non-Potable Water Financial Plan Study Report (Report) for the City of Redlands (City). This report presents the analyses, rationales, and methodologies utilized in the study to determine utility rates that align with the requirements of Proposition 218. The study was developed with feedback and input from City staff.

The study involved a comprehensive review of the City's current water, wastewater, and non-potable water cost requirements to determine rates that meet the City's objectives. The main objectives that informed the study include:

- Adequately recovering all costs to ensure the financial sufficiency of the City's utilities
- Determining feasible capital financing plans for all three utilities
- Developing long-term financial plans for all three utilities
- Calculating cost of service-based rates for all three utilities
- Minimizing customer impacts from rate adjustments

We are confident that the proposed rates developed during this study are fair and equitable for the City's customers and are in alignment with the requirements of Proposition 218. We appreciate the input provided by City staff which helped guide the final recommendations of the financial plan and resulting rates. It was a pleasure working with you and your team, and we wish to express our gratitude for the support you and other City staff provided during the study.

Sincerely,

Sudhir Pardiwala
Executive Vice President

Lindsay Roth
Consultant

Contents

Tables

Figures

Appendices

THIS PAGE INTENTIONALLY LEFT BLANK

1. Executive Summary

1.1. Study Background

In 2022, the City of Redlands (City) contracted Raftelis to conduct a Water, Wastewater, and Non-Potable Water Rate Study, which included developing long-term financial plans and cost of service rates.

This report presents the three financial plans and resulting rates for the water, wastewater, and non-potable water utilities for a five-year period to ensure fairness and equity for its customers and the financial stability of the three enterprises.

This Executive Summary outlines the proposed financial plans and resulting rates and contains a description of the rate study process, methodology, and recommendations for the City's rates. The main objectives that informed the Study include:

- Adequately recovering all costs to ensure the financial sufficiency of the City's utilities
- Determining feasible capital financing plans for all three utilities
- Developing long-term financial plans for all three utilities
- Calculating cost of service-based rates for the three utilities
- Minimizing customer impacts from changes to the rate structures

1.2. Current Rates

The City's current water rates were adopted on July 1, 2018, and include a bi-monthly service charge based on meter size for water service, fire protection service, fire hydrant service, and tiered water usage rates per hundred cubic feet (ccf) of water by customer class. **Table 1-1** shows current bi-monthly service charges and fire protection and hydrant service charges, and **Table 1-2** shows the water usage rates by customer class.

Table 1-1: Current Bi-Monthly Water Service Charges ($/meter size)

	A	B	C	D
Line	Meter Size	Water Service Charge	Fire Protection Water Service Charge	Fire Hydrant Service Charge
1	5/8"	$32.10		
2	3/4"	$43.17		
3	1"	$64.67		
4	1 1/2"	$116.79		
5	2"	$172.83	$10.19	$73.60
6	3"	$299.23	$18.10	$73.60
7	4"	$462.10	$31.75	$73.60
8	6"	$853.02	$80.73	$73.60
9	8"	$1,256.97	$165.22	$73.60
10	10"	$2,977.00	$292.32	$73.60
11	12"	$3,915.20	$468.46	$73.60

Table 1-2: Current Water Usage rates ($/ccf of water)

	A	B
Line	Customer Class	Water Usage Rate
1	Building Water Usage	
2	Tier 1	$1.46
3	Tier 2	$1.78
4	Tier 3	$2.69
5		
6	Non-Building Water Usage	
7	Tier 1	$1.78
8	Tier 2	$2.69
9		
10	Other Water Usage	
11	B Contract	$100.46
12	Recycled	$110.00
13		
14	Fire Protection Water Usage	
15	All Units	$2.69

The current wastewater rates were implemented on July 1, 2018, and include a bi-monthly service charge for residential customers and schools and non-residential wastewater usage rates per ccf of water usage. **Table 1-3** shows the current bi-monthly residential service charges, **Table 1-4** shows the non-residential wastewater usage rates for all non-residential customer classes, and **Table 1-5** shows the bi-monthly schools service charge by school type.

Table 1-3: Current Bi-Monthly Residential Wastewater Service Chargers ($/dwelling unit)

	A	B
Line	Residential Customer Class	Wastewater Service Rate
1	Single Family	$62.43
2	Multiple Family	$48.08

Table 1-4: Current Non-Residential Wastewater Usage Rates ($/ccf of water)

	A	B
Line	Non-Residential Customer Class	Wastewater Usage Rate
1	Low Strength I	$2.42
2	Low Strength II	$2.87
3	Low Strength III	$3.32
4	Medium Strength I	$3.77
5	Medium Strength II	$4.22
6	Medium Strength III	$4.67
7	High Strength I	$5.12
8	High Strength II	$5.56
9	Large Volume User	$3.32
10	Minimum Charge ($)	$48.08
11		
12	Septage Charge ($/gal)	$0.11

Table 1-5: Current Bi-Monthly Schools Wastewater Service Charge ($/100 students)

	A	B
Line	Schools Customer Class	Wastewater Service Rate
1	Elementary	$134.38
2	Secondary & High	$215.02

The current non-potable water rates include a bi-monthly service charge and a usage rate per ccf of non-potable water usage. **Table 1-6** and **Table 1-7** show the bi-monthly non-potable water service charges and non-potable water usage rates, respectively.

Table 1-6: Current Bi-Monthly Non-Potable Water Service Charges ($/meter size)

	A	B
Line	Meter Size	Non-Potable Water Service Charge
1	3/4"	$13.81
2	1"	$20.65
3	1 1/2"	$37.29
4	2"	$55.16
5	3"	$95.50
6	4"	$147.45
7	6"	$272.16
8	8"	$401.04

Table 1-7: Current Non-Potable Water Usage Rates ($/ccf of water)

	A	B
Line	Non-Potable Customer Class	Non-Potable Water Usage Rate
1	Non-Potable Water	$0.99
2	Conversion Customer	$0.64

1.3. Process and Approach

The City's rate-setting process involves participation and feedback from City staff. During the study, Raftelis met with City staff to discuss and understand the challenges the City's three utilities face and to provide guidance to finalize the rate recommendations, which are detailed in this report.

During these meetings, Raftelis presented the various assumptions, inputs, and scenario analyses that were utilized to determine the water, wastewater, and non-potable water financial plans. City staff discussed the upcoming capital project requirements, which are some of the main drivers for the revenue adjustments in the final recommendations presented in this report. Raftelis designed and presented the financial plan and rate models to analyze various scenarios, such as those related to debt issuances, revenue adjustments, and capital funding.

The proposed financial plans detailed in this report followed industry standard practices for long-term financial planning and utilized commonly accepted assumptions in the absence of specified assumptions from the City, such as general inflation based on the Consumer Price Index (CPI). Raftelis worked closely with City staff to determine the most accurate methodology to project future revenues and expenses to reinforce sound fiscal management practices.

The City opted for no revenue adjustments for non-potable water. The cost-of-service analysis utilized to develop the water rates followed the guidelines for allocating costs outlined in the American Water Works Association's (AWWA) "Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1, 6th edition" (M1 Manual). Wastewater rates followed the guidelines for allocating costs outlined in the Water Environment Federation (WEF) *Manual of Practice No. 27, Financing and Charges for Wastewater (2018)*. The cost-of-service analysis and rate design process consists of seven major steps, as outlined below:

1. Determine the revenue requirement, equal to the revenue to be recovered from rates.
2. Functionalize operations and maintenance (O&M) expenses and capital assets into functional categories such as supply, distribution, treatment, laboratory, collection, engineering, etc.
3. Allocate each functional category into cost components such as supply, base delivery, peaking, meter and customer service for water, and wastewater flow and strength, which includes biochemical oxygen demand (BOD) and total suspended solids (TSS) for wastewater.
4. Develop customer class characteristics and units of service by cost component.
5. Calculate the unit cost component rates by dividing the total cost in each component by the total units of service for that component. For example, wastewater service units include flow which is measured in ccf and BOD and TSS which are measured in pounds (lbs) per year.
6. Calculate the cost for each customer class by multiplying the unit cost by the units of service for each customer class.

7. Design rates to meet the City's objectives.

The financial plans for the three utilities include the five-year Study period from fiscal year (FY) 2025[1] to FY 2029. The proposed rates were developed for implementation on July 1, 2024 (beginning of FY 2025) and in July of every year thereafter until 2029.

1.4. Legal Framework

California Constitution Article XIII D, Section 6, commonly referred to as Proposition 218, was enacted in 1996 to ensure that rates and fees are reasonable and proportionate to the cost of providing service. The principal requirements for the fairness of the fees, as they relate to public wastewater service are as follows:

1. A property-related charge (such as water and wastewater rates) imposed by a public agency on a parcel shall not exceed the costs required to provide the property-related service.
2. Revenues derived by the charge shall not be used for any other purpose other than that for which the charge was imposed.
3. The amount of the charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.
4. No charge may be imposed for a service unless that service is actually used or immediately available to the owner of the property.
5. A written notice of the proposed charge shall be mailed to the record owner of each parcel at least 45 days prior to the public hearing, when the agency considers all written protests against the charge.

Proposition 218 requires that rates cannot be "arbitrary and capricious," meaning that the rate-setting methodology must be sound and there must be a nexus between the costs and the rates charged. Raftelis follows industry standard rate setting methodologies to perform the cost-of-service analysis for the water utility based on the M1 Manual and for the wastewater utility based on WEF's Manual No. 27.

1.5. Results and Recommendations

Raftelis worked closely with City staff to define the final results and recommendations of the water, wastewater, and non-potable water rate Study. The recommendations presented in this report will ensure the financial sufficiency and stability of the City's three utilities to fund all necessary operating costs, capital costs, and to maintain sufficient cash balances. To minimize customer impacts due to changes in rate structure, which is a key objective that informed the Study approach, Raftelis recommends that the City maintain the same rate structure for the water, wastewater, and non-potable water systems.

1.5.1. Water Utility

- The water O&M expenses are expected to increase, on average, by 3.6 percent each year of the Study based on the City's FY 2024 budget and inflationary assumptions.
- The City plans to spend approximately $52.8 million on capital projects from FY 2025 to FY 2029.
- Raftelis recommends 2.0 percent revenue adjustments per year in FY 2025 through FY 2029 to fund its capital project spending and to maintain a sufficient cash balance.

[1] FY 2025 is the period from July 1, 2024, to June 30, 2025.

1.5.2. Wastewater Utility

- The wastewater O&M expenses are expected to increase, on average, by 3.7 percent each year of the Study based on the City's FY 2024 budget and inflationary assumptions.
- The City plans to spend $66.3 million in capital projects from FY 2025 to FY 2029, the majority of which is to refurbish and modify the City's current wastewater treatment plant.
- The City plans to obtain an SRF loan of $45 million in FY 2026 to fund most of the wastewater treatment plant project costs.
- Raftelis recommends 10 percent revenue adjustments per year in FY 2025 through FY 2028 and 8 percent revenue adjustment in FY 2029 to fund capital projects and debt service and to meet debt coverage requirements. The wastewater financial plan will be reviewed again in the next rate cycle.

1.5.3. Non-Potable Water Utility

- The non-potable O&M expenses are expected to increase, on average, by 3 percent each year of the Study based on the City's FY 2024 budget and inflationary assumptions.
- The City plans to spend $1.5 million in capital projects for the non-potable water utility from FY 2025 to FY 2029.
- Raftelis recommends no revenue adjustments for FY 2025 through FY 2029 as the utility has sufficient cash balance to fund capital project costs and operating expenses.

1.6. Proposed Rates

Table 1-8 and **Table 1-9** show the proposed bi-monthly water service charges and water usage rates for the City's water utility, respectively, based on the above recommendations. The proposed water rates for FY 2025 are determined by the cost-of-service analysis, and rates for the following years are increased from those rates based on the proposed revenue adjustments.

Table 1-8: Proposed Bi-Monthly Water Service Charges ($/meter size)

	A	B	C	D	E	F	G
Line	Bi-Monthly Water Service Charges	Current Rates	July 2024	July 2025	July 2026	July 2027	July 2028
1	**Water Service**						
2	5/8"	$32.10	$32.94	$33.60	$34.28	$34.97	$35.67
3	3/4"	$43.17	$44.01	$44.90	$45.80	$46.72	$47.66
4	1"	$64.67	$65.50	$66.81	$68.15	$69.52	$70.92
5	1 1/2"	$116.79	$117.60	$119.96	$122.36	$124.81	$127.31
6	2"	$172.83	$173.62	$177.10	$180.65	$184.27	$187.96
7	3"	$299.23	$299.97	$305.97	$312.09	$318.34	$324.71
8	4"	$462.10	$462.79	$472.05	$481.50	$491.13	$500.96
9	6"	$853.02	$853.56	$870.64	$888.06	$905.83	$923.95
10	8"	$1,256.97	$1,257.36	$1,282.51	$1,308.17	$1,334.34	$1,361.03
11	10"	$2,977.00	$2,976.76	$3,036.30	$3,097.03	$3,158.98	$3,222.16
12	12"	$3,915.20	$3,914.61	$3,992.91	$4,072.77	$4,154.23	$4,237.32
13							
14	**Fire Protection Service**						
15	2"	$10.19	$11.81	$12.05	$12.30	$12.55	$12.81
16	3"	$18.10	$21.20	$21.63	$22.07	$22.52	$22.98
17	4"	$31.75	$37.39	$38.14	$38.91	$39.69	$40.49
18	6"	$80.73	$95.48	$97.39	$99.34	$101.33	$103.36
19	8"	$165.22	$195.69	$199.61	$203.61	$207.69	$211.85
20	10"	$292.32	$346.42	$353.35	$360.42	$367.63	$374.99
21	12"	$468.46	$555.33	$566.44	$577.77	$589.33	$601.12
22							
23	**Fire Hydrant Service**						
24	All Meters	$73.60	$299.97	$305.97	$312.09	$318.34	$324.71

Table 1-9: Proposed Water Usage Rates ($/ccf of water)

	A	B	C	D	E	F	G	H
Line	Water Usage Rates	Bi-Monthly Tiers	Current Rates	July 2024	July 2025	July 2026	July 2027	July 2028
1	**Building Water Usage**							
2	Tier 1	16	$1.46	$1.57	$1.61	$1.65	$1.69	$1.73
3	Tier 2	27	$1.78	$1.86	$1.90	$1.94	$1.98	$2.02
4	Tier 3	Over 27	$2.69	$2.79	$2.85	$2.91	$2.97	$3.03
5								
6	**Non-Building Water Usage**							
7	Tier 1	27	$1.78	$1.77	$1.81	$1.85	$1.89	$1.93
8	Tier 2	Over 27	$2.69	$2.49	$2.54	$2.60	$2.66	$2.72
9								
10	**Fire Protection Water Usage**							
11	All Units		$2.69	$2.79	$2.85	$2.91	$2.97	$3.03

Table 1-10 and **Table 1-11** show the proposed bi-monthly residential and schools wastewater service charges and non-residential water usage rates for the wastewater utility, respectively. The proposed wastewater rates are based on the cost-of-service analysis.

Table 1-10: Proposed Bi-Monthly Residential and Schools Wastewater Service Charges

	A	B	C	D	E	F	G
Line	Bi-Monthly Wastewater Service Charges	Current Rates	July 2024	July 2025	July 2026	July 2027	July 2028
1	Residential ($/dwelling unit)						
2	Single Family	$62.43	$66.04	$72.65	$79.92	$87.92	$94.96
3	Multiple Family	$48.08	$52.40	$57.64	$63.41	$69.76	$75.35
4							
5	Schools ($/100 students)						
6	Elementary	$134.38	$143.11	$157.43	$173.18	$190.50	$205.74
7	Secondary & High	$215.02	$238.52	$262.38	$288.62	$317.49	$342.89

Table 1-11: Proposed Non-Residential Wastewater Usage Rates ($/ccf of water)

	A	B	C	D	E	F	G
Line	Wastewater Usage Rates	Current Rates	July 2024	July 2025	July 2026	July 2027	July 2028
1	Non-Residential Usage ($/ccf)						
2	Low Strength I	$2.42	$2.82	$3.11	$3.43	$3.78	$4.09
3	Low Strength II	$2.87	$3.41	$3.76	$4.14	$4.56	$4.93
4	Low Strength III	$3.32	$3.99	$4.39	$4.83	$5.32	$5.75
5	Medium Strength I	$3.77	$4.58	$5.04	$5.55	$6.11	$6.60
6	Medium Strength II	$4.22	$5.16	$5.68	$6.25	$6.88	$7.44
7	Medium Strength III	$4.67	$5.75	$6.33	$6.97	$7.67	$8.29
8	High Strength I	$5.12	$6.34	$6.98	$7.68	$8.45	$9.13
9	High Strength II	$5.56	$6.92	$7.62	$8.39	$9.23	$9.97
10	Large Volume User	$3.32	$3.99	$4.39	$4.83	$5.32	$5.75
11	Minimum Charge ($)	$48.08	$52.40	$57.64	$63.41	$69.76	$75.35
12							
13	Septage Charge ($/gal)	$0.11	$0.10	$0.11	$0.13	$0.15	$0.17

Table 1-12 and **Table 1-13** show the bi-monthly non-potable water service charges and non-potable water usage rates, respectively. Raftelis recommends no revenue adjustments for the study period. The proposed rates for FY 2025 are based on the cost-of-service analysis and remain the same through FY 2029.

Table 1-12: Proposed Bi-Monthly Non-Potable Water Service Charges ($/meter size)

	A	B	C	D	E	F	G
Line	Bi-Monthly Non-Potable Water Service Charges	Current Rates	July 2024	July 2025	July 2026	July 2027	July 2028
1	Non-Potable Water Service						
2	3/4"	$13.81	$13.81	$13.81	$13.81	$13.81	$13.81
3	1"	$20.65	$20.65	$20.65	$20.65	$20.65	$20.65
4	1 1/2"	$37.29	$37.29	$37.29	$37.29	$37.29	$37.29
5	2"	$55.16	$55.16	$55.16	$55.16	$55.16	$55.16
6	3"	$95.50	$95.50	$95.50	$95.50	$95.50	$95.50
7	4"	$147.45	$147.45	$147.45	$147.45	$147.45	$147.45
8	6"	$272.16	$272.16	$272.16	$272.16	$272.16	$272.16
9	8"	$401.04	$401.04	$401.04	$401.04	$401.04	$401.04

Table 1-13: Proposed Non-Potable Water Usage Rates ($/ccf of water)

	A	B	C	D	E	F	G
Line	Non-Potable Water Usage Rates	Current Rates	July 2024	July 2025	July 2026	July 2027	July 2028
1	**Non-Potable Water Usage**						
2	Non-Potable Water	$0.99	$0.99	$0.99	$0.99	$0.99	$0.99
3	Conversion Customer	$0.64	$0.64	$0.64	$0.64	$0.64	$0.64

1.7. Combined Customer Impacts

Table 1-14 outlines the proposed customer bi-monthly impacts for a Single-Family customer with a ¾" meter using 40 ccf of water each billing period. The customer impacts show the water, wastewater, non-potable water, and combined bill impacts. A typical Single Family customer will have water and wastewater service, and the total impact for this typical customer does not exceed $8 per bi-monthly billing period in the first year (Column B, Line 15).

Table 1-14: Proposed Single Family Customer Bi-Monthly Impacts (3/4" meter, 40 ccf)

	A	B	C	D	E	F
Line	**Bi-Monthly Impacts**	**Proposed July 2024**	**Proposed July 2025**	**Proposed July 2026**	**Proposed July 2027**	**Proposed July 2028**
1	Current Water Bill	$121.08	$121.08	$121.08	$121.08	$121.08
2	Proposed Water Bill	$125.86	$128.61	$131.37	$134.15	$136.95
3	*Difference ($)*	*$4.78*	*$7.53*	*$10.29*	*$13.07*	*$15.87*
4						
5	Current Wastewater Bill	$62.43	$62.43	$62.43	$62.43	$62.43
6	Proposed Wastewater Bill	$66.04	$72.65	$79.92	$87.92	$94.96
7	*Difference ($)*	*$3.61*	*$10.22*	*$17.49*	*$25.49*	*$32.53*
8						
9	Current Non-Potable Water Bill	$53.41	$53.41	$53.41	$53.41	$53.41
10	Proposed Non-Potable Water Bill	$53.41	$53.41	$53.41	$53.41	$53.41
11	*Difference ($)*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*
12						
13	Current Water and Wastewater Bill	$183.51	$183.51	$183.51	$183.51	$183.51
14	Proposed Water and Wastewater Bill	$191.90	$201.26	$211.29	$222.07	$231.91
15	*Difference ($)*	*$8.39*	*$17.75*	*$27.78*	*$38.56*	*$48.40*
16						
17	Current Combined Bill	$236.92	$236.92	$236.92	$236.92	$236.92
18	Proposed Combined Bill	$245.31	$254.67	$264.70	$275.48	$285.32
19	*Difference ($)*	*$8.39*	*$17.75*	*$27.78*	*$38.56*	*$48.40*

1.8. Regional Rate Survey

Figure 1-1 shows the bi-monthly sewer bill comparison for a Single Family Dwelling Unit customer. The graph shows the City's proposed wastewater charge to be implemented in July of 2024.

Figure 1-2 shows the bi-monthly water bill comparison for a Single Family Dwelling Unit customer using a 3/4" meter and 40 ccf of water use per bi-monthly billing period. The graph shows the City's proposed water rates to be implemented in July of 2024.

Figure 1-1: Regional Single Family Customer Bi-Monthly Sewer Bill Comparison

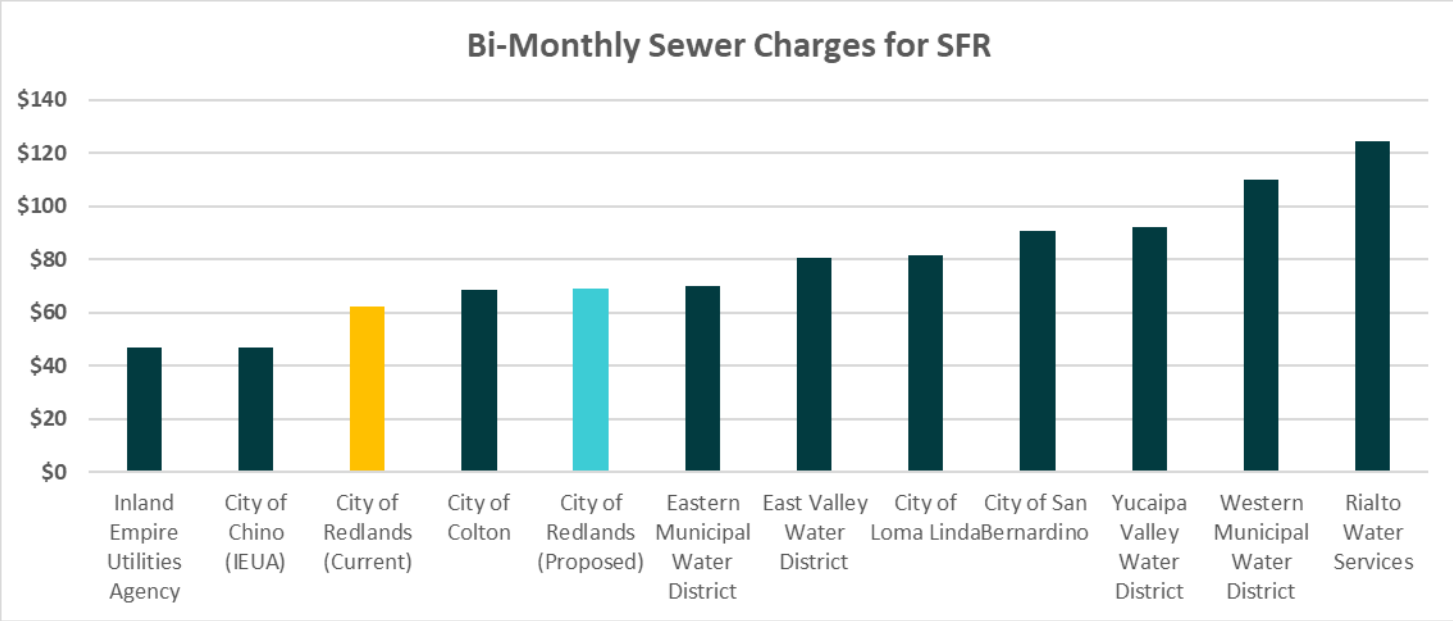
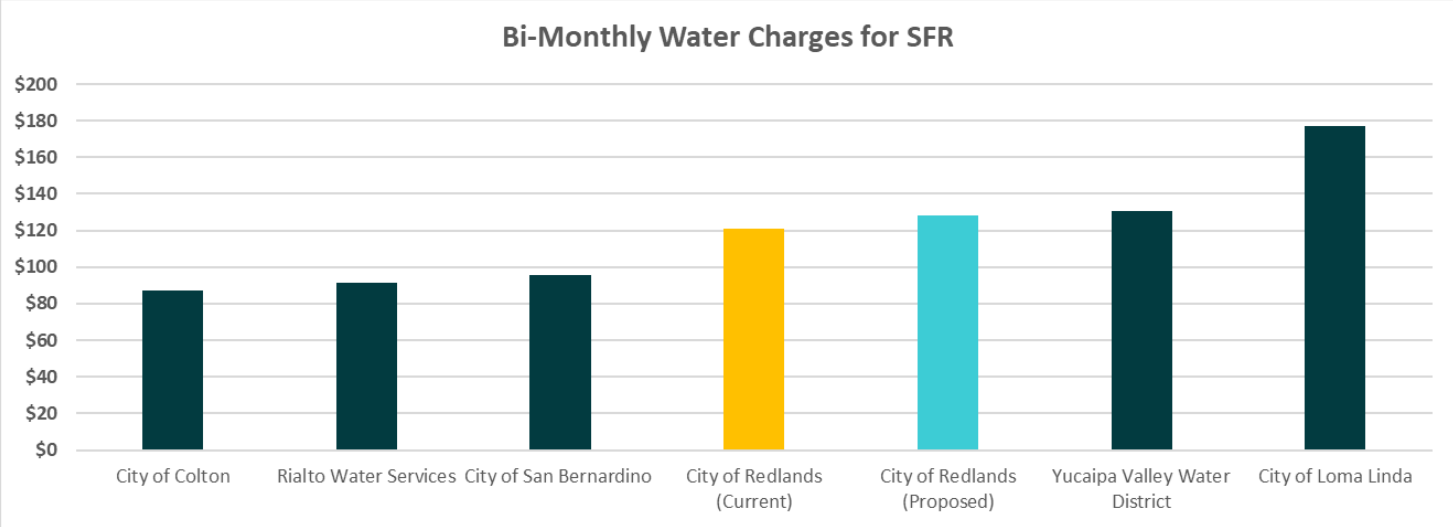


Figure 1-2: Regional Single Family Customer Bi-Monthly Water Bill Comparison



2. Key Assumptions

The key assumptions outlined in this section of the report represent the global assumptions utilized in the Study to project the number of customer accounts, revenues, and expenses for future years. City staff provided data on customer accounts, usage, and actual revenues and expenses for FY 2022 and budgeted revenues and expenses for FY 2023 and FY 2024. The remaining years of the Study, from FY 2025 to FY 2029, were projected based on this information and the key assumptions shown in this section.

2.1. Customer Account Growth

Table 2-1 shows the customer account growth projections for each customer class based on recommendations from City staff. The values from the 2015 Urban Water Management Plan (UWMP) were maintained for this rate study cycle. This conservative value was used as a prudent fiscal practice to ensure that adequate revenues are collected to fund the City's utilities if large growth does not occur.

Table 2-1: Customer Account Growth Projections

	A	B	C	D	E	F	G
Line	Customer Account Growth	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	Single Family	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
2	Multiple Family	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
3	Commercial	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
4	Municipal	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
5	Non-Building	0.6%	0.6%	0.5%	0.5%	0.5%	0.5%
6	Fire Service	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
7	School	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
8	Non-Potable	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%

2.2. Revenue Inflation Factors

Table 2-2 shows the revenue inflation factors utilized to project future revenues and calculate investment income. Projections assume no increase in miscellaneous, non-rate revenues throughout the study period. The reserve interest rate is used to calculate the investment income based on projected fund balances and is based on conservative estimates.

Table 2-2: Revenue Inflation Factors

	A	B	C	D	E	F	G
Line	Revenue Inflation Factors	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	Non-Rate Revenues	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	Reserve Interest Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

2.3. Expense Inflation Factors

Table 2-3 shows the expense inflation factors, which are used to project future operating and capital project expenses for the study period. These factors were determined with input from City staff and reference industry standard escalations and commonly used price indices. The general inflation factor is based on the long-term change in the CPI. Water supply, utilities, power, and chemical costs are based on industry averages. The capital inflation factor is based on the Engineering News Record Construction Cost Index (CCI).

Table 2-3: Expense Inflation Factors

	A	B	C	D	E	F	G
Line	Expense Inflation Factors	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	General	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
2	Salary/Benefits	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
3	Water Supply	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
4	Utilities/Power	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
5	Chemicals	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
6	Supplies/Materials	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
7	Capital	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%

3. Water – Financial Plan

This section of the report details the water enterprise's long-term financial plan, based on the projected revenues, expenses, debt service, and capital project costs. Raftelis modeled the financial plan without revenue (status quo) and with proposed revenue adjustments to ensure the financial sustainability and solvency of the water utility. The results of the water financial plan are the proposed rates for five years based on the proposed revenue adjustments.

3.1. Projected Revenues

City staff provided the actual FY 2022 revenues and budgeted FY 2023 and FY 2024 revenues for the water utility, which were used to project revenues for the remainder of the study period. **Table 3-1** shows the projected water revenues for each of the water funds.

The water rate revenues (Lines 4, 6, 8-10) are calculated for future years based on the weighted customer account growth assumptions for each customer class (**Table 2-1**). The City expects modest increases in water rate revenues for all years of the study. The investment income (Lines 13, 27) is calculated using the reserve interest rate (**Table 2-2** , Line 2). The remaining revenues are inflated using the non-rate revenue inflation factor (**Table 2-2**, Line 1).

Table 3-1: Projected Water Revenues

	A	B	C	D	E	F	G
Line	**Projected Revenues**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**
1	**Water Service (501)**						
2	Cost Recover/Reimb Expenditure	$25	$25	$25	$25	$25	$25
3	Plan Check	$21,000	$21,000	$21,000	$21,000	$21,000	$21,000
4	Water Usage	$26,337,835	$26,482,428	$26,624,274	$26,766,879	$26,910,248	$27,054,385
5	Fire Flow Testing	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000
6	"B" Contract Water Usage	$105,000	$82,423	$82,860	$83,299	$83,741	$84,185
7	Water Meter Install	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000
8	Irrigation Water Usage	$3,100,000	$3,146,152	$3,162,826	$3,179,589	$3,196,441	$3,213,382
9	Fire Hydrant Water Usage	$155,000	$140,931	$141,689	$142,451	$143,218	$143,988
10	Fire Protection Water Usage	$420,000	$541,627	$544,541	$547,470	$550,415	$553,376
11	Conservation Violation Penalty	$525	$525	$525	$525	$525	$525
12	Frontage Charge	$45,000	$45,000	$45,000	$45,000	$45,000	$45,000
13	Investment Income	$510,297	$286,933	$227,614	$215,110	$202,470	$201,514
14	Returned Check Charge	$50	$50	$50	$50	$50	$50
15	Rental Income	$130,000	$130,000	$130,000	$130,000	$130,000	$130,000
16	Miscellaneous Receipts	$105,000	$105,000	$105,000	$105,000	$105,000	$105,000
17	**Total - Water Service (501)**	**$32,917,731**	**$32,970,095**	**$33,073,404**	**$33,224,399**	**$33,376,133**	**$33,540,430**
18							
19	**Source Acquisition (508)**						
20	Water Source Acq Residential	$437,000	$437,000	$437,000	$437,000	$437,000	$437,000
21	Water Source Acquisition Non-Resident	$46,000	$46,000	$46,000	$46,000	$46,000	$46,000
22	**Total - Source Acquisition (508)**	**$500,297**	**$505,300**	**$510,353**	**$515,457**	**$520,611**	**$525,818**
23							
24	**Water CIP (509)**						
25	Capital Improv Chrg Non-Res	$345,000	$345,000	$345,000	$345,000	$345,000	$345,000
26	Capital Improv Chrg Resident	$1,610,000	$1,610,000	$1,610,000	$1,610,000	$1,610,000	$1,610,000
27	Investment Income	$0	$0	$0	$0	$0	$0
28	**Total - Water CIP (509)**	**$1,955,000**	**$1,955,000**	**$1,955,000**	**$1,955,000**	**$1,955,000**	**$1,955,000**
29							
30	**Total - Revenues**	**$35,373,029**	**$35,430,395**	**$35,538,757**	**$35,694,856**	**$35,851,745**	**$36,021,248**

3.2. Projected O&M Expenses

City staff provided the actual FY 2022 and budgeted FY 2023 and FY 2024 O&M expenses for the water utility based on expense function. **Table 3-2** shows the projected O&M expenses for the study period, inflated for FY 2025 and beyond using the expense inflation factors (**Table 2-3**).

Table 3-2: Projected Water O&M Expenses

	A	B	C	D	E	F	G
Line	Projected O&M Expenses	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Water Service (501)**						
2	Salaries and Benefits	$7,685,771	$7,993,202	$8,312,930	$8,645,447	$8,991,265	$9,350,916
3	Services - Power	$2,330,125	$2,459,708	$2,596,497	$2,740,467	$2,892,419	$3,052,796
4	Services	$11,941,234	$12,299,471	$12,668,455	$13,048,509	$13,439,964	$13,843,163
5	Supplies - Purchased Water	$0	$0	$0	$0	$0	$0
6	Supplies - Treatment	$475,500	$501,944	$529,858	$559,237	$590,245	$622,973
7	Supplies	$3,179,750	$3,275,143	$3,373,397	$3,474,599	$3,578,837	$3,686,202
8	Debt Service	$0	$0	$0	$0	$0	$0
9	**Total - Water Service (501)**	**$25,105,345**	**$26,529,467**	**$27,481,137**	**$28,468,258**	**$29,492,730**	**$30,556,049**
10							
11	**Source Acquisition (508)**						
12	Fixed Assets	$0	$0	$0	$0	$0	$0
13	**Total - Water Project (503)**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
14							
15	**Total - O&M Expenses**	**$25,105,345**	**$26,529,467**	**$27,481,137**	**$28,468,258**	**$29,492,730**	**$30,556,049**

3.3. Debt Service

The City currently has two existing debt issues for the water utility. **Table 3-3** shows the annual principal and interest payments for the existing debts.

