READING MUNICIPAL LIGHT DEPARTMENT

FY 18 CAPITAL BUDGET

March 31, 2017

Coleen O'Brien
General Manager

TABLE OF CONTENTS

	Page #
RMLD System Profile	6
Planned Programs	9-11

FACILITIES MANAGEMENT

Continuing Projects:	Page #	Project #
⌘ RMLD Lighting (LED) Upgrade Program	13	104
New Projects:		
⌘ Power Washer and Vacuum	15	TBD
⌘ Remote SCADA Room	17	TBD
Annual Projects:		
⌘ Building Upgrades	19	TBD
⌘ Office Upgrades – 230 Ash Street	21	098
⌘ Security Upgrades – All Sites	23	119
⌘ Rolling Stock Replacement	25	118

INTEGRATED RESOURCES

Continuing Projects:	Page #	Project #
⌘ Electric Vehicle Supply Equipment (EVSE)	29	099
⌘ Demand Management (Flow Battery Energy Storage Unit)	31	100

INFORMATION TECHNOLOGY

Annual Projects:	Page #	Project #
⌘ Hardware Upgrades	34	127
⌘ Software Upgrades	36	128

SYSTEM

Continuing Projects Update:	Page #	Project #
⌘ GIS	39	125
⌘ Grid Modernization and Optimization	41	103
⌘ LED Street Light Implementation – All Towns	43	131
⌘ New Wilmington Substation	45	105
⌘ Pad-mount Switchgear Upgrade at Industrial Parks	47	102
⌘ Station 3: Relay Upgrades and SCADA Integration	49	133

New Projects:	***Page #***	***Project #***
⌘ 115Kv Transmission Line Upgrade	51	TBD
⌘ 35 Kv Underground Cable Upgrade Station 4, 5 and RR ROW	53	TBD
⌘ Pole Line Upgrade – Woburn Street, Wilmington	55	TBD
⌘ Station 3 Reactor	57	TBD

Annual Projects:	**Page #**	**Project #**
⌘ AMI Mesh Network Expansion	59	112
⌘ Communication Equipment (Fiber Optic)	61	126
⌘ Meters	63	117
⌘ Pole Replacement Program	65	175
⌘ Secondary and Main Replacement Program	67	458
⌘ Substation Equipment Upgrade	69	111
⌘ Transformers and Capacitors	71	116
⌘ 13.8kV Upgrade (Step-down Areas, etc.) – All Towns	73	107
⌘ UG Facilities Upgrades (URDs, Manholes, etc.) – All Towns	75	106
⌘ New Service Installations (Commercial and Residential)	77	various
⌘ Routine Construction	79	various

Reading Municipal Light Department
SYSTEM PROFILE
(based on FY16)

SERVICE TERRITORY	51 square miles serving Reading, North Reading, Wilmington and part of Lynnfield
TOTAL OPERATING REVENUES	$88,353,905
POWER PURCHASED	671,275,405 kWh
NUMBER OF CUSTOMERS/ METERS SERVED	29,622
ANNUAL PEAK DEMAND	156,283 kW on July 20, 2015
ANNUAL SALES	676,128,060 kWh
PLANT VALUE	$136,710,000 (Gross) $72,202,000 (Net)
SUPPLY VOLTAGE	115 kV
SUPPLY CAPACITY	Station 4: (3) 60 MVA Transformers (2) 35 MVA Transformers – feeds Station 5 250 MVA Connected, 190 MVA Firm Station 3: (2) 60 MVA Transformers 120 MVA Connected, 60 MVA Firm
DISTRIBUTION SYSTEM VOLTAGE	13,800 volt wye 4,160 volt wye
OVERHEAD PRIMARY LINES	All 335 miles
UNDERGROUND PRIMARY LINES	All 135 miles
DISTRIBUTION TRANSFORMERS	4,190 transformers – 286.6 MVA Capacity
STATION TRANSFORMER CAPACITY	370 MVA Capacity
UTILITY POLES	17,237 poles *Ownership*: 50% Verizon, 50% RMLD *Custodial By Town:* North Reading – RMLD Lynnfield – Verizon Reading • east of Main Street – Verizon • west of Main Street, east of West Street, south of Prescott Street – Verizon • west of West Street – RMLD • west of Main Street, north of Prescott Street – RMLD Wilmington • all poles with 35 kV sub-transmission circuits, and Concord Street – RMLD • all other locations in Wilmington – Verizon

APPLICATION SOFTWARE	
	Great Plains/Cogsdale Windows Server 2012, 2008, Microsoft SQL Office 365 E3 ESRI GIS VMware Windows 7, 8, 8.1, 10 Sharepoint WindMil (in process) LightTable (in process) PoleForeman SpryMobile
CONTACT INFORMATION	
Address:	230 Ash Street Reading, MA 01867
Telephone:	781-942-6598
Fax:	781-942-2409
Website:	www.rmld.com
Office Hours	8:00 am - 4:30 pm Monday through Friday
KEY PERSONNEL	
General Manager	Coleen O'Brien Email: cobrien@rmld.com
Director of Business Finance	Wendy Markiewicz Email: wmarkiewicz@rmld.com
Director of Integrated Resources	Jane Parenteau Email: jparenteau@rmld.com
Director of Engineering and Operations	Hamid Jaffari Email: hjaffari@rmld.com
GOVERNING BODY	
	David Hennessy Thomas O'Rourke Philip B. Pacino John Stempeck David Talbot
Number of Employees	73
Year Founded	1894

Reviewed by:

Business/Accounting: Wendy Markiewicz 3/20/2017
Engineering: Brian Smith 3/14/17
GM's Office: Coleen O'Brien 3/10/17
Information Technology: Mark Uvanni 3/20/2017

READING MUNICIPAL LIGHT DEPARTMENT

Capital Improvements FY17 thru FY22

$ Shown in thousands

TOWN	PG #	WO (PROJECT) #	PROJECT NAME	TOTAL ESTIMATED PROJECT COST	PRIOR YEARS' (ACTUAL) SPENDING PRIOR TO FY17	ACTUAL PROJECT SPENDING THRU 2/17	FY17 Budget	FY17 Est.	FY18 Est.	FY19	FY20	FY21	FY22	BRIEF DESCRIPTION
A	n/a	129	Master Facilities Site Plan (ON-HOLD)	50	0	0	50	0						Town economic development plan impact. Master-hold. Evaluate maintenance only.
A	13	104	RMLD Lighting (LED) Upgrade Program	125		0	25	25	100					Upgrade Ash Street and other RMLD facilities including substations with new LED fixtures. Evaluate transformer. Change in Scope: installation of fixtures by an electrical contractor.
A		096	Control Center Modifications	100		0	100	100						Modify the physical arrangement of the existing Control Center in order to meet grid mod-op.
A		097	HVAC Roof Units for Garage	50	14	58		44						Roof top unit and duct work.
A		121	HVAC System Upgrade - 230 Ash Street	1,273	686	1,205	500	520						Replace boilers, chillers, air handling units, and building automation systems addressing air filtration and efficiency.
A	15	TBD	Power Washer and Vacuum						20					Replace power wash system in garage; add vacuum system.
A	17	TBD	Remote SCADA Room						75					NERC - redundancy - need location.
A	19	TBD	Building Upgrades						110					Partial roof covering over 30% of building at 230 Ash Street, and lobby insulation.
A	21	098	Office Upgrades -230 Ash Street				72	97	92					Upgrade worn carpet at 230 Ash Street building. Remodel accounting area and replace broken office/conference room chairs.
A	23	119	Security Upgrades All Sites				5	35	30	30	30	30	30	Access control, alarm monitoring, video and perimeter monitoring along the fence lines, cyber security. Access control upgrade (scheduled FY16) completed in FY17.
A	25	118	Rolling Stock Replacement (vehicles, trailers fork trucks)				310	322	230	250	300	250	300	Scheduled vehicle replacement based on Fleet Assessment.
A	29	099	Electric Vehicle Supply Equipment (EVSE)	92	0	1	10	62	10	10	10			One electric charging station per town in the service area. Research grant options. FY17: unit to be installed at 230 Ash Street, Reading. Parking lot reconstruction.
A	31	100	Demand Management (Distributed Gas Generation - Pilot FY16-17)	2,920	29	121	2,720	2,504	25					Alternate years solar/battery storage and gas. FY16/17: Pilot DG gas peaking unit. FY18: Flow Battery Storage 150kW - $25K site prep -grant $150k.
A	34	127	Hardware Upgrades				112	79	105	119	119	119	119	General hardware purchases, wireless internal network configuration.
A	36	128	Software and Licensing				231	73	235	239	239	239	239	Custom programing/development (OM/UAN/GIS/GPS), SpryPoint SSRS software.
A	39	125	GIS	871	14	194	360	638	219					Current GIS model requires data integrity and quality inspection. Comprehensive data collection.
A	41	103	Grid Modernization and Optimization	1,003	202	424	284	227	227	347				Implement technology road map for grid efficiency, reduction of losses, etc. FY17: 4 switches to be installed. FY18: 4 switches/1 intelleruptor to be installed.
A	43	131	LED Street Light Implementation - All Towns	2,599	625	1,110	804	804	1,169					Full implementation. On target. Price of lights reduced. Labor costs increased for FY18 to include expense portion of project. Approximately 8,800 lights/ $125k grant.
W	45	105	New Wilmington Substation	7,700		0	250	50	650	5,785	1,265			Planning and securing land and licensing will begin in FY17 and continue in FY18.
W	47	102	Pad-mount Switchgear Upgrade at Industrial Parks	1,227		2	195	227	196	196	196	196	214	Starting in FY17, replace all 15kV padmount switchgears at River Park and Analog Devices, etc. A total of 25 switches/4 per year (5 in year six).
NR	49	133	Station 3: Relay Upgrades and SCADA Integration	476		251	252	400	76					Upgrade SEL 351 relays to SEL 351-7 to enhance data delivery to SCADA.
R		108	Relay Replacement -Station 4 (Gaw)	122	71	184	49	113						Replace existing electromechanical protective relay systems on the 15kV feeder breakers. The new relays will be capable of providing more information back to SCADA and store vast amounts of data for down loading and evaluation.
NR		130	Remote Terminal Unit (RTU) Replacement - Station 3	94	0	0	39	39						Upgrade to add functionality of the existing SEL relays. RTU will be IP addressable and will include Ethernet connection for RMLD and NSTAR connection.
R		113	Station 4: Battery Bank Upgrade	57	0	24	17	41						Replace battery bank.
A		115	Fault Indicators	50	0	1	25	1						Fault indicators to aid in fault locating.
A		136	Voltage Data Recorders	60	15	15	25	0						Voltage data and load logger required for voltage assessment and verification of energy efficiency commercial rebates. Project 098 IRD Hardware added to this item.
R		110	4W9 Getaway Replacement - Station 4	235		105	235	235						Upgrade 2,850 circuit feet of UG cable on Causeway Road and Lowell Street, R, with 750 mcm cu for increased reliability and capacity.
R		120	Station 4: Relay/SCADA Integration for Bus A&B	70		24	70	70						Replace electromechanical relays with solid state relays to bring more data into SCADA.