Table 3-3: Existing Water Debt Service

	A	B	C	D	E	F	G
Line	Existing Debt Service	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Safe Drinking Water (Tate)**						
2	Principal	$355,782	$364,156	$926,522	$0	$0	$0
3	Interest	$27,937	$19,563	$32,773	$0	$0	$0
4	**Total - Safe Drinking Water (Tate)**	**$383,719**	**$383,719**	**$959,295**	**$0**	**$0**	**$0**
5							
6	**Hinkley SRF Loan**						
7	Principal	$499,951	$512,536	$525,439	$538,666	$552,226	$566,127
8	Interest	$153,165	$146,912	$134,169	$121,105	$107,713	$93,983
9	**Total - Hinkley SRF Loan**	**$653,116**	**$659,448**	**$659,607**	**$659,771**	**$659,938**	**$660,110**
10							
11	**Total - Existing Debt Service**	**$1,036,834**	**$1,043,167**	**$1,618,902**	**$659,771**	**$659,938**	**$660,110**

3.4. Capital Projects

City staff provided the capital improvement plan (CIP) for the water utility for the study period.

Table 3-4 shows the CIP costs for the study period, escalated by the capital expense inflation factor (**Table 2-3**, Line 7) to determine CIP costs in future years' dollars. Replacement projects are funded through a combination of water rate revenues, cash reserves, and bond proceeds, and expansion projects are funded entirely through Development Impact Fee (DIF) revenues.

Table 3-4: Inflated Water Capital Projects

	A	B	C	D	E	F	G
Line	Capital Projects (Inflated)	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Replacement**						
2	Annual Citywide Water Pipeline Replacement	$4,635,000	$4,774,050	$4,917,272	$5,064,790	$5,216,733	$5,373,235
3	Highline Replacement Project - Final Phase	$206,000	$3,182,700	$0	$0	$0	$0
4	Citywide Pavement Repair for Water	$309,000	$318,270	$327,818	$0	$0	$0
5	Water System SCADA Design & Integration (14 sites)	$0	$0	$0	$0	$0	$0
6	Water System SCADA Design & Integration (18 sites fy 21/22; 13 sites fy 22/23)	$0	$0	$0	$0	$0	$0
7	Annual Citywide Potable Water Meter Replacements	$0	$0	$0	$0	$0	$0
8	Water Infrastructure Seismic Assessment	$0	$0	$0	$0	$0	$0
9	HAWC Booster Pump Rehab	$515,000	$0	$0	$0	$0	$0
10	1750 Blend Manifold Replacement	$0	$0	$0	$0	$0	$0
11	Booster #2310 Replacement	$0	$0	$0	$0	$0	$0
12	Booster #2311 Replacement	$0	$0	$0	$0	$0	$0
13	Booster Stations & MCC Upgrade Master Plan - Tesco	$0	$318,270	$546,364	$844,132	$869,456	$895,539
14	Booster Pump Replacement (Booster Pump Repl Order TBD)	$0	$530,450	$546,364	$337,653	$347,782	$358,216
15	Sunset Reservoir Rehab / Repl to meet current seismic standards	$0	$6,365,400	$0	$0	$0	$0
16	Margarita, Sand Cyn., Smiley, 5th Ave. Tank Mixers Installation	$0	$0	$0	$0	$0	$0
17	Texas Grove Reservoir stair installation & mixer	$0	$0	$0	$0	$0	$0
18	AWIA Reservoir Risk Mitigation (R3 Thru R7)	$0	$0	$0	$1,042,221	$0	$0
19	AWIA Reservoir Risk Mitigation (R8 Thru R13)	$0	$0	$0	$0	$585,433	$0
20	Agate Reservoir curtin anchor replacement	$0	$0	$0	$0	$98,538	$298,513
21	Hinckley WTP Transmission Line Repl (Cost shared with B.V.)	$2,060,000	$0	$0	$0	$0	$0
22	Hinckley/Tate Roof Repair	$0	$0	$0	$0	$0	$0
23	Hinckley WTP Safety Fencing	$0	$0	$0	$0	$0	$0
24	Hinckley Sludge Press	$0	$0	$0	$0	$0	$0
25	Hinckley Generator Replacement	$0	$0	$0	$0	$0	$0
26	Hinckley WTP Paving	$0	$0	$0	$0	$0	$0
27	AWIA HWTP Resilience Improvements (R1)	$0	$0	$0	$272,373	$0	$0
28	Tate WTP Transmission Line Assessment	$4,120,000	$0	$0	$0	$0	$0
29	Tate ACH Tank Replacement	$0	$0	$0	$0	$0	$0
30	Tate WTP Clarifier Recoating & Cover Installation	$0	$0	$0	$0	$0	$0
31	Tate Influent Static Mixer	$0	$0	$163,909	$0	$0	$0
32	Tate PLC Replacement (End of Life Hardware)	$0	$0	$0	$0	$0	$0

	A	B	C	D	E	F	G
Line	Capital Projects (Inflated)	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
33	PRV Station Replacement (Redlands Blvd. & New Jersey)	$257,500	$0	$0	$0	$0	$0
34	AWIA TWTP Resilience Improvements (R2)	$257,500	$0	$0	$160,948	$0	$0
35	Tate Disinfection System Upgrade Cl2 Gas to NaOCl	$257,500	$0	$163,909	$1,688,263	$0	$0
36	Maint. - Airport 1	$0	$0	$0	$168,826	$0	$0
37	Maint. - S.B. MUNI	$0	$0	$0	$258,867	$0	$0
38	Maint. - E.L. 3	$0	$0	$0	$47,271	$0	$0
39	Maint. - E.L. 6	$0	$0	$0	$92,292	$0	$0
40	Maint. - N. Orange 1	$0	$0	$0	$174,454	$0	$0
41	Maint. - Madeira	$0	$0	$0	$0	$165,776	$0
42	Maint. - Mentone 2	$0	$0	$0	$0	$192,439	$0
43	Maint. - Well 38	$0	$0	$0	$0	$173,891	$0
44	Maint. - Well 39	$0	$0	$0	$0	$185,484	$0
45	Maint. - Airport 2	$137,773	$0	$0	$0	$0	$191,048
46	Maint. - Mill Creek 2A	$69,216	$0	$0	$0	$0	$95,524
47	Maint. - Rees	$116,019	$0	$0	$0	$0	$161,197
48	Maint. - Church St.	$143,483	$0	$0	$0	$0	$202,989
49	Maint. - Crafton	$0	$196,267	$0	$0	$0	$0
50	Maint. - Orange ST	$0	$201,571	$0	$0	$0	$0
51	Maint. - N. Orange 2	$0	$212,180	$0	$0	$0	$0
52	Maint. - Well 10	$0	$0	$218,545	$0	$0	$0
53	Maint. - Well 13	$0	$0	$218,545	$0	$0	$0
54	Maint. - Mill Creek 2	$0	$0	$147,518	$0	$0	$0
55	Agate 2 Liner	$0	$249,312	$0	$0	$0	$0
56	E.L. 6 Liner	$0	$201,571	$0	$196,964	$0	$0
57	E.L.3 Drill New Well	$103,000	$2,652,250	$0	$0	$0	$0
58	AWIA Resilience Improvements (R18)	$0	$58,350	$0	$0	$0	$0
59	Wellhead Perchlorate Treatment Evaluation - Church Street/Orange/Well #38/Well #39	$0	$0	$0	$0	$0	$0
60	Wellhead Perchlorate Treatment Evaluation - Well #10/Well #13/Agate #1/Agate #2/Crafton	$0	$0	$0	$0	$0	$0
61	Entrained Air Treatment System Assessment	$0	$530,450	$0	$0	$0	$0
62	**Total - Replacement**	**$13,186,991**	**$19,791,090**	**$7,250,244**	**$10,349,054**	**$7,835,533**	**$7,576,262**

Table 3-5 shows the proposed capital financing plan for the water utility. The City plans to fully fund its water CIP for all years of the study (Line 1). The inflated project costs (Line 3) are the total project costs (

Table 3-4, Line 13). The CIP expenditures will be funded through rate revenue and reserves.

Table 3-5: Proposed Water Capital Financing Plan

	A	B	C	D	E	F	G
Line	Capital Financing Plan	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**CIP to Spend**	100%	100%	100%	100%	100%	100%
2							
3	**Inflated Project Costs**	$13,186,991	$19,791,090	$7,250,244	$10,349,054	$7,835,533	$7,576,262
4							
5	Bond Proceeds	$0	$0	$0	$0	$0	$0
6	Balance	$0	$0	$0	$0	$0	$0
7							
8	**Capital Financing**						
9	Rate Funded	$13,186,991	$19,791,090	$7,250,244	$10,349,054	$7,835,533	$7,576,262
10	Bond Funded	$0	$0	$0	$0	$0	$0
11	Loan Funded	$0	$0	$0	$0	$0	$0
12							
13	**Total - Capital Financing**	**$13,186,991**	**$19,791,090**	**$7,250,244**	**$10,349,054**	**$7,835,533**	**$7,576,262**

3.5. Current Financial Plan – Status Quo

Table 3-6 shows the projected water financial plan without revenue adjustments (also referred to as status quo). Rate revenues and other revenues are derived from projected revenues (**Table 3-1**). O&M expenses are derived from projected O&M expenses (**Table 3-2**); existing debt service is from the annual debt service payments for outstanding debt (**Table 3-3**); rate funded capital projects (Line 22) are from the capital financing plan (**Table 3-5**, Line 9).

The net cash flow (Line 26) is calculated by subtracting O&M expenses (Line 17) and debt and capital costs (Line 24) from the total revenues (Line 6). Net operating revenue (Line 27) is equal to total revenues (Line 6) less O&M expenses (Line 17). Debt coverage (Line 29) is calculated by dividing the net operating revenue (Line 27) by the total debt service (Lines 20 and 21) and is well over the required debt coverage (Line 30).

Net cash flow is negative for all years of the rate study, which means that the water utility does not have enough revenue from rates to fund its operating expenses, debt, and capital costs. If there are no revenue adjustments for the water utility, the fund cash balance (Line 33) will be depleted by FY 2030.

Table 3-6: Projected Water Financial Plan (Status Quo)

	A	B	C	D	E	F	G

Line	Water Financial Plan	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Revenues**						
2	Rate Revenues	$30,012,835	$30,311,138	$30,473,330	$30,636,390	$30,800,322	$30,965,132
3	Revenue Adjustments	$0	$0	$0	$0	$0	$0
4	Investment Income	$510,297	$283,902	$215,366	$187,208	$152,218	$121,950
5	Other Revenues	$4,702,600	$4,680,023	$4,680,460	$4,680,899	$4,681,341	$4,681,785
6	**Total - Revenues**	**$35,225,731**	**$35,275,063**	**$35,369,156**	**$35,504,497**	**$35,633,881**	**$35,768,867**
7							
8	**O&M Expenses**						
9	Salaries and Benefits	$7,685,771	$7,993,202	$8,312,930	$8,645,447	$8,991,265	$9,350,916
10	Services - Power	$2,330,125	$2,459,708	$2,596,497	$2,740,467	$2,892,419	$3,052,796
11	Services	$11,941,234	$12,299,471	$12,668,455	$13,048,509	$13,439,964	$13,843,163
12	Supplies - Purchased Water	$0	$0	$0	$0	$0	$0
13	Supplies - Treatment	$475,500	$501,944	$529,858	$559,237	$590,245	$622,973
14	Supplies	$3,179,750	$3,275,143	$3,373,397	$3,474,599	$3,578,837	$3,686,202
15	Fixed Assets	$0	$0	$0	$0	$0	$0
16	Debt Service	$0	$0	$0	$0	$0	$0
17	**Total - O&M Expenses**	**$25,612,380**	**$26,529,467**	**$27,481,137**	**$28,468,258**	**$29,492,730**	**$30,556,049**
18							
19	**Debt and Capital**						
20	Existing Debt Service	$1,036,834	$1,043,167	$1,618,902	$659,771	$659,938	$660,110
21	Proposed Debt Service	$0	$0	$0	$0	$0	$0
22	Rate Funded Capital Projects	$13,186,991	$19,791,090	$7,250,244	$10,349,054	$7,835,533	$7,576,262
23	DIF Funded Capital Projects	$0	$0	$0	$0	$0	$0
24	**Total - Debt and Capital**	**$14,223,825**	**$20,834,256**	**$8,869,146**	**$11,008,824**	**$8,495,472**	**$8,236,372**
25							
26	**Net Cash Flow**	**($4,480,474)**	**($11,958,659)**	**($851,127)**	**($3,842,585)**	**($2,224,320)**	**($2,893,554)**
27	Net Operating Revenue	$9,743,351	$8,875,597	$8,018,019	$7,166,239	$6,271,152	$5,342,818
28							
29	**Calculated Debt Coverage**	**9.40**	**8.51**	**4.95**	**10.86**	**9.50**	**8.09**
30	Required Debt Coverage	1.25	1.25	1.25	1.25	1.25	1.25
31							
32	Beginning Balances	$55,254,771	$36,741,518	$24,805,159	$23,981,386	$20,171,257	$17,984,549
33	Ending Balances	$36,741,518	$24,805,159	$23,981,386	$20,171,257	$17,984,549	$15,133,812

Figure 3-1 shows the proposed water capital financing plan in graphical format, based on the capital projects shown in

Table 3-4 and with no debt issuances. The dark teal bars represent the rate funded CIP costs.

Figure 3-1: Proposed Water Capital Financing Plan (Status Quo)

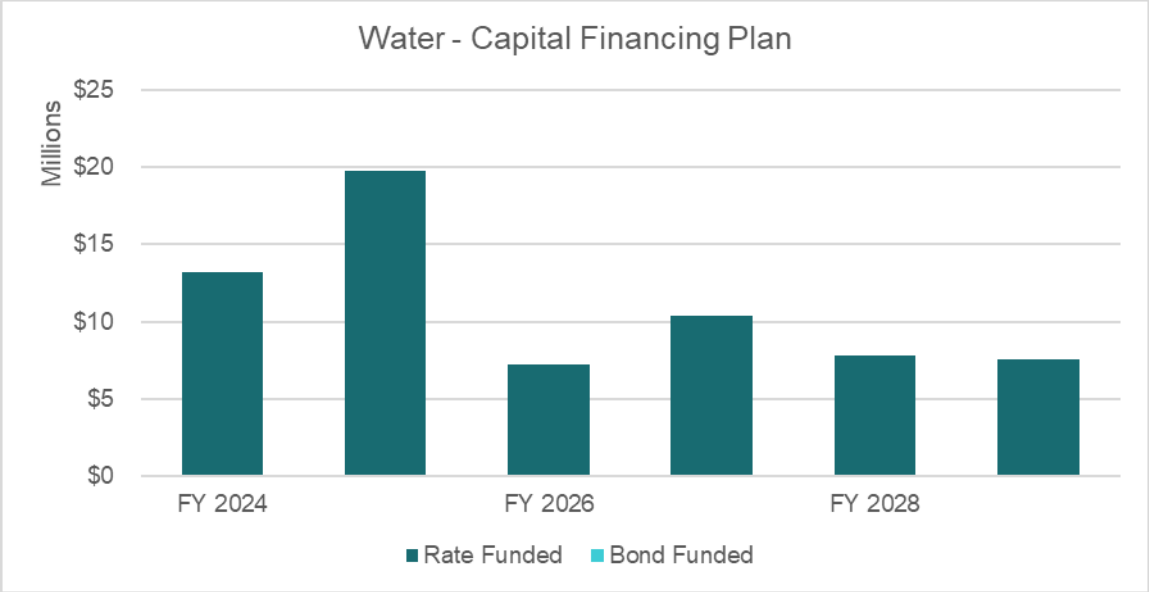


Figure 3-2 shows the projected water financial plan under the status quo scenario in graphical format. The stacked bars represent the O&M expenses (light gray), supply, treatment, and power (dark teal), debt service (yellow), and capital projects (dark gray). The green bars show the changes to cash balances: if the green bars are below the stacked bars, then the City will be drawing from cash reserves, and vice versa. The current and proposed revenue lines overlap since there is no revenue adjustment. Since the line, which represents current revenues, is below the stacked bars, this means that the City's current water revenues are not sufficient to fund its costs.

Figure 3-2: Projected Water Financial Plan (Status Quo)

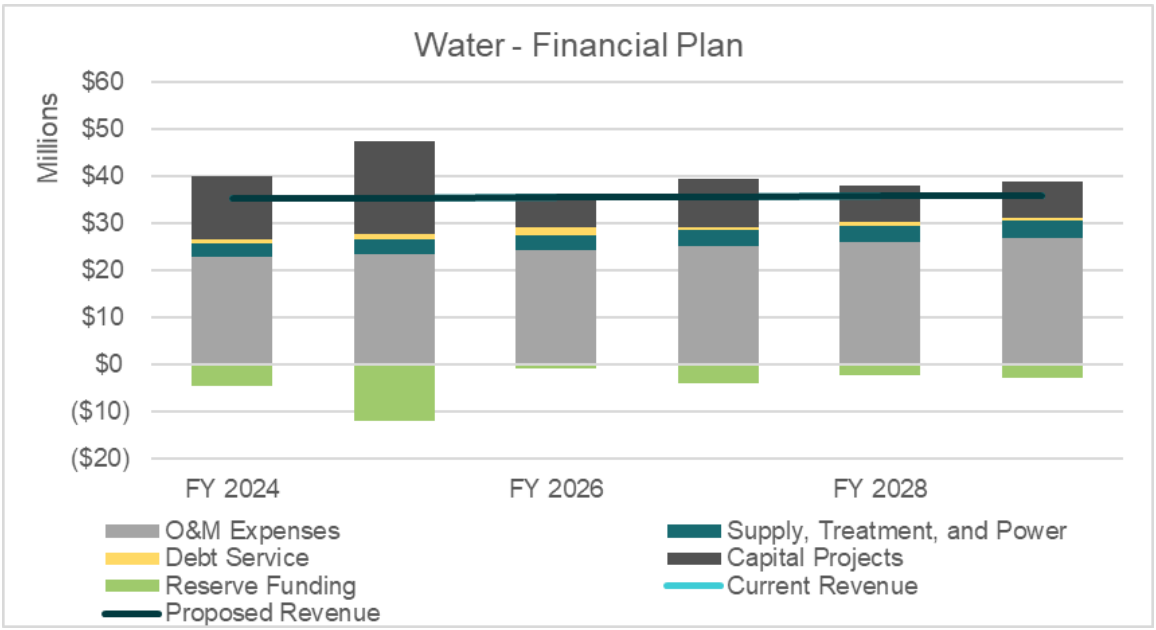
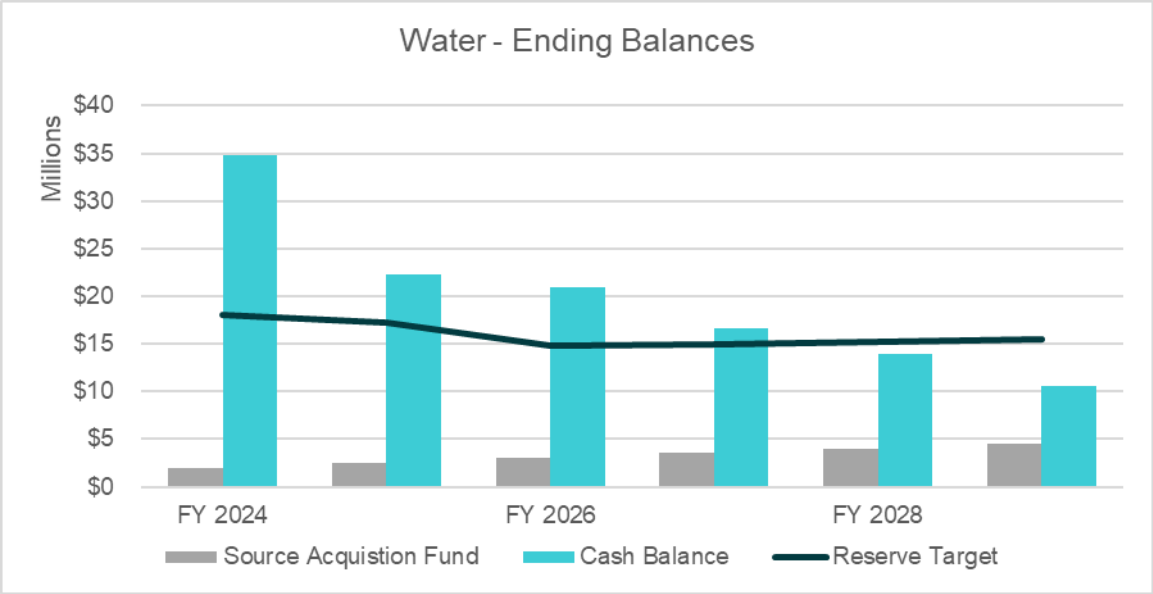


Figure 3-3 shows the projected water fund cash balance under the status quo scenario in graphical format. Without revenue adjustments, the cash balances (shown as turquoise bars) will be significantly drawn down over the Study period and will be depleted by FY 2030.

Figure 3-3: Projected Water Fund balances (Status Quo)



3.6. Proposed Financial Plan

The projected financial plan under the status quo scenario in **Table 3-6** shows that the City's current water rate revenues are not sufficient to sustain financial sufficiency for the water utility beginning in FY 2027. **Table 3-7** shows the proposed revenue adjustments for the study period, effective in July of each fiscal year, which will allow the City to fund all necessary operating and capital costs.

Table 3-7: Proposed Water Revenue Adjustments

	A	B	C
Line	Fiscal Year	Revenue Adjustment	Month Effective
1	FY 2025	2.0%	July
2	FY 2026	2.0%	July
3	FY 2027	2.0%	July
4	FY 2028	2.0%	July
5	FY 2029	2.0%	July

Table 3-8 shows the projected water financial plan with the proposed revenue adjustments from FY 2025 through FY 2029. The net cash flow (Line 26) is negative for all years as the water utility draws down cash reserves to minimize rate impacts. The ending cash balance (Line 33) is positive throughout the study period.

Table 3-8: Projected Water Financial Plan (Proposed Revenue Adjustments)

	A	B	C	D	E	F	G
Line	Water Financial Plan	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Revenues**						
2	Rate Revenues	$30,012,835	$30,311,138	$30,473,330	$30,636,390	$30,800,322	$30,965,132
3	Revenue Adjustments	$0	$606,223	$1,231,123	$1,875,192	$2,538,937	$3,222,876
4	Investment Income	$510,297	$286,933	$227,614	$215,110	$202,470	$201,514
5	Other Revenues	$4,702,600	$4,680,023	$4,680,460	$4,680,899	$4,681,341	$4,681,785
6	**Total - Revenues**	**$35,225,731**	**$35,884,317**	**$36,612,527**	**$37,407,592**	**$38,223,070**	**$39,071,306**
7							
8	**O&M Expenses**						
9	Salaries and Benefits	$7,685,771	$7,993,202	$8,312,930	$8,645,447	$8,991,265	$9,350,916
10	Services - Power	$2,330,125	$2,459,708	$2,596,497	$2,740,467	$2,892,419	$3,052,796
11	Services	$11,941,234	$12,299,471	$12,668,455	$13,048,509	$13,439,964	$13,843,163
12	Supplies - Purchased Water	$0	$0	$0	$0	$0	$0
13	Supplies - Treatment	$475,500	$501,944	$529,858	$559,237	$590,245	$622,973
14	Supplies	$3,179,750	$3,275,143	$3,373,397	$3,474,599	$3,578,837	$3,686,202
15	Fixed Assets	$0	$0	$0	$0	$0	$0
16	Debt Service	$0	$0	$0	$0	$0	$0
17	**Total - O&M Expenses**	**$25,612,380**	**$26,529,467**	**$27,481,137**	**$28,468,258**	**$29,492,730**	**$30,556,049**
18							
19	**Debt and Capital**						
20	Existing Debt Service	$1,036,834	$1,043,167	$1,618,902	$659,771	$659,938	$660,110
21	Proposed Debt Service	$0	$0	$0	$0	$0	$0
22	Rate Funded Capital Projects	$13,186,991	$19,791,090	$7,250,244	$10,349,054	$7,835,533	$7,576,262
23	DIF Funded Capital Projects	$0	$0	$0	$0	$0	$0
24	**Total - Debt and Capital**	**$14,223,825**	**$20,834,256**	**$8,869,146**	**$11,008,824**	**$8,495,472**	**$8,236,372**
25							
26	**Net Cash Flow**	**($4,480,474)**	**($11,349,406)**	**$392,244**	**($1,939,491)**	**$364,869**	**$408,885**
27	Net Operating Revenue	$9,743,351	$9,484,850	$9,261,390	$9,069,333	$8,860,341	$8,645,257
28							
29	**Calculated Debt Coverage**	**9.40**	**9.09**	**5.72**	**13.75**	**13.43**	**13.10**
30	Required Debt Coverage	1.25	1.25	1.25	1.25	1.25	1.25
31							
32	Beginning Balances	$55,254,771	$36,741,518	$25,414,413	$25,834,010	$23,926,976	$24,329,457
33	Ending Balances	$36,741,518	$25,414,413	$25,834,010	$23,926,976	$24,329,457	$24,781,159

Figure 3-4 shows the proposed water capital financing plan in graphical format, based on the capital financial plan shown in **Table 3-5**. The dark teal bars show that all CIP is funded by rates and reserves.

Figure 3-4: Proposed Water Capital Financing Plan

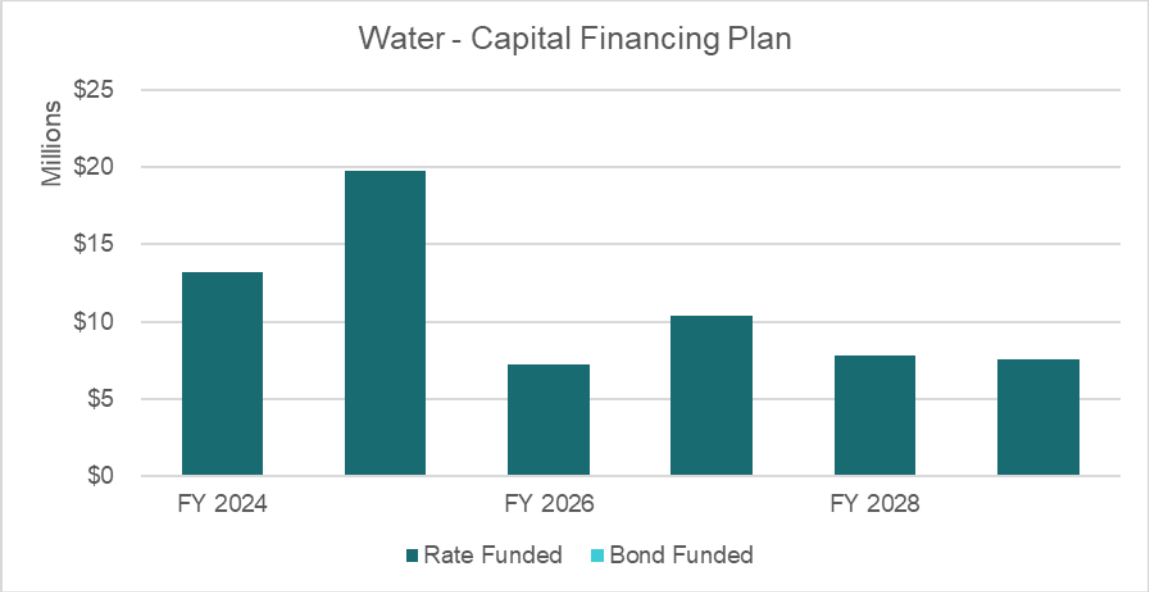


Figure 3-5 shows the proposed financial plan in graphical format with the revenue adjustments in **Table 3-7**. The proposed revenues shown as the dark teal line, along with the drawdown of the reserves (green bars), allow the City to fund its operating and capital costs for the study period.

Figure 3-5: Projected Water Financial Plan (Proposed Revenue Adjustments)

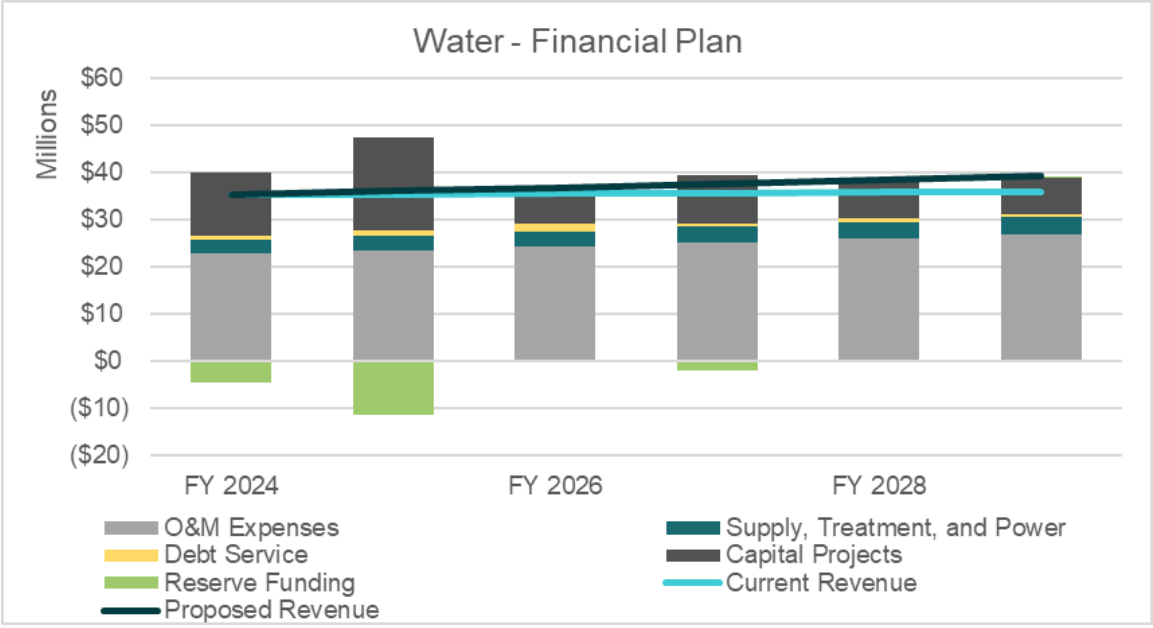
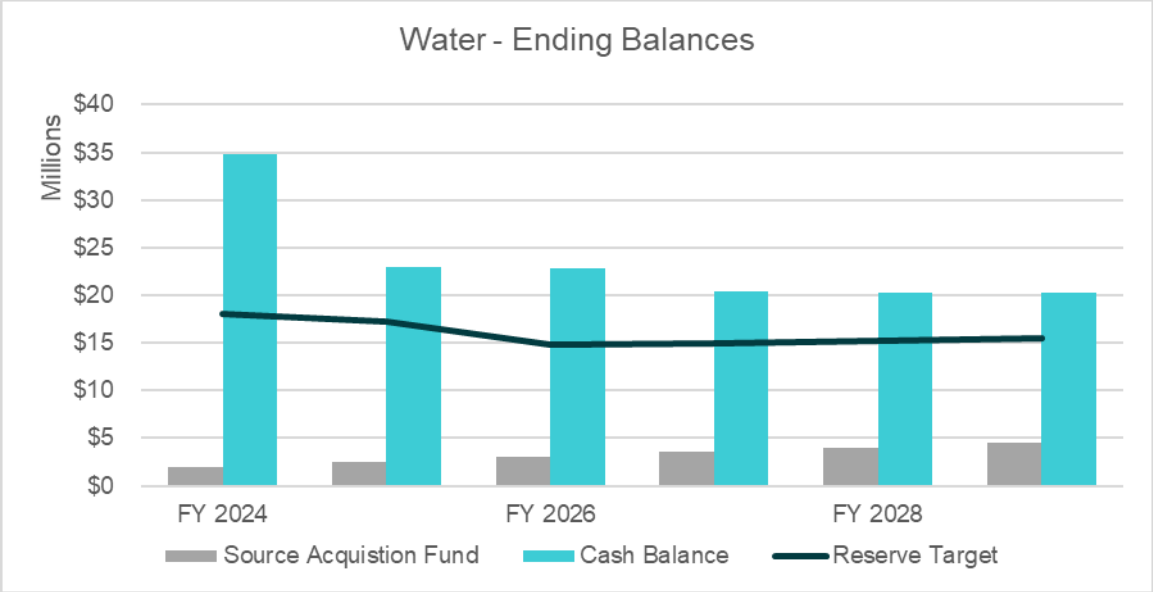


Figure 3-6 shows the projected water fund balances with the proposed revenue adjustments in **Table 3-7**. The City's restricted reserves are for the source acquisition fund and are represented by the gray bars. The unrestricted reserves or cash balance is comprised of operating and capital reserves. The blue bars represent the unrestricted cash balance available to finance operating expenses and capital projects. While the

unrestricted reserves are being drawn down through the study period, the ending balance remains at or above target through FY 2029.

Figure 3-6: Projected Water Fund Balances (Proposed Revenue Adjustments)



4. Water – Cost-of-Service Analysis and Rates

This section of the report details the cost-of-service analysis and rate calculation process to determine the proposed water rates. The goal of this process is to determine the cost of providing water service to each of the City's water customer classes and to ensure equity and fairness among the various classes.

4.1. Process and Approach

The cost-of-service analysis utilized to develop the water rates followed the guidelines for allocating costs outlined in the AWWA M1 manual. The cost of service analysis and rate design process consists of seven major steps, as outlined below:

1. Determine the revenue requirement, equal to the revenue to be recovered from rates
2. Functionalize O&M expenses and capital assets into functional categories such as supply, pumping, transmission & distribution, customer service & billing, etc.
3. Allocate each functional category into cost components such as supply, meters, customer service, conservation, base delivery, etc.
4. Develop customer class characteristics and units of service by cost component
5. Calculate the cost component unit rates by dividing the total cost in each cost component by the total units of service for that component. For example, base delivery costs are divided by the annual water demand and customer billing costs are divided by the annual number of bills.
6. Calculate the cost for each customer class by multiplying the unit cost by the units of service for each customer class.
7. Design rates to meet City's objectives.

4.2. Revenue Requirement

The first step of the cost-of-service analysis is to determine the revenue requirement for the test year, or rate-making year. The test year of this study is FY 2025.
Table 4-1 shows the revenue requirement calculations for the water utility.