READING MUNICIPAL LIGHT DEPARTMENT
Capital Improvements FY17 thru FY22
$ Shown in thousands

TOWN	PG #	WO (PROJECT) #	PROJECT NAME	TOTAL ESTIMATED PROJECT COST	PRIOR YEARS' (ACTUAL) SPENDING PRIOR TO FY17	ACTUAL PROJECT SPENDING THRU 2/17	FY17 Budget	FY17 Est.	FY18 Est.	FY19	FY20	FY21	FY22	BRIEF DESCRIPTION
A		135	Analog Devices Cap Bank Upgrade	54		1	54	16						Replace 360 Kvar Cap bank and upgrade bushing inserts from 200 Amp to 600 Amp
W		139	Station 5: LTC Control Replacement	42		6	42	30						Upgrade LTC control with newer or solid state controls.
A		140	Substation Grounding Equipment Upgrade (all stations)	21		0	21	21						Upgrade personal protective grounding equipment.
R		109	Station 4 (Gaw) 35kv Potential Transformer Replacement	41	14	14		14						Replace six 30+ -years-old transformers.
R	51	TBD	115 kV Transmission Line Upgrade (1 LINE PER YEAR FY18 & 19)	226					95	131				Transmission lines feeding Station 4 built in 1970 and have reached the end of their useful life. Both 115kV lines (211-503 and 211-504) are in need of upgrade.
R/W	53	TBD	35kV UG Cable Upgrade at Station 4, Station 5 and RR ROW	677					207	235	235			35kV Underground cables feeding substation 5 (4P2 and 4P9) are over 36 years old. Both are due for upgrade.
W	55	TBD	Pole Line Upgrade - Woburn Street, Wilmington (between West and Concord Streets)	401	0	0			200	200				Replace/upgrade twenty-four (24) main line poles and four (4) stub poles on Woburn Street (from Concord to West Street) to proper strength and height, create proper NESC clearance between utilities. Benefit to long-term reliability.
NR	57	TBD	Station 3 Reactors	561					561					Install two sets of reactors to lower fault current and incident energy or ARC flash per Booth Reliability Study recommendation.
A	59	112	AMI Mesh Network Expansion				220	200	120	150	150	150	150	Retrofit 500 meters per year and install relays to expand the AMI mesh network. This will allow for end-of-the-line voltage readings.
A	61	126	Communication Equipment (Fiber Optic)				69	17	215	50	50	50	50	Materials to accommodate expanded use of fiber optic network for Distribution Automation and Eaton AMI system. In FY18 we will add approximately 12 fiber nodes to expand communications options for substations and automation devices.
A	63	117	Meters				80	80	60	60	60	60	60	Purchase meters for stock - new construction, upgrades and failures.
A	65	TBD	Pole Replacement Program						209	215	222	229	235	Replace poles identified through the Pole Inspection Program. This will include transfers and replacement of secondary services as necessary. 50 poles scheduled for replacement in FY18.
A	67	TBD	Secondary and Main Replacement Program						222	200	200	200	200	Repair as necessary secondary/main services and connectors as determined by system-wide inspection.
A	69	111	Substation Equipment Upgrade				75	50	50	50	30	30	30	Upgrade various equipment at substations to include TLC controls, remote racking devices, cable trays and various minor items. FY18 will include replacement of various 35Kv insulators at Station 4.
A	n/a	134	Substation/Metering Test Equipment				30	30		30	30			Purchase of test equipment for substation and metering. Nothing planned for FY18.
A	71	116	Transformers and Capacitors				668	316	561	577	595	612	631	Purchase of units for stock and proposed projects.
A	73	107	13.8kV Upgrade (Step-down Area, etc.) - All Towns				106	60	71	73	75	77	80	Convert areas to 13.8kV, remove antiquated equipment and step-downs to lower losses and improve system efficiency.
A	75	106	UG Facilities Upgrades (URDs, Manholes, etc.) - All Towns				150	400	345	355	366	377	388	Replace primary and neutral cables and padmount transformers as needed in various aging URDs. Improved reliability. In FY17 unexpected underground facilities failure (Lucaya Estates and Gandolf Way, Wilmington; Patrice Lane, Lynnfield; Turner Drive and Crestwood Drive, North Reading). For the next five years, three subdivisions are planned to be upgraded per year.
A	77	various	New Customer Service Connections (Residential and Commercial)				140	140	156	161	165	170	176	Install new and upgraded residential and commercial services as requested.
A	79	various	Routine Construction				1,013	1,613	1,044	1,075	1,107	1,141	1,175	Non-project capital including labor, miscellaneous pole sets, transfers, UG, police details, and OT.
R		TBD	4W4 Getaway Replacement - Station 4							242				Upgrade 3,700 circuit feet of UG cable on West Street, R and West St, W to 750 mcm cu for increased reliability and capacity.
W		TBD	Station 5- Getaway Replacements, 5W4, 5W5, 5W8							92				Upgrade feeders from substation to risers to increase feeders' Ampacity.
W		101	5W9 Reconductoring - Ballardvale Area, Wilmington							150	200			Upgrade to 795 spacer for capacity feeding Ballardvale area (Target).
R		TBD	Upgrade 4W24 to 795							225	225			Upgrade main feeder of Circuit 4W24 to 795 to address voltage and conductor capacity issues (1.5 miles)

READING MUNICIPAL LIGHT DEPARTMENT
Capital Improvements FY17 thru FY22
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W		TBD	5W5 Reconductoring - Wildwood to Upton Drive							214	214	214		Upgrade 25,000 circuit feet of 336 spacer cable on Wildwood, Woburn, and Andover Streets to 795 spacer cable.
R		TBD	4W5 Getaway Replacement - Station 4								234			Upgrade 1,700 circuit feet of UG cable on West Street, R to 750 mcm cu for increased reliability and capacity.
R		TBD	4W6 Getaway Replacement - Station 4								243	243		Upgrade 1,850 circuit feet of UG cable on West Street, R to 750 mcm cu for increased reliability and capacity per Booth Reliability Study recommendations.
R		TBD	Upgrade 4W23 to 795								60	165		Upgrade main feeder to Circuit 4W23 to795 to address voltage and conductor capacity issues
			TOTAL				**9,406**	**9,695**	**7,686**	**11,463**	**6,621**	**4,553**	**4,077**	

CURRENTLY COMPLETED

SCHEDULED TO BE COMPLETED BY END OF FY

TABLE 1: PLANT VALUES & DEPRECIATION EXPENSE:	**FY17 Budget**	**FY17 Est.**	**FY18 Est.**	**FY19**	**FY20**	**FY21**	**FY22**
Plant in Service (Beginning)	138,986	137,976	146,671	153,356	163,819	169,440	172,992
Additions	**9,406**	**9,695**	**7,686**	**11,463**	**6,621**	**4,553**	**4,077**
Adjustments (Property Retirement)	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000
Plant in Service (Ending)	147,392	146,671	153,356	163,819	169,440	172,992	176,069
Less Land and Land Rights	-1,266	-1,266	-1,266	-1,266	-1,266	-1,266	-1,266
Depreciable Plant in Service	146,126	145,405	152,090	162,553	168,174	171,726	174,803
Accumulated Reserve For Depreciation	-70,919	-69,875	-74,237	-78,800	-83,676	-88,722	-93,873
Net Plant in Service	76,473	76,796	79,119	85,019	85,763	84,271	82,196
Maximum allowed Return on Net Plant (%)	8%	8%	8%	8%	8%	8%	8%
Maximum allowed Return on Net Plant ($)	6,118	6,144	6,330	6,802	6,861	6,742	6,576
TABLE 2: DEPRECIATION FUND BALANCES:							
Beginning Balance	4,820	4,495	767	600	989	2,017	4,025
Interest Earned*	48	34	6	4	7	15	30
Depreciation Rate (3-5%)	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Depreciation Expense	4,132	4,101	4,362	4,563	4,877	5,045	5,152
Bond Proceeds and Other Fund Sources	0	332	650	5,785	1,265	0	0
Operating Fund Transfer	1,000	1,500	2,500	1,500	1,500	1,500	1,500
	10,000	10,462	8,285	12,452	8,638	8,578	10,707
Capital Improvements	-9,406	-9,695	-7,686	-11,463	-6,621	-4,553	-4,077
Principal Payment							
Ending Balance	593	767	600	989	2,017	4,025	6,630
* Interest Rate on Fund Balances	1.00%	0.75%	0.75%	0.75%	0.75%	0.75%	0.75%
Mass DOT (Highway): West Street		270					
DOER - ENE Grant (LED Credit)		63					
Bond Proceeds for Demand Management							
Bond Proceeds for New Substation - Wilmington			650	5,785	1,265		
Bond Proceeds Secondary Main & Services Upgrade							
Grid Optimization Expansion							
	0	332	650	5,785	1,265	0	0

FACILITIES MANAGEMENT

CAPITAL PROJECT SUMMARY

Project Name: RMLD Lighting (LED) Upgrade Program **Project #:** 104

Project Schedule: FY17-18 **Project Manager:** Paul McGonagle, Facilities Manager

Reason for Expenditure:
Upgrade the existing lighting at 230 Ash Street, 218 Ash Street, and the substations with new LED fixtures. Energy use will be reduced when switching to LED.