The revenue requirements (Lines 2-3) are equal to the O&M expense and debt and capital costs for FY 2025 (**Table 3-8**, Column C, Lines 17 and 24). The revenues from other sources (Lines 7-10), also known as non-rate revenues or revenue offsets, are equal to all non-rate revenues (**Table 3-8**, Column C, Lines 4-5). The adjustment for cash from/(to) reserves (Line 14) is equal to the negative value of net cash flow (**Table 3-8**, Column C, Line 26) excluding the source acquisition fund revenue of $437,000.

The revenue to be recovered from rates excluding interest income (Line 19) is divided between operating (Column B) and capital (Column C) based on the function of each line item. For example, debt and capital costs (Line 3) are allocated to capital, while O&M expenses (Line 2) are allocated to operating. Note that the total revenue requirement (Column D, Line 18) is equal to rate revenues increased by a full year of the revenue adjustment for FY 2025. Interest income is excluded in Line 19 to be used as an offset for the Tier 1 building variable rate and therefore is excluded from the total rate revenue requirement for FY 2025.

Table 4-1: Water Revenue Requirement Calculation

	A	B	C	D
Line	Revenue Requirement Calculation	Operating	Capital	Total
1	**Revenue Requirements**			
2	O&M Expenses	$26,529,467	$0	$26,529,467
3	Debt and Capital	$0	$20,834,256	$20,834,256
4	**Total - Revenue Requirements**	**$26,529,467**	**$20,834,256**	**$47,363,723**
5				
6	**Revenue from Other Sources**			
7	Investment Income	$0	$286,933	$286,933
8	Water Service (501)	$2,242,023	$0	$2,242,023
9	Water Capital Improvement (509)	$0	$1,955,000	$1,955,000
10	B Contract Water Revenue	$130,000	$0	$130,000
11	**Total - Revenue from Other Sources**	**$2,372,023**	**$2,241,933**	**$4,613,957**
12				
13	**Adjustments**			
14	Cash from Reserves	$0	$11,832,406	$11,832,406
15	Midyear Increase	$0	$0	$0
16	**Subtotal - Adjustments**	**$0**	**$11,832,406**	**$11,832,406**
17				
18	**Revenue to be Recovered from Rates**	**$24,157,443**	**$6,759,917**	**$30,917,361**
19	**Revenue to be recovered Excluding Interest Income**	**$24,157,443**	**$7,046,850**	**$31,204,294**

4.3. Peaking Factors

One of the major factors in cost allocation is allocation of peaking costs. To do so, we must identify system-wide peaking factors. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour demand is the maximum usage in an hour on the maximum usage day. Different facilities, such as distribution and storage facilities and infrastructure, and the capital and O&M costs associated with those facilities, are designed to meet the peak demands placed on the system by customers. Therefore, extra capacity costs include the O&M and capital costs associated with meeting peak customer demand in excess of average rate of use, or base use, requirements. The system-wide factors for maximum day and maximum hour were provided by the City's UWMP. Maximum day and maximum hour factors are shown in **Table 4-2** relative to the base factor. Base, or average daily demand, is represented by the factor of 1.00.

Table 4-2: System Peaking

	A	B
Line	Allocation Factor	System Peaking Factor
1	Base	1.00
2	Max Day	1.70
3	Max Hour	2.75

Calculated water system peaking factors from Table 4-2 are shown in Column B of **Table 4-3**. The system-wide peaking factors are used to derive the cost causation component allocation base (i.e., percentages) shown

in Columns of **Table 4-3**. The numbers and calculations outlined in the following sections are rounded and may not be equal to the exact amounts shown.

Line 1 "Base" represents the average day demand throughout the year and is, therefore assigned a factor of 1.00.

- Base = 1.00 / 1.00 = 100%

Line 2 "Max Day" is the ratio of maximum day demand relative to base demand, or 1.33. The percentage allocated to maximum day is the incremental responsibility above base demand.

- Base = 1.00 / 1.70 = 59%
- Max Day = (1.70 – 1.00) / 1.70 = 41%

Similarly, Line 3, "Max Hour" is the ratio of maximum hour demand, on the maximum day, relative to base demand. The max hour factor is 1.65.

- Base = 1.00 / 2.75 = 36%
- Max Day = (1.70 – 1.00) / 2.75 = 26%
- Max Hour = (2.75 – 1.70) / 2.75 = 38%

These factors indicate how much additional capacity is required to meet demand above average daily use. As demand, and therefore capacity, increases, so must the sizing of facilities and pipelines, which incur greater costs to construct, maintain, and replace. To understand the interpretation of the percentages shown in columns C through E, "Base" is established as the average daily demand during the year. These allocation bases are used to assign certain functionalized costs to the cost causation components including reservoir, transmission, treatment, and distribution functions.

Table 4-3: System-Wide Peaking Factors

	A	B	C	D	E	F
Line	Allocation Factor	System Peaking Factor	Base	Max Day	Max Hour	Total
1	Base	1.00	100%	0%	0%	100%
2	Max Day	1.70	59%	41%	0%	100%
3	Max Hour	2.75	36%	26%	38%	100%
4	Average Max Day/Max Hour		48%	33%	19%	100%

4.4. Operating and Capital Cost Allocation

The next step in the cost-of-service analysis is to determine the operating and capital cost allocations by cost component. The cost components for water include Base, Max Day, Max Hour, Meters, Customer, Fire Protection, Conservation and General.

Table 4-4 shows the water operating cost allocation. The allocation basis for each function is listed in Column B. For the purpose of allocating operating costs, City staff provided the O&M expense budget estimates by function (Column A, Lines 14-25). This is representative of the distribution of operating costs shown in **Table 3-2**. Functions include General and Administration, Engineering, Production & Operations, Production Maintenance, Water Treatment, Water Quality, Water Distribution, Water Conservation Program, B Contract (Reimbursable and City), and South Mountain Water. The operating costs are allocated to each cost component based on the percentage allocation (Lines 1-12) for each component. The final O&M expense allocation (Line 27) is determined by taking the weighted proportion of total operating costs by cost component based on the percentage allocations.

Table 4-4: Water Operating Cost Allocation

	A	B	C	D	E	F	G	H	I	J	K
Line	O&M Allocation	Allocation Basis	Base	Max Day	Max Hour	Meters	Customer	Fire Protection	Conservation	General	Total
1	Water Admin & General	General	0%	0%	0%	0%	11%	0%	0%	89%	100%
2	Water Engineering	Max Hour Fire	25%	18%	27%	15%	0%	15%	0%	0%	100%
3	Water Production & Operations - General	Max Day	59%	41%	0%	0%	0%	0%	0%	0%	100%
4	Water Production Maintenance	Max Day	59%	41%	0%	0%	0%	0%	0%	0%	100%
5	Water Treatment - HTWTP	Max Day	59%	41%	0%	0%	0%	0%	0%	0%	100%
6	Water Treatment - HHWTP	Max Day	59%	41%	0%	0%	0%	0%	0%	0%	100%
7	Water Quality - General	Base	95%	0%	0%	5%	0%	0%	0%	0%	100%
8	Water Distribution - General	Max Hour Fire	25%	18%	27%	15%	0%	15%	0%	0%	100%
9	Water Conservation Program	Conservation	0%	0%	0%	0%	0%	0%	100%	0%	100%
10	B' Contract (Reimbursable)	Base	95%	0%	0%	5%	0%	0%	0%	0%	100%
11	B' Contract (City)	Base	95%	0%	0%	5%	0%	0%	0%	0%	100%
12	South Mountain Water (Reimbursable)	Base	95%	0%	0%	5%	0%	0%	0%	0%	100%
13											
14	Water Admin & General	General	$0	$0	$0	$0	$925,279	$0	$0	$7,486,349	$8,411,628
15	Water Engineering	Max Hour Fire	$302,904	$212,852	$317,640	$178,585	$0	$178,585	$0	$0	$1,190,566
16	Water Production & Operations - General	Max Day	$3,019,621	$2,121,896	$0	$0	$0	$0	$0	$0	$5,141,518
17	Water Production Maintenance	Max Day	$1,859,120	$1,306,409	$0	$0	$0	$0	$0	$0	$3,165,529
18	Water Treatment - HTWTP	Max Day	$493,743	$346,954	$0	$0	$0	$0	$0	$0	$840,697
19	Water Treatment - HHWTP	Max Day	$681,909	$479,179	$0	$0	$0	$0	$0	$0	$1,161,088
20	Water Quality - General	Base	$458,256	$0	$0	$24,119	$0	$0	$0	$0	$482,375
21	Water Distribution - General	Max Hour Fire	$1,416,314	$995,248	$1,485,216	$835,024	$0	$835,024	$0	$0	$5,566,826
22	Water Conservation Program	Conservation	$0	$0	$0	$0	$0	$0	$452,935	$0	$452,935
23	B' Contract (Reimbursable)	Base	$93,653	$0	$0	$4,929	$0	$0	$0	$0	$98,582
24	B' Contract (City)	Base	$12,412	$0	$0	$653	$0	$0	$0	$0	$13,066
25	South Mountain Water (Reimbursable)	Base	$4,425	$0	$0	$233	$0	$0	$0	$0	$4,658
26	**Total O&M Expenses**		**$8,342,358**	**$5,462,538**	**$1,802,856**	**$1,043,543**	**$925,279**	**$1,013,609**	**$452,935**	**$7,486,349**	**$26,529,467**
27	*O&M Allocation*		*31%*	*21%*	*7%*	*4%*	*3%*	*4%*	*2%*	*28%*	*100%*

Table 4-5 shows the water capital cost allocation. To minimize fluctuations in the capital cost allocation as capital projects change from year to year, capital costs are allocated on the basis of capital assets. For the purpose of allocating capital costs, City staff provided the water capital assets listed by function (Column A, Lines 16-29). This is representative of the distribution of capital costs shown in **Table 3-5**. Functions include Source of Supply, Wells, Pumping, Treatment, Transmission, Distribution, Storage, Meters, Fire Protection, Customer Billing, Land, Building Improvements, Rolling Stock (Vehicles), and General Plant. The capital asset costs are allocated into each cost component based on the percentage allocation (Lines 1-14) for each component. The final capital expense allocation (Line 31) is determined by taking the weighted proportion of total capital asset costs by cost component.

Table 4-5: Water Asset Allocation

	A	B	C	D	E	F	G	H	I	J	K
Line	Assets Allocation	Allocation Basis	Base	Max Day	Max Hour	Meters	Customer	Fire Protection	Conservation	General	Total
1	Source of Supply	Base	95%	0%	0%	5%	0%	0%	0%	0%	100%
2	Wells	Max Day	59%	41%	0%	0%	0%	0%	0%	0%	100%
3	Pumping	Max Day	59%	41%	0%	0%	0%	0%	0%	0%	100%
4	Treatment	Max Day	59%	41%	0%	0%	0%	0%	0%	0%	100%
5	Transmission	Max Day Fire	47%	33%	0%	5%	0%	15%	0%	0%	100%
6	Distribution	Max Hour Fire	25%	18%	27%	15%	0%	15%	0%	0%	100%
7	Storage	Max Day Fire	47%	33%	0%	5%	0%	15%	0%	0%	100%
8	Meters	Meters	0%	0%	0%	100%	0%	0%	0%	0%	100%
9	Fire Protection	Fire Service	0%	0%	0%	0%	0%	100%	0%	0%	100%
10	Customer Billing	Billing & Customer Service	0%	0%	0%	0%	100%	0%	0%	0%	100%
11	Land	Max Day Fire	47%	33%	0%	5%	0%	15%	0%	0%	100%
12	Building and Improvements	General	0%	0%	0%	0%	11%	0%	0%	89%	100%
13	Rolling Stock (Vehicles)	Base	95%	0%	0%	5%	0%	0%	0%	0%	100%
14	General Plant	Max Day	59%	41%	0%	0%	0%	0%	0%	0%	100%
15											
16	Source of Supply	Base	$9,387,387	$0	$0	$494,073	$0	$0	$0	$0	$9,881,460
17	Wells	Max Day	$1,504,123	$1,056,951	$0	$0	$0	$0	$0	$0	$2,561,074
18	Pumping	Max Day	$329,162	$231,303	$0	$0	$0	$0	$0	$0	$560,466
19	Treatment	Max Day	$42,208	$29,660	$0	$0	$0	$0	$0	$0	$71,867
20	Transmission	Max Day Fire	$29,223,535	$20,535,457	$0	$3,109,937	$0	$9,329,811	$0	$0	$62,198,740
21	Distribution	Max Hour Fire	$2,240,016	$1,574,065	$2,348,990	$1,320,658	$0	$1,320,658	$0	$0	$8,804,388
22	Storage	Max Day Fire	$2,815,532	$1,978,482	$0	$299,626	$0	$898,878	$0	$0	$5,992,518
23	Meters	Meters	$0	$0	$0	$0	$0	$0	$0	$0	$0
24	Fire Protection	Fire Service	$0	$0	$0	$0	$0	$0	$0	$0	$0
25	Customer Billing	Billing & Customer Service	$0	$0	$0	$0	$0	$0	$0	$0	$0
26	Land	Max Day Fire	$3,307,469	$2,324,167	$0	$351,977	$0	$1,055,932	$0	$0	$7,039,545
27	Building and Improvements	General	$0	$0	$0	$0	$1,562,036	$0	$0	$12,638,289	$14,200,325
28	Rolling Stock (Vehicles)	Base	$383,718	$0	$0	$20,196	$0	$0	$0	$0	$403,913
29	General Plant	Max Day	$0	$0	$0	$0	$0	$0	$0	$0	$0
30	**Total Assets**		**$49,233,150**	**$27,730,086**	**$2,348,990**	**$5,596,467**	**$1,562,036**	**$12,605,279**	**$0**	**$12,638,289**	**$111,714,296**
31	*Asset Allocation*		*44%*	*25%*	*2%*	*5%*	*1%*	*11%*	*0%*	*11%*	*100%*

4.5. Allocation of Fire Protection Costs – Public vs. Private

Water systems provide two types of fire protection: public fire protection for firefighting, which is generally visible as hydrants on a street, and private fire protection which provides fire flow to building and other structure sprinkler systems for fire suppression within private improvements. To determine the share of total fire costs responsible to each, Raftelis performs an analysis of the public hydrants and private fire lines.

Table 4-6 shows the steps of allocating costs between public and private fire service Each fire connection size has a fire flow demand factor similar to a hydraulic capacity factor of a water meter. The diameter of the connection is raised to the 2.63 power to determine the fire flow demand factor[2]. The number of connections of a specific size is multiplied by the fire flow demand factor to derive total equivalent fire connections. Total fire costs are allocated based on the percentage share of total equivalent fire connections between public and private. The analysis estimates that 75 percent of fire costs relate to public fire and will be included and recovered on the monthly fixed charges. The remaining 25 percent is attributable to private fire service and will be recovered through private fire service charges.

Table 4-6: Fire Analysis

	A	B	C	D
Line	Fire Line/Hydrant Size	Fire Ratio	Number of Lines/Hydrants	Equivalent Demand
1	**Private Fire Line Size**			
2	2"	6.19	10	64
3	3"	17.98	0	0
4	4"	38.32	153	5,868
5	6"	111.31	151	16,817
6	8"	237.21	183	43,394
7	10"	426.58	127	54,363
8	12"	689.04	0	0
9	**Total Fire Lines**	**0.00**	**625**	**120,505**
10				25%
11	**Public Fire Hydrant Size**			
12	**6"**	**111.31**	**3,236**	**360,202**
13				75%

4.6. Final Cost Allocation of Revenue Requirement

The total revenue recoverable from each cost causation component through water rates is shown in

[2] Hazen-Williams equation via AWWA M1 Manual

Table 4-7 using the revenue requirement from **Table** 4-1, the O&M and Capital allocations in

Table 4-4 and

Table 4-5, and the fire cost analysis in **Table 4-6**. Since public fire protection costs are a function of system capacity, they are reallocated to the Meter component. Interest earnings, shown separately, will be used to offset some rates. Five percent of Base costs and 33 percent of Peaking costs (Max Day plus Max Hour) are allocated to the meter charge to preserve the utility's current fixed revenue recovery of 30 percent.

Table 4-7: Revenue Requirement by Cost Component

	A	B	C	D	E	F	G	H	I	J	K
Line	Cost Allocation	Base	Max Day	Max Hour	Meters	Customer	Fire Protection	Conservation	General	Offset	Total
1	Operating Revenue Requirement	$7,596,460	$4,974,127	$1,641,661	$950,239	$842,549	$922,981	$412,437	$6,816,988	$0	$24,157,443
2	Capital Revenue Requirement	$3,105,589	$1,749,192	$148,172	$353,021	$98,532	$795,131	$0	$797,213	$0	$7,046,850
3	Revenue Offset	$0	$0	$0	$0	$0	$0	$0	$0	-$286,933	-$286,933
4	**Total Cost of Service**	**$10,702,049**	**$6,723,320**	**$1,789,834**	**$1,303,259**	**$941,081**	**$1,718,112**	**$412,437**	**$7,614,201**	**-$286,933**	**$30,917,361**
5	Allocation of General Cost	$3,597,842	$2,260,262	$601,711	$438,133	$0	$577,599	$138,654	-$7,614,201	$0	$0
6	Allocation to Public Fire	$0	$0	$0	$1,720,216	$0	-$1,720,216	$0	$0	$0	$0
7	Allocation of Base to Meter	-$714,995	$0	$0	$714,995	$0	$0	$0	$0	$0	$0
8	Allocation of Peak to Meter	$0	-$2,964,582	-$789,210	$3,753,792	$0	$0	$0	$0	$0	$0
9	**Total Adjusted Cost of Service**	**$13,584,896**	**$6,019,000**	**$1,602,335**	**$7,930,394**	**$941,081**	**$575,496**	**$551,092**	**$0**	**-$286,933**	**$30,917,361**

4.7. Unit Cost Components

Unit costs for each component must be calculated, which starts by assessing the total water demand (or equivalent service units) for each cost component. Projected water use (base units of service) for FY 2025 is shown in **Table 4-8**. Daily use is calculated as annual use is divided by 365 days. Demand is detailed by rate class. Values are rounded to the nearest ccf and may not be equal to the exact values shown.

Table 4-8: FY 2025 Projected Water Usage by Class

	A	B	C
Line	Customer Class	Annual Use (ccf)	Average Daily Use (ccf/day)
1	Building Water Usage		
2	Tier 1	3,215,034	8,808
3	Tier 2	282,597	774
4	Tier 3	4,665,284	12,782
5	Non-Building Water Usage		
6	Tier 1	76,156	209
7	Tier 2	1,119,180	3,066
8	**Total**	**9,358,251**	**25,639**

Table 4-9 shows the total equivalent meters and annual number of bills. **Table 4-10** shows the total equivalent fire line connections. These totals are used as the denominator in developing unit costs for the rate components of the monthly fixed service charges and private fire service charges.

Table 4-9: Derivation of Equivalent Meters

	A	B	C	D	E
Line	Meter Size	Meter Count	Hydraulic Capacity Factor	Equivalent Meters	Annual Bi-monthly Bills
1	5/8"	179	1.00	179	1,073
2	3/4"	8,284	1.43	11,804	49,703
3	1"	11,981	2.25	26,957	71,884
4	1 1/2"	778	4.25	3,307	4,668
5	2"	775	6.40	4,960	4,650
6	3"	78	11.25	879	469
7	4"	54	17.50	953	327
8	6"	28	32.50	902	166
9	8"	13	48.00	641	80
10	10"	0	114.00	0	0
11	12"	1	150.00	154	6
12	**Total**	**22,171**		**50,735**	**133,026**

Table 4-10: Derivation of Equivalent Fire Lines

	A	B	C	D	E
Line	Fire Line Size	Fire Line Count	Demand Factor	Equivalent Fire Lines	Annual Bi-monthly Bills
1	2"	10	6.19	64	62
2	3"	0	17.98	0	0
3	4"	153	38.32	5,868	919
4	6"	151	111.31	16,817	906
5	8"	183	237.21	43,394	1,098
6	10"	127	426.58	54,363	765
7	12"	0	689.04	0	0
8	**Total**	**625**		**120,505**	**3,749**

Table 4-11 shows the total and extra capacity calculation by class and tier for maximum day and maximum hour demand. The class and tier specific maximum day peaking factors were calculated by dividing the maximum billing period usage by the average billing period usage. The class and tier specific maximum hour peaking factors were calculated by multiplying the maximum day peaking factors by the ratio of the system-wide maximum hour to maximum day peaking factors shown in **Table 4-3**.

Table 4-11: Calculation of Peak Capacity

	A	B	C	D	E	F	G	H	I
				Max Day			Max Hour		
Line	Customer Class	Annual Use (ccf)	Average Daily Use (ccf/day)	Capacity Factor	Total Capacity (ccf/day)	Extra Capacity (ccf/day)	Capacity Factor	Total Capacity (ccf/day)	Extra Capacity (ccf/day)
1	**Building Water Usage**								
2	Tier 1	3,215,034	8,808	1.33	11,683	2,875	2.14	18,879	7,195
3	Tier 2	282,597	774	1.48	1,149	375	2.40	1,856	708
4	Tier 3	4,665,284	12,782	2.41	30,742	17,961	3.89	49,676	18,933
5	**Non-Building Water Usage**								
6	Tier 1	76,156	209	1.55	322	114	2.50	521	199
7	Tier 2	1,119,180	3,066	2.26	6,923	3,857	3.65	11,187	4,264

Utilizing the final cost of service from

Table 4-7 as the numerator and **Table 4-8**, **Table 4-9**, **Table 4-10**, and

Table 4-11 as the denominators allows us to derive the unit costs of service in

Table 4-12. The total cost of service is divided by the respective units of service to calculate the unit cost of each cost component.

Meter costs are divided by the total meter equivalencies from **Table 4-9** multiplied by 6 bi-monthly bills to determine a cost per equivalent meter and annual customer costs are divided by the estimated number of annual monthly bills, also from **Table 4-9**. Fire protection costs are divided by total fire line equivalencies from **Table 4-10** to determine a cost per equivalent inch of fire line. Base delivery costs are divided by total annual water demand from **Table 4-8** to determine a cost per unit of water usage. Similarly, Conservation costs are divided by annual Tier 3 water demand and Offset savings are divided by Building Tier 1 usage as those are the units from **Table 4-8** over which those costs and savings, respectively, are being recovered. The unit costs are used to distribute the cost components to the meter classes and commodity classes and tiers.

Table 4-12: Cost Causation Component Unit Cost Calculation

	A	B	C	D	E	F	G	H	I
Line	Cost of Service	Base	Max Day	Max Hour	Meters	Customer	Fire Protection	Conservation	Offset
1	Cost of Service	$13,584,896	$6,019,000	$1,602,335	$7,930,394	$941,081	$575,496	$551,092	($286,933)
2	Units of Service	9,358,251	25,181	31,299	304,412	136,775	723,031	4,665,284	3,215,034
3	Unit of Measure	ccf	ccf/day	ccf/day	equiv. meter/yr	bills/yr	equiv. line/yr	ccf	
4	**Unit Cost**	**$1.45**	**$239.03**	**$51.19**	**$26.05**	**$6.88**	**$0.80**	**$0.12**	**($0.09)**

4.8. Distribution of Cost Components to Customer Classes

The final step in a cost-of-service analysis is to distribute the cost components to the customer classes using the unit costs derived in

Table 4-12. This is the end goal of a cost-of-service analysis and yields the cost to serve each class.

Table 4-13 shows the derivation of the costs to serve each class. The supply, base, max day, max hour, conservation, and offset cost components are collected through the commodity charges ($/ccf). Fire protection, meters, and customer cost components are collected through the City's bi-monthly fixed service charge ($/2 months) and private fire service charge ($/2 months). The interest revenue, which is a non-rate revenue and over which the City Council has discretion, is applied as an offset to Tier 1 rate for building usage to provide affordability for low volume customers. All building users will benefit from the lower rate in Tier 1.

To derive the cost to serve each class, the unit costs from

Table 4-12 are multiplied by the respective units of service for each class (**Table 4-8**, **Table 4-9**, **Table 4-10**, and

Table 4-11). With the cost to serve each user class calculated, we can proceed to derive rates to collect the cost to serve each commodity class, tier, and meter size.

Table 4-13: Derivation of Costs to Serve Each Class

	A	B	C	D	E	F	G	H	I	J
Line	Customer Class	Base	Max Day	Max Hour	Meters	Customer	Fire Protection	Conservation	Offset	Total
1	Building Water Usage				$7,930,394	$915,285				$8,845,679
2	Tier 1	$4,667,102	$687,190	$368,367					($286,933)	$5,435,726
3	Tier 2	$410,232	$89,549	$36,224						$536,005
4	Tier 3	$6,772,354	$4,293,149	$969,294				$551,092		$12,585,888
5	Non-Building Water Usage									
6	Tier 1	$110,551	$27,213	$10,168						$147,933
7	Tier 2	$1,624,657	$921,899	$218,282						$2,764,838
8	Fire Protection	$0	$0	$0		$25,796	$575,496			$601,292
9	**Total Cost of Service**	**$13,584,896**	**$6,019,000**	**$1,602,335**	**$7,930,394**	**$941,081**	**$575,496**	**$551,092**	**($286,933)**	**$30,917,361**

4.9. Rate Calculation

4.9.1. Proposed Bi-Monthly Fixed Charges

Table 4-14 shows the bi-monthly service charge calculation, which consists of the Meter and Customer cost components. The Meter cost component is derived based on total equivalent meters. Therefore, the meter unit cost (**Table 4-12**, Column E, Line 4) is multiplied by the capacity ratio for each meter size (Column B) to appropriately reflect the share of cost by meter size (Column C). The Customer cost does not vary with meter size, and therefore the Customer unit cost (**Table 4-12**, Column F, Line 4) is applied uniformly across all meter sizes (Column D). These components added together determine the proposed bi-monthly service charge (Column E).

Table 4-14: Proposed Bi-Monthly Service Charge (FY 2025)

	A	B	C	D	E	F
Line	Bi-Monthly Service Charge	Capacity Ratio	Meter	Customer	Proposed Charge	Current Charge
1	5/8"	1.00	$26.05	$6.88	$32.94	$32.10
2	3/4"	1.43	$37.12	$6.88	$44.01	$43.17
3	1"	2.25	$58.62	$6.88	$65.50	$64.67
4	1 1/2"	4.25	$110.72	$6.88	$117.60	$116.79
5	2"	6.40	$166.73	$6.88	$173.62	$172.83
6	3"	11.25	$293.08	$6.88	$299.97	$299.23
7	4"	17.50	$455.90	$6.88	$462.79	$462.10
8	6"	32.50	$846.67	$6.88	$853.56	$853.02
9	8"	48.00	$1,250.47	$6.88	$1,257.36	$1,256.97
10	10"	114.00	$2,969.87	$6.88	$2,976.76	$2,977.00
11	12"	150.00	$3,907.73	$6.88	$3,914.61	$3,915.20

4.9.2. Proposed Bi-Monthly Fire Service Charges

Table 4-15 shows the bi-monthly service charge calculation, which consists of the Private Fire and Customer cost components. The Private Fire unit cost (**Table 4-12**, Column G, Line 4) is multiplied by the fire ratio for each fire line diameter (Column B) to appropriately reflect the share of cost by fire line (Column C). A connection's share of the Customer cost does not vary with fire line size, and therefore the Customer unit cost (**Table 4-12**, Column F, Line 4) is applied uniformly across all meter sizes (Column D). These components added together arrive at the proposed bi-monthly fire service charge (Column E).

Table 4-15: Proposed Bi-Monthly Fire Service Charge (FY 2025)

	A	B	C	D	E	F
Line	Bi-Monthly Fire Service Charge	Capacity Ratio	Fire	Customer	Proposed Charge	Current Charge
1	2"	6.19	$4.93	$6.88	$11.81	$10.19
2	3"	17.98	$14.31	$6.88	$21.20	$18.10
3	4"	38.32	$30.50	$6.88	$37.39	$31.75
4	6"	111.31	$88.60	$6.88	$95.48	$80.73
5	8"	237.21	$188.80	$6.88	$195.69	$165.22
6	10"	426.58	$339.54	$6.88	$346.42	$292.32
7	12"	689.04	$548.44	$6.88	$555.33	$468.46

4.9.3. Proposed Water Usage Rates

The City's water usage rates consist of five components: Base, Peaking, Supply, Conservation, and Offset. The following subsections will present the calculations for each of the components.

4.9.3.1. Base Component

The Base component is applied uniformly across all units of water and is equal to the Base unit cost (**Table 4-12**, Column B, Line 4).

4.9.3.2. Peaking Component

Table 4-16 shows the Peaking unit cost calculation for each customer class and tier. Peaking costs (Column C) are the sum of Max Day and Max Hour costs for each class and tier (**Table 4-13**, Columns C and D). Peaking costs are divided by annual use (Column B) to determine the Peaking unit cost for each class and tier (Column D).

Table 4-16: Peaking Unit Cost Calculation

	A	B	C	D
Line	Customer Class	Annual Use (ccf)	Peaking Costs	Unit Cost
1	**Building Water Usage**			
2	Tier 1	3,215,034	$1,055,557	$0.33
3	Tier 2	282,597	$125,773	$0.45
4	Tier 3	4,665,284	$5,262,443	$1.13
5	**Non-Building Water Usage**			
6	Tier 1	76,156	$37,381	$0.49
7	Tier 2	1,119,180	$1,140,181	$1.02

4.9.3.3. Supply Component

Table 4-17 shows the calculation of the unit cost for each source of water (Line 6). The percentage from each source (Line 2) is determined by the proportion of volume purchased from each source in Line 1. These proportions are used to determine the proportion of demand from each source (Line 3). The direct water

purchase costs (provided by City staff) on Line 4 are divided by the estimated potable demand (Line 3) to calculate the unit costs in Line 6.

Table 4-18 shows supply component unit cost calculation for each customer class and tier. The lowest cost water source is used for Tier 1, if that source does not meet the demand, then water from the next lowest source is used and so on. Once the Tier 1 demand is met then Tier 2 is allocated the remaining lowest cost water and so on. The uses for each class and tier from each source (Columns E through H) are multiplied by their respective unit costs (**Table 4-17**, Line 6) to calculate the total supply cost for each class and tier in Column J. The total costs (Column J) are divided by the total use (Column I) to calculate the supply unit cost for each class and tier (Column K).

Table 4-17: Potable Water Supply Cost

	A	B	C	D	E	F
Line	Potable Water Supply Cost	MC Surface	SAR Surface (BV)	Groundwater	SWP Water	Total
1	Volume (AF)	5,700	5,466	10,767	1,342	23,275
2	% from Source	24%	23%	46%	6%	100%
3	Estimated Potable Demand	2,291,939	2,197,531	4,329,091	539,690	9,358,251
4	Direct Water Purchase Costs	$148,209	$431,779	$1,453,551	$200,000	$2,233,539
5	% of Water Purchase Costs	7%	19%	65%	9%	100%
6	Unit Cost ($/ccf)	$0.06	$0.20	$0.34	$0.37	$0.24

Table 4-18: Supply Component Calculation

Line	A Customer Class	B Tier Definitions	C Annual Use (ccf)	D % of Annual Use	E MC Surface	F SAR Surface (BV)	G Groundwater	H SWP Water	I Total Use (ccf)	J Total Cost	K Supply Unit Cost
1	**Building Water Usage**										
2	Tier 1	16	3,215,034	34%	1,999,188	1,215,847	0	0	3,215,034	$368,173	$0.11
3	Tier 2	27	282,597	3%	0	282,597	0	0	282,597	$55,526	$0.20
4	Tier 3	Over 27	4,665,284	50%	0	418,395	3,776,134	470,755	4,665,284	$1,524,549	$0.33
5	**Non-Building Water Usage**										
6	Tier 1	27	76,156	1%	76,156	0	0	0	76,156	$4,925	$0.06
7	Tier 2	Over 27	1,119,180	12%	216,595	280,692	552,958	68,935	1,119,180	$280,367	$0.25
8	**Total Potable Use**		**9,358,251**	**100%**	**2,291,939**	**2,197,531**	**4,329,091**	**539,690**	**9,358,251**	**$2,233,539**	

4.9.3.4. Conservation Component

The Conservation component is applied to Building Tier 3 use and is equal to the Conservation unit cost (**Table 4-12**, Column H, Line 4) for that class and tier only.

4.9.3.5. Offset Component

The Offset component is applied to Building Tier 1 use and is equal to the Offset unit cost (**Table 4-12**, Column I, Line 4) for that class and tier only. The offset helps to provide affordability in Tier 1 and benefits all building customers.

4.9.3.6. Water Usage Rates

Table 4-19 shows the calculation of proposed water usage rates (Column H) for each customer class and tier based on the five rate components (Columns C through G) described previously.

Table 4-19: Proposed Water Usage Rates (FY 2025)

	A	B	C	D	E	F	G	H
Line	Customer Class	Bi-monthly Tiers, ccf	Supply	Base Delivery	Peaking	Conservation	Offset	Proposed Rate
1	**Building Water Usage**							
2	Tier 1	16	$0.11	$1.21	$0.33	$0.00	($0.09)	$1.57
3	Tier 2	27	$0.20	$1.21	$0.45	$0.00	$0.00	$1.86
4	Tier 3	Over 27	$0.33	$1.21	$1.13	$0.12	$0.00	$2.79
5	**Non-Building Water Usage**							
6	Tier 1	27	$0.06	$1.21	$0.49	$0.00	$0.00	$1.77
7	Tier 2	Over 27	$0.25	$1.21	$1.02	$0.00	$0.00	$2.49

4.9.3.7. Proposed Rate Schedule

Table 4-20 and **Table 4-21** show the proposed bi-monthly water service charges, private fire service charges, and water usage rates, respectively. The proposed water rates after the FY 2025 test year are increased across the board by the revenue adjustments in **Table 3-7**.