Brief Description/Scope:

FY17 At 230 Ash Street, replace the existing light fixtures in common areas mounted in the drop ceiling with new LED retrofit fixtures.

FY18 Continue to replace existing interior and exterior light fixtures (at the Ash Street campus), fixtures in the garage, including the offices and bay area, and lighting at the substations.

Barriers:
No licensed electrician on staff to perform install.

Change in Scope of Work From Prior Fiscal Year:
The scope will include the installation of new fixture by an electrical contractor.

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: RMLD Lighting (LED) Upgrade Program **SCHEDULE:** FY17-18

PROJECT #: 104

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
Purchase and Replace: Facility lighting at the Ash Street office building, garage, high bay, and substations						$100,000	$100,000
	Unit Cost						
Electrical Labor				$25,000			$25,000
	Unit Cost						
	Unit Cost						
	Unit Cost						

TOTAL	**$25,000**	**$100,000**

TOTAL ESTIMATED PROJECT COST: $125,000

FY17	Estimate	$25,000
FY18	Estimate	$100,000

CAPITAL PROJECT SUMMARY

Project Name: Power Washer and Vacuum **Project #:** TBD

Project Schedule: FY18 **Project Manager:** Paul McGonagle, Facilities Manager

Reason for Expenditure:
The current power washer has failed in its performance including an irreparable water heater. This item needs to be replaced. Also, an industrial grade vacuum will be added to the fleet's maintenance equipment.

Brief Description/Scope:

The power washer will be replaced with a commercial grade washer with a high-pressure detergent system at approximately 2000psi. This washer will be used to clean, remove salt, and de-ice the RMLD vehicles.

An industrial grade vacuum system will be added to the fleet's maintenance equipment to clean out the interior cabs and the mounted cabinets on the vehicles.

Barriers:
None anticipated at this time.

Change in Scope of Work from Prior Fiscal Year:
n/a

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Power Washer and Vacuum **SCHEDULE:** FY18

PROJECT #: TBD

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Purchase and install a power washer.						$15,000	$15,000
	Unit Cost						
Purchase and install a power vacuum.						$5,000	$5,000
	Unit Cost						
	Unit Cost						
	Unit Cost						

TOTAL **$20,000**

TOTAL ESTIMATED PROJECT COST: $20,000

CAPITAL PROJECT SUMMARY

Project Name: Remote SCADA Room **Project #:** TBD

Project Schedule: FY18 **Project Manager:** Paul McGonagle, Facilities Manager

Reason for Expenditure:
The SCADA server is required to have a redundant system in a remote location to ensure compliance with NERC regulations. A server room is to be constructed in one of the adjacent building to the 230 Ash Street building.

Brief Description/Scope:
A medium sized climate controlled room will be constructed to provide a secured location for the SCADA Server. Room components include a new cooling and heating system. Electrical systems, lighting, access control, cameras surveillance, and IT server equipment.

Barriers:
Work to be performed by licensed contractors, not in-house staff.

Change in Scope of Work from Prior Fiscal Year:
n/a

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Remote SCADA Room **SCHEDULE:** FY18

PROJECT #: TBD

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
General Contractor; Construction of walls, flooring, ceiling, fire alarm and sprinkers, and HVAC.						$60,000	$60,000
	Unit Cost						
Technical equipment including server and security equipment.						$15,000	$15,000
	Unit Cost						
	Unit Cost						
	Unit Cost						
TOTAL						**$75,000**	

TOTAL ESTIMATED PROJECT COST: $75,000

CAPITAL PROJECT SUMMARY

Project Name: Building Upgrades **Project #:** TBD

Project Schedule: Annual **Project Manager:** Paul McGonagle, Facilities Manager

Reason for Expenditure:
Annual allotment for repairs and upgrades to RMLD buildings.

Brief Description/Scope:
In FY18 we plan to address the following:

- The roof on 230 Ash Street is original to the 1994 building. Different sections of the roof such as high foot-traffic areas are experiencing leaks. Localized sealing has not been successful. At the south end of the building, approximately 30% of the roof will be covered with insulation board and EPDM membrane. A degraded roof system around the roof hatch area will be removed and replaced. New walk off mats will be installed in the high traffic areas around the roof top mechanical equipment. All flashing will be installed where applicable.

- Insulate and seal exterior wall and vestibule ceiling above the main entrance of the building.

Barriers:
None anticipated at this time.

Change in Scope of Work from Prior Fiscal Year:
n/a

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Building Upgrades **SCHEDULE:** FY18

PROJECT #: TBD

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Roofing Contractor to: Make repairs to roof including membrane and insulation, build up at hatch, seam repair/seal.						$100,000	$100,000
Unit Cost							
Contractor to: Install insulation in lobby to comply with code and new HVAC analysis.						$10,000	$10,000
Unit Cost							
Contractor to:							
Unit Cost							

TOTAL **$110,000**

TOTAL ESTIMATED PROJECT COST: $110,000

CAPITAL PROJECT SUMMARY

Project Name: Office Upgrades – 230 Ash Street **Project #:** 098

Project Schedule: Annual **Project Manager:** Paul McGonagle, Facilities Manager

Reason for Expenditure:
Annual allotment for general office upgrades at 230 Ash Street.

Brief Description/Scope:
In FY18 we plan to upgrade the Accounting area by constructing office walls to accommodate the confidential nature of the work in this department. Additionally, we plan to replace desk and office chairs which are 20 plus years old with ergonomic desk chairs (approximately 100 chairs). Cubicles will be installed in the Customer Service area.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
n/a

Status Update:
In FY17 we anticipate completion of the carpet upgrade as planned.

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Office Upgrade - 230 Ash Street

SCHEDULE: FY18

PROJECT #: 098

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
Upgrade to Accounting area.						$52,000	$52,000
	Unit Cost			$3,084		$52,000	
Purchase Replacement Office Chair						$30,000	$30,000
	Unit Cost					$300.00 per chair	
Install Cubicles in Customer Service Area						$10,000	$10,000
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						

TOTAL **$92,000**

TOTAL ESTIMATED PROJECT COST: $92,000

CAPITAL PROJECT SUMMARY

Project Name: Security System Upgrades – All Sites **Project #:** 119

Project Schedule: Annual **Project Manager:** Paul McGonagle, Facilities Manager

Reason for Expenditure:

Further enhancements will be performed to the access control system and the surveillance system. The security systems are continuously updated to ensure compliance with NERC and other security based regulations. The security systems exist at the Ash Street campus and all the substations.

Brief Description/Scope:
The Access Control System enhancements will include additional equipment to secure the more sensitive areas of the RMLD properties. Other equipment included perimeter fencing, card readers, door locks, and site lighting.

The Surveillance System enhancements will include additional equipment such as cameras with high definition capabilities to provide adequate coverage of the properties. This scope also includes replacing old or defective cameras, DVR's, and cabling.

Barriers:
No licensed electrician on staff to perform maintenance on electrical portions of the systems.

Change in Scope of Work from Prior Fiscal Year:
The scope will include the services of a licensed security/electrical contractor.

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Security Upgrades - All Sites **SCHEDULE:** FY18

PROJECT #: 119

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Upgrade security equipment, card readers, cameras, lighting, fences, etc.						$30,000	$30,000
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						

TOTAL $30,000

TOTAL ESTIMATED PROJECT COST: $30,000

CAPITAL PROJECT SUMMARY

Project Name: Rolling Stock Replacement **Project #:** 118

Project Schedule: Annual **Project Manager:** Paul McGonagle, Facilities Manager

Reason for Expenditure:
Replace vehicles based on an eight to ten-year cycle to reduce maintenance costs and improve reliability. Vehicles removed from the fleet will be disposed of under RMLD Policy No. 2 "Surplus Material."

Brief Description/Scope:
Specifications, bids, and purchase orders will be complete for FY18 delivery of the following:

- one (1) new electric vehicle with trade-in of one (1) 2007 Ford Escape.
- one (1) 40' bucket truck with trade-in of one (1) 2009 52' bucket truck.

Barriers:
None anticipated at this time.