Table 4-20: Proposed Bi-Monthly Service Charges

	A	B	C	D	E	F	G
Line	Bi-Monthly Water Service Charges	Current Rates	July 2024	July 2025	July 2026	July 2027	July 2028
1	**Water Service**						
2	5/8"	$32.10	$32.94	$33.60	$34.28	$34.97	$35.67
3	3/4"	$43.17	$44.01	$44.90	$45.80	$46.72	$47.66
4	1"	$64.67	$65.50	$66.81	$68.15	$69.52	$70.92
5	1 1/2"	$116.79	$117.60	$119.96	$122.36	$124.81	$127.31
6	2"	$172.83	$173.62	$177.10	$180.65	$184.27	$187.96
7	3"	$299.23	$299.97	$305.97	$312.09	$318.34	$324.71
8	4"	$462.10	$462.79	$472.05	$481.50	$491.13	$500.96
9	6"	$853.02	$853.56	$870.64	$888.06	$905.83	$923.95
10	8"	$1,256.97	$1,257.36	$1,282.51	$1,308.17	$1,334.34	$1,361.03
11	10"	$2,977.00	$2,976.76	$3,036.30	$3,097.03	$3,158.98	$3,222.16
12	12"	$3,915.20	$3,914.61	$3,992.91	$4,072.77	$4,154.23	$4,237.32
13							
14	**Fire Protection Service**						
15	2"	$10.19	$11.81	$12.05	$12.30	$12.55	$12.81
16	3"	$18.10	$21.20	$21.63	$22.07	$22.52	$22.98
17	4"	$31.75	$37.39	$38.14	$38.91	$39.69	$40.49
18	6"	$80.73	$95.48	$97.39	$99.34	$101.33	$103.36
19	8"	$165.22	$195.69	$199.61	$203.61	$207.69	$211.85
20	10"	$292.32	$346.42	$353.35	$360.42	$367.63	$374.99
21	12"	$468.46	$555.33	$566.44	$577.77	$589.33	$601.12
22							
23	**Fire Hydrant Service**						
24	All Meters	$73.60	$299.97	$305.97	$312.09	$318.34	$324.71

Table 4-21: Proposed Water Usage Rates

	A	B	C	D	E	F	G	H
Line	Water Usage Rates	Bi-Monthly Tiers	Current Rates	July 2024	July 2025	July 2026	July 2027	July 2028
1	**Building Water Usage**							
2	Tier 1	16	$1.46	$1.57	$1.61	$1.65	$1.69	$1.73
3	Tier 2	27	$1.78	$1.86	$1.90	$1.94	$1.98	$2.02
4	Tier 3	Over 27	$2.69	$2.79	$2.85	$2.91	$2.97	$3.03
5								
6	**Non-Building Water Usage**							
7	Tier 1	27	$1.78	$1.77	$1.81	$1.85	$1.89	$1.93
8	Tier 2	Over 27	$2.69	$2.49	$2.54	$2.60	$2.66	$2.72
9								
10	**Fire Protection Water Usage**							
11	All Units		$2.69	$2.79	$2.85	$2.91	$2.97	$3.03

5. Wastewater – Financial Plan

This section of the report details the wastewater enterprise's long-term financial plan, based on the projected revenues, expenses, debt service, and capital project costs. Raftelis modeled the financial plan without revenue adjustments (status quo) and with proposed revenue adjustments to ensure the financial sustainability and solvency of the wastewater utility. The result of the wastewater financial plan is the total revenue requirement utilized as the basis for the cost-of-service analysis and resulting rates in the next section of the report.

5.1. Customer Accounts and Usage

Table 5-1 shows the projected wastewater customer accounts and water usage for the study period. City staff provided wastewater customer accounts and usage data for FY 2022, which are then projected based on the customer account growth rates from **Table 2-1**. Typical types of users that fall within the non-residential classes include:

- Low Strength I – Car Wash
- Low Strength II – Office Building
- Low Strength III – Hotel (rooms only, no restaurant)
- Medium Strength I – Laundromat (linen & general)
- Medium Strength II – Mini-Mall
- Medium Strength III – Hotel (with restaurant)
- High Strength I – Laundry (industrial)
- High Strength II - Bakery

Table 5-1: Projected Wastewater Customer Accounts and Usage

	A	B	C	D	E	F	G
Line	Wastewater Customer Data	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Residential (dwelling units)**						
2	Single Family	16,661	16,752	16,842	16,932	17,022	17,113
3	Multiple Family	10,017	10,072	10,126	10,180	10,234	10,289
4	**Total - Residential**	**26,678**	**26,824**	**26,967**	**27,111**	**27,256**	**27,402**
5							
6	**Non-Residential (ccf)**						
7	Low Strength I	43,850	44,091	44,328	44,567	44,806	45,047
8	Low Strength II	411,018	413,274	415,497	417,732	419,979	422,239
9	Low Strength III	89,331	89,821	90,305	90,790	91,279	91,770
10	Medium Strength I	26,055	26,198	26,339	26,480	26,623	26,766
11	Medium Strength II	37,882	38,090	38,295	38,501	38,708	38,916
12	Medium Strength III	19,582	19,689	19,795	19,902	20,009	20,117
13	High Strength I	10,217	10,273	10,328	10,383	10,439	10,495
14	High Strength II	135,769	136,514	137,248	137,987	138,729	139,475
15	Large Volume User	33,116	33,298	33,477	33,657	33,838	34,020
16	**Total - Non-Residential**	**806,821**	**811,248**	**815,612**	**820,000**	**824,411**	**828,846**
17							
18	**Schools (students)**						
19	Elementary	4,821	4,848	4,874	4,900	4,927	4,953
20	Secondary & High	8,145	8,189	8,233	8,278	8,322	8,367
21	**Total - Schools**	**12,966**	**13,037**	**13,107**	**13,178**	**13,249**	**13,320**

5.2. Current Rates

The City's current wastewater rates include bi-monthly wastewater service charges for residential customers by type of dwelling unit, a non-residential wastewater usage rate based on ccf of water usage per customer class, and for schools by 100 students. **Table 5-2** shows the current wastewater rates effective July 1, 2021.

Table 5-2: Current Bi-Monthly Wastewater Service Charges and Usage Rates

	A	B
Line	Current Wastewater Rates	FY 2024
1	**Bi-Monthly Residential Rate ($/dwelling unit)**	
2	Single Family	$62.43
3	Multiple Family	$48.08
4		
5	**Non-Residential Rate ($/ccf)**	
6	Low Strength I	$2.42
7	Low Strength II	$2.87
8	Low Strength III	$3.32
9	Medium Strength I	$3.77
10	Medium Strength II	$4.22
11	Medium Strength III	$4.67
12	High Strength I	$5.12
13	High Strength II	$5.56
14	Large Volume User	$3.32
15		
16	**Bi-Monthly Schools Rate ($/100 students)**	
17	Elementary	$134.38
18	Secondary & High	$215.02

5.3. Calculated Rate Revenues at Current Rates

Table 5-3 shows the calculated wastewater rate revenues by customer class. To calculate rate revenues, the current wastewater rates (**Table 5-2**) are multiplied by the customer account and usage data (**Table 5-1**) for all years of the study.

Residential rate revenues (Lines 2-3) = Residential wastewater service charge x Residential dwelling units x 6 billing periods

Non-residential rate revenues (Lines 7-15) = Non-residential wastewater usage rate x Non-residential water usage in ccf

Schools rate revenues (Lines 19-20) = Schools wastewater service charge x (Number of students / 100 students) x 6 billing periods

Table 5-3: Calculated Wastewater Rate Revenues at Current Rates

	A	B	C	D	E	F	G
Line	Calculated Rate Revenues	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Residential (dwelling units)**						
2	Single Family	$6,240,804	$6,275,056	$6,308,577	$6,342,276	$6,376,156	$6,410,216
3	Multiple Family	$2,889,669	$2,905,522	$2,921,037	$2,936,634	$2,952,315	$2,968,079
4	**Total - Residential**	**$9,130,473**	**$9,180,579**	**$9,229,613**	**$9,278,910**	**$9,328,470**	**$9,378,295**
5							
6	**Non-Residential (ccf)**						
7	Low Strength I	$106,118	$106,700	$107,274	$107,851	$108,432	$109,015
8	Low Strength II	$1,179,622	$1,186,095	$1,192,476	$1,198,891	$1,205,340	$1,211,825
9	Low Strength III	$296,580	$298,207	$299,811	$301,424	$303,046	$304,676
10	Medium Strength I	$98,227	$98,765	$99,297	$99,831	$100,368	$100,908
11	Medium Strength II	$159,863	$160,740	$161,605	$162,474	$163,348	$164,227
12	Medium Strength III	$91,448	$91,949	$92,444	$92,941	$93,441	$93,944
13	High Strength I	$52,309	$52,596	$52,879	$53,163	$53,449	$53,737
14	High Strength II	$754,876	$759,018	$763,101	$767,206	$771,334	$775,483
15	Large Volume User	$109,946	$110,549	$111,144	$111,741	$112,343	$112,947
16	**Total - Non-Residential**	**$2,848,988**	**$2,864,620**	**$2,880,031**	**$2,895,524**	**$2,911,101**	**$2,926,762**
17							
18	**Schools (students)**						
19	Elementary	$38,875	$39,088	$39,298	$39,510	$39,722	$39,936
20	Secondary & High	$105,076	$105,652	$106,221	$106,792	$107,367	$107,944
21	**Total - Schools**	**$143,950**	**$144,740**	**$145,519**	**$146,302**	**$147,089**	**$147,880**
22							
23	**Total - Non-Residential and Schools**	**$2,992,938**	**$3,009,360**	**$3,025,550**	**$3,041,826**	**$3,058,190**	**$3,074,642**

5.4. Projected Revenues at Current Rates

Table 5-4 shows the projected wastewater revenues for the study period. City staff provided actual revenues for FY 2022 and budgeted revenues for FY 2023 and FY 2024. The wastewater rate revenues (Lines 3-4) from FY 2024 and beyond are from the rate revenue calculations (**Table 5-3**, Lines 4 and 23). Investment income (Lines 8, 16, 23, and 27) are calculated using the reserve interest rate (**Table 2-2**, Line 2). All other revenues are inflated for future years based on the non-rate revenue inflation factor (**Table 2-2**, Line 1).

Table 5-4: Projected Wastewater Revenues at Current Rates

	A	B	C	D	E	F	G
Line	Projected Revenues	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Wastewater Service (521)**						
2	Cost Recover/Reimb Expenditure	$3,100	$3,100	$3,100	$3,100	$3,100	$3,100
3	Sewer Residential	$9,130,473	$9,180,579	$9,229,613	$9,278,910	$9,328,470	$9,378,295
4	Sewer Non-Residential	$2,992,938	$3,009,360	$3,025,550	$3,041,826	$3,058,190	$3,074,642
5	Recycled Water Usage	$330,000	$330,000	$330,000	$330,000	$330,000	$330,000
6	Septage Charge	$48,000	$48,000	$48,000	$48,000	$48,000	$48,000
7	Frontage Charge	$69,000	$69,000	$69,000	$69,000	$69,000	$69,000
8	Investment Income	$164,714	$137,328	$104,710	$83,431	$79,585	$75,754
9	Miscellaneous Receipts	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000
10	**Total - Wastewater Service (521)**	**$12,763,225**	**$12,802,367**	**$12,834,973**	**$12,879,268**	**$12,941,345**	**$13,003,791**
11							
12	**Wastewater Project (523)**						
13	State Grants	$0	$0	$0	$0	$0	$0
14	Federal Grants	$0	$0	$0	$0	$0	$0
15	Other Grants	$0	$0	$0	$0	$0	$0
16	Investment Income	$0	$0	$0	$0	$0	$0
17	Sale of Surplus Property	$0	$0	$0	$0	$0	$0
18	Miscellaneous Receipts	$0	$0	$0	$0	$0	$0
19	Misc Taxable Sales	$0	$0	$0	$0	$0	$0
20	**Total - Wastewater Project (523)**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
21							
22	**Wastewater Debt Service (526)**						
23	Investment Income	$0	$0	$0	$0	$0	$0
24	**Total - Wastewater Debt Service (526)**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
25							
26	**Wastewater Capital Improvement (529)**						
27	Investment Income	$18,297	$18,480	$18,665	$18,852	$19,040	$19,231
28	**Total - Wastewater Capital Improvement (529)**	**$18,297**	**$18,480**	**$18,665**	**$18,852**	**$19,040**	**$19,231**
29							
30	**Total - Revenues**	**$12,781,523**	**$12,820,848**	**$12,853,639**	**$12,898,120**	**$12,960,385**	**$13,023,022**

5.5. Projected O&M Expenses

Table 5-5 shows the projected wastewater O&M expenses for the study period. City staff provided the actual O&M expenses for FY 2022 and budgeted O&M expenses for FY 2023 and FY 2024, which are escalated for future years of the study based on the expense inflation factors (**Table 2-3**).

Table 5-5: Projected Wastewater O&M Expenses

	A	B	C	D	E	F	G
Line	Projected O&M Expenses	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Wastewater Service (521)**						
2	Salaries and Benefits	$4,660,205	$4,846,613	$5,040,478	$5,242,097	$5,451,781	$5,669,852
3	Services - Power	$850,000	$897,270	$947,169	$999,687	$1,055,118	$1,113,621
4	Services	$5,440,159	$5,500,364	$5,665,375	$5,835,336	$6,010,396	$6,190,708
5	Supplies - Treatment	$1,054,400	$1,113,037	$1,174,936	$1,240,083	$1,308,842	$1,381,414
6	Supplies	$1,353,450	$1,394,054	$1,435,875	$1,478,951	$1,523,320	$1,569,019
7	**Total - Wastewater Service (521)**	**$13,358,214**	**$13,751,338**	**$14,263,832**	**$14,796,154**	**$15,349,457**	**$15,924,615**
8							
9	**Wastewater Project (523)**						
10	Services	$250,000	$257,500	$265,225	$273,182	$281,377	$289,819
11	Supplies	$0	$0	$0	$0	$0	$0
12	**Total - Wastewater Project (523)**	**$250,000**	**$257,500**	**$265,225**	**$273,182**	**$281,377**	**$289,819**
13							
14	**Wastewater Debt Service (526)**						
15	Services	$17,590	$18,117	$18,661	$19,221	$19,797	$20,391
16	**Total - Wastewater Debt Service (526)**	**$17,590**	**$18,117**	**$18,661**	**$19,221**	**$19,797**	**$20,391**
17							
18	**Total - O&M Expenses**	**$13,625,804**	**$14,026,955**	**$14,547,718**	**$15,088,557**	**$15,650,631**	**$16,234,825**

5.6. Debt Service

The City currently has one existing debt issue for the wastewater utility. **Table 5-6** shows the annual principal and interest payments for the existing debt. This debt will be paid off in FY 2025.

Table 5-6: Existing Wastewater Debt Service

	A	B	C	D	E	F	G
Line	Existing Debt Service	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**CA Recycled Water Project**						
2	Principal	$347,449	$356,136	$0	$0	$0	$0
3	Interest	$17,590	$8,903	$0	$0	$0	$0
4	**Total - CA Recycled Water Project**	**$365,039**	**$365,039**	**$0**	**$0**	**$0**	**$0**
5							
6	**Total - Existing Debt Service**	**$365,039**	**$365,039**	**$0**	**$0**	**$0**	**$0**

To fund the wastewater capital program, the City plans to obtain an SRF loan in FY 2026. The SRF loan is a 30-year term at 2.1% interest. The proposed loan proceeds would be used to fund most of the wastewater treatment plant rehabilitation capital costs. The proposed annual debt service is shown in **Table 5-7**. Because the SRF loan is paid off after completion of the project it is funding, repayment will start in FY 2028.

Table 5-7: Proposed Wastewater Debt Service

	A	B	C	D	E	F	G
Line	Proposed Debt Service	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	Proposed Loan Issuance	$0	$0	$45,000,000	$0	$0	$0
2	Loan Proceeds	$0	$0	$45,000,000	$0	$0	$0
3							
4	**Annual Debt Service**						
5	FY 2024 Bond Issuance	$0	$0	$0	$0	$0	$0
6	FY 2025 Bond Issuance		$0	$0	$0	$0	$0
7	FY 2026 Bond Issuance			$0	$0	$2,036,979	$2,036,979
8	FY 2027 Bond Issuance				$0	$0	$0
9	FY 2028 Bond Issuance					$0	$0
10	FY 2029 Bond Issuance						$0
11							
12	**Total - Proposed Debt Service**	**$0**	**$0**	**$0**	**$0**	**$2,036,979**	**$2,036,979**

5.7. Capital Projects

City staff provided the CIP for the wastewater utility for the study period.

Table 5-8 shows the CIP costs for the study period, escalated by the capital expense inflation factor (**Table 2-3**, Line 7) to determine CIP costs in future years' dollars. The CIP provided consists of projects totaling $66.3 million for the five years FY 2025 through FY 2029. Projects are funded through a combination of wastewater rate revenues, cash reserves, DIF revenues, and debt proceeds.

Table 5-8: Inflated Wastewater Capital Projects

	A	B	C	D	E	F	G
Line	Capital Projects (Inflated)	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Replacement**						
2	Annual Citywide Sewer Pipeline Replacement	$3,090,000	$3,182,700	$3,278,181	$3,376,526	$3,477,822	$3,582,157
3	Citywide Sewer Manhole Adjustment	$0	$318,270	$0	$0	$0	$0
4	WWTP Rehabilitation - MBR System Equipment - Phase 1	$0	$0	$0	$0	$0	$0
5	WWTP Rehabilitation - MBR System Equipment Installation- Phase 1A	$0	$0	$0	$0	$0	$0
6	WWTP Rehabilitation - MBR & Digester Improvements - Phase 1B	$0	$0	$0	$0	$0	$0
7	WWTP Rehabilitation - Phase 2 (Design)	$0	$0	$0	$0	$0	$0
8	WWTP Rehabilitation - Phase 2A, 2B, 2C & 2D (Construction)	$0	$0	$48,565,640	$0	$0	$0
9	Alabama Septage Pond Remediation	$0	$0	$0	$0	$0	$0
10	WWTP Drying bed leachate remediation	$0	$0	$0	$0	$0	$0
11	Brine Cap Rehabilitation	$0	$0	$0	$112,551	$0	$0
12	Storm water-Hillside stabilization and parking lot rehab/expansion	$103,000	$0	$0	$0	$0	$0
13	WW Composite Samplers	$0	$0	$0	$0	$0	$0
14	Laboratory Instruments	$56,650	$63,654	$71,027	$78,786	$86,946	$95,524
15	Centrifuge Conveyor	$0	$0	$0	$0	$0	$0
16	Chemical Tank Lining Project	$0	$0	$0	$0	$0	$0
17	Centrifuge HMI Upgrade Phase 1&2	$0	$0	$0	$0	$0	$0
18	WWTP Sign- Front Entrance	$0	$31,827	$0	$0	$0	$0
19	Chemical Feed Skids (Polymer/Sodium Hypochlorite/Ferric)	$0	$0	$0	$0	$0	$0
20	WW Operations Facility Improvement	$0	$0	$0	$0	$0	$0
21	Climate Controlled Storage Units	$0	$0	$0	$0	$0	$0
22	Chemical Storage Tank (Ferric)	$0	$0	$0	$0	$0	$0
23	Citywide Sewer Manhole REHAB	$515,000	$0	$0	$0	$0	$0
24	**Total - Replacement**	**$3,764,650**	**$3,596,451**	**$51,914,848**	**$3,567,863**	**$3,564,768**	**$3,677,681**

Table 5-9 shows the proposed wastewater capital financing plan based on the CIP (

Table 5-8). The City plans to fully fund its wastewater CIP for all years of the study (Line 1). The debt proceeds (Line 11) are from the proposed Debt issues (**Table 5-7**, Line 2).

Table 5-9: Proposed Wastewater Capital Financing Plan

	A	B	C	D	E	F	G
Line	Capital Financing Plan	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**CIP to Spend**	100%	100%	100%	100%	100%	100%
2							
3	**Inflated Project Costs**	$3,764,650	$3,596,451	$51,914,848	$3,567,863	$3,564,768	$3,677,681
4							
5	Bond Proceeds	$0	$0	$0	$0	$0	$0
6	Balance	$0	$0	$0	$0	$0	$0
7							
8	**Capital Financing**						
9	Rate Funded	$3,764,650	$3,596,451	$6,914,848	$3,567,863	$3,564,768	$3,677,681
10	Bond Funded	$0	$0	$0	$0	$0	$0
11	Loan Funded	$0	$0	$45,000,000	$0	$0	$0

5.8. Current Financial Plan – Status Quo

Table 5-10 shows the projected wastewater financial plan under the status quo scenario. Revenues (Lines 2-7) are equal to projected revenues (**Table 5-4**). The O&M expenses (Lines 10-18) are equal to projected O&M expenses for the study period (**Table 5-5**). Existing debt service (Line 21) is equal to the principal and interest payments for the City's outstanding wastewater debt (**Table 5-6**). Rate funded CIP (Line 23) is derived from the capital financing plan (**Table 5-9**).

The net cash flow (Line 27) is negative for all years of the Study under the status quo scenario, signifying that the City's current wastewater rate revenues are not sufficient to fund the operating expenses, debt and capital costs associated with the proposed CIP. In addition, the calculated debt coverage (Line 30) is well below the required coverage (Line 31), which will put the City's wastewater utility into technical default. In FY 2026 and FY 2027, there is no calculated debt coverage because the wastewater utility will not have any debt service payments.

Table 5-10: Projected Wastewater Financial Plan (Status Quo)

Line	A Wastewater Financial Plan	B FY 2024	C FY 2025	D FY 2026	E FY 2027	F FY 2028	G FY 2029
1	**Revenues**						
2	Rate Revenues	$12,171,411	$12,237,939	$12,303,163	$12,368,736	$12,434,660	$12,500,937
3	Revenue Adjustments	$0	$0	$0	$0	$0	$0
4	Investment Income	$183,011	$149,690	$98,158	$43,425	$19,040	$19,231
5	Sale of Surplus Property	$0	$0	$0	$0	$0	$0
6	Other Revenues	$2,152,100	$2,152,100	$2,152,100	$2,152,100	$2,152,100	$2,152,100
7	**Total - Revenues**	**$14,506,523**	**$14,539,729**	**$14,553,421**	**$14,564,261**	**$14,605,801**	**$14,672,268**
8							
9	**O&M Expenses**						
10	Salaries and Benefits	$4,660,205	$4,846,613	$5,040,478	$5,242,097	$5,451,781	$5,669,852
11	Services - Power	$850,000	$897,270	$947,169	$999,687	$1,055,118	$1,113,621
12	Services	$5,707,749	$5,775,981	$5,949,261	$6,127,738	$6,311,570	$6,500,918
13	Supplies - Purchased Water	$0	$0	$0	$0	$0	$0
14	Supplies - Treatment	$1,054,400	$1,113,037	$1,174,936	$1,240,083	$1,308,842	$1,381,414
15	Supplies	$1,353,450	$1,394,054	$1,435,875	$1,478,951	$1,523,320	$1,569,019
16	Fixed Assets	$0	$0	$0	$0	$0	$0
17	Debt Service	$0	$0	$0	$0	$0	$0
18	**Total - O&M Expenses**	**$13,625,804**	**$14,026,955**	**$14,547,718**	**$15,088,557**	**$15,650,631**	**$16,234,825**
19							
20	**Debt and Capital**						
21	Existing Debt Service	$365,039	$365,039	$0	$0	$0	$0
22	Proposed Debt Service	$0	$0	$0	$0	$2,036,979	$2,036,979
23	Rate Funded Capital Projects	$3,764,650	$3,596,451	$6,914,848	$3,567,863	$3,564,768	$3,677,681
24	DIF Funded Capital Projects	$0	$0	$0	$0	$0	$0
25	**Total - Debt and Capital**	**$4,129,689**	**$3,961,490**	**$6,914,848**	**$3,567,863**	**$5,601,747**	**$5,714,660**
26							
27	**Net Cash Flow**	**($3,248,970)**	**($3,448,717)**	**($6,909,145)**	**($4,092,158)**	**($6,646,577)**	**($7,277,217)**
28	Net Operating Revenue	$880,719	$512,773	$5,703	($524,295)	($1,044,830)	($1,562,557)
29							
30	**Calculated Debt Coverage**	**2.41**	**1.40**	**#N/A**	**#N/A**	**(0.51)**	**(0.77)**
31	Required Debt Coverage	1.25	1.25	1.25	1.25	1.25	1.25
32							
33	Beginning Balances	$20,017,133	$16,768,163	$13,319,447	$6,410,302	$2,318,143	($4,328,434)
34	Ending Balances	$16,768,163	$13,319,447	$6,410,302	$2,318,143	($4,328,434)	($11,605,650)

Figure 5-1 shows the proposed wastewater capital financing plan in graphical format, based on the capital projects shown in

Table 5-8. The dark teal bars represent the portion of CIP funded by rates.

Figure 5-1: Proposed Wastewater Capital Financing Plan

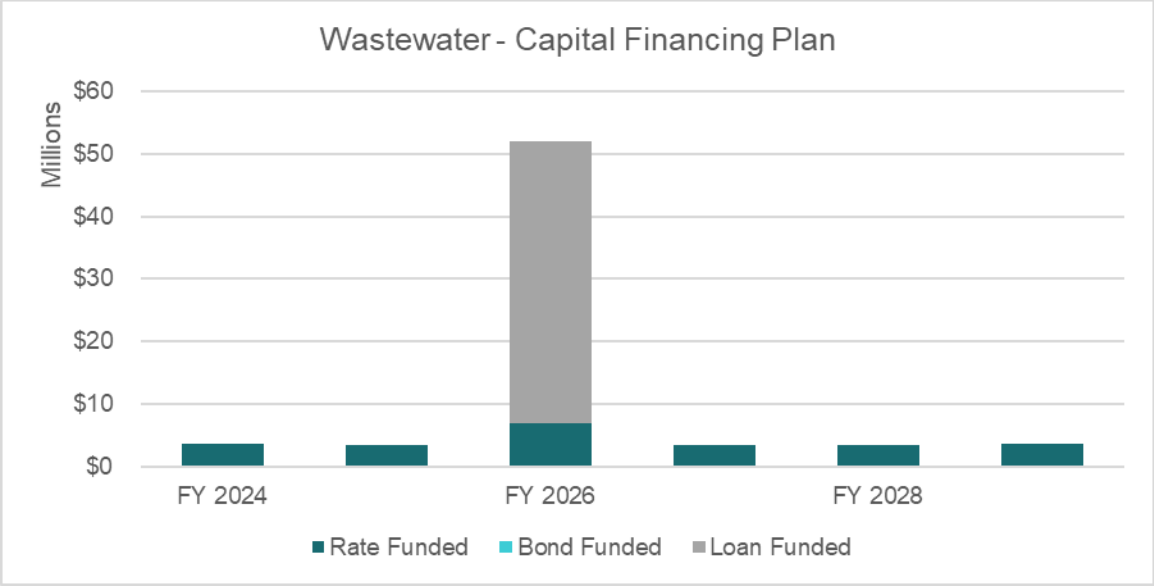


Figure 5-2 shows the projected wastewater financial plan without revenue adjustments in graphical format. The turquoise line, representing current wastewater revenues, is well below the stacked bars representing the O&M (light grey), treatment and power (teal), debt service (yellow), and capital (dark grey) expenses. The green bars, which are below the stacked bars, show that the City will be drawing down its wastewater cash balances significantly without revenue adjustments.

Figure 5-2: Projected Wastewater Financial Plan (Status Quo)

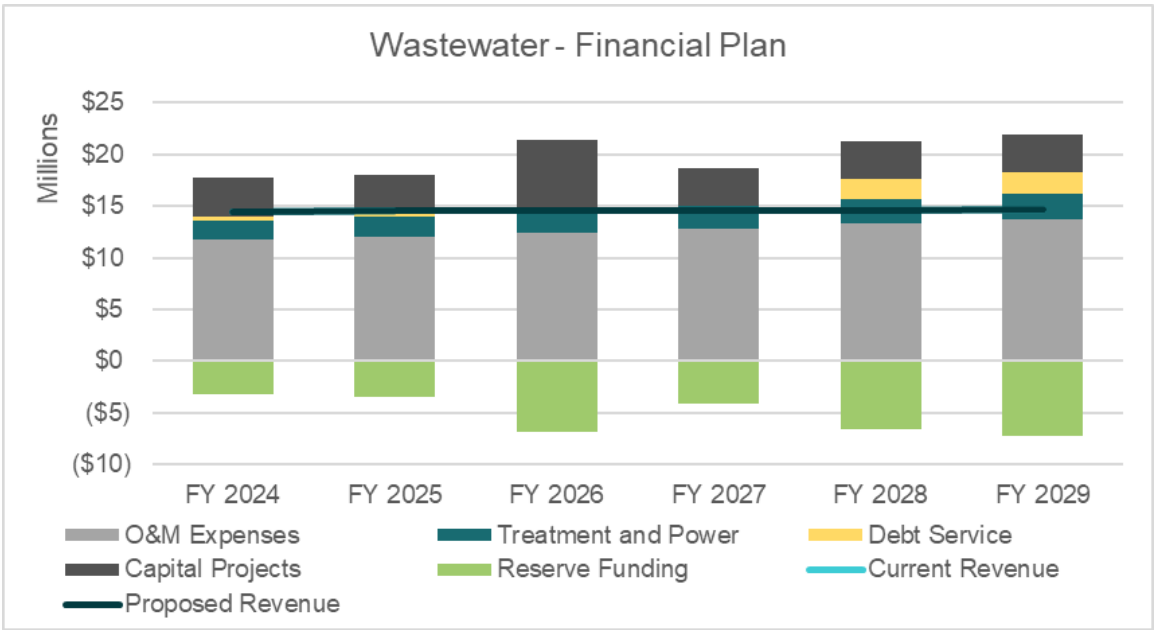
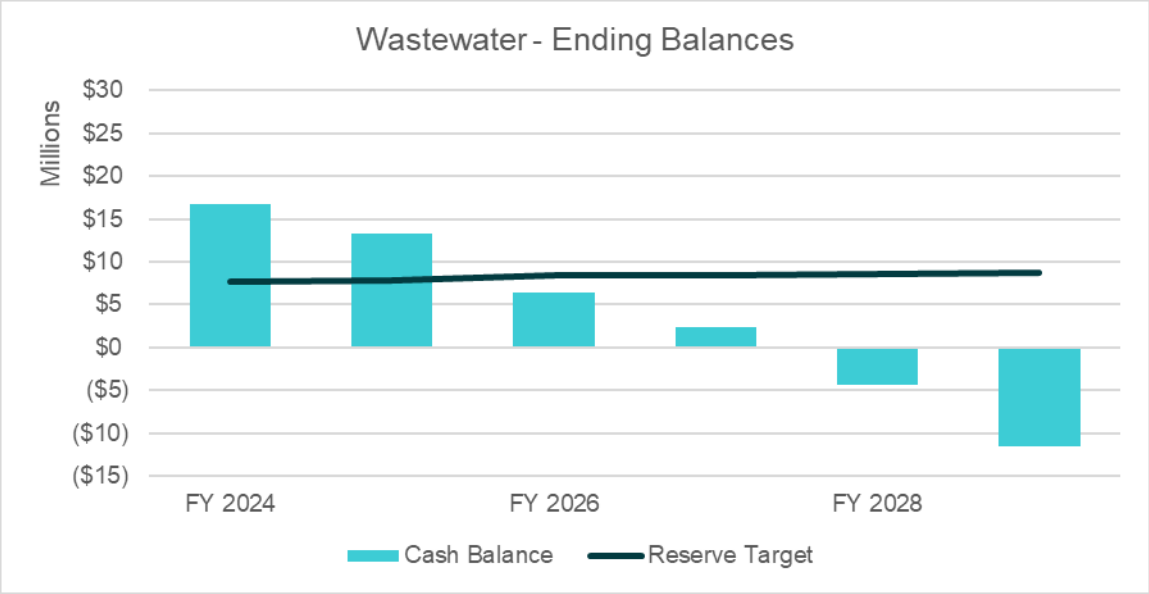


Figure 5-3 shows the projected wastewater fund cash balance without revenue adjustments in graphical format. In FY 2028, the wastewater unrestricted cash balance (shown as turquoise bars) will be negative and become further depleted at the end of the study period. The grey bars represent the restricted reserves including operating, capital, equipment replacement and treatment plant reserves.

Figure 5-3: Projected Wastewater Fund Balances (Status Quo)



5.9. Proposed Financial Plan

Table 5-11 shows the proposed revenue adjustments necessary to maintain the financial sufficiency of the City's wastewater utility. The revenue adjustments will be effective starting July 2024 and in July every year thereafter.

Table 5-11: Proposed Wastewater Revenue Adjustments

Line	A Fiscal Year	B Revenue Adjustment	C Month Effective
1	FY 2025	10.0%	July
2	FY 2026	10.0%	July
3	FY 2027	10.0%	July
4	FY 2028	10.0%	July
5	FY 2029	8.0%	July

Table 5-12 shows the projected wastewater financial plan with the proposed revenue adjustments (**Table 5-11**). The net cash flow (Line 27) is negative in some years of the study period but will reduce the wastewater cash balances significantly less than under the status quo scenario. With the proposed revenue adjustments and debt issuance, the wastewater utility will meet its debt coverage ratio requirements (Line 30) and have positive ending balances (Line 34).

Table 5-12: Projected Wastewater Financial Plan (Proposed Revenue Adjustments)

Line	A Wastewater Financial Plan	B FY 2024	C FY 2025	D FY 2026	E FY 2027	F FY 2028	G FY 2029
1	**Revenues**						
2	Rate Revenues	$12,171,411	$12,237,939	$12,303,163	$12,368,736	$12,434,660	$12,500,937
3	Revenue Adjustments	$0	$1,223,794	$2,583,664	$4,094,052	$5,770,926	$7,265,895
4	Investment Income	$183,011	$155,809	$123,375	$102,283	$98,625	$94,985
5	Sale of Surplus Property	$0	$0	$0	$0	$0	$0
6	Other Revenues	$2,152,100	$2,152,100	$2,152,100	$2,152,100	$2,152,100	$2,152,100
7	**Total - Revenues**	**$14,506,523**	**$15,769,642**	**$17,162,303**	**$18,717,171**	**$20,456,311**	**$22,013,917**
8							
9	**O&M Expenses**						
10	Salaries and Benefits	$4,660,205	$4,846,613	$5,040,478	$5,242,097	$5,451,781	$5,669,852
11	Services - Power	$850,000	$897,270	$947,169	$999,687	$1,055,118	$1,113,621
12	Services	$5,707,749	$5,775,981	$5,949,261	$6,127,738	$6,311,570	$6,500,918
13	Supplies - Purchased Water	$0	$0	$0	$0	$0	$0
14	Supplies - Treatment	$1,054,400	$1,113,037	$1,174,936	$1,240,083	$1,308,842	$1,381,414
15	Supplies	$1,353,450	$1,394,054	$1,435,875	$1,478,951	$1,523,320	$1,569,019
16	Fixed Assets	$0	$0	$0	$0	$0	$0
17	Debt Service	$0	$0	$0	$0	$0	$0
18	**Total - O&M Expenses**	**$13,625,804**	**$14,026,955**	**$14,547,718**	**$15,088,557**	**$15,650,631**	**$16,234,825**
19							
20	**Debt and Capital**						
21	Existing Debt Service	$365,039	$365,039	$0	$0	$0	$0
22	Proposed Debt Service	$0	$0	$0	$0	$2,036,979	$2,036,979
23	Rate Funded Capital Projects	$3,764,650	$3,596,451	$6,914,848	$3,567,863	$3,564,768	$3,677,681
24	DIF Funded Capital Projects	$0	$0	$0	$0	$0	$0
25	**Total - Debt and Capital**	**$4,129,689**	**$3,961,490**	**$6,914,848**	**$3,567,863**	**$5,601,747**	**$5,714,660**
26							
27	**Net Cash Flow**	**($3,248,970)**	**($2,218,804)**	**($4,300,263)**	**$60,752**	**($796,066)**	**$64,432**
28	Net Operating Revenue	$880,719	$1,742,686	$2,614,585	$3,628,615	$4,805,680	$5,779,092
29							
30	**Calculated Debt Coverage**	**2.41**	**4.77**	**#N/A**	**#N/A**	**2.36**	**2.84**
31	Required Debt Coverage	1.25	1.25	1.25	1.25	1.25	1.25
32							
33	Beginning Balances	$20,017,133	$16,768,163	$14,549,359	$10,249,096	$10,309,848	$9,513,781

34	Ending Balances	$16,768,163	$14,549,359	$10,249,096	$10,309,848	$9,513,781	$9,578,214

Figure 5-4 shows the proposed wastewater capital financing plan in graphical format, based on the capital financial plan shown in **Table 5-9**. The dark teal bars represent the portion of replacement CIP funded by rates and the turquoise bars represent the portion of replacement CIP funded by bond proceeds. Most of the capital projects in FY 2026 are funded from SRF Loan proceeds.

Figure 5-4: Proposed Wastewater Capital Financing Plan

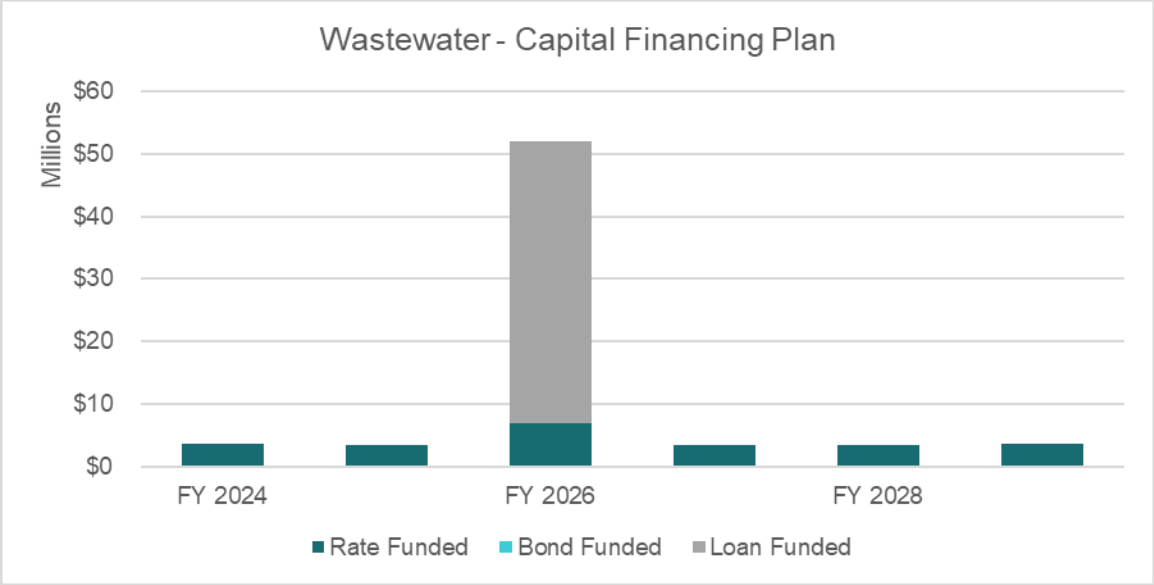


Figure 5-5 shows the projected wastewater financial plan with the proposed revenue adjustments. Although the net cash flow is still negative in some years of the study, shown by the green bars under the stacked grey, yellow, and teal bars, the additional revenue will allow the wastewater utility to meet its debt coverage requirements and fund its operating and capital costs for the Study period.

Figure 5-5: Projected Wastewater Financial Plan (Proposed Revenue Adjustments)

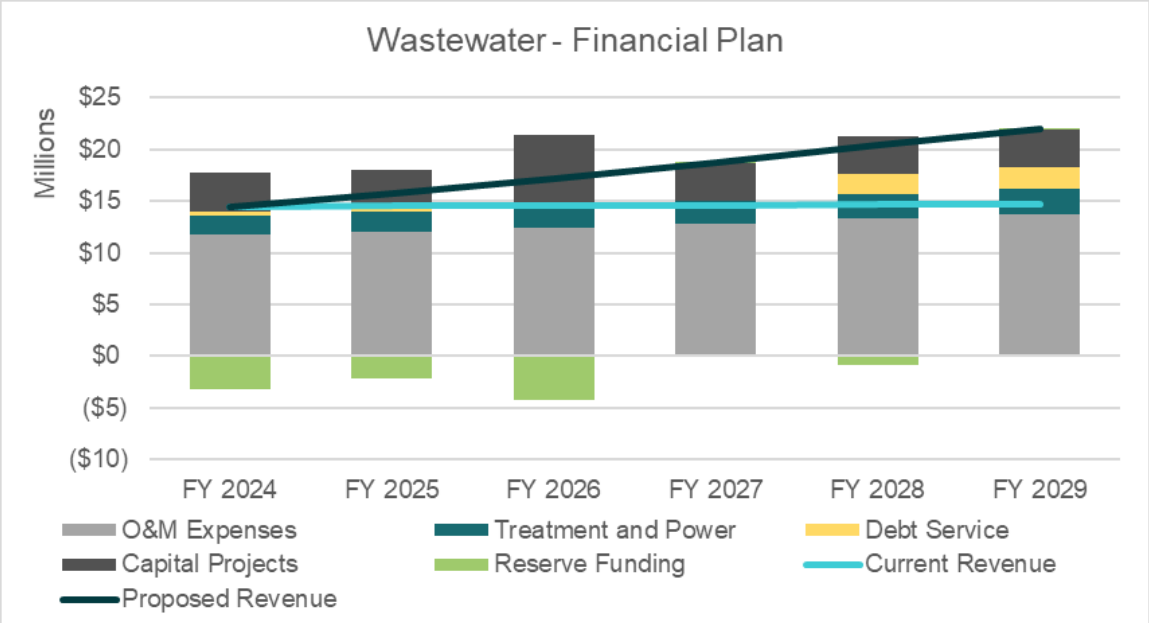


Figure 5-6 shows the projected wastewater fund balances with the proposed revenue adjustments. The cash balances are positive for all years of the Study. These balances are drawn down to fund the City's capital projects in FY 2025, FY 2026, and FY 2028.

Figure 5-6: Projected Wastewater Fund Balances (Proposed Revenue Adjustments)

6. Wastewater – Cost of Service Analysis and Rates

This section of the report details the cost-of-service analysis and rate calculation process to determine the proposed wastewater rates. The goal of this process is to determine the cost of providing wastewater service to each of the City's wastewater customer classes and to ensure equity and fairness among the various classes.

6.1. Process and Approach

The cost-of-service analysis utilized to develop the wastewater rates followed the guidelines for allocating costs outlined in the WEF Manual No. 27. The cost-of-service analysis and rate design process consists of eight major steps, as outlined below:

1. Determine the revenue requirement, equal to the revenue to be recovered from rates.
2. Conduct a treatment plant mass balance analysis to estimate the flows and strength characteristics of each customer class.
3. Functionalize O&M expenses and capital assets into functional categories such as treatment, laboratory, collection, engineering, etc.
4. Allocate each functional category into cost components such as wastewater flow and strength, which includes BOD and TSS.
5. Develop customer class characteristics and units of service by cost component.
6. Calculate the cost component unit rates by dividing the total cost in each cost component by the total units of service for that component. For example, wastewater flow is measured in ccf and BOD and TSS are measured in lbs per year.
7. Calculate the cost for each customer class by multiplying the unit cost by the units of service for each customer class.
8. Design rates to meet City's objectives.

6.2. Revenue Requirement

The first step of the cost-of-service analysis is to determine the revenue requirement for the test year, or rate-making year. The test year of this study is FY 2025. **Table 6-1** shows the revenue requirement calculation for the wastewater utility.

The revenue requirements (Lines 2-4) are equal to the O&M expenses and debt and capital costs for FY 2025 (**Table 5-12**, Column C, Lines 18 and 25). The revenues from other sources (Lines 7-11), also known as non-rate revenues or revenue offsets, are equal to all non-rate revenues (**Table 5-12**, Column C, Lines 4-6). The adjustment for cash from/(to) reserves (Line 15) is equal to the negative value of net cash flow (**Table 5-12**, Column C, Line 27).

The revenue to be recovered from rates (Line 19) is divided between operating (Column B) and capital (Column C) based on the function of each line item. For example, debt and capital costs (Line 3) are allocated to capital, while O&M expenses (Line 2) are allocated to operating. Note that the total revenue requirement (Column D, Line 19) is equal to rate revenues for a full year of the revenue adjustment for FY 2025.

Table 6-1: Wastewater Revenue Requirement Calculation

	A	B	C	D
Line	Revenue Requirement (FY 2025)	Operating	Capital	Total
1	**Revenue Requirements**			
2	O&M Expenses	$14,008,838	$0	$14,008,838
3	Debt and Capital	$0	$3,979,607	$3,979,607
4	**Total - Revenue Requirements**	**$14,008,838**	**$3,979,607**	**$17,988,445**
5				
6	**Revenue from Other Sources**			
7	Investment Income	$0	$137,328	$137,328
8	Sale of Surplus Property	$0	$0	$0
9	Other Revenues	$0	$0	$0
10	Wastewater Service (521)	$427,100	$0	$427,100
11	Wastewater Project (523)	$0	$0	$0
12	**Total - Revenue from Other Sources**	**$427,100**	**$137,328**	**$564,428**
13				
14	**Adjustments**			
15	Cash from Reserves	$0	$3,962,284	$3,962,284
16	Midyear Increase	$0	$0	$0
17	**Subtotal - Adjustments**	**$0**	**$3,962,284**	**$3,962,284**
18				
19	**Revenue to be Recovered from Rates**	**$13,581,738**	**($120,005)**	**$13,461,733**

6.3. Plant Mass Balance

The second step of the cost-of-service analysis is to conduct a plant mass balance analysis. The plant mass balance analysis is used to estimate and validate the wastewater loadings (flow and strength) generated by each customer class. While wastewater discharged into sewers for most users is not metered when it enters the wastewater system, the total amount of flow and strength entering the treatment plant is a known quantity. The quantity entering into the wastewater system is called total plant influent.

From the total plant influent, a portion is subtracted for inflows and infiltration (I&I). Non-residential customer flows can be estimated based on their water usage and using industry-accepted return factors. From there, residential customer loadings can be calculated by subtracting I&I and estimated non-residential loadings from total plant influent to determine the reasonableness of residential loadings.

Table 6-2 shows the wastewater flow estimates for elementary and secondary schools. The estimated wastewater flow per student (Line 1) in gallons per capita per day (gpcd) is based on industry standards, with some conservation factored in for secondary schools. This is multiplied by the projected number of students for FY 2025 (**Table 5-1**, Column D, Lines 19-20). The annual flow in gallons (Line 3) is converted to ccf (Line 4) to determine the total wastewater flow in ccf for elementary and secondary schools.

Table 6-2: Schools Wastewater Flow Estimate

	A	B	C
Line	Schools	Elementary	Secondary
1	Per Student Flow (gpcd)	5	8
2	Students	4,848	8,189
3	Annual Flow (gal)	7,962,732	22,418,316
4	Annual Flow (ccf)	10,645	29,971

Table 6-3 shows the plant balance analysis for all customer classes. There is no change to the customer classes which are grouped by the strength of their wastewater flow. The left-most columns (Columns B to D) represent the same values as the right-most columns (Columns F to H) in converted values. Flow is measured in million gallons per day (MGD) and converted to ccf per year. BOD and TSS are measured in milligrams per liter (mg/L) and converted to lbs per year.

City staff provided total plant influent (Line 1) and estimated approximately 7 percent of total influent to be from I&I (Line 2). Customers are grouped based on their strength and estimated strength - BOD and TSS in mg/L (Columns C and D, Lines 2-17) - are based on industry standards. The non-residential return factors (Column E) are estimated for the City's characteristics. The wastewater flows for non-residential customers (Column F, Lines 6-14) are calculated by multiplying the non-residential water usage (**Table 5-1**, Column C, Lines 7-15) by the return factors. The estimated wastewater flows for schools (Column D, Lines 16-17) were calculated in

Table 6-2. Septage loadings (Line 20) represent a small portion of total plant loadings; flow is derived from data provided by City staff, and strength is based on industry standards.

The net residential loadings (Line 22) are determined by subtracting non-residential loadings (Lines 5-17), septage (Line 20), and I&I (Line 2) from total plant influent (Line 1).

Table 6-3: Wastewater Plan Balance Calculation

	A	B	C	D	E	F	G	H
Line	**Plant Balance**	**Flow (MGD)**	**BOD (mg/L)**	**TSS (mg/L)**	**Return Factor**	**Flow (ccf)**	**BOD (lbs/yr)**	**TSS (lbs/yr)**
1	Total Plant Influent	5.85	329	248		2,852,760	5,863,450	4,423,940
2	Less: I&I	0.41	100	100		199,693	124,656	124,656
3	**Net Plant Influent**	**5.44**	**346**	**260**		**2,653,067**	**5,738,795**	**4,299,284**
4								
5	**Non-Residential**							
6	Low Strength I	0.08	50	50	84%	37,036	11,560	11,560
7	Low Strength II	0.71	150	150	84%	347,150	325,055	325,055
8	Low Strength III	0.15	250	250	84%	75,450	117,747	117,747
9	Medium Strength I	0.05	350	350	84%	22,006	48,079	48,079
10	Medium Strength II	0.07	450	450	84%	31,996	89,878	89,878
11	Medium Strength III	0.03	550	550	84%	16,539	56,784	56,784
12	High Strength I	0.02	650	650	84%	8,629	35,013	35,013
13	High Strength II	0.23	750	750	84%	114,672	536,867	536,867
14	Large Volume User	0.06	250	250	84%	27,970	43,650	43,650
15								
16	Elementary School	0.02	130	130	100%	10,645	8,639	8,639
17	Secondary & High School	0.06	130	130	100%	29,971	24,322	24,322
18	**Subtotal Non-Residential Flow**	**1.48**	**288**	**288**		**722,064**	**1,297,592**	**1,297,592**
19								
20	Septage	0.001	5,400	12,000		583	19,665	43,700
21								
22	**Net Residential Flow**	**3.96**	**367**	**245**		**1,930,419**	**4,421,538**	**2,957,993**

The plant mass balance analysis in

Table 6-3 results in total estimated residential loadings. **Table 6-4** shows the number of total single family and multiple family dwelling units. To allocate the total flow and strength between single and multiple family customers, the dwelling units (**Table 5-1**, Column D, Lines 2-3) are multiplied by the dwelling unit (DU) ratio (Column C) to determine the adjusted units (Column D). The dwelling unit ratio represents the amount of wastewater flow compared to the average flow from a single family customer. The ratio for multiple family dwelling units is lower than that of single family because multiple family units tend to have a smaller household size based on housing density data. The proportion of adjusted units (Column E), or equivalent dwelling units (EDU), is used to allocate the estimated residential loadings between single and multiple family.

Table 6-4: Residential Proportion of Wastewater Flow

	A	B	C	D	E
Line	Residential Customer Classes	Dwelling Units	DU Ratio	Adjusted Units	Proportion of Total Units
1	Single Family	16,752	1.00	16,752	67.7%
2	Multiple Family	10,072	0.79	7,991	32.3%
3	**Total - Residential**	**26,824**		**24,744**	**100.0%**

Table 6-5 shows the estimated residential wastewater loadings, allocated using the EDU ratios (**Table 6-4**, Column E). The total residential flow (Line 3) is equal to that calculated in the plant mass balance analysis (

Table 6-3, Columns F to H, Line 22). To validate the results of the plant mass balance analysis, the total estimated residential flow is divided by the total population estimate, equal to 70,130 people, to determine that each resident in the City uses 56 gpcd. The residential wastewater strength shown in **Table 6-3**, Line 22, is also reasonable given the reduced wastewater flow. This is a reasonable estimate based on industry standard wastewater flow and strength estimates.

Table 6-5: Estimated Residential Wastewater Loadings

	A	B	C	D
Line	Residential Customer Classes	Flow (ccf)	BOD (lbs/yr)	TSS (lbs/yr)
1	Single Family	1,306,953	2,993,516	2,002,651
2	Multiple Family	623,467	1,428,022	955,342
3	**Total - Residential**	**1,930,419**	**4,421,538**	**2,957,993**

The estimated flow from a single family dwelling unit is 160 gpd. The wastewater strength is higher because of lower wastewater flow due to conservation. This is now common for residential flow and strength. The estimated flow is calculated as follows:

1,306,953 ccf per year / 16,752 units x 748 ccf per gallon / 365 days per year = 160 gpd

6.4. Operating and Capital Cost Allocation

The next step in the cost-of-service analysis is to determine the operating and capital cost allocations by cost component. The cost components in this Study include flow, BOD, TSS, and general.

Table 6-6 shows the wastewater operating cost allocation. The flow cost component represents costs associated with wastewater flow, such as collection. The BOD and TSS cost components represent costs associated with wastewater strength, such as treatment and laboratory analyses. General costs, such as administration or engineering costs, do not have a specific function.

For the purpose of allocating operating costs, City staff provided the O&M expense budget estimates by function (Column F, Lines 13-21). This is representative of the distribution of operating costs shown in **Table 5-5**. Functions include administration, engineering, treatment and operations, treatment plant maintenance, quality control, industrial waste monitoring, collection, and laboratory. The operating costs are allocated to each cost component based on the percentage allocation (Lines 2-10) for each component. The final O&M expense allocation (Line 23) is determined by taking the weighted proportion of total operating costs by cost component based on the percentage allocations.

Table 6-6: Wastewater Operating Cost Allocation

	A	B	C	D	E	F
Line	**O&M Expense Allocation**	**Flow**	**BOD**	**TSS**	**General**	**Total**
1	**Percentage Allocation**					
2	Wastewater Admin & General				100%	100%
3	Wastewater Engineering				100%	100%
4	Wastewater Treatment and Operations	50%	25%	25%		100%
5	Wastewater Treatment Plant Maintenance	50%	25%	25%		100%
6	Wastewater Quality Control		50%	50%		100%
7	Wastewater Industrial Waste Monitoring	100%				100%
8	Wastewater Collection System - General	100%				100%
9	WW Joint Laboratory - Water		50%	50%		100%
10	WW Joint Laboratory - Solid Waste		50%	50%		100%
11						
12	**Dollar Allocation**					
13	Wastewater Admin & General	$0	$0	$0	$3,365,775	$3,365,775
14	Wastewater Engineering	$0	$0	$0	$734,148	$734,148
15	Wastewater Treatment and Operations	$2,372,907	$1,186,454	$1,186,454	$0	$4,745,814
16	Wastewater Treatment Plant Maintenance	$604,593	$302,297	$302,297	$0	$1,209,186
17	Wastewater Quality Control	$0	$361,003	$361,003	$0	$722,006
18	Wastewater Industrial Waste Monitoring	$930,789	$0	$0	$0	$930,789
19	Wastewater Collection System - General	$1,990,298	$0	$0	$0	$1,990,298
20	WW Joint Laboratory - Water	$0	$160,103	$160,103	$0	$320,206
21	WW Joint Laboratory - Solid Waste	$0	$4,366	$4,366	$0	$8,732
22	**Total - O&M Expenses**	**$5,898,587**	**$2,014,222**	**$2,014,222**	**$4,099,924**	**$14,026,955**
23	*O&M Expense Allocation*	*42.1%*	*14.4%*	*14.4%*	*29.2%*	*100.0%*

Table 6-7 shows the wastewater capital cost allocation. To minimize fluctuations in the capital cost allocation as capital projects change from year to year, capital costs are allocated based on capital assets. For the purpose of allocating capital costs, City staff provided the wastewater capital assets listed by function (Column F, Lines 10-15). This is representative of the distribution of capital costs shown in

Table 5-8. Functions include land, wastewater facilities, construction in progress, machinery and equipment, collection system, and vehicles. The capital asset costs are allocated into each cost component based on the percentage allocation (Lines 2-7) for each component. The final capital expense allocation (Line 17) is determined by taking the weighted proportion of total capital asset costs by cost component.

Table 6-7: Wastewater Capital Allocation

	A	B	C	D	E	F
Line	Capital Expense Allocation	Flow	BOD	TSS	General	Total
1	**Percentage Allocation**					
2	Land (For WWTP and Perc Ponds)	50%	25%	25%		100%
3	Wastewater Facilities/Plant	50%	25%	25%		100%
4	Construction in Progress				100%	100%
5	Machinery and Equipment	50%	25%	25%		100%
6	Collection System	100%				100%
7	Vehicles	100%				100%
8						
9	**Dollar Allocation**					
10	Land (For WWTP and Perc Ponds)	$2,219,416	$1,109,708	$1,109,708	$0	$4,438,832
11	Wastewater Facilities/Plant	$5,307,140	$2,653,570	$2,653,570	$0	$10,614,280
12	Construction in Progress	$0	$0	$0	$0	$0
13	Machinery and Equipment	$82,840	$41,420	$41,420	$0	$165,680
14	Collection System	$18,220,858	$0	$0	$0	$18,220,858
15	Vehicles	$186,819	$0	$0	$0	$186,819
16	**Total - Capital Assets**	**$26,017,073**	**$3,804,698**	**$3,804,698**	**$0**	**$33,626,469**
17	*Capital Expense Allocation*	*77%*	*11%*	*11%*	*0%*	*100%*

6.5. Unit Cost Components

Table 6-8 shows the wastewater service units by cost component, which are from the plant mass balance analysis (

Table 6-3).

Table 6-8: Wastewater Service Units by Cost Components

	A	B	C	D
Line	Customer Class	Flow (ccf)	BOD (lbs/yr)	TSS (lbs/yr)
1	**Residential**			
2	Single Family Residence	1,306,953	2,993,516	2,002,651
3	Multi-Family Residence	623,467	1,428,022	955,342
4	**Total - Residential**	**1,930,419**	**4,421,538**	**2,957,993**
5				
6	**Non-Residential**			
7	Low Strength I	37,036	11,560	11,560
8	Low Strength II	347,150	325,055	325,055
9	Low Strength III	75,450	117,747	117,747
10	Medium Strength I	22,006	48,079	48,079
11	Medium Strength II	31,996	89,878	89,878
12	Medium Strength III	16,539	56,784	56,784
13	High Strength I	8,629	35,013	35,013
14	High Strength II	114,672	536,867	536,867
15	Large Volume User	27,970	43,650	43,650
16	**Total - Non-Residential**	**681,448**	**1,264,632**	**1,264,632**
17				
18	**Schools**			
19	Elementary School	10,645	8,639	8,639
20	Secondary & High School	29,971	24,322	24,322
21	**Total - Schools**	**40,616**	**32,960**	**32,960**
22				
23	**Septage**	**583**	**19,665**	**43,700**
24				
25	**Total**	**2,653,067**	**5,738,795**	**4,299,284**

Table 6-9 shows the calculation of unit costs by cost component. The operating revenue requirement (**Table 6-1**, Column B, Line 19) is allocated based on the O&M expense allocation (**Table 6-6**, Line 23) for each cost component. Similarly, the capital revenue requirement (**Table 6-1**, Column C, Line 19) is allocated based on the capital asset allocation (**Table 6-7**, Line 17). Then, the general costs (Column E, Line 3) are reallocated to the flow, BOD, and TSS cost components proportionately to the remaining cost of service. The adjusted cost of service for each cost component (Line 5) is divided by the units of service (Line 7) derived from **Table 6-8**, resulting in the unit cost component.

Table 6-9: Wastewater Cost of Service and Unit Costs

	A	B	C	D	E	F
Line	**Cost of Service Allocation**	**Flow**	**BOD**	**TSS**	**General**	**Total**
1	Operating Cost	$5,711,365	$1,950,291	$1,950,291	$3,969,792	$13,581,738
2	Capital Cost	($92,849)	($13,578)	($13,578)	$0	($120,005)
3	**Total Cost of Service**	**$5,618,516**	**$1,936,713**	**$1,936,713**	**$3,969,792**	**$13,461,733**
4	Allocation of General Costs	$2,349,818	$809,987	$809,987	($3,969,792)	$0
5	**Adjusted Cost of Service**	**$7,968,335**	**$2,746,699**	**$2,746,699**	**$0**	**$13,461,733**
6						
7	Units of Service	2,653,067	5,738,795	4,299,284		
8		ccf	lbs/yr	lbs/yr		
9						
10	Unit Cost	$3.00	$0.48	$0.64		
11		ccf	lbs/yr	lbs/yr		

6.6. Revenue Requirement Allocation

The final step in the cost-of-service analysis is to allocate the revenue requirement to each customer class based on their share of burden in the wastewater system. **Table 6-10** shows the revenue requirement allocated to each customer class based on the cost components, which is calculated by multiplying the unit costs of each cost component (**Table 6-9**, Line10) by the units of service for each customer class (**Table 6-8**). Note that the total cost of service (Column E, Line 25) is equal to the total revenue required from rates (**Table 6-1**, Column D, Line 19). The calculations in the table may not be equal to the precise number shown due to rounding within the tables.

Table 6-10: Allocation of Wastewater Revenue Requirement to Customer Classes

	A	B	C	D	E
Line	Customer Class	Flow	BOD	TSS	Total
1	**Residential**				
2	Single Family Residence	$3,925,357	$1,432,755	$1,279,441	$6,637,553
3	Multi-Family Residence	$1,872,546	$683,479	$610,342	$3,166,368
4	**Total - Residential**	**$5,797,903**	**$2,116,234**	**$1,889,783**	**$9,803,921**
5					
6	**Non-Residential**				
7	Low Strength I	$111,237	$5,533	$7,385	$124,155
8	Low Strength II	$1,042,644	$155,578	$207,669	$1,405,891
9	Low Strength III	$226,610	$56,356	$75,225	$358,191
10	Medium Strength I	$66,094	$23,012	$30,717	$119,823
11	Medium Strength II	$96,097	$43,017	$57,421	$196,535
12	Medium Strength III	$49,674	$27,178	$36,278	$113,130
13	High Strength I	$25,917	$16,758	$22,369	$65,043
14	High Strength II	$344,410	$256,955	$342,990	$944,355
15	Large Volume User	$84,007	$20,892	$27,887	$132,785
16	**Total - Non-Residential**	**$2,046,690**	**$605,277**	**$807,940**	**$3,459,907**
17					
18	**Schools**				
19	Elementary School	$31,973	$4,135	$5,519	$41,627
20	Secondary & High School	$90,016	$11,641	$15,538	$117,196
21	**Total - Schools**	**$121,989**	**$15,776**	**$21,058**	**$158,822**
22					
23	**Septage**	**$1,752**	**$9,412**	**$27,918**	**$39,083**
24					
25	**Total**	**$7,968,335**	**$2,746,699**	**$2,746,699**	**$13,461,733**

6.7. Rate Calculation

Table 6-11 shows the rate calculation for the City's proposed wastewater rates for the FY 2025 test year.

Bi-monthly residential service charge = Residential cost of service / dwelling units / 6 billing periods

Non-residential wastewater usage rate = Non-residential cost of service / ccf of water usage

Bi-monthly schools service charge = Schools cost of service / students x 100 students / 6 billing periods

The City's wastewater utility incurs additional costs (Line 22) to serve septage customers above and beyond the allocated cost of service. These additional costs are equal to the total burdened labor cost for administrative work related to collecting septage. Note that the revenues from septage charges were estimated in the projected wastewater revenues (**Table 5-4**, Line 5). The additional costs are calculated as follows:

$30 per hour x 0.25 hours x 2 for overhead costs / 2,000 gallons per load x 363,636 gallons of septage per year

Table 6-11: Wastewater Bi-Monthly Rate Calculation

	A	B	C	D
Line	**Customer Class**	**Cost of Service**	**FY 2025 Units**	**Proposed Bi-Monthly Rate**
1	**Residential**		*dwelling units*	*per dwelling unit*
2	Single Family Residence	$6,637,553	16,752	$66.04
3	Multi-Family Residence	$3,166,368	10,072	$52.40
4				
5	**Non-Residential**		*ccf of water*	*per ccf*
6	Low Strength I	$124,155	44,091	$2.82
7	Low Strength II	$1,405,891	413,274	$3.41
8	Low Strength III	$358,191	89,821	$3.99
9	Medium Strength I	$119,823	26,198	$4.58
10	Medium Strength II	$196,535	38,090	$5.16
11	Medium Strength III	$113,130	19,689	$5.75
12	High Strength I	$65,043	10,273	$6.34
13	High Strength II	$944,355	136,514	$6.92
14	Large Volume User	$132,785	33,298	$3.99
15				
16	**Schools**		*students*	*per 100 students*
17	Elementary School	$41,627	4,848	$143.11
18	Secondary & High School	$117,196	8,189	$238.52
19				
20	**Septage**		*gallons*	*per gallon*
21	Cost of Service	$39,083	436,364	$0.09
22	Additional Costs	$3,273	436,364	$0.01
23	Total Septage	$42,355	436,364	$0.10

Table 6-12 shows the bi-monthly rate comparison between the proposed rates calculated in **Table 6-11** and the City's current wastewater rates.

Table 6-12: Wastewater Bi-Monthly Rate Comparison

	A	B	C	D
Line	Customer Class	Proposed Bi-Monthly Rate	Current Bi-Monthly Rate	Difference ($)
1	**Residential**	*per dwelling unit*		
2	Single Family Residence	$66.04	$62.43	$3.61
3	Multi-Family Residence	$52.40	$48.08	$4.32
4				
5	**Non-Residential**	*per ccf*		
6	Low Strength I	$2.82	$2.42	$0.40
7	Low Strength II	$3.41	$2.87	$0.54
8	Low Strength III	$3.99	$3.32	$0.67
9	Medium Strength I	$4.58	$3.77	$0.81
10	Medium Strength II	$5.16	$4.22	$0.94
11	Medium Strength III	$5.75	$4.67	$1.08
12	High Strength I	$6.34	$5.12	$1.22
13	High Strength II	$6.92	$5.56	$1.36
14	Large Volume User	$3.99	$3.32	$0.67
15				
16	**Schools**	*per 100 students*		
17	Elementary School	$143.11	$134.38	$8.73
18	Secondary & High School	$238.52	$215.02	$23.50
19				
20	**Septage**	*per gallon*		
21	Septage Charge *	$0.10	$0.11	($0.01)

6.8. Proposed Rates

Table 6-13 and **Table 6-14** show the proposed bi-monthly wastewater service charges and the non-residential wastewater rates, respectively. The proposed wastewater rates for July 2024 are from **Table 6-11**. The proposed wastewater rates in the following years are increased across the board by the revenue adjustments in **Table 5-11**.

Table 6-13: Proposed Bi-Monthly Wastewater Service Charges

	A	B	C	D	E	F	G
Line	Bi-Monthly Wastewater Service Charges	Current Rates	July 2024	July 2025	July 2026	July 2027	July 2028
1	Residential ($/dwelling unit)						
2	Single Family	$62.43	$66.04	$72.65	$79.92	$87.92	$94.96
3	Multiple Family	$48.08	$52.40	$57.64	$63.41	$69.76	$75.35
4							
5	Schools ($/100 students)						
6	Elementary	$134.38	$143.11	$157.43	$173.18	$190.50	$205.74
7	Secondary & High	$215.02	$238.52	$262.38	$288.62	$317.49	$342.89

Table 6-14: Proposed Non-Residential Wastewater Rates

	A	B	C	D	E	F	G
Line	Wastewater Usage Rates	Current Rates	July 2024	July 2025	July 2026	July 2027	July 2028
1	Non-Residential Usage ($/ccf)						
2	Low Strength I	$2.42	$2.82	$3.11	$3.43	$3.78	$4.09
3	Low Strength II	$2.87	$3.41	$3.76	$4.14	$4.56	$4.93
4	Low Strength III	$3.32	$3.99	$4.39	$4.83	$5.32	$5.75
5	Medium Strength I	$3.77	$4.58	$5.04	$5.55	$6.11	$6.60
6	Medium Strength II	$4.22	$5.16	$5.68	$6.25	$6.88	$7.44
7	Medium Strength III	$4.67	$5.75	$6.33	$6.97	$7.67	$8.29
8	High Strength I	$5.12	$6.34	$6.98	$7.68	$8.45	$9.13
9	High Strength II	$5.56	$6.92	$7.62	$8.39	$9.23	$9.97
10	Large Volume User	$3.32	$3.99	$4.39	$4.83	$5.32	$5.75
11	Minimum Charge ($)	$48.08	$52.40	$57.64	$63.41	$69.76	$75.35
12							
13	Septage Charge ($/gal)	$0.11	$0.10	$0.11	$0.13	$0.15	$0.17

7. Non-Potable Water – Financial Plan

This section of the report details the non-potable enterprise's long-term financial plan, based on the projected revenues, expenses, debt service, and capital project costs. Raftelis modeled the financial plan without revenue adjustments (status quo) and with proposed revenue adjustments to ensure the financial sustainability and solvency of the non-potable water utility.

7.1. Projected Revenues

City staff provided the actual FY 2022 revenues and budgeted FY 2023 and FY 2024 revenues for the non-potable water utility, which were used to project revenues for the remainder of the Study period. **Table 7-1** shows the projected water revenues for each of the non-potable water funds.

The non-potable water rate revenues (Lines 2-3) are inflated for future years based on the weighted customer account growth assumptions for each customer class (**Table 2-1**). The City expects modest increases in non-potable water rate revenues for all years of the Study. The investment incomes (Lines 4 and 9) are calculated using the reserve interest rate (**Table 2-2**, Line 2). The remaining revenues are inflated using the non-rate revenue inflation factor (**Table 2-2**, Line 1).