Change in Scope of Work from Prior Fiscal Year: Increase (Decrease)
n/a

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Rolling Stock Replacement **SCHEDULE:** FY18

PROJECT #: 118

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
Purchase one (1) new electric vehicle.						$30,000	$30,000
	Unit Cost					$30,000 per vehicle	
Purchase one (1) 40' bucket truck.						$200,000	$200,000
	Unit Cost					$200,000 per vehicle	
	Unit Cost					per vehicle	
	Unit Cost						
	Unit Cost						
	Unit Cost						

TOTAL **$230,000**

TOTAL ESTIMATED PROJECT COST: $230,000

Light Duty Vehicles

Vehicle ID #	Year	Last Mileage Date	Current Mileage	Average Annual Maintenance Costs 2008-present	Department	Vehicle Type	FY 17	FY 18
2	2005	9/9/15	35,274	$771.96	Customer Service	Toyota Prius	Traded / 52	X
7	2007	3/10/17	123,077	$1,927.12	Customer Service	Ford Escape	X	Trade/54
52 (New)	2017	3/10/17	1,351	$35.00	Facilities	Ford Explorer	$22,606.00	X
New (54) Electric	2018	X	X	X	Customer Service	All Electric Vehicle	X	$30,000.00

Heavy Duty Line Trucks

Vehicle ID #	Year	Last Mileage Date	Current Mileage	Average Annual Maintenance Costs 2008-present	Department	Vehicle Type	FY 17	FY 18
8	2006	3/10/17	57,831	$11,856.38	Line	Inter - 50'MatHdlr	Trade/53	X
9	2010	3/10/17	119,506	$10,363.61	Line	Inter - 40' Bucket	X	Trade/55
New (53)	2016	X	X	X	Line	Inter - 50'MatHdlr	$250,000.00	X
New (55)	2018	X	X	X	Line	Inter - 40'Bucket	X	$200,000.00

Trailers

Vehicle ID #	Year	Last Hour Date	Current Hours	Average Annual Maintenance Costs 2009-present	Department	Vehicle Type	FY 17	FY 18
T2	2009	X	X	Insp	Line	Sauber 1519 - Single reel wire with brake	Auction	X
T6	1979	X	X	Insp	Line	Nevlen Cable	Auction	X
T9	1957	X	X	Insp	Line	Kiley Reel - single reel trailer no brake	Auction	X
New (T-15)	2017	X	X	X	Line	Multi-use Utility	$25,000.00	X
						FY Totals:	$297,606.00	$230,000.00
							FY 17	FY 18

INTEGRATED RESOURCES

CAPITAL PROJECT SUMMARY

Project Name: Electric Vehicle Supply Equipment (EVSE) **Project #:** 099

Project Schedule: FY17-20 **Project Manager:** Jane Parenteau, Director of Integrated Resources

Reason for Expenditure:
RMLD anticipates installing four EVSEs fiscal years 2017-20 over the next four years (one in each of the four towns in the service territory). This will increase RMLD's kWh sales.

Brief Description/Scope:
Each EVSE is a dual charger. RMLD will work with each town to determine interest in locating a unit within the town and the appropriate location.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
n/a

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Electric Vehicle Supply Equipment (EVSE)

SCHEDULE: FY17-20

PROJECT #: 099

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Purchase four EVSE for installation in RMLD service territory.						$40,000	$40,000
	Unit Cost					$10,000 each	
Construction at 230 Ash Street parking to accommodate charging station.						$52,000	$52,000
	Unit Cost						
							$0
	Unit Cost						
							$0
	Unit Cost						
							$0
	Unit Cost						
							$0
	Unit Cost						
TOTAL	**0**	**$0**	**$0**	**$0**		**$92,000**	

TOTAL ESTIMATED PROJECT COST: $92,000

FY16	Estimate	$0
FY17	Estimate	$62,000
FY18	Estimate	$10,000
FY19	Estimate	$10,000
FY20	Estimate	$10,000

CAPITAL PROJECT SUMMARY

Project Name: Demand Management - Flow Battery Energy Storage Unit **Project #:** 100

Project Schedule: FY18 **Project Manager:** Tom Ollila, Integrated Resources Engineer

Reason for Expenditure:
RMLD will collaborate with a Massachusetts startup company (WattJoule) to evaluate their flow battery system, and the economics/business case for peak demand management, specifically for commercial and industrial customers on RMLD's distribution grid. Other applications, such as emergency backup for grid resiliency and solar integration, will also be explored as time allows and will be defined as the project moves forward.

Brief Description/Scope:
WattJoule has won a grant from the State which will cover some of the costs to purchase and install a flow battery energy storage unit on-site at RMLD. WattJoule will fund most of the remaining project costs. However, RMLD will need to prepare a space, potentially at Station1 to house the unit. This project will cover any related construction costs, reconfiguring of any electrical service for the supply or the load of the flow battery, and related equipment.

Barriers:
Scheduling project work so that it does not interfere with normal RMLD activities and critical functions.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
n/a

Status Update From Prior Fiscal Year:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Demand Management: Flow Battery Storage Unit

SCHEDULE: FY18

PROJECT #: TBD

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Construction Costs related to preparation of space at Station 1 to house unit.						$25,000	$25,000
Unit Cost							
							$0
Unit Cost							
							$0
Unit Cost							
							$0
Unit Cost							
							$0
Unit Cost							
							$0
Unit Cost							
TOTAL	**0.0**	**0**	**$0**	**$0**	**$0**	**$25,000**	

TOTAL ESTIMATED PROJECT COST: $25,000

INFORMATION TECHNOLOGY

CAPITAL PROJECT SUMMARY

Project Name: Hardware Upgrades **Project #:** 127

Project Schedule: Annual **Project Manager:** Mark Uvanni, IT Manager

Reason for Expenditure:
This is an amount annually reserved for failed and/or obsolete computer and related equipment. This budget item is also used for unforeseen purchases, which may be necessary.

Brief Description/Scope:

1) This is an amount annually reserved for failed and or obsolete computer and related equipment. This budget item is also used for unforeseen purchases that may be required.

2) EMC SAN VNX 5300 to replace VNXe3100 that has reached end of live (per EMC)

3) Create disaster recovery 'site' in building two for main ERP system(s).

4) Update network to accommodate the addition of distribution automation (partial).

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
n/a

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Hardware Upgrades **SCHEDULE:** FY18

PROJECT #: 127

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
1) General hardware purchases.						$50,000	$50,000
	Unit Cost					per week	
2) EMC SAN EMC VNX 5300						$30,000	$30,000
	Unit Cost					per week	
3) Create DR site at 230 Ash Street, Building 2						$10,000	$10,000
	Unit Cost					per week	
4) Network update to accommodate feeders.						$15,000	$15,000
	Unit Cost					per week	
	Unit Cost						
	Unit Cost						
	Unit Cost						

TOTAL **$105,000**

TOTAL ESTIMATED PROJECT COST: $105,000

CAPITAL PROJECT SUMMARY

Project Name: Software and Licensing **Project #:** 128

Project Schedule: Annual **Project Manager:** Mark Uvanni, IT Manager

Reason for Expenditure:
Each year RMLD must renew existing software licenses and purchase new software, either to update existing users or for new users. Additionally, new software may be added at the request of various operating units. This item includes these ad hoc purchases as well as more specific items (outlined below) which are anticipated at this time.

Brief Description/Scope:
In addition to the standard software and licensing purchases described above, we anticipated the following:

- Custom programing/development for GIS/GPS, OM/Fixed Network, continued CIS integration.
- Replace Barracuda appliances.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
n/a

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Software and Licensing **SCHEDULE:** FY18

PROJECT #: 128

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
1) General software purchases.						$50,000	$50,000
2) Custom programming/development OM/UAN/GIS/GPS*		Unit Cost				$120,000	$120,000
3) Replace Barracuda Appliances		Unit Cost				$65,000	$65,000

TOTAL **$235,000**

TOTAL ESTIMATED PROJECT COST: $235,000

SYSTEM

CAPITAL PROJECT SUMMARY

Project Name: GIS Upgrade **Project #:** 125

Project Schedule: FY15-18 **Project Manager:** Hamid Jaffari, Director of Engineering and Operations

Reason for Expenditure:
The current RMLD GIS lacks critical information to accurately perform system modeling. Once this information is captured, reviewed, and optimized, RMLD will be able to enhance contingency and reliability planning, developing system protection and coordination studies. By increasing the value of the information within the GIS, RMLD will be better able to manage the assets within the network. Once completed RMLD will be able to track flow from substations to individual meters.

In conjunction with a contracted engineering firm, RMLD is creating a template of desired GIS attributes to include the Milsoft WindMilMap required attributes for engineering analysis as well as Smart Grid systems (i.e. OMS, DMS, FDIR, etc.). RMLD does not have enough resources to collect pole-by-pole data throughout its service territory, as this is a tedious and time-consuming task. Staff augmentation with an outside data collector will be used for this data integration effort.

Brief Description/Scope:
Comprehensive, contracted third-party data collection to produce GIS base model for overhead assets.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
None.

Status Update:
It is anticipated that 75% of this project will be completed by the end of FY17.

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: GIS **SCHEDULE:** FY15-18

PROJECT #: 125

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Comprehensive data collection for RMLD overhead network.						$395,434	$395,434
GIS project management.	Unit Cost					$256,888	$256,888
Engineering Labor 10.40 weeks				$40,689	$8,735		$49,423
	Unit Cost			$3,913	$840		
Engineering Labor (OT) 18.12 week(s)				$68,839	$15,222		$84,061
	Unit Cost			$3,799	$840		
MIS Labor 45.13 week(s)				$79,340			79,340
	Unit Cost			$1,758			
MIS Labor (OT) 3.19 week(s)				$5,436.37			$5,436.37
	Unit Cost			$1,706.87			
TOTAL				**194,304**	**23,957**	**652,322**	

TOTAL ESTIMATED PROJECT COST: $870,582

FY15	Actual	
FY16	Actual	$13,835
FY17	Estimate	$638,021
FY18	Estimate	$218,726

CAPITAL PROJECT SUMMARY

Project Name: Grid Modernization and Optimization **Project #:** 103

Project Schedule: FY15-18 **Project Manager:** Hamid Jaffari, Director of Engineering & Operations
Peter Price, Chief Engineer

Reason for Expenditure:
In compliance with DPU/OSHA Order DPU 12-76B, increase system reliability, modernize/optimize system operation and functionality, decrease system losses and expenses for labor and truck rolls, related to outage management.

Brief Description/Scope:
Implement grid modernization/optimization road map including installation of smart switches, intellirupters, outage management system, cyber security, simulator, fiber rationale connection, fault detection, economic dispatch and overall system integration, including GIS and AMI.

Barriers:
Technology/software integration; merging old technology with new emerging technology.

Change in Scope of Work From Prior Fiscal Year:
n/a

Status Update:
Upgraded SCADA licensing, installed N-Dimensions cyber security, cap bank automation upgrade and fiber nodes. We anticipate eight switches and one intellerupter will be installed by the end of FY17.

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Grid Modernization and Optimization **SCHEDULE:** FY15-18

PROJECT #: 103

ITEM	CREW WEEKS 2-Man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC		TOTAL
Purchase								$522,000
12 SCADA-mate switches						$420,000		
2 Intellirupters						$90,000		
10 RuggedCom Ethernet Switches (Cap Banks, etc)						$12,000		
Intelliteam Software								$40,000
14 Licenses						$28,000		
Designer Software						$12,000		
Servers/Hardware/Integration								$199,949
SCADA Upgrade						$19,500		
SCADA Licenses						$65,000		
OMS						$90,000		
Cyber Security						$25,449		
Fiber Installation-Construction						$46,200		$46,200
Miscellaneous						$10,000		$10,000
AGIs, Sensors, RTUs, etc.								
Consulting Services						$26,520		$26,520
Line Crews	16.0	$101,020	$14,720					$115,740
		$6,314	$920				per week	
Technical Services Labor				$26,285	$168			$26,453
4 weeks (2-man crew)								
	Unit Cost			$6,571	$42		per week	
Engineering Labor:				$15,652	$84			$15,736
4 week(s)								
	Unit Cost			$3,913	$21		per week	
TOTAL		**$101,020**	**$14,720**	**$41,937**	**$252**	**$844,669**		

TOTAL ESTIMATED PROJECT COST: $1,002,598

FY15	Actual	$90,519
FY16	Actual	$111,066
FY17	Estimate	$227,183
FY18	Estimate	$227,183
FY19-22	Estimate	$346,647

CAPITAL PROJECT SUMMARY

Project Name: LED Street Light Implementation – All Towns **Project #:** 131

Project Schedule: FY16-18 **Project Manager:** Brian Smith
Engineering Project Manager

Reason for Expenditure:
Street light technology has advanced greatly over the years and has moved towards the installation and use of the more energy efficient and longer lasting LED replacements. In FY15, we conducted an LED Street Light Pilot Program, which allowed us to evaluate the performance of, monitor the energy usage of, and get feedback on the lighting provided by this newer technology. Once the Pilot Program was completed, we began work with the towns to determine an implementation strategy for system-wide installation as appropriate.

Brief Description/Scope:
Purchase and install approximately 8,800 LED lights for system-wide installation in all four towns including streetlights and floodlights.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
None.

Status Update:
RMLDis on target to have approximately 6,000 lights replaced through FY17.

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: LED Street Light Implementation **SCHEDULE:** FY16-18

PROJECT #: 131

ITEM	CREW WEEKS 2-Man	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC		TOTAL
Conversion Program Purchase and install 8000 LED light fixtures	73	$460,905	$67,160			$1,423,400		$1,951,465
	Unit Cost	$6,314	$920			$178	see box at left	
Purchase and install 800 LED flood lights.	7	$44,196	$6,440			$526,020		$576,656
	Unit Cost	$6,314	$920			$658	see box at left	
	Unit Cost							
	Unit Cost							
	Unit Cost							
	Unit Cost							
Police Details: 29 week(s)				$70,397				$70,397
	Unit Cost			$2,427				
TOTAL		**$505,102**	**$73,600**	**$70,397**		**$1,949,420**		

TOTAL ESTIMATED PROJECT COST: $2,598,519

FY16	Actual	$625,054
FY17	Estimate	$804,132
Note: Expense Labor added to project in FY18	Estimate	$1,169,332

CAPITAL PROJECT SUMMARY

Project Name: New Wilmington Substation **Project #:** 105

Project Schedule: FY17-20 **Project Manager:** Hamid Jaffari, Director of Engineering & Operations

Reason for Expenditure:
Substation 5 has reached the end of its useful life. The transformer and switchgear need major upgrades/repairs to keep substation operational.

Brief Description/Scope:
Install a new 115kV/13.8 MW substation in Wilmington in the Ballardvale area. The new substation will include two 60 MVA 115kV/13.8MW transformers and a 15Kv switchgear with six feeder breaker positions to accommodate the Town of Wilmington load and provide backup for both Substation 3 and Substation 4.

Barriers:
Availability of land.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
n/a

Status Update From Prior Fiscal Year:
RMLD continues to explore options for location of the new substation.

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: New Wilmington Substation **SCHEDULE:** FY17-21

PROJECT #: 105

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Purchase Land.						$250,000	$250,000
Construction Contractor	Unit Cost					$2,100,000	$2,100,000
Power Transformers	Unit Cost					$2,000,000	$2,000,000
15kV Switchgear	Unit Cost					$1,500,000	$1,500,000
Substation Equipment Package	Unit Cost					$260,000	$260,000
Environmental Permitting	Unit Cost					$150,000	$150,000
Distribution - 3 circuits	Unit Cost					$500,000	$500,000
Testing and Commissioning.	Unit Cost					$100,000	$100,000
Indirect	Unit Cost					$500,000	$500,000
Contintency	Unit Cost					$340,000	$340,000
TOTAL						$7,700,000	

TOTAL ESTIMATED PROJECT COST: $7,700,000

FY17	Estimate	$50,000
FY18	Estimate	$650,000
FY19	Estimate	$5,785,000
FY20	Estimate	$1,265,000

CAPITAL PROJECT SUMMARY

Project Name: Pad-mount Switchgear Upgrade at Industrial Parks **Project #:** 102

Project Schedule: FY17-22 **Project Manager:** Peter Price
Chief Engineer

Reason for Expenditure:
Increase distribution system protection in the underground industrial parks in Wilmington, i.e., River Park Drive, Jonspin Road, etc.

Brief Description/Scope:
Purchase twenty-five units to replace live front pad-mounted switchgear. New units will be dead front with provisions for remote/supervisor control.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
n/a

Status Update From Prior Fiscal Year:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Pad-mount Switchgear Upgrade - Industrial Parks

SCHEDULE: FY17-22

PROJECT #: 102

ITEM	CREW WEEKS 2-Man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC		TOTAL
Install: 25 Pad-mount Switches.	7.5	$47,353	$6,900					$54,253
	Unit Cost	$6,314	$920				per week	
Purchase: 25 Pad-mount Switches.						$1,125,000		$1,125,000
	Unit Cost					$45,000	per switch	
	Unit Cost							
	Unit Cost							
Labor: Engineering 10 week(s)				$39,129	$8,400			$47,529
	Unit Cost			$3,913	$840		per week	
Police Details (if applicable) week(s)								
	Unit Cost						per week	
TOTAL	**$47,353**		**$6,900**	**$39,129**	**$8,400**	**$1,125,000**		

TOTAL ESTIMATED PROJECT COST: $1,226,782

FY17	Estimate	$227,183
FY18	Estimate	$196,285
FY19	Estimate	$196,285
FY20	Estimate	$196,285
FY21	Estimate	$196,285
FY22	Estimate	$214,458

CAPITAL PROJECT SUMMARY

Project Name: Station 3: Relay Upgrades and SCADA Integration **Project #:** 133

Project Schedule: FY17-18 **Project Manager:** Nick D'Alleva
Technical Services Manager

Reason for Expenditure:
Booth and Associates identified an issue with the existing relays at Station 3. They recommend replacing the relays with the new type SEL relays. In addition, RMLD will need to install new equipment so the relays can communicate with RMLD's SCADA system.

Brief Description/Scope:
Replace all feeder and main bus relays with SEL version 7 relays. Install communication and data concentration equipment to collect and populate data to RMLD's SCADA system.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
n/a

Status Update From Prior Fiscal Year:

The majority of work will be completed in FY17. In FY18 we will do minor work to close out project.

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Station 3: Relay Upgrades and SCADA Integration **SCHEDULE:** FY17-18

PROJECT #: 133

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC		TOTAL
Contractor: Design and map new relays to SCADA System.						$160,000		$160,000
Materials: (12) SEL 351 feeder relays; (6) 50-2 SEL relays; (2) SEL 387 Bus relays; SEL communication relays.						$127,268		$127,268
Contractor: SEL integration of new relays to SCADA system.						$28,500		$28,500
Contractor: UPG - wiring, testing and commissioning.						$100,000		$100,000
Labor: Senior Techs				$32,856	$8,400			$41,256
10 week(s)	Unit Cost			$3,286	$840		per week	
Labor: Technical Services Manager				$5,937	$1,260			$7,197
1.5 week(s)	Unit Cost			$3,958	$840		per week	
Labor: Engineering				$9,782	$2,100			$11,882
2.5 week(s)	Unit Cost			$3,913	$840		per week	
TOTAL				**$48,576**	**$11,760**	**$415,768**		

TOTAL ESTIMATED PROJECT COST: $476,103

FY17	Estimate	$400,000
FY18	Estimate	$76,103

CAPITAL PROJECT SUMMARY

Project Name: 115kV Transmission Line Upgrade **Project #:** TBD

Project Schedule: FY18-19 **Project Manager:** Peter Price, Chief Engineer

Reason for Expenditure:
The transmission lines that feed Station 4 were built in 1970. The poles, davit arms, insulators, guys, etc. are reaching their end of life and are in need of replacement/upgrade. PLM has done a design to bring the poles and hardware up to today's standards. The 211-503 line will be started in FY 17 and completed in FY18. The 211-504 line will be done in FY19.

Brief Description/Scope:
The RMLD will purchase all the materials needed to replace four (4) poles on the 211-503 line in FY18 and five (5) poles on the 211-504 line in FY 19. The messenger and phase conductors will be re-used as they are the proper size and are in good condition. Pole 211-504 - 4 was replaced in the mid 90's. Although this pole will not be replaced, all the guys, anchors, insulators, etc., will be replaced.