Table 7-1: Projected Non-Potable Water Revenues

	A	B	C	D	E	F	G
Line	Projected Revenues	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Non-Potable Water Service (531)**						
2	Non-Potable Water Usage	$360,000	$608,911	$612,105	$615,315	$618,542	$621,785
3	Non-Potable Water Service Chrg	$230,000	$47,990	$48,241	$48,494	$48,749	$49,004
4	Investment Income	$21,034	$17,488	$17,202	$15,547	$13,559	$11,281
5	**Total - Non-Potable Water Service (531)**	**$611,034**	**$674,389**	**$677,548**	**$679,356**	**$680,850**	**$682,071**
6							
7	**Non-Potable Capital Improvement (549)**						
8	Capital Improv Chrg Non-Res	$80,000	$80,000	$80,000	$80,000	$80,000	$80,000
9	Investment Income	$12,987	$13,117	$13,248	$13,381	$13,515	$13,650
10	**Total - Non-Potable Capital Improvement (549)**	**$92,987**	**$93,117**	**$93,248**	**$93,381**	**$93,515**	**$93,650**
11							
12	**Total - Revenues**	**$704,022**	**$767,506**	**$770,796**	**$772,737**	**$774,364**	**$775,721**

7.2. Projected O&M Expenses

City staff provided the non-potable water O&M actual expenses for FY 2022 and budgeted O&M expenses for FY 2023 and FY 2024. **Table 7-2** shows the projected O&M expenses for the study period, inflated for FY 2025 and beyond using the expense inflation factors (**Table 2-3**).

Table 7-2: Projected Non-Potable Water O&M Expenses

	A	B	C	D	E	F	G
Line	Projected O&M Expenses	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Non-Potable Water Service (531)**						
2	Salaries and Benefits	$100,356	$104,370	$108,545	$112,887	$117,402	$122,098
3	Services - Power	$20,200	$21,323	$22,509	$23,757	$25,075	$26,465
4	Services	$175,740	$181,012	$186,443	$192,036	$197,797	$203,731
5	Supplies	$50,000	$51,500	$53,045	$54,636	$56,275	$57,964
6	**Total - Non-Potable Water Service (531)**	**$346,296**	**$358,206**	**$370,542**	**$383,316**	**$396,549**	**$410,258**
7							
8	**Non-Potable Projects (543)**						
9	Salaries and Benefits	$0	$0	$0	$0	$0	$0
10	Services - Power	$0	$0	$0	$0	$0	$0
11	Services	$150,000	$154,500	$159,135	$163,909	$168,826	$173,891
12	Supplies	$44,542	$45,878	$47,255	$48,672	$50,132	$51,636
13	**Total - Non-Potable Projects (543)**	**$194,542**	**$200,378**	**$206,390**	**$212,581**	**$218,959**	**$225,527**
14							
15	**Total - O&M Expenses**	**$540,838**	**$558,584**	**$576,931**	**$595,898**	**$615,508**	**$635,785**

7.3. Debt Service

The City does not have any existing debt for the non-potable water utility and does not plan to incur new debt to fund capital projects for the study period.

7.4. Capital Projects

Table 7-3 shows the inflated non-potable water capital project costs, based on CIP provided from City staff inflated by the capital expense inflation factor (**Table 2-3**, Line 7). The City plans to fund all CIP for the non-potable water system through rates.

Table 7-3: Inflated Non-Potable Water Capital Projects

	A	B	C	D	E	F	G
Line	**Capital Projects (Inflated)**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**
1	**Replacement**						
2	Texas St. Reservoir & booster station	$51,500	$0	$0	$0	$0	$0
3	Recycled Water Reservoirs	$824,000	$0	$0	$0	$0	$0
4	Well 31A maintenance rehab	$0	$0	$0	$0	$0	$0
5	Redlands Heights Well Rehabilitation	$77,250	$0	$0	$0	$0	$0
6	California Street Well Rehab	$0	$106,090	$0	$0	$0	$0
7	Citywide Non-Potable Water Meter Replacements	$0	$0	$0	$0	$0	$0
8	Chicken Hill Well Rehabilitation	$0	$0	$109,273	$0	$0	$0
9	Well #30A Rehabilitation	$0	$0	$109,273	$0	$0	$0
10	Well 32 liner rehab	$0	$0	$109,273	$348,908	$0	$0
11	Projection	$0	$0	$0	$0	$359,375	$370,156
12	**Total - Replacement**	**$952,750**	**$106,090**	**$327,818**	**$348,908**	**$359,375**	**$370,156**

7.5. Current Financial Plan – Status Quo

Table 7-4 shows the projected non-potable water financial plan under the status quo scenario. Revenues (Line 6) are derived from **Table 7-1**. O&M expenses (Line 15) are from **Table 7-2**. Rate funded capital projects (Line 12) are from **Table 7-3**. The net cash flow (Line 18) is positive for FY 2025 through FY 2029, indicating that the City's non-potable water revenues are sufficient to fund operating and capital project costs and the cash balance at or above the target over the Study period. Therefore, Raftelis does not recommend any rate increases for the Non-Potable water rates for the next five years.

Table 7-4: Projected Non-Potable Water Financial Plan (Status Quo)

	A	B	C	D	E	F	G
Line	Non-Potable Water Financial Plan	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
1	**Revenues**						
2	Rate Revenues	$590,000	$656,901	$660,346	$663,809	$667,290	$670,790
3	Revenue Adjustments	$0	$0	$0	$0	$0	$0
4	Investment Income	$34,022	$30,605	$30,450	$28,928	$27,074	$24,931
5	Other Revenues	$80,000	$80,000	$80,000	$80,000	$80,000	$80,000
6	**Total - Revenues**	**$704,022**	**$767,506**	**$770,796**	**$772,737**	**$774,364**	**$775,721**
7							
8	**O&M Expenses**						
9	Salaries and Benefits	$100,356	$104,370	$108,545	$112,887	$117,402	$122,098
10	Services - Power	$20,200	$21,323	$22,509	$23,757	$25,075	$26,465
11	Services	$325,740	$335,512	$345,578	$355,945	$366,623	$377,622
12	**Total - O&M Expenses**	**$446,296**	**$461,206**	**$476,632**	**$492,589**	**$509,100**	**$526,185**
13							
14	**Debt and Capital**						
15	Rate Funded Capital Projects	$952,750	$106,090	$327,818	$348,908	$359,375	$370,156
16	**Total - Debt and Capital**	**$952,750**	**$106,090**	**$327,818**	**$348,908**	**$359,375**	**$370,156**
17							
18	**Net Cash Flow**	($789,566)	$102,832	($133,953)	($172,069)	($200,519)	($230,221)
19	Net Operating Revenue	$163,184	$208,922	$193,865	$176,839	$158,856	$139,935
20							
21	Beginning Balances	$3,853,955	$3,064,389	$3,167,221	$3,033,268	$2,861,199	$2,660,680
22	Ending Balances	$3,064,389	$3,167,221	$3,033,268	$2,861,199	$2,660,680	$2,430,460

Figure 7-1 shows the proposed non-potable water capital financing plan in graphical format, based on the capital projects shown in **Table 7-3** and with no debt issues. The dark teal bars represent the rate funded replacement CIP costs.

Figure 7-1: Proposed Water Capital Financing Plan (Status Quo)

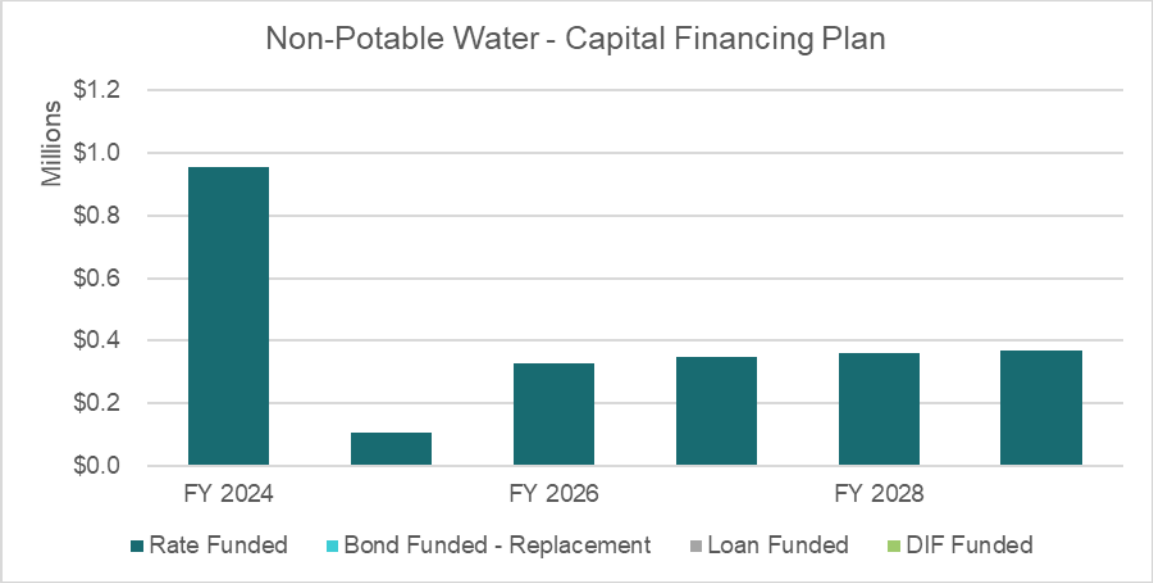


Figure 7-2 shows the projected non-potable water financial plan under the status quo scenario. The green bars, which represent net cash flow, are below the stacked gray bars from FY 2025 to FY 2029, which represents the reduction to the cash balance in those years of the study.

Figure 7-2: Projected Non-Potable Water Financial Plan (Status Quo)

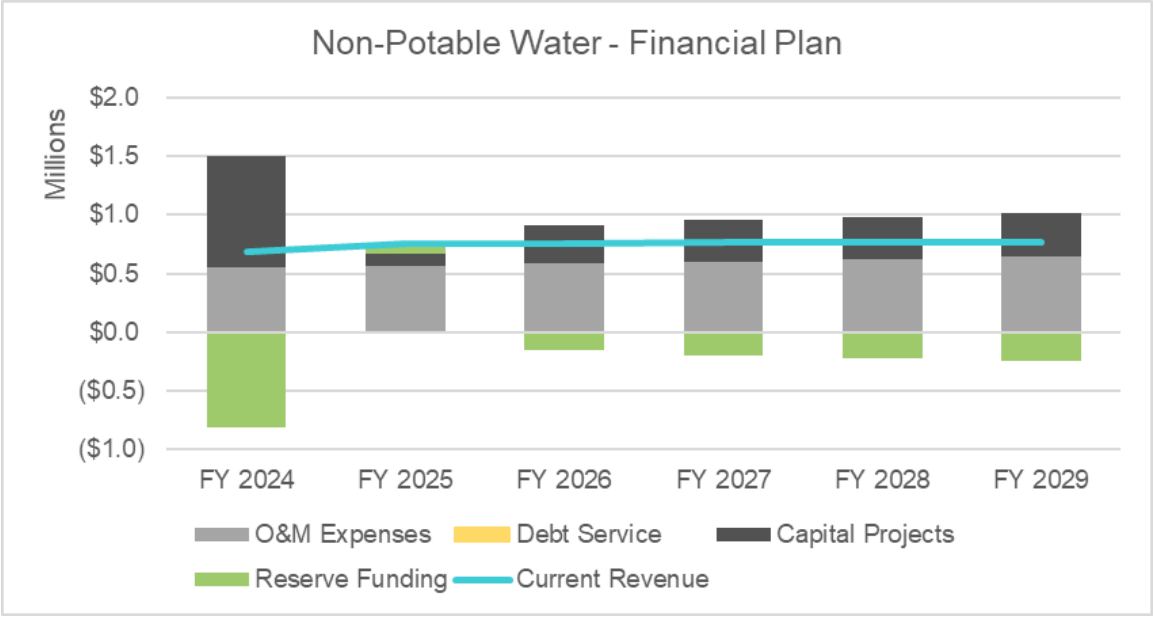
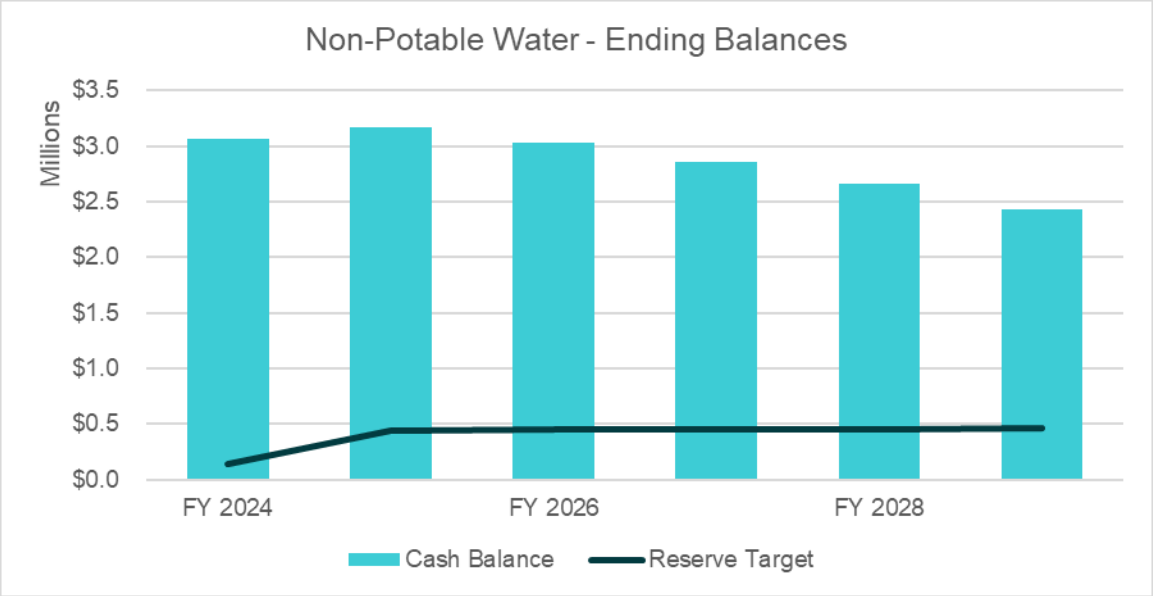


Figure 7-3 shows the projected non-potable water fund cash balance under the status quo scenario. The turquoise bars, which represent the ending cash balance for the non-potable water system, fall above target in FY 2025 through FY 2029.

Figure 7-3: Projected Non-Potable Water Fund Balances (Status Quo)



7.6. Proposed Financial Plan

Table 7-5 shows the proposed non-potable water revenue adjustments over the study period. Currently, Raftelis does not recommend any revenue adjustments.

Table 7-5: Proposed Non-Potable Water Revenue Adjustments

	A	B	C
Line	Fiscal Year	Revenue Adjustment	Month Effective
1	FY 2025	0.0%	July
2	FY 2026	0.0%	July
3	FY 2027	0.0%	July
4	FY 2028	0.0%	July
5	FY 2029	0.0%	July

7.7. Proposed Rates

Since there are no revenue adjustments proposed for the non-potable system, the current non-potable water rates will remain in effect as shown in in **Table 7-6** and **Table 7-7**.

Table 7-6: Proposed Bi-Monthly Non-Potable Water Service Charges ($/meter size)

	A	B	C	D	E	F	G
Line	Bi-Monthly Non-Potable Water Service Charges	Current Rates	July 2024	July 2025	July 2026	July 2027	July 2028
1	Non-Potable Water Service						
2	3/4"	$13.81	$13.81	$13.81	$13.81	$13.81	$13.81
3	1"	$20.65	$20.65	$20.65	$20.65	$20.65	$20.65
4	1 1/2"	$37.29	$37.29	$37.29	$37.29	$37.29	$37.29
5	2"	$55.16	$55.16	$55.16	$55.16	$55.16	$55.16
6	3"	$95.50	$95.50	$95.50	$95.50	$95.50	$95.50
7	4"	$147.45	$147.45	$147.45	$147.45	$147.45	$147.45
8	6"	$272.16	$272.16	$272.16	$272.16	$272.16	$272.16
9	8"	$401.04	$401.04	$401.04	$401.04	$401.04	$401.04

Table 7-7: Proposed Non-Potable Water Usage Rates ($/ccf of water)

	A	B	C	D	E	F	G
Line	Non-Potable Water Usage Rates	Current Rates	July 2024	July 2025	July 2026	July 2027	July 2028
1	**Non-Potable Water Usage**						
2	Non-Potable Water	$0.99	$0.99	$0.99	$0.99	$0.99	$0.99
3	Conversion Customer	$0.64	$0.64	$0.64	$0.64	$0.64	$0.64

8. Appendix A – Alternative Wastewater Rate Scenario

Raftelis is proposing a second financial plan and rates scenario for the wastewater utility. This scenario includes an additional $3 million bond issuance in FY 2025 to pay for capital expenditures. The purpose of this scenario is to spread costs out over a longer period of time to reduce the necessary rate increase. This scenario would lower the rate revenue increase in FY 2027 and FY 2028 from 10 percent to 8 percent. **Table 8-1** and **Table 8-2** show the proposed wastewater rates under this alternative scenario.

Table 8-1: Proposed Bi-Monthly Residential and Schools Wastewater Service Charges

	A	B	C	D	E	F	G
Line	Bi-Monthly Wastewater Service Charges	Current Rates	July 2024	July 2025	July 2026	July 2027	July 2028
1	Residential ($/dwelling unit)						
2	Single Family	$62.43	$66.04	$72.65	$78.47	$84.75	$91.53
3	Multiple Family	$48.08	$52.40	$57.64	$62.26	$67.25	$72.63
4							
5	Schools ($/100 students)						
6	Elementary	$134.38	$143.11	$157.43	$170.03	$183.64	$198.34
7	Secondary & High	$215.02	$238.52	$262.38	$283.38	$306.06	$330.55

Table 8-2: Proposed Non-Residential Wastewater Usage Rates ($/ccf of water)

	A	B	C	D	E	F	G
Line	Wastewater Usage Rates	Current Rates	July 2024	July 2025	July 2026	July 2027	July 2028
1	Non-Residential Usage ($/ccf)						
2	Low Strength I	$2.42	$2.82	$3.11	$3.36	$3.63	$3.93
3	Low Strength II	$2.87	$3.41	$3.76	$4.07	$4.40	$4.76
4	Low Strength III	$3.32	$3.99	$4.39	$4.75	$5.13	$5.55
5	Medium Strength I	$3.77	$4.58	$5.04	$5.45	$5.89	$6.37
6	Medium Strength II	$4.22	$5.16	$5.68	$6.14	$6.64	$7.18
7	Medium Strength III	$4.67	$5.75	$6.33	$6.84	$7.39	$7.99
8	High Strength I	$5.12	$6.34	$6.98	$7.54	$8.15	$8.81
9	High Strength II	$5.56	$6.92	$7.62	$8.23	$8.89	$9.61
10	Large Volume User	$3.32	$3.99	$4.39	$4.75	$5.13	$5.55
11	Minimum Charge ($)	$48.08	$52.40	$57.64	$62.26	$67.25	$72.63
12							
13	Septage Charge ($/gal)	$0.11	$0.10	$0.11	$0.12	$0.13	$0.15

City of
REDLANDS
300 E. State Street, Suite 690
Redlands, CA 92373
909-798-7510
cboatman@cityofredlands.org

Christopher Boatman
Assistant City Manager

DATE: APRIL 8, 2024

TO: MUNICIPAL UTILITIES/ PUBLIC WORKS COMMISSION

FROM: CHRIS BOATMAN, ASSISTANT CITY MANAGER

SUBJECT: ITEM E(A)- SOLID WASTE RATES PRESENTATION & POSSIBLE RECOMMENDATION TO CITY COUNCIL.

Suggested Motion:

> "I move to recommend that the City Council direct staff to prepare and distribute the Proposition 218 Notice of Solid Waste Rate Increase that includes 9% for fiscal year 2024-25, 9% for fiscal year 2025-26, 9% for fiscal year 2016-27, and 5% for fiscal year 2027-28, and set a public hearing date for City Council Consideration of rate adjustments."

Discussion:

On March 18, 2024 the Commission received a comprehensive overview of Solid Waste operations, including an analysis of revenues and expenses. It was underscored that the last rate adjustment occurred in 2017, highlighting the necessity to adjust rates to ensure the sustainability of the operation. The Commission then discussed various rate models, with a specific focus on maintaining any proposed rate increases below 10%. This directive has been duly noted and incorporated into our subsequent actions. Consequently, city staff worked with R3 Consulting to develop a new rate model that adheres to the Commission's request while also addressing the operational needs of the division.

The Revised Rate Model results in lower rate increases than were presented to the Commission in March. Whereas the March projections included rate increases in FY 2024-25 and FY 2025-26 that each exceeded 10%, the Revised Rate Model results in rate increases that are lower than 10% in all years. Additionally, the March projections anticipated two increases in a 12-month time period (either August 1, 2024 and July 1, 2025 OR January 1, 2025 and July 1, 2025). The

Revised Rate Model shifts all projected increases to occur on January 1, annually, thereby avoiding two increases occurring within a 12-month timespan. Finally, two of the options presented in March (Options 3 and 4, which achieved lower near-term rate increases compared to Options 1 and 2) resulted in depletion of fund balance reserves to near $0 within one to two years. The Revised Rate Model projects a minimum fund balance of 10% of operating expenses in all years, which is the minimum recommended by R3 to account for unforeseen circumstances that may arise in the future.

With these updates, the recommended new rate increases per the Revised Rate Model are 9% on January 1, 2025, 2026 and 2027 and 5% on January 1, 2028, for a total of four years of planned rate increases. It is further recommended that the City re-analyze actual and projected expenses in the Solid Waste Service Fund in FY 2027-28 to establish recommended rates effective FY 2028-29 (and up to four additional fiscal years thereafter).

These revisions to the Rate Model were made possible due to adjustments to projected operating and capital expenses. Staff identified revisions for staffing allocations to the Solid Waste Service fund that are estimated to reduce personnel costs in the Fund by $750,000 annually starting in FY 2024-25. Staff also identified revised fleet maintenance costs which are estimated to costs to the Fund also by $750,000 annually starting in FY 2024-25. Finally, the timeframe for replacement of 5 of the 17 vehicles scheduled to be replaced by FY 2028-29 was adjusted; while it is important that the City maintain its replacement schedule, replacement of these vehicles can be deferred by a few years without impacting operations.

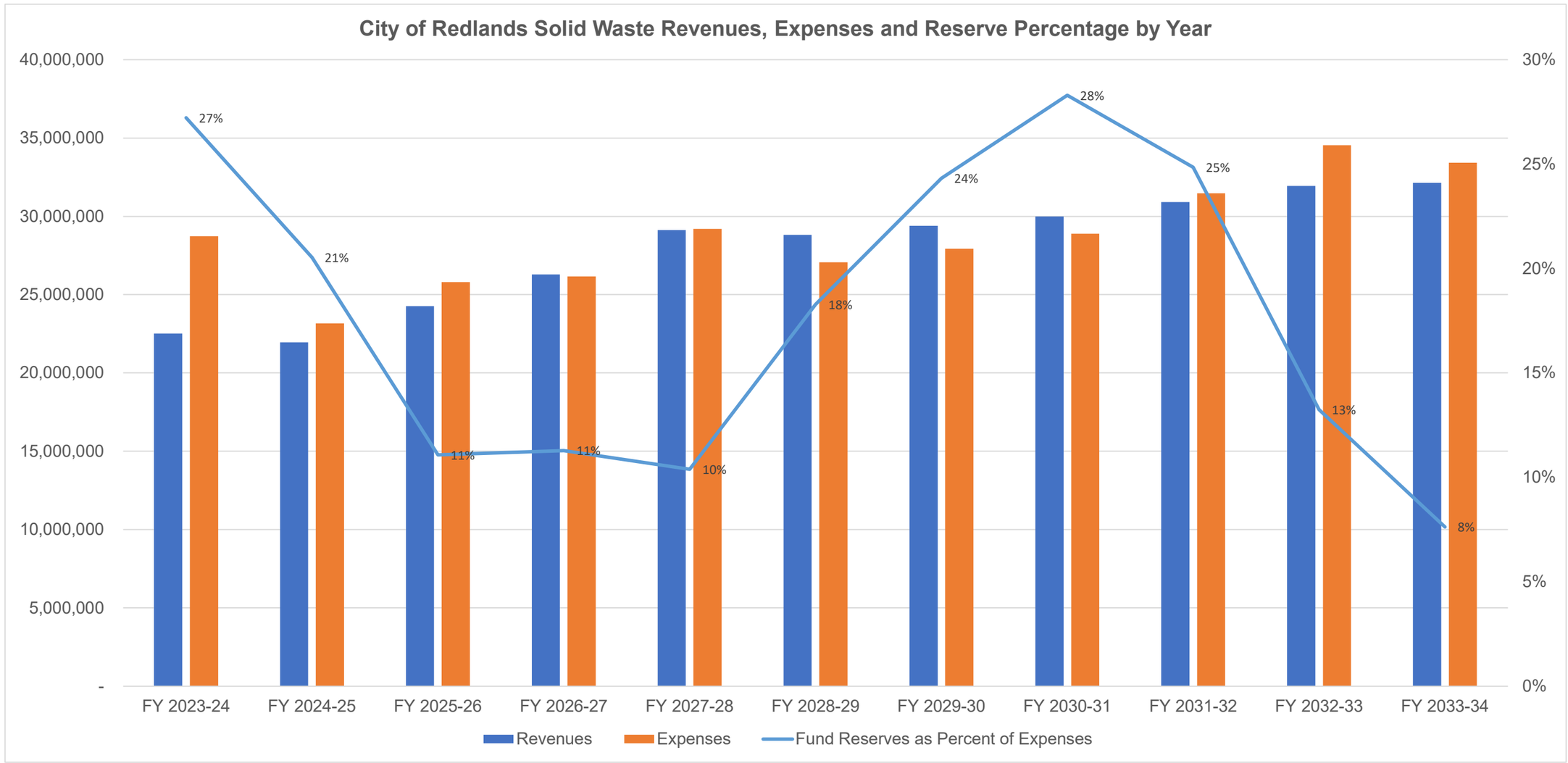
Attached:

Recommended Redlands Rate Model

ATTACHMENT A

CITY OF REDLANDS 5-YEAR RATE STUDY
SUMMARY OF REVENUES, EXPENSES AND RESERVES BY YEAR

	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-31	FY 2031-32	FY 2032-33	FY 2033-34
Revenues	22,520,010	21,964,715	24,262,423	26,292,741	29,124,839	28,814,112	29,395,588	29,989,057	30,913,359	31,937,776	32,133,776
Expenses	28,730,189	23,173,120	25,810,938	26,156,821	29,200,278	27,069,064	27,940,624	28,892,763	31,474,785	34,533,243	33,425,642
Fund Reserves as Percent of Expenses	27%	21%	11%	11%	10%	18%	24%	28%	25%	13%	8%



ATTACHMENT B

CITY OF REDLANDS

DRAFT 5-YEAR RATE STUDY AND 10-YEAR FINANCIAL PROJECTION

SOLID WASTE SERVICE FUND (511)

		Rate Increase Percentage	9.00%	9.00%	9.00%	5.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
		BUDGET	5-YEAR RATE STUDY					10-YEAR FINANCIAL PROJECTION				
		FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-31	FY 2031-32	FY 2032-33	FY 2033-34
	Starting Fund Balance $	**10,981,141**	**4,770,962**	**3,562,557**	**2,014,041**	**2,149,961**	**2,074,522**	**3,819,570**	**5,274,534**	**6,370,828**	**5,809,402**	**3,213,935**
Revenues	Residential Rate Revenue	9,481,500	9,908,168	10,799,903	11,771,894	12,585,788	13,021,686	13,282,120	13,547,762	13,818,717	14,095,092	14,376,993
	Non-Residential Rate Revenue	8,268,750	8,640,844	9,418,520	10,266,186	10,975,978	11,356,121	11,583,244	11,814,909	12,051,207	12,292,231	12,538,076
	Special Hauls & Roll-off Rate Revenue	2,976,750	3,110,704	3,390,667	3,695,827	3,951,352	4,088,204	4,169,968	4,253,367	4,338,434	4,425,203	4,513,707
	Transfer In From Capital Reserve	1,647,962	200,000	548,333	453,833	1,506,721	243,101	255,256	268,019	600,000	1,020,250	600,000
	Other Revenues	145,048	105,000	105,000	105,000	105,000	105,000	105,000	105,000	105,000	105,000	105,000
	Total Revenues	**22,520,010**	**21,964,715**	**24,262,423**	**26,292,741**	**29,124,839**	**28,814,112**	**29,395,588**	**29,989,057**	**30,913,359**	**31,937,776**	**32,133,776**
Operating Expenses	Personnel	6,883,624	6,477,805	6,801,695	7,141,780	7,498,869	7,873,813	8,188,765	8,516,316	8,856,968	9,211,247	9,579,697
	Fleet Maintenance	4,501,774	3,931,845	4,089,119	4,252,684	4,422,791	4,599,702	4,783,691	4,975,038	5,174,040	5,381,001	5,596,241
	Recycling and Organics Processing	2,464,255	2,612,110	2,768,837	2,934,967	3,111,065	3,297,729	3,429,638	3,566,824	3,709,497	3,857,877	4,012,192
	Landfill Costs	1,415,714	1,469,685	1,525,735	1,583,944	1,644,398	1,693,730	1,744,542	1,796,878	1,850,784	1,906,308	1,963,497
	Professional Services	933,464	989,472	1,048,840	1,111,771	1,178,477	1,249,185	1,299,153	1,351,119	1,405,164	1,461,370	1,519,825
	Information Technology Services	729,338	758,512	788,852	820,406	853,222	878,819	905,184	932,339	960,309	989,118	1,018,792
	Supplies, Materials, Other Operating	604,072	629,800	656,628	682,893	710,209	736,668	760,282	784,665	809,843	835,842	862,688
	SB 1383 Compliance	-	480,750	499,980	519,979	540,778	557,002	573,712	590,923	608,651	626,910	645,718
	Subtotal Operating Expenses	**17,532,241**	**17,349,979**	**18,179,686**	**19,048,424**	**19,959,809**	**20,886,648**	**21,684,966**	**22,514,102**	**23,375,256**	**24,269,673**	**25,198,650**
Capital and Equipment	Vehicles and Other Capital Equipment	5,112,850	1,201,525	1,776,559	1,304,094	3,364,318	1,417,165	1,477,970	1,541,815	3,201,750	5,303,033	3,201,816
	Zero Emission Vehicle Infrastructure	-	-	-	-	-	-	100,000	100,000	100,000	100,000	100,000
	New Landfill Cell	-	-	1,166,667	1,166,667	1,166,667	-	-	-	-	-	-
	Subtotal Capital and Equipment Expenses	**5,112,850**	**1,201,525**	**2,943,225**	**2,470,761**	**4,530,985**	**1,417,165**	**1,577,970**	**1,641,815**	**3,301,750**	**5,403,033**	**3,301,816**
Interdepartmental Services and Transfers	Debt Service	2,221,506	693,178	692,147	571,618	570,522	569,392	423,226	422,023	420,783	419,505	418,186
	Transfer to PARIS	1,885,248	1,885,248	1,885,248	1,885,248	1,885,248	1,885,248	1,885,248	1,885,248	1,885,248	1,885,248	1,885,248
	Billing Services	850,000	884,000	919,360	956,134	994,380	1,024,211	1,054,938	1,086,586	1,119,183	1,152,759	1,187,341
	Internal Service Charge	771,173	802,020	834,101	867,465	902,163	929,228	957,105	985,818	1,015,393	1,045,855	1,077,230
	Other Transfers	213,846	213,846	213,846	213,846	213,846	213,846	213,846	213,846	213,846	213,846	213,846
	Transfer to Landfill Closure Reserve	143,325	143,325	143,325	143,325	143,325	143,325	143,325	143,325	143,325	143,325	143,325
	Debt Service on Interfund Loan from Fund 517	-	-	-	-	-	-	-	-	-	-	-
	Subtotal Interdepartmental Services and Transfers	**6,085,098**	**4,621,617**	**4,688,027**	**4,637,637**	**4,709,484**	**4,765,250**	**4,677,687**	**4,736,846**	**4,797,778**	**4,860,537**	**4,925,177**
	Total Expenses	**28,730,189**	**23,173,120**	**25,810,938**	**26,156,821**	**29,200,278**	**27,069,064**	**27,940,624**	**28,892,763**	**31,474,785**	**34,533,243**	**33,425,642**
	Revenues less Expenses	**(6,210,179)**	**(1,208,405)**	**(1,548,515)**	**135,920**	**(75,439)**	**1,745,049**	**1,454,964**	**1,096,294**	**(561,426)**	**(2,595,467)**	**(1,291,866)**
	Ending Fund Balance	**4,770,962**	**3,562,557**	**2,014,041**	**2,149,961**	**2,074,522**	**3,819,570**	**5,274,534**	**6,370,828**	**5,809,402**	**3,213,935**	**1,922,069**
	Ending Fund Balance as Percentage of Operating Expenses	**27%**	**21%**	**11%**	**11%**	**10%**	**18%**	**24%**	**28%**	**25%**	**13%**	**8%**

DIF CAPITAL RESERVE FUND (519)

		BUDGET	5-YEAR RATE STUDY					10-YEAR FINANCIAL PROJECTION				
		FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	FY 2030-31	FY 2031-32	FY 2032-33	FY 2033-34
	Starting Fund Balance	**$ 4,691,907**	**$ 3,565,945**	**$ 3,888,605**	**$ 3,863,611**	**$ 3,933,818**	**$ 2,951,858**	**$ 3,234,261**	**$ 3,505,274**	**$ 3,764,312**	**$ 3,692,181**	**$ 3,200,636**
Revenues	Development Impact Fees	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000
	Investment Income	$ 22,000	$ 22,660	$ 23,340	$ 24,040	$ 24,761	$ 25,504	$ 26,269	$ 27,057	$ 27,869	$ 28,705	$ 29,566
	Total Revenues	**$ 522,000**	**$ 522,660**	**$ 523,340**	**$ 524,040**	**$ 524,761**	**$ 525,504**	**$ 526,269**	**$ 527,057**	**$ 527,869**	**$ 528,705**	**$ 529,566**
Expenses	Transfer to Solid Waste Service Fund 511	$ 1,647,962	$ 200,000	$ 548,333	$ 453,833	$ 1,506,721	$ 243,101	$ 255,256	$ 268,019	$ 600,000	$ 1,020,250	$ 600,000
	Total Expenses	**$ 1,647,962**	**$ 200,000**	**$ 548,333**	**$ 453,833**	**$ 1,506,721**	**$ 243,101**	**$ 255,256**	**$ 268,019**	**$ 600,000**	**$ 1,020,250**	**$ 600,000**
	Revenues less Expenses	**$ (1,125,962)**	**$ 322,660**	**$ (24,994)**	**$ 70,207**	**$ (981,960)**	**$ 282,403**	**$ 271,013**	**$ 259,038**	**$ (72,131)**	**$ (491,545)**	**$ (70,434)**
	Ending Fund Balance	**$ 3,565,945**	**$ 3,888,605**	**$ 3,863,611**	**$ 3,933,818**	**$ 2,951,858**	**$ 3,234,261**	**$ 3,505,274**	**$ 3,764,312**	**$ 3,692,181**	**$ 3,200,636**	**$ 3,130,202**

ATTACHMENT C

REDLANDS 5-YEAR RATE STUDY

DRAFT LINE ITEM FINANCIAL FORECAST

			0	1	2	3	4	5	6	7	8	9	10
REFUSE COLLECTION AND DISPOSAL			**FY 23-24**	**FY 24-25**	**FY 25-26**	**FY 26-27**	**FY 27-28**	**FY 28-29**	**FY 29-30**	**FY 30-31**	**FY 31-32**	**FY 32-33**	**FY 33-34**
Account	**Expense Line Item**	**Adjustment Category**	**Proposed Budget**	**Projected**	**Projected**	**Projected**	**Projected**	**Projected**	**Projected**	**Projected**	**Projected**	**Projected**	**Projected**
30-511900-5001	Salaries, Full-Time	Personnel Services	3,601,975	$ 3,032,074	$ 3,183,677	$ 3,342,861	$ 3,510,004	$ 3,685,505	$ 3,832,925	$ 3,986,242	$ 4,145,691	$ 4,311,519	$ 4,483,980
30-511900-5002	Salaries, Part-time	Personnel Services	19,672	$ 20,656	$ 21,688	$ 22,773	$ 23,911	$ 25,107	$ 26,111	$ 27,156	$ 28,242	$ 29,372	$ 30,547
30-511900-5101	Overtime Salaries	Personnel Services	367,765	$ 386,153	$ 405,461	$ 425,734	$ 447,021	$ 469,372	$ 488,147	$ 507,672	$ 527,979	$ 549,098	$ 571,062
30-511900-5301	Banked Leave Buy Back	Personnel Services	65,988	$ 69,287	$ 72,752	$ 76,389	$ 80,209	$ 84,219	$ 87,588	$ 91,092	$ 94,735	$ 98,525	$ 102,466
30-511900-5401	Pension Contributions	Personnel Services	920,076	$ 966,080	$ 1,014,384	$ 1,065,103	$ 1,118,358	$ 1,174,276	$ 1,221,247	$ 1,270,097	$ 1,320,901	$ 1,373,737	$ 1,428,686
30-511900-5501	Social Security/Medicare	Personnel Services	220,544	$ 231,571	$ 243,150	$ 255,307	$ 268,073	$ 281,476	$ 292,735	$ 304,445	$ 316,622	$ 329,287	$ 342,459
30-511900-5601	Deferred Compensation	Personnel Services	9,677	$ 10,161	$ 10,669	$ 11,202	$ 11,762	$ 12,351	$ 12,845	$ 13,358	$ 13,893	$ 14,448	$ 15,026
30-511900-5701	Health/Dental Insurance	Personnel Services	1,001,621	$ 1,051,702	$ 1,104,287	$ 1,159,502	$ 1,217,477	$ 1,278,350	$ 1,329,484	$ 1,382,664	$ 1,437,970	$ 1,495,489	$ 1,555,309
30-511900-5702	Workers 'Comp Insurance	Personnel Services	196,200	$ 206,010	$ 216,311	$ 227,126	$ 238,482	$ 250,406	$ 260,423	$ 270,840	$ 281,673	$ 292,940	$ 304,658
30-511900-5703	Disability Insurance	Personnel Services	25,983	$ 27,282	$ 28,646	$ 30,079	$ 31,582	$ 33,162	$ 34,488	$ 35,868	$ 37,302	$ 38,794	$ 40,346
30-511900-5704	Unemployment Insurance	Personnel Services	20,684	$ 21,718	$ 22,804	$ 23,944	$ 25,142	$ 26,399	$ 27,455	$ 28,553	$ 29,695	$ 30,883	$ 32,118
30-511900-5705	Life Insurance	Personnel Services	2,940	$ 3,087	$ 3,241	$ 3,403	$ 3,574	$ 3,752	$ 3,902	$ 4,058	$ 4,221	$ 4,390	$ 4,565
30-511900-5802	Eyecare Reimbursement	Personnel Services	10,499	$ 11,024	$ 11,575	$ 12,154	$ 12,762	$ 13,400	$ 13,936	$ 14,493	$ 15,073	$ 15,676	$ 16,303
30-511900-5803	Clothing Allowance	Other Operating Costs	12,885	$ 13,465	$ 14,071	$ 14,634	$ 15,219	$ 15,828	$ 16,303	$ 16,792	$ 17,295	$ 17,814	$ 18,349
30-511900-5804	Uniform Rental	Other Operating Costs	5,369	$ 5,611	$ 5,863	$ 6,098	$ 6,342	$ 6,595	$ 6,793	$ 6,997	$ 7,207	$ 7,423	$ 7,646
30-511900-5903	Other Taxable Benefits	Other Operating Costs	95,520	$ 99,818	$ 104,310	$ 108,483	$ 112,822	$ 117,335	$ 120,855	$ 124,481	$ 128,215	$ 132,061	$ 136,023
30-511900-6005	License & Permits	Other Operating Costs	103,031	$ 107,667	$ 112,512	$ 117,013	$ 121,693	$ 126,561	$ 130,358	$ 134,269	$ 138,297	$ 142,446	$ 146,719
30-511900-6006	Taxes	Other Operating Costs	4,988	$ 5,212	$ 5,447	$ 5,665	$ 5,891	$ 6,127	$ 6,311	$ 6,500	$ 6,695	$ 6,896	$ 7,103
30-511900-6007	Penalties and Interest	Other Operating Costs	551	$ 576	$ 602	$ 626	$ 651	$ 677	$ 697	$ 718	$ 740	$ 762	$ 785
30-511900-6008	State Mandated Fees	Other Operating Costs	74,970	$ 78,344	$ 81,869	$ 85,144	$ 88,550	$ 92,092	$ 94,854	$ 97,700	$ 100,631	$ 103,650	$ 106,759
30-511900-6105	Medical/Physicals	Professional Services	3,297	$ 3,495	$ 3,705	$ 3,927	$ 4,162	$ 4,412	$ 4,589	$ 4,772	$ 4,963	$ 5,162	$ 5,368
30-511900-6106	Other Professional Services	Professional Services	895,432	$ 949,158	$ 1,006,107	$ 1,066,474	$ 1,130,462	$ 1,198,290	$ 1,246,222	$ 1,296,070	$ 1,347,913	$ 1,401,830	$ 1,457,903
30-511900-6301	Water Wastewater Refuse	Other Operating Costs	6,615	$ 6,913	$ 7,224	$ 7,513	$ 7,813	$ 8,126	$ 8,370	$ 8,621	$ 8,879	$ 9,146	$ 9,420
30-511900-6303	City Disposal	Landfill Tip	115,420	$ 118,883	$ 122,449	$ 126,123	$ 129,906	$ 133,803	$ 137,818	$ 141,952	$ 146,211	$ 150,597	$ 155,115
30-511900-6304	Telephone	Other Operating Costs	2,425	$ 2,534	$ 2,648	$ 2,754	$ 2,864	$ 2,979	$ 3,068	$ 3,160	$ 3,255	$ 3,353	$ 3,453
30-511900-6307	Electricity & Gas	Other Operating Costs	6,693	$ 6,994	$ 7,309	$ 7,601	$ 7,905	$ 8,222	$ 8,468	$ 8,722	$ 8,984	$ 9,253	$ 9,531
30-511900-6402	Travel Expense/Reimbursement	Other Expenses	1,985	$ 2,064	$ 2,147	$ 2,233	$ 2,322	$ 2,392	$ 2,464	$ 2,537	$ 2,614	$ 2,692	$ 2,773
30-511900-6403	Training	Other Expenses	16,800	$ 17,472	$ 18,171	$ 18,898	$ 19,654	$ 20,243	$ 20,851	$ 21,476	$ 22,120	$ 22,784	$ 23,467
30-511900-6505	Retiree Health Insurance	Personnel Services	420,000	$ 441,000	$ 463,050	$ 486,203	$ 510,513	$ 536,038	$ 557,480	$ 579,779	$ 602,970	$ 627,089	$ 652,173
30-511900-6710	Special Contractual Services	Professional Services	2,464,255	$ 2,612,110	$ 2,768,837	$ 2,934,967	$ 3,111,065	$ 3,297,729	$ 3,429,638	$ 3,566,824	$ 3,709,497	$ 3,857,877	$ 4,012,192
30-511900-6712	Landfill Tipping Charges	Landfill Tip	150,362	$ 154,873	$ 159,519	$ 164,305	$ 169,234	$ 174,311	$ 179,540	$ 184,926	$ 190,474	$ 196,188	$ 202,074
30-511900-6713	Landfill Closure/PC Expense	Landfill CPC NON CASH	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
30-511900-6801	City Attorney Legal Service	Professional Services	34,735	$ 36,819	$ 39,028	$ 41,370	$ 43,852	$ 46,483	$ 48,343	$ 50,276	$ 52,287	$ 54,379	$ 56,554
30-511900-6802	Info Tech Service Charges	Other Expenses	729,338	$ 758,512	$ 788,852	$ 820,406	$ 853,222	$ 878,819	$ 905,184	$ 932,339	$ 960,309	$ 989,118	$ 1,018,792
30-511900-6803	City Garage Charges	Maintenance	4,501,774	$ 3,931,845	$ 4,089,119	$ 4,252,684	$ 4,422,791	$ 4,599,702	$ 4,783,691	$ 4,975,038	$ 5,174,040	$ 5,381,001	$ 5,596,241
30-511900-6804	General Govt Service Charge	Other Expenses	771,173	$ 802,020	$ 834,101	$ 867,465	$ 902,163	$ 929,228	$ 957,105	$ 985,818	$ 1,015,393	$ 1,045,855	$ 1,077,230
30-511900-6805	Billing Services	Other Expenses	850,000	$ 884,000	$ 919,360	$ 956,134	$ 994,380	$ 1,024,211	$ 1,054,938	$ 1,086,586	$ 1,119,183	$ 1,152,759	$ 1,187,341
30-511900-6901	Printing and Binding	Other Expenses	1,100	$ 1,144	$ 1,190	$ 1,237	$ 1,287	$ 1,325	$ 1,365	$ 1,406	$ 1,448	$ 1,492	$ 1,537
30-511900-6902	Advertising	Other Expenses	4,650	$ 4,836	$ 5,029	$ 5,231	$ 5,440	$ 5,603	$ 5,771	$ 5,944	$ 6,123	$ 6,306	$ 6,495
30-511900-6903	Janitorial Services	Other Expenses	9,983	$ 10,382	$ 10,798	$ 11,230	$ 11,679	$ 12,029	$ 12,390	$ 12,762	$ 13,144	$ 13,539	$ 13,945
30-511900-6904	Land and Building Rent	Other Expenses	5,618	$ 5,843	$ 6,076	$ 6,319	$ 6,572	$ 6,769	$ 6,973	$ 7,182	$ 7,397	$ 7,619	$ 7,848
30-511900-6908	Other Rentals	Other Expenses	124,040	$ 129,002	$ 134,162	$ 139,528	$ 145,109	$ 149,463	$ 153,946	$ 158,565	$ 163,322	$ 168,221	$ 173,268
30-511900-6909	Subscriptions & Memberships	Other Expenses	1,041	$ 1,083	$ 1,126	$ 1,171	$ 1,218	$ 1,254	$ 1,292	$ 1,331	$ 1,371	$ 1,412	$ 1,454
30-511900-6910	Labor	Other Expenses	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
30-511900-7002	Office Supplies	Supplies and Materials	3,511	$ 3,651	$ 3,797	$ 3,949	$ 4,107	$ 4,272	$ 4,443	$ 4,620	$ 4,805	$ 4,997	$ 5,197
30-511900-7004	Uniform/Safety Clothing	Supplies and Materials	45,564	$ 47,387	$ 49,282	$ 51,253	$ 53,303	$ 55,436	$ 57,653	$ 59,959	$ 62,357	$ 64,852	$ 67,446
30-511900-7101	Office Equipment & Furniture	Supplies and Materials	4,630	$ 4,815	$ 5,008	$ 5,208	$ 5,416	$ 5,633	$ 5,858	$ 6,093	$ 6,336	$ 6,590	$ 6,854
30-511900-7102	Small Tools & Equipment	Supplies and Materials	10,046	$ 10,448	$ 10,866	$ 11,300	$ 11,752	$ 12,222	$ 12,711	$ 13,220	$ 13,749	$ 14,299	$ 14,871
30-511900-7201	Hardware Maint/Replace	Maintenance	551	$ 573	$ 596	$ 620	$ 645	$ 670	$ 697	$ 725	$ 754	$ 784	$ 816
30-511900-7205	Machinery & Equip. Maint.	Maintenance	15,233	$ 15,842	$ 16,476	$ 17,135	$ 17,820	$ 18,533	$ 19,275	$ 20,046	$ 20,847	$ 21,681	$ 22,549
30-511900-7206	Vehicle Maintenance	Maintenance	1,766	$ 1,837	$ 1,910	$ 1,987	$ 2,066	$ 2,149	$ 2,235	$ 2,324	$ 2,417	$ 2,514	$ 2,614
30-511900-7208	Repair/Maintenance Supplies	Maintenance	32,011	$ 33,291	$ 34,623	$ 36,008	$ 37,448	$ 38,946	$ 40,504	$ 42,124	$ 43,809	$ 45,562	$ 47,384
30-511900-7209	Janitorial Supplies	Supplies and Materials	7,497	$ 7,797	$ 8,109	$ 8,433	$ 8,770	$ 9,121	$ 9,486	$ 9,866	$ 10,260	$ 10,671	$ 11,097
30-511900-7210	Building Supplies	Supplies and Materials	3,638	$ 3,784	$ 3,935	$ 4,092	$ 4,256	$ 4,426	$ 4,603	$ 4,787	$ 4,979	$ 5,178	$ 5,385
30-511900-7211	Computer Components	Supplies and Materials	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
30-511900-7807	Food	Other Expenses	1,361	$ 1,415	$ 1,472	$ 1,531	$ 1,592	$ 1,640	$ 1,689	$ 1,740	$ 1,792	$ 1,846	$ 1,901
30-511900-7810	Special Departmental Supplies	Other Expenses	670,153	$ 696,959	$ 724,837	$ 753,831	$ 783,984	$ 807,504	$ 831,729	$ 856,681	$ 882,381	$ 908,853	$ 936,118
30-511900-8801	Capital Lease	Other Expenses	479,779	$ 498,970	$ 518,929	$ 539,686	$ 561,274	$ 578,112	$ 595,455	$ 613,319	$ 631,718	$ 650,670	$ 670,190
30-511900-9901	Transfer to General Fund	Transfer	57,186	$ 57,186	$ 57,186	$ 57,186	$ 57,186	$ 57,186	$ 57,186	$ 57,186	$ 57,186	$ 57,186	$ 57,186
30-511900-9901	Transfer to PARIS	Transfer	1,885,248	$ 1,885,248	$ 1,885,248	$ 1,885,248	$ 1,885,248	$ 1,885,248	$ 1,885,248	$ 1,885,248	$ 1,885,248	$ 1,885,248	$ 1,885,248
30-511900-9901	Transfer to Groves	Transfer	81,660	$ 81,660	$ 81,660	$ 81,660	$ 81,660	$ 81,660	$ 81,660	$ 81,660	$ 81,660	$ 81,660	$ 81,660
30-511900-9901	Transfer to Risk Management	Transfer	75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000	$ 75,000
30-511900-9901	Transfer to Landfill Closure Reserve	Transfer	143,325	$ 143,325	$ 143,325	$ 143,325	$ 143,325	$ 143,325	$ 143,325	$ 143,325	$ 143,325	$ 143,325	$ 143,325
Solid Waste - Projects/Grants													
30-511910-6710	Special Contractual Services	Capital Projects	40,748	$ 40,748	$ 40,748	$ 40,748	$ 40,748	$ 40,748	$ 40,748	$ 40,748	$ 40,748	$ 40,748	$ 40,748
30-511910-7206	Vehicle Maintenance	Capital Projects	49,880	$ 49,880	$ 49,880	$ 49,880	$ 49,880	$ 49,880	$ 49,880	$ 49,880	$ 49,880	$ 49,880	$ 49,880
30-511910-7810	Special Departmental Supplies	Capital Projects	40,048	$ 40,048	$ 40,048	$ 40,048	$ 40,048	$ 40,048	$ 40,048	$ 40,048	$ 40,048	$ 40,048	$ 40,048
30-511910-7901	Non-Capital Expenditures	Other Expenses	816	$ 849	$ 883	$ 918	$ 955	$ 983	$ 1,013	$ 1,043	$ 1,074	$ 1,107	$ 1,140
30-511910-8501	Other Betterments/Improv	Capital Projects	1,399,485	$ -									
30-511910-8704	Motor Vehicles	Capital Projects	3,511,873	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
30-511910-8704	Replacement Motor Vehicles (Vehicl	Capital Projects	-	$ 1,000,000	$ 1,575,000	$ 1,102,500	$ 3,162,688	$ 1,215,506	$ 1,276,282	$ 1,340,096	$ 3,000,000	$ 5,101,250	$ 3,000,000
30-511910-8706	All Other Equipment	Capital Projects	70,000	$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ 70,000	$ 70,000
30-511910-9001	Principal	Capital Projects	111,656	$ 256,656	$ 256,656	$ 145,000	$ 145,000	$ 145,000	$ -	$ -	$ -	$ -	$ -
30-511910-9101	Interest	Capital Projects	7,810	$ 7,810	$ 7,810	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Solid Waste - Debt Service													
30-511930-6001	Fiscal Agent Fees	Capital Projects	2,225	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

ATTACHMENT C

REDLANDS 5-YEAR RATE STUDY

DRAFT LINE ITEM FINANCIAL FORECAST

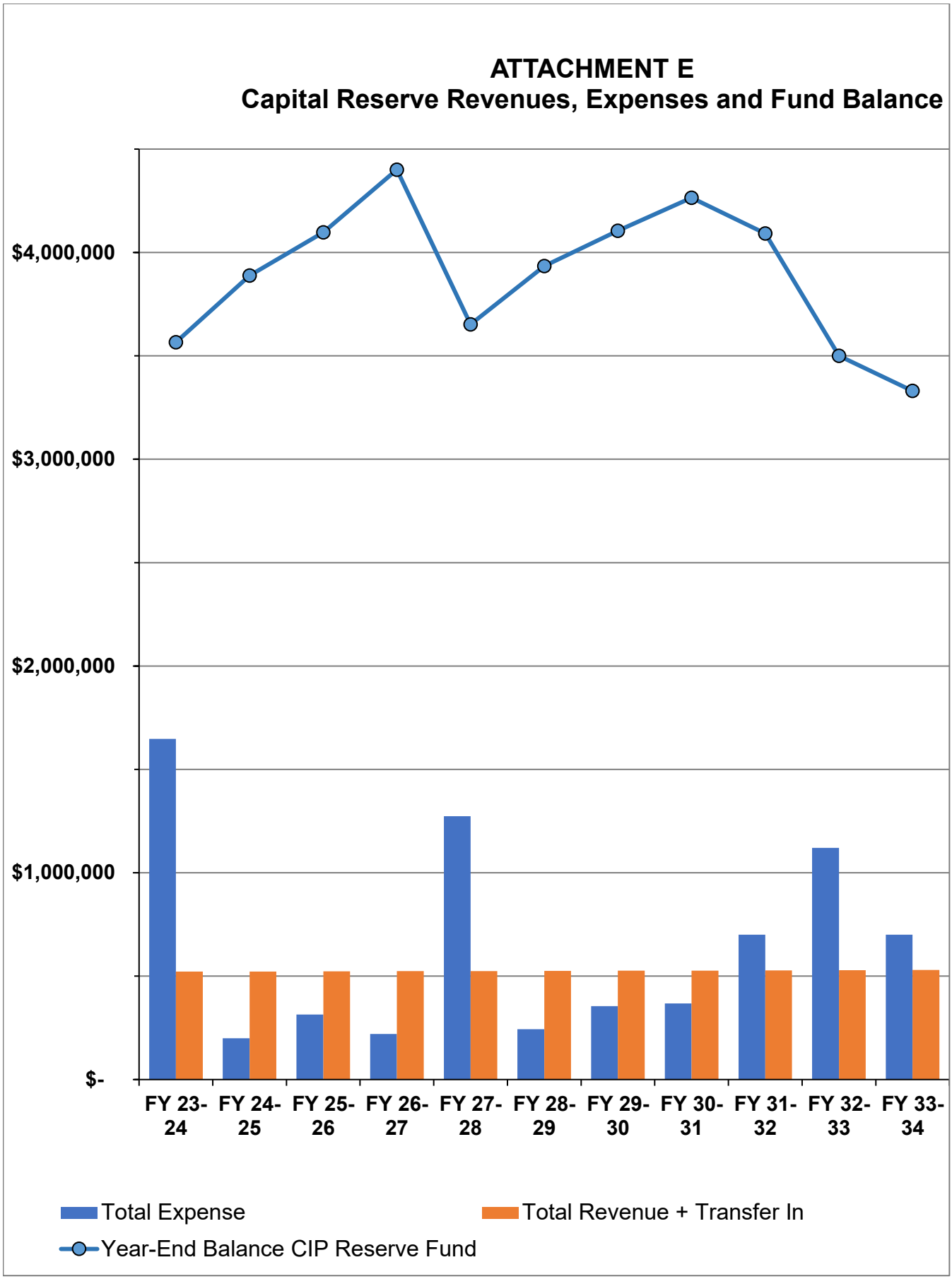
			0	1	2	3	4	5	6	7	8	9	10
REFUSE COLLECTION AND DISPOSAL			**FY 23-24**	**FY 24-25**	**FY 25-26**	**FY 26-27**	**FY 27-28**	**FY 28-29**	**FY 29-30**	**FY 30-31**	**FY 31-32**	**FY 32-33**	**FY 33-34**
30-511930-6004	Bank/Collection Agent Fees	Capital Projects	12,913	$ 12,054	$ 11,167	$ 10,253	$ 9,311	$ 8,339	$ 7,336	$ 6,302	$ 5,236	$ 4,137	$ 3,003
30-511930-9001	Principal	Capital Projects	1,946,507	$ 295,459	$ 304,691	$ 314,212	$ 324,031	$ 334,158	$ 344,601	$ 355,371	$ 366,478	$ 377,933	$ 389,746
30-511930-9101	Interest	Capital Projects	140,395	$ 121,200	$ 111,823	$ 102,153	$ 92,180	$ 81,895	$ 71,289	$ 60,350	$ 49,069	$ 37,435	$ 25,437
	New Landfill Cell	Landfill Projects	-	$ -	$ 1,166,667	$ 1,166,667	$ 1,166,667	$ -	$ -	$ -	$ -	$ -	$ -
	ZEV Infrastructure	Capital Projects	-	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000
	SB 1383 Compliance Costs	Other Expenses	$ -	$ 480,750	$ 499,980	$ 519,979	$ 540,778	$ 557,002	$ 573,712	$ 590,923	$ 608,651	$ 626,910	$ 645,718
	TOTAL EXPENSE		**$ 28,730,189**	**$ 23,173,120**	**$ 25,810,938**	**$ 26,156,821**	**$ 29,200,278**	**$ 27,069,064**	**$ 27,940,624**	**$ 28,892,763**	**$ 31,474,785**	**$ 34,533,243**	**$ 33,425,642**
					111%	101%	112%	93%	103%	103%	109%	110%	97%

ATTACHMENT D
CITY OF REDLANDS
DRAFT FLEET REPLACEMENT SCHEDULE AND ESTIMATES

Current Truck #	Description	Purchase Year	First Replacement	Second Replacement	1 FY 2024-25	2 FY 2025-26	3 FY 2026-27	4 FY 2027-28	5 FY 2028-29	6 FY 2029-30	7 FY 2030-31	8 FY 2031-32	9 FY 2032-33	10 FY 2033-34
835	Chevrolet 3500 stake bed	2007	2024	2039				$ 200,000						
817	Peterbilt Roll-off	2008	2024	2032				$ 500,000					$ 1,000,000	
802	Peterbilt ASL	2013	2024	2032	$ 500,000								$ 1,000,000	
850	Peterbilt FEL	2013	2024	2032	$ 500,000								$ 1,000,000	
804	Peterbilt ASL	2014	2025	2034		$ 525,000								$ 1,000,000
805	Peterbilt ASL	2014	2025	2034		$ 525,000								$ 1,000,000
806	Peterbilt ASL	2014	2025	2034		$ 525,000								$ 1,000,000
877	Ford F250	2014	2025	2040				$ 100,000						
881	Ford F150	2014	2025	2040				$ 75,000						
803	Peterbilt ASL	2015	2026	2035				$ 551,250						
823	Peterbilt FEL	2015	2026	2035			$ 551,250							
847	Peterbilt ASL	2015	2026	2035			$ 551,250							
840	Ford REL	2017	2027	2042				$ 578,813						
Route Growth	Peterbilt FEL	N/A	2027	2036				$ 578,813						
Route Growth	Peterbilt ASL	N/A	2027	2036				$ 578,813						
846	Peterbilt FEL	2018	2028	2037					$ 607,753					
809	Peterbilt ASL	2019	2028	2037					$ 607,753					
811	Peterbilt ASL	2020	2029	2038						$ 638,141				
836	Peterbilt ASL	2020	2029	2038						$ 638,141				
821	Peterbilt FEL	2021	2030	2039							$ 670,048			
822	Peterbilt FEL	2021	2030	2039							$ 670,048			
808	Peterbilt ASL	2022	2031	2040								$ 1,000,000		
810	Peterbilt ASL	2022	2031	2040								$ 1,000,000		
859	Peterbilt Roll-off	2022	2031	2040								$ 1,000,000		
841	Peterbilt FEL	2023	2032	2041									$ 1,000,000	
842	Peterbilt FEL	2023	2032	2041									$ 1,000,000	
807	Ford – F150 XL	2022	2032	2047									$ 101,250	
				TOTAL	**$ 1,000,000**	**$ 1,575,000**	**$ 1,102,500**	**$ 3,162,688**	**$ 1,215,506**	**$ 1,276,282**	**$ 1,340,096**	**$ 3,000,000**	**$ 5,101,250**	**$ 3,000,000**
			20%	DIF	$ 200,000	$ 315,000	$ 220,500	$ 1,273,388	$ 243,101	$ 255,256	$ 268,019	$ 600,000	$ 1,020,250	$ 600,000

Green Highlighting & Red Text = ZEV Truck Purchase per CARB requirements.

ATTACHMENT E
Capital Reserve Revenues, Expenses and Fund Balance



ATTACHMENT F

City of Redlands - SB 1383 Cost Estimates

2024

Cost Component	Annual (High)	Notes
Program Management Costs	$20,000	*Includes time for staff and supervisors. Enforcement activities are increased.*
Program Overhead Costs	$91,000	*Includes outreach development, printing and mailing costs; enforcement fleet and mailing costs.*
Route Audits	$45,000	*Estimate based on minimum estimate of hours needed and utilizing Solid Waste Enforcement Officer. Comparative estimates route review sampling methodologies on "Route Review" tab. "Annual (low)" calculates the average of the two lowest cost estimates. "Annual (high)" calculates the average of the two highest cost estimates. These estimates can be replaced with any of the options presented in the summary table on the "Route Review" tab for comparison.*
Edible Food Recovery Program	*$50,000*	*This estimate needs to be informed by capacity planning at the County level and engagement with businesses covered and not currently donating and what annual contribution will support expansion of edible food recovery capacity as needed.*
Procurement	$149,000	*Estimate based on total cost for purchase and transport per ton of compost of $18.78 for* ***17,475*** *tons of compost (The regulations state CalRecycle will recalculate the targets every 5 years, so this may change). This estimate is for planning purposes and is based on fulfilling* ***100%*** *of the procurement target with compost, which is not required (mulch, RNG, and electricity derived from biomass conversion may also be used). The ability to meet your procurement target depends on availability and opportunities for utilization.*
Green Carts Com/FD	$24,000	*5 year spread*
Green Bins COM/ MFD	$50,000	*5 year spread*
Container Labels (All)	$51,750	*10 year spread, all carts and containers*
Total	**$480,750**	

ATTACHMENT G

CITY OF REDLANDS 5-YEAR RATE STUDY
SUMMARY OF MONTHLY AND ANNUAL RATE CHANGES

DRAFT Monthly Rates

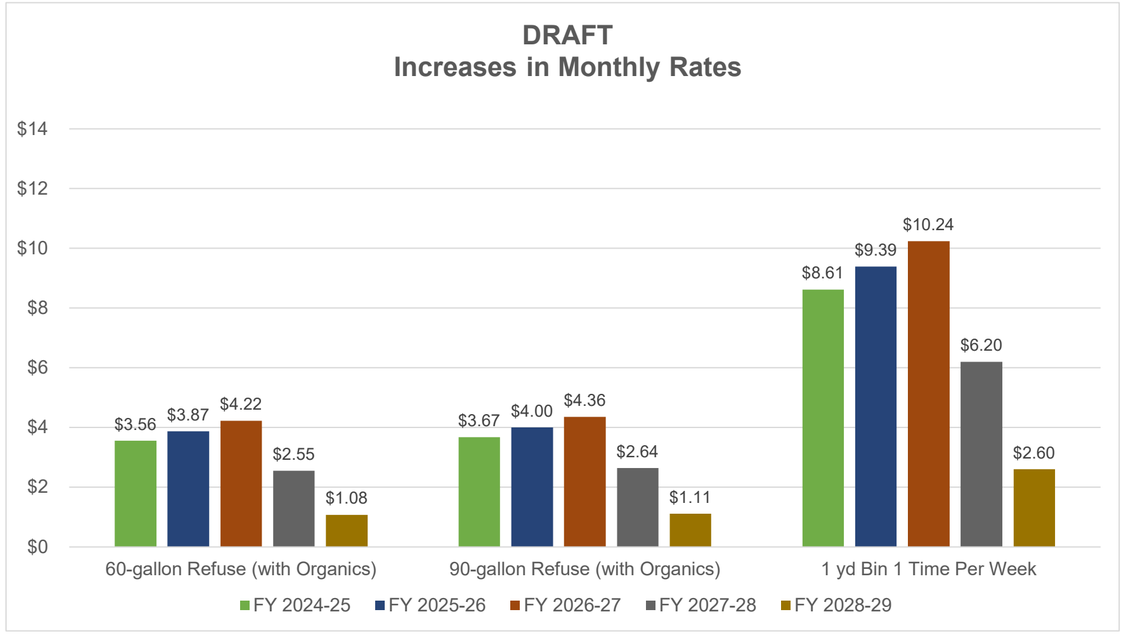
Service Level	FY 2021-22	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
60-gallon Refuse (with Organics)	$39.47	$43.02	$46.89	$51.11	$53.66	$54.74
90-gallon Refuse (with Organics)	$40.77	$44.44	$48.44	$52.80	$55.44	$56.55
1 yd Bin 1 Time Per Week	$95.74	$104.35	$113.74	$123.98	$130.18	$132.78
1 yd Bin 3 Times Per Week	$229.96	$250.65	$273.21	$297.80	$312.69	$318.95
3 yd Bin 3 Times Per Week	$633.10	$690.08	$752.18	$819.88	$860.87	$878.09

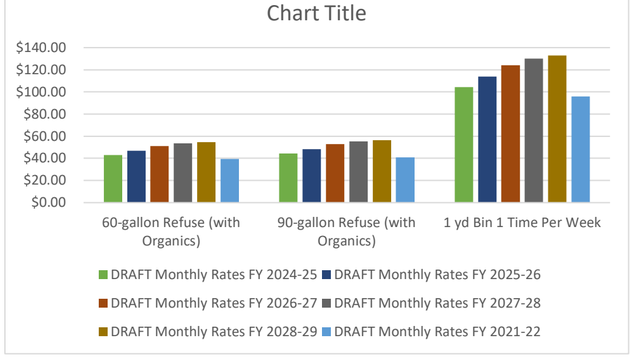
Increase in Monthly Rate

Service Level	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
60-gallon Refuse (with Organics)	$3.56	$3.87	$4.22	$2.55	$1.08
90-gallon Refuse (with Organics)	$3.67	$4.00	$4.36	$2.64	$1.11
1 yd Bin 1 Time Per Week	$8.61	$9.39	$10.24	$6.20	$2.60
1 yd Bin 3 Times Per Week	$20.70	$22.56	$24.59	$14.89	$6.26
3 yd Bin 3 Times Per Week	$56.99	$62.10	$67.70	$40.99	$17.22