Barriers:
This work will require the RMLD to secure a transmission line contractor and a transmission line outage from Eversource. During this time, Station 4 will be running on one line.

Change in Scope of Work From Prior Fiscal Year:
n/a

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: 115kV Transmission Line Upgrade **SCHEDULE:** FY18-19

PROJECT #: TBD

ITEM	CREW WEEKS 2-man	CREW LABOR COST	CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC		TOTAL
Secure services of a transmission line contractor to replace five (5) poles on the 211-504 line.				$143,000		$54,000		$197,000
	Unit Cost							
Switching and Testing 0.8 week(s) Senior Techs				$2,629	$672			$3,301
	Unit Cost			$3,286	$840		per week	
Line Operations Supervision 2 week(s)				$8,272	$1,680			$9,952
	Unit Cost			$4,136	$840		per week	
Engineering Labor 1.55 week(s)				$6,065	$1,302			$7,367
	Unit Cost			$3,913	$840		per week	
Engineering Labor (OT) 0.45 week(s)				$1,709	$378			$2,087
	Unit Cost			$3,799	$840		per week	
Technical Services Manager 1.4 week(s)				$5,541	$1,176			$6,717
	Unit Cost			$3,958	$840		per week	
Police Details (if applicable) weeks								
	Unit Cost						per week	

Total RMLD Crew Weeks

TOTAL	**$167,216**	**$5,208**	**$54,000**

TOTAL PROJECT COST: $226,424

FY18	42%	Estimate	$95,098
FY19	58%	Estimate	$131,326

CAPITAL PROJECT SUMMARY

Project Name: 35 kV Underground Cable Upgrade Station 4, 5 and RR ROW **Project #:** TBD

Project Schedule: FY18-19 **Project Manager:** Peter Price, Chief Engineer

Reason for Expenditure:
The 35 kV underground cables that make up circuits 4P2 and 4P9 are original to the building at the Station 5 and are over 36 years old. The cables have reached their end of life. The riser structures for 4P2 and 4P9 on the ROW at Causeway Road are also near the end of life and will be replaced.

Brief Description/Scope:
Replace approximately 16,200 feet of 350 mcm CU underground cable on circuits 4P2 and 4P9 at Station 4, Station 5 and on the RR ROW. Replace riser pole structures at ROW at Causeway Road for 4P2 and 4P9.

FY18: Replace 4,500' of 4P2 at Station 4. Replace riser pole structures at ROW at Causeway Road for 4P2.

FY19: Replace 4,500' of 4P9 at Station 4, replace 6,300' of 4P9 at the RR ROW, and 900' of 4P9 at Station 5. Replace riser pole structures at ROW at Causeway Road for 4P9.

Barriers:
This project will need to be scheduled for light load periods. While either circuit is out of service, Station 5 will be running on one line.

Change in Scope of Work From Prior Fiscal Year:
n/a

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: 35 kV Underground Cable Upgrade Station 4, 5 and RR ROW

SCHEDULE: FY18-19

PROJECT #: TBD

ITEM	CREW WEEKS 2-man	CREW LABOR COST	CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC		TOTAL
FY18: 4P2								
Remove and install approximately 4,500' of 35kV, 350CU UG cable	9.0	$56,824	$8,280			$76,500		$141,604
	Unit Cost	$6,314	$920				per week	
Contractor Assist: Remove and install approximately 4,500' of 35kV, 350CU UG cable 4 week(s)						$25,120		$25,120
	Unit Cost					$6,280	per week	
Reconstruct 35kV riser structure at Causeway Road.	3.5	$22,098.20	$3,220			$4,625		$29,943
	Unit Cost	$6,314	$920				per week	
Testing, switching and racking. 0.9 week(s) Senior Tech Labor				$2,957	$756			$3,713
	Unit Cost			$3,286	$840		per week	
FY19: 4P9								
Remove and install approximately 11,700' of 35kV 350CU UG cable	20.0	$126,275	$18,400			$196,500		$341,175
	Unit Cost	$6,314	$920				per week	
Contractor Assist: Remove and install approximately 11,700' of 35kV 350CU UG cable 9 week(s)						$56,520		$56,520
	Unit Cost					$6,280	per week	
Reconstruct 35kV riser structure at Causeway Road.	3.5	$22,098	$3,220			$4,625		$29,943
	Unit Cost	$6,314	$920				per week	
Testing, switching and racking. 2.1 week(s) Senior Tech Labor				$6,900	$1,764			$8,664
	Unit Cost			$3,286	$840		per week	
Engineering Labor 3 week(s)				$11,739	$2,520			$14,259
	Unit Cost			$3,913	$840		per week	
Technical Services Manager 1.5 week(s)				$5,937	$1,260			$7,197
	Unit Cost			$3,958	$840		per week	
Police Details (if applicable)				$2,427				$2,427
1.0 weeks	Unit Cost			$2,427			per week	
Railroad Flaggers						$16,400		$16,400
4.0 week(s)	Unit Cost					$4,100	per week	
TOTAL		**$227,296**	**$33,120**	**$29,960**	**$6,300**	**$380,290**		

TOTAL ESTIMATED PROJECT COST: $676,966

FY18	Estimate	$206,817
FY19	Estimate	$235,074
FY20	Estimate	$235,074

CAPITAL PROJECT SUMMARY

Project Name: Pole Line Upgrade – Woburn Street (West Street to Concord Street) Wilmington **Project #:** TBD

Project Schedule: FY18 **Project Manager:** Peter Price, Chief Engineer

Reason for Expenditure:

The pole line on Woburn Street, Wilmington, between Concord Street and West Street currently has three (3) spacer cable circuits. These poles are under-sized, under-classed, and over 30 years old. This project will upgrade the poles to the proper strength and height class, create the proper NESC clearances between utilities and benefit the long-term reliability of the system.

Brief Description/Scope:

Replace approximately twenty-four (24) main line poles with 55' poles and four (4) stub poles with 40' poles along a section of Woburn Street in Wilmington between Concord Street and West Street. Frame poles with new hardware and transfer the three (3) spacer cable circuits, replace five (5) transformers, transfer one (1) primary lateral, reconductor with secondary cable, transfer/replace 32 services, and 14 street lights. Street lights will be changed to LEDs (as part of the LED Upgrade Project).

Barriers:

Although this is a Verizon set area, RMLD will set the poles because this project requires 55' poles

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Pole Line Upgrade: Woburn Street (between West Street and Concord Street), Wilmington

SCHEDULE: FY18

PROJECT #: TBD

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC.		TOTAL
Install twenty-four (24) 55' and four (4) 40' poles. Frame 28 poles	18.0	$113,648	$16,560			$17,200		$147,408
	Unit Cost	$6,314	$920				per week	
Transfer 28 poles/three circuits	9.0	$56,824	$8,280			$24,100		$89,204
	Unit Cost	$6,314	$920				per week	
Install five (5) transformers	1.0	$6,314	$920					$7,234
	Unit Cost	$6,314	$920				per week	
Install 3000' of 4/O- 3/C secondary cable.	3	$18,941.31	$2,760			$5,550		$27,251
		$6,314	$920					
Change approximately 32 services.	2	$12,627.54	$1,840					$14,468
	Unit Cost	$6,314	$920					
Overtime as needed to complete pole setting, framing, transfers, cable installation.	7	$42,906.40	$6,440			$2,848		$52,194
	Unit Cost	$6,129	$920					
Engineering Labor: 3 week(s)				$ 11,739	$2,520			$14,259
	Unit Cost			$3,913	$840		per hour	
Police Details (if applicable) 20.0 week(s)				$48,550				$48,550
	Unit Cost			$2,427			per week	
TOTAL		**$251,261**	**$36,800**	**$60,288**	**$2,520**	**$49,698**		

TOTAL ESTIMATED PROJECT COST: $400,567

FY18	50%	Estimate	$200,284
FY19	50%	Estimate	$200,284

CAPITAL PROJECT SUMMARY

Project Name: Station 3 Reactors **Project #:** TBD

Project Schedule: FY18 **Project Manager:** Nick D'Alleva
Technical Services Manager

Reason for Expenditure:
In order to reduce the available short circuit fault current and incident energy, the RMLD will be installing two sets of phase reactors. These phase reactors will be installed on the load side of each transformer at Station 3 in North Reading. The installation of the phase reactors will reduce the available short circuit fault current to a level more in line with industry standards.

Brief Description/Scope:
The purchase and installation of two sets of phase reactors. Modifications to the existing 15Kv structure to accommodate the installation.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
n/a

Status Update From Prior Fiscal Year:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Station 3 Reactors **SCHEDULE:** FY18

PROJECT #: TBD

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC		TOTAL
Engineering services for design modifications of existing 15Kv structure.						$40,000		$40,000
Construction services and materials for foundations and structures.						$165,000		$165,000
(2) 15 Kv Reactors						$250,000		$250,000
						$125,000	each	
Bus Modifications and Switching				$19,713.87	$5,040.00	$20,000		$44,754
6 week (s) Senior Techs				$3,286	$840.00		per week	
Bus Modifications and Switching (OT)				$4,785	$1,260.00			$6,045
1.5 (weeks) Senior Techs				$3,190	$840.00		per week	
Install temporary feeds between transformers.	2.0	$12,627.54	$1,840.00			$15,000		$29,468
		$6,313.77	$920.00					
Install temporary feeds between transformers. (OT)	1.0	$6,129.49	$920.00					$7,049
		$6,129.49	$920.00					
Technical Services Manager				$9,894.74	$2,100.00			$11,995
2.5 week(s)	Unit Cost			$3,958	$840.00		per week	
Technical Services Manager (OT)				$1,921.19	$420.00			$2,341
0.5 week(s)	Unit Cost			$3,842	$840.00		per week	
Engineering				$1,956	$420.00			$2,376
0.5 week(s)	Unit Cost			$3,913	$840.00		per week	
Engineering (OT)				$1,899	$420.00			$2,319
0.5 week(s)	Unit Cost			$3,799	$840.00		per week	
TOTAL		**$18,757**	**$2,760**	**$40,170**	**$9,660**	**$490,000**		

TOTAL ESTIMATED PROJECT COST: $561,347

CAPITAL PROJECT SUMMARY

Project Name: AMI Mesh Network Expansion **Project #:** 112

Project Schedule: Annual **Project Manager:** Nick D'Alleva
Technical Services Manager

Reason for Expenditure:
In order to expand RMLD's AMI mesh network, additional relays, meters and retrofit units need to be purchased and installed. These new/retrofit meters will give the RMLD the ability to monitor voltage, current, demand, power factor and power quality. These meters will also provide end-of-the-line voltage.

Brief Description/Scope:
Purchase materials and retrofit 500 exiting RMLD Itron meters to enable them to join the AMI Mesh Network.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
n/a

Status Update From Prior Fiscal Year:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: AMI Mesh Network Expansion **SCHEDULE:** FY18

PROJECT #: 112

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC		TOTAL
Purchase and Install:								$92,500
25 Relays						$7,500		
50 Commercial Meters						$35,000		
500 Retrofit units and materials for existing meters to join the AMI Mesh Network						$50,000		
Labor: Senior Meter Tech				$16,295	$4,320			$20,615
6 week(s)	Unit Cost			$2,716	$720		per week	
Labor: Technical Services Manager				$5,937	$1,260			$7,197
1.5 week(s)	Unit Cost			$3,958	$840		per week	
							each	
	Unit Cost							

RMLD Crew Weeks:

TOTAL	**$22,231**	**$5,580**	**$92,500**

TOTAL ESTIMATED PROJECT COST: $120,311

CAPITAL PROJECT SUMMARY

Project Name: Communication Equipment (for Fiber Optic) **Project #:** 126

Project Schedule: Annual **Project Manager:** Peter Price, Chief Engineer

Reason for Expenditure:
As the RMLD expands its use of the fiber optic network to establish communication with metering equipment, recloser controls, capacitor bank controls and other distribution equipment, the Department will create fiber nodes at various locations along the fiber optic network. Each node will require an enclosure, a fiber optic interface, a power supply, cabling, fiber optic cable, and the termination of the fiber optic cable.

Brief Description/Scope:
Purchase materials and procure fiber optic cable splicers as needed.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
In FY18 RMLD is planning to add approximately 12 nodes to the fiber network to expand communications options. Additional money was added to this annual project to accommodate this expansion.

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Communication Equipment (Fiber Optic) **SCHEDULE:** FY18

PROJECT #: 126

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC		TOTAL
Fiber node materials to include the enclosure, patch panel, power supply and Ethernet switch.						$70,200		$70,200
	Unit Cost							
Contract labor and materials for splicing fiber.						$60,000		$60,000
	Unit Cost							
Fiber optic cable and hardware.						$4,940		$4,940
	Unit Cost							
Line Crews	2	$12,628	$1,840					$14,468
	Unit Cost	$6,314	$920				per week	
Engineering 5 week(s)				$19,565	$4,200			$23,765
	Unit Cost			$3,913	$840			
Labor: Senior Techs 10 week(s)				$32,856	$8,400			$41,256
	Unit Cost			$3,286	$840			
Police Details (if applicable) week(s)								
	Unit Cost						per week	
TOTAL		**$12,628**	**$1,840**	**$52,421**	**$12,600**	**$135,140**		

TOTAL ESTIMATED PROJECT COST: $214,629

CAPITAL PROJECT SUMMARY

Project Name: Meters **Project #:** 117

Project Schedule: Annual **Project Manager:** Nick D'Alleva
Technical Services Manager

Reason for Expenditure:
Purchase of meters and metering equipment for new construction, upgrades, and failures.

Brief Description/Scope:
Two hundred residential and commercial meters as well as miscellaneous hardware will be purchases for stock.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
n/a

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Meters **SCHEDULE:** FY18

PROJECT #: 117

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
For Stock: Residential and Commercial Meters						$60,000	$60,000
200 units	Unit Cost					$300 each	
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						
TOTAL						$60,000	

TOTAL ESTIMATED PROJECT COST: $60,000

CAPITAL PROJECT SUMMARY

Project Name: Pole Replacement Program **Project #:** 175

Project Schedule: Annual **Project Manager:** Peter Price, Chief Engineer

Reason for Expenditure:
In 2015 RMLD initiated a Pole Inspection Program. Ten percent of RMLD-owned poles are inspected annually by an outside contractor using various technology including resistorgraph technology. This Inspection Program provides RMLD with verifiable data on pole condition. Testing (through FY17), has identified 452 poles which were recommended for replacement.

Brief Description/Scope:
RMLD will replace 50 poles per year that are identified as part of the Pole Inspection Program. This project includes setting poles, transfers, and replacement of secondary services as needed.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
n/a

Status Update From Prior Fiscal Year:
Since the inception of the Pole Inspection Program a total of 219 poles have been replaced, and 123 transfers have been completed (as of March 2017).

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Pole Replacement Program **SCHEDULE:** FY18

PROJECT #: 175

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC.		TOTAL
Set and transfer approximately 50 poles.	19.5	$123,119	$17,940			$24,500		$165,559
	Unit Cost	$6,314	$920				per week	
Overtime for pole sets and transfers.	1.0	$6,129	$920					$7,049
	Unit Cost	$6,129	$920				per week	
Service upgrades as necessary.	3.25	$20,520	$2,990			$10,650		$34,160
		$6,314	$920					
	Unit Cost							
Engineering Labor: week(s)								
	Unit Cost							
Police Details (if applicable) 1.0 week (s)				$2,427				$2,427
	Unit Cost			$2,427			per week	
TOTAL		**$149,768**	**$21,850**	**$2,427**		**$35,150**		

TOTAL ESTIMATED PROJECT COST: $209,195

CAPITAL PROJECT SUMMARY

Project Name: Secondary and Main Replacement Program **Project #:** 458

Project Schedule: Annual **Project Manager:** Peter Price, Chief Engineer

Reason for Expenditure:

This preventive maintenance program is intended to upgrade and improve system reliability and address aging infrastructure.

Brief Description/Scope:

This program identifies aging infrastructure and addresses a variety of work to include: pole replacements, stepdown area upgrades, primary upgrades, secondary upgrades, transformer upgrades and service drop upgrades as needed.

Barriers:

Future upgrades are in Verizon set territory and could result in pole setting delays.

Change in Scope of Work from Prior Fiscal Year: Increase (Decrease)

n/a

Status Update from Prior Fiscal Year:

Last year consisted of a pilot program as well as the start of the permanent program which was included in Routine Construction. RMLD inspected 1,100 services and changed out 700. During the pilot program RMLD found numerous areas where poles, primary, secondary and transformers needed upgrades.

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

Secondary and Main Replacement

SCHEDULE: FY18

PROJECT #: 458

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC.		TOTAL
Install 27 40' class 2 poles/anchors/guys	2.1	$13,259	$1,932			$15,120		$30,311
	Unit Cost	$6,314	$920				per week	
Frame and run 27 sections of 1/0 primary.	1.8	$11,049	$1,610			$4,688		$17,347
	Unit Cost	$6,314	$920				per week	
Install nine (9) transformers	0.9	$5,682	$828					$6,510
		$6,314	$920				per week	
Frame and run 16 sections of 4/0 triplex	1.3	$7,892	$1,150			$4,995		$14,037
		$6,314	$920				per week	
Cut-over/replace services	3.0	$18,941	$2,760			$7,526		$29,227
		$6,314	$920				per week	
Wreck-out and pull old poles.	1.2	$7,577	$1,104					$8,681
		$6,314	$920				per week	
Contractor Assist for Line Crews						$100,400		$100,400
10 Week(s)						$10,040		
Line Operations Supervision				$ 4,136	$840			$4,976
1 week(s)	Unit Cost			$4,136	$840		per week	
Engineering Labor:				$ 4,891	$1,050			$5,941
1.25 week(s)	Unit Cost			$3,913	$840			
Police Details (if applicable)				$4,855				$4,855
2.0 week (s)	Unit Cost			$2,427			per week	
TOTAL		**$64,400**	**$9,384**	**$13,882**	**$1,890**	**$132,729**		

TOTAL ESTIMATED PROJECT COST: $222,285

CAPITAL PROJECT SUMMARY

Project Name: Substation Equipment Upgrade **Project #:** 111

Project Schedule: Annual **Project Manager:** Nick D'Alleva
Technical Services Manager

Reason for Expenditure:
United Power Group and RMLD personnel have identified equipment that needs to be replaced or upgraded as a result of their condition assessment of our substation equipment.

Brief Description/Scope:
Major items include the replacement of various 35Kv insulators at Station 4, the replacement of the hydrant oil monitoring devices on both transformers at Station 3 and various minor items at Stations 3, 4 and 5.

Barriers:
Availability of replacement parts.

Change in Scope From Prior Fiscal Year:
None.