Increase in Annual Rate

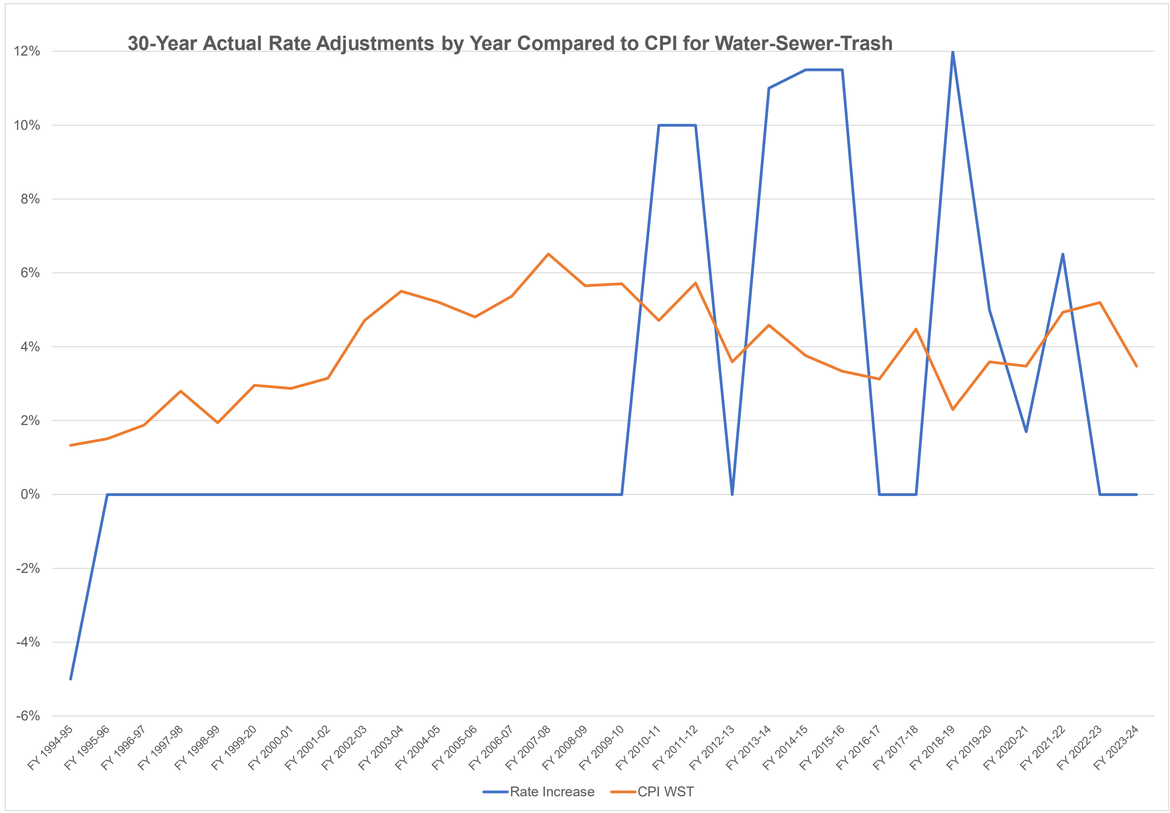
Service Level	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29
60-gallon Refuse (with Organics)	$ 42.7	$ 46.4	$ 50.6	$ 30.6	$ 13.0
90-gallon Refuse (with Organics)	$ 44.0	$ 48.0	$ 52.3	$ 31.7	$ 13.3
1 yd Bin 1 Time Per Week	$ 103.4	$ 112.7	$ 122.9	$ 74.4	$ 31.2
1 yd Bin 3 Times Per Week	$ 248.3	$ 270.7	$ 295.1	$ 178.7	$ 75.1
3 yd Bin 3 Times Per Week	$ 683.8	$ 745.2	$ 812.4	$ 491.9	$ 206.6





ATTACHMENT H
CITY OF REDLANDS 5-YEAR RATE STUDY

	Rate Increase	CPI WST	CPI
FY 1994-95	-5.0%	1.3%	1.3%
FY 1995-96	0.0%	1.5%	1.5%
FY 1996-97	0.0%	1.9%	1.9%
FY 1997-98	0.0%	2.8%	1.6%
FY 1998-99	0.0%	1.9%	1.4%
FY 1999-20	0.0%	3.0%	2.3%
FY 2000-01	0.0%	2.9%	3.3%
FY 2001-02	0.0%	3.2%	3.3%
FY 2002-03	0.0%	4.7%	2.8%
FY 2003-04	0.0%	5.5%	2.6%
FY 2004-05	0.0%	5.2%	3.3%
FY 2005-06	0.0%	4.8%	4.5%
FY 2006-07	0.0%	5.4%	4.3%
FY 2007-08	0.0%	6.5%	3.3%
FY 2008-09	0.0%	5.7%	3.5%
FY 2009-10	0.0%	5.7%	-0.8%
FY 2010-11	10.0%	4.7%	1.2%
FY 2011-12	10.0%	5.7%	2.7%
FY 2012-13	0.0%	3.6%	2.0%
FY 2013-14	11.0%	4.6%	1.1%
FY 2014-15	11.5%	3.8%	1.3%
FY 2015-16	11.5%	3.3%	0.9%
FY 2016-17	0.0%	3.1%	1.9%
FY 2017-18	0.0%	4.5%	2.8%
FY 2018-19	12.0%	2.3%	3.8%
FY 2019-20	5.0%	3.6%	3.1%
FY 2020-21	1.7%	3.5%	1.6%
FY 2021-22	6.5%	4.9%	3.8%
FY 2022-23	0.0%	5.2%	7.4%
FY 2023-24	0.0%	3.5%	3.5%
FY 2024-25	9.0%	3.8%	3.0%
FY 2025-26	9.0%	3.8%	3.0%
FY 2026-27	9.0%	3.8%	3.0%
FY 2027-28	5.0%	3.8%	3.0%
FY 2028-29	2.0%	3.8%	3.0%
FY 2029-30	2.0%	3.8%	3.0%
FY 2030-31	2.0%	3.8%	3.0%
FY 2031-32	2.0%	3.8%	3.0%
FY 2032-33	2.0%	3.8%	3.0%
FY 2033-34	2.0%	3.8%	3.0%
		Ten Year Average	
		3.8%	
AVE	2.5%	3.9%	
	40		
Years @ 0%	20		



ATTACHMENT I
CITY OF REDLANDS 5-YEAR RATE STUDY
PRIOR, CURRENT AND DRAFT BI-MONTHLY SOLID WASTE RATES

			12.0%	5.0%	1.7%	6.5%	9.0%	9.0%	9.0%	5.0%	2.0%
		19-Oct	1-Oct	1-Oct	1-Oct	1-Oct	January 1st	January 1st	January 1st	January 1st	January 1st
Item Code	Descriptions	2017	2018	2019	2020	2021	2025	2026	2027	2028	2029
9000	1-60 Gallon Refuse ($8.77 GW Exmpt Credit Incl)	$54.64	$61.19	$64.25	$65.34	$69.59	$75.85	$82.68	$90.12	$94.63	$96.52
9001	1-90 Gallon Refuse ($8.77 GW Exmpt Credit Incl)	$56.68	$63.48	$66.65	$67.79	$72.20	$78.70	$85.78	$93.50	$98.18	$100.14
9002	1-60 Gallon Refuse (1-60 Gallon GW)	$61.97	$69.40	$72.87	$74.11	$78.93	$86.03	$93.77	$102.21	$107.32	$109.47
9003	1-90 Gallon Refuse (1-60 Gallon GW)	$64.01	$71.69	$75.28	$76.56	$81.54	$88.88	$96.88	$105.60	$110.88	$113.10
9004	2-90 Gallon Refuse ($76.56 + 31.78) NOT GW exempt	$90.59	$101.45	$106.53	$108.34	$115.39	$125.78	$137.10	$149.44	$156.91	$160.05
9005	1-90 Gallon Refuse (1-90 Gallon GW)	$64.01	$71.69	$75.28	$76.56	$81.54	$88.88	$96.88	$105.60	$110.88	$113.10
9006	1 Extra 60 Gallon Refuse	$20.98	$23.49	$24.67	$25.09	$26.72	$29.12	$31.74	$34.60	$36.33	$37.06
9007	1 Extra 90 Gallon Refuse	$26.58	$29.76	$31.25	$31.78	$33.85	$36.90	$40.22	$43.84	$46.03	$46.95
9008	1-60 Gallon Refuse ($8.77 GW Exmpt Credit Incl)	$54.64	$61.19	$64.25	$65.34	$69.59	$75.85	$82.68	$90.12	$94.63	$96.52
9009	1-60 Gallon Refuse - Commercial	$51.85	$58.07	$60.98	$62.02	$66.05	$71.99	$78.47	$85.53	$89.81	$91.61
9010	1-90 Gallon Refuse ($8.77 GW Exmpt Credit Incl)	$56.68	$63.48	$66.65	$67.79	$72.20	$78.70	$85.78	$93.50	$98.18	$100.14
9011	1-90 Gallon Refuse - Commercial	$57.82	$64.76	$68.00	$69.16	$73.65	$80.28	$87.51	$95.39	$100.16	$102.16
9012	1-60 Gallon Refuse (1-60 Gallon GW)	$61.97	$69.40	$72.87	$74.11	$78.93	$86.03	$93.77	$102.21	$107.32	$109.47
9013	2-60 Gallon Refuse ($74.11 + $25.09)	$82.94	$92.90	$97.54	$99.20	$105.65	$115.16	$125.52	$136.82	$143.66	$146.53
9014	1-90 Gallon Refuse (1-60 Gallon GW)	$64.01	$71.69	$75.28	$76.56	$81.54	$88.88	$96.88	$105.60	$110.88	$113.10
9015	1-60 Gal Refuse & 1-90 Gal Refuse ($76.56 + $25.09)	$84.99	$95.18	$99.94	$101.65	$110.71	$120.67	$131.53	$143.37	$150.54	$153.55
9016	2-90 Gal Refuse($76.56+$31.78-$8.77 GW Exmpt)	$83.25	$93.24	$97.91	$99.57	$106.05	$115.59	$125.99	$137.33	$144.20	$147.08
9017	1-90 Gallon Refuse (1-90 Gallon GW)	$64.01	$71.69	$75.28	$76.56	$81.54	$88.88	$96.88	$105.60	$110.88	$113.10
9018	2-90 Gallon Refuse - Commercial	$84.40	$94.53	$99.25	$100.94	$107.50	$117.18	$127.73	$139.23	$146.19	$149.11
9019	1 Extra 60 Gallon Refuse	$20.98	$23.49	$24.67	$25.09	$26.72	$29.12	$31.74	$34.60	$36.33	$37.06
9020	1 Extra 90 Gallon Refuse	$26.58	$29.76	$31.25	$31.78	$33.85	$36.90	$40.22	$43.84	$46.03	$46.95
9021	Pull Down Service 1-90 Refuse ($76.56 +$52.41)	$107.82	$120.76	$126.79	$128.97	$137.36	$149.72	$163.19	$177.88	$186.77	$190.51
9022	Pull Down Service 1-90 RF ($76.56 + $52.41)	$107.82	$120.76	$126.79	$128.97	$137.36	$149.72	$163.19	$177.88	$186.77	$190.51
9024	BC Pull Down Service (1-60 RF)	$61.97	$69.40	$72.87	$74.11	$78.93	$86.03	$93.77	$102.21	$107.32	$109.47
9025	BC Pull Down Service (2-90 RF)	$90.59	$101.45	$106.53	$108.34	$115.39	$125.78	$137.10	$149.44	$156.91	$160.05
9026	1-90 Gallon Refuse Shared by 2 Units - Multi-Fam	$34.28	$38.39	$40.31	$41.00	$43.66	$47.59	$51.87	$56.54	$59.37	$60.56
9027	1-90 Gallon Refuse Shared by 2 Units - Multi-Fam	$34.28	$38.39	$40.31	$41.00	$43.66	$47.59	$51.87	$56.54	$59.37	$60.56
9028	1-60 Gallon Refuse for Each Unit - Multi-Family	$28.35	$31.76	$33.34	$33.91	$36.11	$39.36	$42.90	$46.76	$49.10	$50.08
9029	1-90 Gallon Refuse for Each Unit - Multi-Family	$36.37	$40.73	$42.77	$43.50	$46.32	$50.49	$55.03	$59.98	$62.98	$64.24
9030	1 yd Bin 1 Time Per Week	$150.33	$168.36	$176.78	$179.79	$191.47	$208.70	$227.48	$247.95	$260.35	$265.56
9031	1 yd Bin 2 Times Per Week	$255.70	$286.38	$300.70	$305.81	$325.69	$355.00	$386.95	$421.78	$442.87	$451.73
9032	1 yd Bin 3 Times Per Week	$361.07	$404.40	$424.62	$431.84	$459.91	$501.30	$546.42	$595.60	$625.38	$637.89
9033	1 yd Bin 4 Times Per Week	$466.63	$522.63	$548.76	$558.09	$594.36	$647.85	$706.16	$769.71	$808.20	$824.36
9034	1 yd Bin 5 Times Per Week	$572.19	$640.85	$672.89	$684.33	$728.81	$794.40	$865.90	$943.83	$991.02	$1,010.84
9035	1 yd Bin 6 Times Per Week	$677.56	$758.87	$796.81	$810.36	$863.03	$940.70	$1,025.36	$1,117.64	$1,173.52	$1,196.99
9039	2 yd Bin 1 Time Per Week	$255.70	$286.38	$300.70	$305.81	$325.69	$355.00	$386.95	$421.78	$442.87	$451.73
9040	2 yd Bin 2 Times Per Week	$466.63	$522.63	$548.76	$558.09	$594.36	$647.85	$706.16	$769.71	$808.20	$824.36
9041	2 yd Bin 3 Times Per Week	$677.56	$758.87	$796.81	$810.36	$863.03	$940.70	$1,025.36	$1,117.64	$1,173.52	$1,196.99
9042	2 yd Bin 4 Times Per Week	$888.52	$995.15	$1,044.90	$1,062.66	$1,131.74	$1,233.60	$1,344.62	$1,465.64	$1,538.92	$1,569.70
9043	2 yd Bin 5 Times Per Week	$1,099.46	$1,231.39	$1,292.96	$1,314.94	$1,400.41	$1,526.45	$1,663.83	$1,813.57	$1,904.25	$1,942.34
9044	2 yd Bin 6 Times Per Week	$1,310.60	$1,467.88	$1,541.27	$1,567.47	$1,669.36	$1,819.60	$1,983.36	$2,161.86	$2,269.95	$2,315.35
9045	3 yd Bin 1 Time Per Week	$361.08	$404.41	$424.63	$431.85	$459.92	$501.31	$546.43	$595.61	$625.39	$637.90
9046	3 yd Bin 2 Times Per Week	$677.56	$758.87	$796.81	$810.36	$863.03	$940.70	$1,025.36	$1,117.64	$1,173.52	$1,196.99
9047	3 yd Bin 3 Times Per Week	$994.08	$1,113.37	$1,169.04	$1,188.91	$1,266.19	$1,380.15	$1,504.36	$1,639.75	$1,721.74	$1,756.17
9048	3 yd Bin 4 Times Per Week	$1,310.60	$1,467.88	$1,541.27	$1,567.47	$1,669.36	$1,819.60	$1,983.36	$2,161.86	$2,269.95	$2,315.35
9049	3 yd Bin 5 Times Per Week	$1,626.91	$1,822.14	$1,913.25	$1,945.78	$2,072.25	$2,258.75	$2,462.04	$2,683.62	$2,817.80	$2,874.16
9050	3 yd Bin 6 Times Per Week	$1,943.43	$2,176.64	$2,285.47	$2,324.32	$2,475.40	$2,698.19	$2,941.03	$3,205.72	$3,366.01	$3,433.33
9051	4 yd Bin 1 Time Per Week	$466.63	$522.63	$548.76	$558.09	$594.36	$647.85	$706.16	$769.71	$808.20	$824.36
9052	4 yd Bin 2 Times Per Week	$888.52	$995.15	$1,044.90	$1,062.66	$1,131.74	$1,233.60	$1,344.62	$1,465.64	$1,538.92	$1,569.70
9053	4 yd Bin 3 Times Per Week	$1,310.60	$1,467.88	$1,541.27	$1,567.47	$1,669.36	$1,819.60	$1,983.36	$2,161.86	$2,269.95	$2,315.35
9054	4 yd Bin 4 Times Per Week	$1,732.47	$1,940.36	$2,037.38	$2,072.02	$2,206.70	$2,405.30	$2,621.78	$2,857.74	$3,000.63	$3,060.64

ATTACHMENT I
CITY OF REDLANDS 5-YEAR RATE STUDY
PRIOR, CURRENT AND DRAFT BI-MONTHLY SOLID WASTE RATES

Item Code	Descriptions	19-Oct 2017	12.0% 1-Oct 2018	5.0% 1-Oct 2019	1.7% 1-Oct 2020	6.5% 1-Oct 2021	9.0% January 1st 2025	9.0% January 1st 2026	9.0% January 1st 2027	5.0% January 1st 2028	2.0% January 1st 2029
9055	4 yd Bin 5 Times Per Week	$2,154.36	$2,412.89	$2,533.53	$2,576.60	$2,744.08	$2,991.05	$3,260.24	$3,553.66	$3,731.34	$3,805.97
9056	4 yd Bin 6 Times Per Week	$2,576.26	$2,885.41	$3,029.68	$3,081.18	$3,281.46	$3,576.79	$3,898.70	$4,249.58	$4,462.06	$4,551.30
9057	3 yd Compacted Bin 2 Times Per Week	$954.21	$1,068.71	$1,122.15	$1,141.23	$1,215.41	$1,324.80	$1,444.03	$1,573.99	$1,652.69	$1,685.74
9058	2 yd Compacted Bin 4 Times Per Week	$1,272.77	$1,425.50	$1,496.78	$1,522.23	$1,621.17	$1,767.08	$1,926.12	$2,099.47	$2,204.44	$2,248.53
9059	4 yd Compacted Bin 2 Times Per Week	$1,272.77	$1,425.50	$1,496.78	$1,522.23	$1,621.17	$1,767.08	$1,926.12	$2,099.47	$2,204.44	$2,248.53
9060	2 yd Compacted Bin 5 Times Per Week	$1,590.93	$1,781.88	$1,870.97	$1,902.78	$2,026.46	$2,208.84	$2,407.64	$2,624.33	$2,755.55	$2,810.66
9061	4 yd Compacted Bin 3 Times Per Week	$1,908.41	$2,137.42	$2,244.29	$2,282.44	$2,430.80	$2,649.57	$2,888.03	$3,147.95	$3,305.35	$3,371.46
9062	1 1/2 yd Compacted Bin 4 Times Per Week	$954.20	$1,068.71	$1,122.14	$1,141.22	$1,215.40	$1,324.79	$1,444.02	$1,573.98	$1,652.68	$1,685.73
9079	1 Can 1 Time Per Week	$33.32	$37.32	$39.18	$39.85	$42.44	$46.26	$50.42	$54.96	$57.71	$58.86
9080	2 Cans 1 Time Per Week	$66.64	$74.64	$78.37	$79.70	$84.88	$92.52	$100.85	$109.93	$115.43	$117.74
9081	3 Cans 1 Time Per Week	$99.96	$111.95	$117.55	$119.55	$127.32	$138.78	$151.27	$164.88	$173.12	$176.58
9082	1 Can 2 Times Per Week	$66.64	$74.64	$78.37	$79.70	$84.88	$92.52	$100.85	$109.93	$115.43	$117.74
9083	2 Cans 2 Times Per Week	$133.28	$149.27	$156.74	$159.40	$169.77	$185.05	$201.70	$219.85	$230.84	$235.46
9084	3 Cans 2 Times Per Week	$199.92	$223.91	$235.10	$239.10	$254.64	$277.56	$302.54	$329.77	$346.26	$353.19
9085	4 Cans 2 Times Per Week	$266.56	$298.54	$313.47	$318.80	$339.52	$370.08	$403.39	$439.70	$461.69	$470.92
9086	5 Cans 2 Times Per Week	$333.20	$373.18	$391.84	$398.50	$424.40	$462.60	$504.23	$549.61	$577.09	$588.63
9087	6 Cans 2 Times Per Week	$399.84	$447.82	$470.21	$478.20	$509.29	$555.13	$605.09	$659.55	$692.53	$706.38
9088	7 Cans 2 Times Per Week	$466.48	$522.45	$548.58	$557.91	$594.17	$647.65	$705.94	$769.47	$807.94	$824.10
9089	11 Cans 2 Times Per Week	$733.03	$821.00	$862.05	$876.70	$933.69	$1,017.72	$1,109.31	$1,209.15	$1,269.61	$1,295.00
9090	18 Cans 2 Times Per Week	$1,199.51	$1,343.45	$1,410.62	$1,434.60	$1,527.85	$1,665.36	$1,815.24	$1,978.61	$2,077.54	$2,119.09
9091	22 Cans 2 Times Per Week	$1,465.93	$1,641.84	$1,723.93	$1,753.24	$1,867.20	$2,035.25	$2,218.42	$2,418.08	$2,538.98	$2,589.76
9092	39 Cans 2 Times Per Week	$2,598.93	$2,910.81	$3,056.35	$3,108.31	$3,310.35	$3,608.28	$3,933.03	$4,287.00	$4,501.35	$4,591.38
9093	2 Cans 3 Times Per Week	$199.92	$223.91	$235.10	$239.10	$254.64	$277.56	$302.54	$329.77	$346.26	$353.19
9094	6 Cans 3 Times Per Week	$599.75	$671.72	$705.31	$717.30	$763.92	$832.67	$907.61	$989.29	$1,038.75	$1,059.53
9095	3 Cans 5 Times Per Week	$499.80	$559.77	$587.76	$597.75	$636.61	$693.90	$756.35	$824.42	$865.64	$882.95
9096	4 Cans 5 Times Per Week	$666.39	$746.36	$783.68	$797.00	$848.81	$925.20	$1,008.47	$1,099.23	$1,154.19	$1,177.27
9097	6 Cans 5 Times Per Week	$999.59	$1,119.54	$1,175.52	$1,195.50	$1,273.21	$1,387.80	$1,512.70	$1,648.84	$1,731.28	$1,765.91
9098	3 Cans 6 Times Per Week	$599.75	$671.72	$705.31	$717.30	$763.92	$832.67	$907.61	$989.29	$1,038.75	$1,059.53
9099	6 Cans 6 Times Per Week	$1,199.51	$1,343.45	$1,410.62	$1,434.60	$1,527.85	$1,665.36	$1,815.24	$1,978.61	$2,077.54	$2,119.09
9102	3 yd Compacted Bin 3 Times Per Week	$1,431.29	$1,603.05	$1,683.20	$1,711.81	$1,823.08	$1,987.16	$2,166.00	$2,360.94	$2,478.99	$2,528.57
9103	3 yd Compacted Bin 4 Times Per Week	$1,908.41	$2,137.42	$2,244.29	$2,282.44	$2,430.80	$2,649.57	$2,888.03	$3,147.95	$3,305.35	$3,371.46
9104	6 yd Bin 4 Times Per Week	$2,576.26	$2,885.41	$3,029.68	$3,081.18	$3,281.46	$3,576.79	$3,898.70	$4,249.58	$4,462.06	$4,551.30
9105	4 yd Compacted Bin 4 Times Per Week	$2,545.54	$2,851.00	$2,993.55	$3,044.44	$3,242.33	$3,534.14	$3,852.21	$4,198.91	$4,408.86	$4,497.04
9106	5 yd Bin 2 Times Per Week	$1,099.46	$1,231.39	$1,292.96	$1,314.94	$1,400.41	$1,526.45	$1,663.83	$1,813.57	$1,904.25	$1,942.34
9109	4 yd Compacted Bin 1 Times Per Week	$636.38	$712.75	$748.39	$761.11	$810.58	$883.53	$963.05	$1,049.72	$1,102.21	$1,124.25
9110	BC Pull Down Service (2-60 RF)	$82.94	$92.90	$97.54	$99.20	$105.65	$115.16	$125.52	$136.82	$143.66	$146.53
9111	5 yd Bin 6 Times Per Week	$3,208.90	$3,593.97	$3,773.66	$3,837.81	$4,087.27	$4,455.12	$4,856.08	$5,293.13	$5,557.79	$5,668.95
9112	BC Pull Down Service (1-60 RF/1-90RF)	$84.99	$95.18	$99.94	$101.64	$108.25	$117.99	$128.61	$140.18	$147.19	$150.13
9113	BC Pull Down Service (1-90 RF)	$64.01	$71.69	$71.69	$76.56	$81.54	$88.88	$96.88	$105.60	$110.88	$113.10
9114	1-60 Gallon Refuse (1-90 Gallon GW)	$61.97	$69.40	$72.87	$74.11	$78.93	$86.03	$93.77	$102.21	$107.32	$109.47
9115	1-90 Gallon Refuse (1-60 Gallon GW)	$64.01	$71.69	$75.28	$76.56	$81.54	$88.88	$96.88	$105.60	$110.88	$113.10
9116	1-60 Gallon Refuse Shared by 2 Units - Multi-Fam	$22.86	$25.61	$26.89	$27.35	$29.12	$31.74	$34.60	$37.71	$39.60	$40.39
9117	1 Extra 60 Gallon Greenwaste (New Code)* charge for 4 more	$20.98	$23.49	$24.67	$25.09	$26.72	$29.12	$31.74	$34.60	$36.33	$37.06
9118	1 Extra 90 Gallon Greenwaste (New Code)* charge for 4 more	$26.58	$29.76	$31.25	$31.78	$33.85	$36.90	$40.22	$43.84	$46.03	$46.95
9119	5 yd Bin 4 Times Per Week	$2,154.36	$2,412.89	$2,533.53	$2,576.60	$2,744.08	$2,991.05	$3,260.24	$3,553.66	$3,731.34	$3,805.97
9120	5 yd Bin 5 Times Per Week	$2,681.54	$3,003.32	$3,153.49	$3,207.10	$3,415.56	$3,722.96	$4,058.03	$4,423.25	$4,644.41	$4,737.30
9121	1 Extra 60 Gallon Greenwaste (New Code)* charge for 4 more	$20.98	$23.49	$24.67	$25.09	$26.72	$29.12	$31.74	$34.60	$36.33	$37.06
9122	1 Extra 90 Gallon Greenwaste (New Code)*charge for 4 more	$26.58	$29.76	$31.25	$31.78	$33.85	$36.90	$40.22	$43.84	$46.03	$46.95
9123	Pull Down Service 1-60 Refuse ($74.11 + $52.41)	$52.89	$59.23	$124.39	$126.52	$134.75	$146.88	$160.10	$174.51	$183.24	$186.90
9124	Pull Down Service 1-60 RF ($74.11 + $52.41)	$105.78	$118.47	$124.39	$126.52	$134.75	$146.88	$160.10	$174.51	$183.24	$186.90
9125	1-90 Gallon Refuse - Commercial	$57.82	$64.76	$68.00	$69.16	$73.65	$80.28	$87.51	$95.39	$100.16	$102.16

ATTACHMENT I
CITY OF REDLANDS 5-YEAR RATE STUDY
PRIOR, CURRENT AND DRAFT BI-MONTHLY SOLID WASTE RATES

Item Code	Descriptions	19-Oct 2017	12.0% 1-Oct 2018	5.0% 1-Oct 2019	1.7% 1-Oct 2020	6.5% 1-Oct 2021	9.0% January 1st 2025	9.0% January 1st 2026	9.0% January 1st 2027	5.0% January 1st 2028	2.0% January 1st 2029
9126	BC Pull Down Srvc(1-60 Gallon Refuse $8.77 GW Exmpt)	$54.64	$61.19	$64.25	$65.34	$69.59	$75.85	$82.68	$90.12	$94.63	$96.52
9127	1-90 BC Gallon Refuse (1-90 Gallon GW)	$64.01	$71.69	$75.28	$76.56	$81.54	$88.88	$96.88	$105.60	$110.88	$113.10
9128	1-60 BC Gallon Refuse ($8.77 GW Exmpt Credit Incl)	$54.64	$61.19	$64.25	$65.34	$69.59	$75.85	$82.68	$90.12	$94.63	$96.52
9129	1-60 BC Gallon Refuse (1-60 Gallon GW)	$61.97	$69.40	$72.87	$74.11	$78.93	$86.03	$93.77	$102.21	$107.32	$109.47
9130	2-90 BC Gal Refuse($76.56+$31.78-$8.77 GW Exmpt)	$83.25	$93.24	$97.91	$99.57	$106.05	$115.59	$125.99	$137.33	$144.20	$147.08
9131	1-90 BC Gallon Refuse (1-90 Gallon GW)	$64.01	$71.69	$75.28	$76.56	$81.54	$88.88	$96.88	$105.60	$110.88	$113.10
9132	1-60 BC Gallon Refuse (1-90 Gallon GW)	$61.97	$69.40	$72.87	$74.11	$78.93	$86.03	$93.77	$102.21	$107.32	$109.47
9133	1-90 BC Gallon Refuse (1-60 Gallon GW)	$64.01	$71.69	$75.28	$76.56	$81.54	$88.88	$96.88	$105.60	$110.88	$113.10
9134	1-90 BC Gal Refuse ($8.77 GW Exmpt Credit Incl)	N/A	$63.48	$66.65	$67.79	$72.20	$78.70	$85.78	$93.50	$98.18	$100.14
9135	5 yd Bin 1 Times Per Week- RESERVED	$549.71	$615.68	$645.46	$656.43	$699.10	$762.02	$830.60	$905.35	$950.62	$969.63
9136	5 yd Bin 3 Times Per Week - RESERVED	$1,604.40	$1,796.93	$1,886.77	$1,918.85	$2,043.57	$2,227.49	$2,427.96	$2,646.48	$2,778.80	$2,834.38
9137	6 yd Bin 1 Times Per Week - RESERVED	$644.04	$721.33	$757.40	$770.28	$820.34	$894.17	$974.65	$1,062.37	$1,115.49	$1,137.80
9138	6 yd Bin 2 Times Per Week - RESERVED	$1,288.09	$1,442.66	$1,514.79	$1,540.54	$1,640.68	$1,788.34	$1,949.29	$2,124.73	$2,230.97	$2,275.59
9139	6 yd Bin 3 Times Per Week - RESERVED	$1,932.13	$2,163.99	$2,272.19	$2,310.82	$2,461.02	$2,682.51	$2,923.94	$3,187.09	$3,346.44	$3,413.37
9140	6 yd Bin 5 Times Per Week - RESERVED	$3,220.22	$3,606.65	$3,786.98	$3,851.36	$4,101.70	$4,470.85	$4,873.23	$5,311.82	$5,577.41	$5,688.96
9141	6 yd Bin 6 Times Per Week - RESERVED	$3,864.27	$4,327.98	$4,544.38	$4,621.63	$4,922.04	$5,365.02	$5,847.87	$6,374.18	$6,692.89	$6,826.75
9142	2 yd Compacted Bin 1 Times Per Wk-RESERVED	$318.18	$356.36	$374.18	$380.54	$405.28	$441.76	$481.52	$524.86	$551.10	$562.12
9143	2 yd Compacted Bin 2 Times Per Wk-RESERVED	$636.36	$712.72	$748.36	$761.08	$810.55	$883.50	$963.02	$1,049.69	$1,102.17	$1,124.21
9144	2 yd Compacted Bin 3 Times Per Wk-RESERVED	$954.54	$1,069.09	$1,122.54	$1,141.62	$1,215.83	$1,325.25	$1,444.52	$1,574.53	$1,653.26	$1,686.33
9145	3 yd Compacted Bin 1 Times Per Wk-RESERVED	$477.09	$534.34	$561.05	$570.59	$607.68	$662.37	$721.98	$786.96	$826.31	$842.84
9146	3 yd Compacted Bin 5 Times Per Wk-RESERVED	$2,385.43	$2,671.68	$2,805.27	$2,852.96	$3,038.40	$3,311.86	$3,609.93	$3,934.82	$4,131.56	$4,214.19
9147	4 yd Compacted Bin 5 Times Per Wk-RESERVED	$3,181.82	$3,563.64	$3,741.82	$3,805.43	$4,052.78	$4,417.53	$4,815.11	$5,248.47	$5,510.89	$5,621.11
9151	1-32 Gallon 1 Time Per Week	$125.00	$140.00	$156.80	$159.47	$169.83	$185.11	$201.77	$219.93	$230.93	$235.55
9152	1-32 Gallon 2 Times Per Week	$250.00	$280.00	$313.60	$318.93	$339.66	$370.23	$403.55	$439.87	$461.86	$471.10
9153	1-32 Gallon 3 Times Per Week	$374.00	$418.88	$469.15	$477.13	$508.14	$553.87	$603.72	$658.05	$690.95	$704.77
9156	1-64 Gallon 1 Time Per Week	$145.00	$162.40	$181.89	$184.98	$197.01	$214.74	$234.07	$255.14	$267.90	$273.26
9157	1-64 Gallon 2 Times Per Week	$290.00	$324.80	$363.78	$369.96	$394.01	$429.47	$468.12	$510.25	$535.76	$546.48
9158	1-64 Gallon 3 Times Per Week	$435.00	$487.20	$545.66	$554.94	$591.01	$644.20	$702.18	$765.38	$803.65	$819.72
9161	1-96 Gallon 1 Time Per Week	$186.00	$208.32	$233.32	$237.29	$252.71	$275.45	$300.24	$327.26	$343.62	$350.49
9162	1-96 Gallon 2 Times Per Week	$371.00	$415.52	$465.38	$473.29	$504.06	$549.43	$598.88	$652.78	$685.42	$699.13
9163	1-96 Gallon 3 Times Per Week	$557.00	$623.84	$698.70	$710.58	$756.77	$824.88	$899.12	$980.04	$1,029.04	$1,049.62
9166	1 Yard Bin 1 Time Per Week	$298.00	$333.76	$373.81	$380.16	$404.88	$441.32	$481.04	$524.33	$550.55	$561.56
9167	1 Yard Bin 2 Times Per Week	$596.00	$667.52	$747.62	$760.33	$809.75	$882.63	$962.07	$1,048.66	$1,101.09	$1,123.11
9168	1 Yard Bin 3 Times Per Week	$894.00	$1,001.28	$1,121.43	$1,140.49	$1,214.63	$1,323.95	$1,443.11	$1,572.99	$1,651.64	$1,684.67
9171	2 Yard Bin 1 Time Per Week	$551.00	$617.12	$691.17	$702.92	$748.61	$815.98	$889.42	$969.47	$1,017.94	$1,038.30
9172	2 Yard Bin 2 Times Per Week	$1,101.00	$1,233.12	$1,381.09	$1,404.57	$1,495.87	$1,630.50	$1,777.25	$1,937.20	$2,034.06	$2,074.74
9173	2 Yard Bin 3 Times Per Week	$1,652.00	$1,850.24	$2,072.27	$2,107.50	$2,244.49	$2,446.49	$2,666.67	$2,906.67	$3,052.00	$3,113.04
9176	3 Yard Bin 1 Time Per Week	$794.00	$889.28	$995.99	$1,012.92	$1,078.76	$1,175.85	$1,281.68	$1,397.03	$1,466.88	$1,496.22
9177	3 Yard Bin 2 Times Per Week	$1,588.00	$1,778.56	$1,991.99	$2,025.85	$2,157.53	$2,351.71	$2,563.36	$2,794.06	$2,933.76	$2,992.44
9178	3 Yard Bin 3 Times Per Week	$2,382.00	$2,667.84	$2,987.98	$3,038.78	$3,236.30	$3,527.57	$3,845.05	$4,191.10	$4,400.66	$4,488.67
9181	1-90 Gallon Refuse Shared by 2 Units - Multi-Fam	N/A	$38.40	$40.31	$41.00	$43.66	$47.59	$51.87	$56.54	$59.37	$60.56
9182	1-90 Gallon Refuse for Each Unit - Multi-Family	N/A	$40.72	$42.77	$43.50	$46.32	$50.49	$55.03	$59.98	$62.98	$64.24