Status Update:

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Substation Equipment Upgrade **SCHEDULE:** FY18

PROJECT #: 111

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC.		TOTAL
Various Upgrades (including 35kV insulators)	2	$12,628	$1,840			$10,000		$24,468
	Unit Cost	$6,314	$920				per week	
Overtime (35kV insulators)	0.25	$1,532	$230					$1,762
	Unit Cost	$6,129	$920				per week	
Labor: Senior Techs				$9,857	$2,520			$12,377
3 week(s)	Unit Cost			$3,286	$840		per hour	
Labor: Senior Techs-OT (35kV insulators)				$1,595	$420			$2,015
0.5 week(s)	Unit Cost			$3,190	$840		per hour	
Labor: Technical Services Manager				$7,915.79	$1,680			$9,596
2 week(s)	Unit Cost			$3,958	$840		per hour	
	Unit Cost							
	Unit Cost							
TOTAL	**$14,160**	**$2,070**	**$19,368**	**$4,620**	**$10,000**			

TOTAL ESTIMATED PROJECT COST: $50,218

CAPITAL PROJECT SUMMARY

Project Name: Transformers and Capacitors **Project #:** 116

Project Schedule: Annual **Project Manager:** Peter Price, Chief Engineer

Reason for Expenditure:
A major quantity of standard units is necessary for proposed projects and stock on an ongoing basis.

Brief Description/Scope:

a)	Three-phase padmount transformers (commercial services)	Quantity: 19 units
b)	Single-phase padmount transformers for proposed subdivisions and stock.	Quantity: 59 units
c)	Three-phase polemount transformers for proposed commercial projects and stock	Quantity: 12 units
d)	Single-phase polemount transformers for proposed residential services and stock.	Quantity: 45 units
e)	1200 kVar capacitor banks.	Quantity: 4 units

Barriers:
None anticipated at this time

Change in Scope of Work From Prior Fiscal Year:
n/a

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Transformers and Capacitors **SCHEDULE:** FY18

PROJECT #: 116

ITEM	CREW WEEKS	CREW LABOR COST	CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
a) Three-phase padmount transformers for proposed commercial services and stock 19 units						$237,500 Unit Cost $12,500 per unit	$237,500
b) Single-phase padmount transformers for proposed subdivisions and stock 59 units						$147,500 Unit Cost $2,500 per unit	$147,500
c) Three-phase polemount transformers for proposed commercial services and stock 12 units						$78,000 Unit Cost $6,500 per unit	$78,000
d) Single phase polemount transformers for proposed residential services and stock 45 units						$67,500 Unit Cost $1,500 per unit	$67,500
e) 1200 kVar capacitor banks 4 units						$30,000 Unit Cost $7,500 per unit	$30,000
						Unit Cost per unit	
TOTAL						**$560,500**	

TOTAL ESTIMATED PROJECT COST: $560,500

CAPITAL PROJECT SUMMARY

Project Name: 13.8kV Upgrade (Step-down Area, etc.) All Towns **Project #:** 107

Project Schedule: Annual **Project Manager:** Peter Price, Chief Engineer

Reason for Expenditure:
There are 32 +/- step-down areas in the RMLD service territory. These areas on the RMLD distribution system were originally fed from 4kV distribution circuits. When RMLD began moving load over to the 13.8kV distribution circuits, most areas were converted and some areas were re-fed with pole-mount, step-down transformers. Most of the distribution system in these areas are 30+ years old and in need of upgrade before they can be converted.

Brief Description/Scope:
Replace poles, primary cable, secondary cable, and overhead transformers, as needed, in the various step-down areas. Convert areas to 13.8kV and remove step-down transformers.

Barriers:
Some areas are Verizon set areas.

Change in Scope of Work From Prior Fiscal Year:
n/a

Status Update:
A conversion has been completed on Federal Street in Reading. Additional, conversions are underway on Vine Street, Main Street, and Timberneck Road in Reading; McDonald Road in Wilmington, and Adams Street in North Reading.

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: 13.8kV Upgrade (Step-down Area, etc) - All Towns **SCHEDULE:** FY18

PROJECT #: 107

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC.		TOTAL
Install 1,126' of 1/0 primary.	3.0	$18,941	$2,760			$1,500		$23,201
	Unit Cost	$6,314	$920				see box at left	
Install 939' of 4/0 - 3/C sec cable	3.0	$18,941	$2,760			$1,700		$23,401
	Unit Cost	$6,314	$920				see box at left	
Replace 4 transformers. (Transformers are included with annual transformer purchase.)	2.0	$12,628	$1,840					$14,468
	Unit Cost	$6,314	$920				per week	
Miscellaneous Hardware $200 per pole for approximately 13 poles.						$2,600		$2,600
	Unit Cost						$200 per pole	
	Unit Cost							
Engineering Labor: 1 week(s)				3,913	$840.00			$4,753
	Unit Cost			3,913	$840		per week	
Police Details (if applicable) 1 week(s)				$2,427				$2,427
	Unit Cost			$2,427			per week	

Total RMLD Crew Weeks 8.0

TOTAL	**$50,510**	**$7,360**	**$6,340**	**$840**	**$5,800**

TOTAL ESTIMATED PROJECT COST: $70,851

CAPITAL PROJECT SUMMARY

Project Name: Underground Facilities Upgrades (URDs, Manholes, etc.) – All Towns **Project #:** 106

Project Schedule: Annual **Project Manager:** Peter Price, Chief Engineer

Reason for Expenditure:
There are 244 +/- underground residential subdivisions in the RMLD service territory, of which, 65 +/- are over 25 years old. These subdivisions are in need of new primary cable and transformers. Some of the URDs are in step-down areas and need to be upgraded before they can be converted to 7,979 volts. Also, most of the existing transformers are live-front units. The new padmount transformers will be dead-front units, which will improve reliability by eliminating the possibility of animal contacts within the pad transformer.

Brief Description/Scope:
Replace primary and neutral cables, and padmount transformers as needed in the various URDs. Replace precast transformer pads with fiberglass box pads as needed for elevation requirements.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
n/a

Status Update:
Completed work on Patrice Lane and Perkins Lane, Lynnfield; Lucaya Estates, Gandalf Way, Clorinda Road Earles Row, Wilmington; Turner Drive, Judith Drive, North Hill Estates and Bishops Way, North Reading.

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: UG Facilities Upgrades (URDs, Manholes, etc.) - All Towns **SCHEDULE:** FY18

PROJECT #: 106

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC.		TOTAL
Rebuild three underground residential subdivisions. Materials including splices, elbows, terminations connections, box pads, tape, etc.	16.0	$101,020	$14,720			$77,000		$192,740
	Unit Cost	$6,314	$920				per week	
Contractor Assist: Rebuild three underground residential subdivisions. 16 week(s)						$100,480		$100,480
	Unit Cost					$6,280	per week	
Excavation/manhole replacement, as necessary.						$24,000		$24,000
	Unit Cost							
Line Supervision 1.75 week(s)				$7,237.68	$1,470			$8,708
	Unit Cost			$4,136	$840		per week	
Testing 1.1 week(s) Senior Techs				$ 3,614	$924			$4,538
	Unit Cost			$3,286	$840		per week	
Engineering Labor 3 week(s)				$ 11,739	$2,520			$14,259
	Unit Cost			$3,913	$840		per week	
Police Details (if applicable) week(s)								
	Unit Cost						per week	

Total RMLD Crew Weeks **16.0**

TOTAL	$101,020	$14,720	$22,591	$4,914	$201,480

TOTAL ESTIMATED PROJECT COST: **$344,725**

CAPITAL PROJECT SUMMARY

Project Name: Service Installations (Commercial and Residential) **Project #:** various

Project Schedule: Annual **Project Manager:** n/a

Reason for Expenditure:
To install new and upgraded services for both residential and commercial/industrial customers in the service territory.

Brief Description/Scope:
This item includes new service connections, upgrades, and service replacements for residential, commercial and industrial customers. This represents the time and materials associated with the replacement of an existing or installation of a new overhead service drop and the connection of an underground service, etc. This does not include the time and materials associated with pole replacements/installations, transformer replacements/installations, primary or secondary cable replacements/installations, etc. These aspects of a project are captured under Routine Construction.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year
n/a

Status Update:
n/a

FISCAL 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Service Installations (Residential and Commercial) **SCHEDULE:** FY18

PROJECT #: various

ITEM	CREW WEEKS 2-Man	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
Install new and upgraded service connections at approximately 270 units (approx 75-100 feet per installation).	15	$96,041.28	$13,994.49			$45,900	$155,936
	Unit Cost	$6,314	$920			per week	
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						

TOTAL	**96,041**	**$13,994**		**$45,900**

TOTAL ESTIMATED PROJECT COST $155,936

CAPITAL PROJECT SUMMARY

Project Name: Routine Construction **Project #:** various

Project Schedule: Annual **Project Manager:** n/a

Reason for Expenditure:
Routine Construction covers capital projects that develop during the year involving items shown below.

Brief Description/Scope:

- Capital Construction – transformer installation, overhead and underground system upgrades, miscellaneous projects, pole damage, etc.
- Street Lights – new equipment installation
- Pole setting/transfers
- Engineering labor
- General Line Foreman labor
- Underground capital construction
- Police details associated with routine capital work
- Overtime associated with routine capital work

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
n/a

Status Update:
n/a

FISCAL YEAR 2018 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Routine Construction **SCHEDULE:** FY18

PROJECT #: various

ITEM	CREW WEEKS 2-man	CREW LABOR COST	CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC		TOTAL
a) Capital Construction	20	126,275	$18,400			$100,000		$244,675
	Unit Cost	6,314	$920				per week	
b) Street Light Installations	4	25,255	$3,680					$28,935
	Unit Cost	6,314	$920				per week	
c) Pole Setting/Transfers	27	170,472	$24,840			$100,000		$295,312
	Unit Cost	$6,314	$920				per week	
d) Engineering Labor				$31,303	$6,720			$38,023
8.0 weeks	Unit Cost			$3,913	$840		per week	
e) General Line Foreman Labor				$107,531	$21,840.0			$129,371
26.0 weeks	Unit Cost			$4,136	$840		per week	
f) U/G Construction	1.5	$9,471	$1,380			$100,000		$110,851
	Unit Cost	$6,314	$920				per week	
g) Police Details				$126,229				$126,229
52.0 weeks	Unit Cost			$2,427			per week	
h) Overtime	10	$61,295	$9,200					$70,495
	Unit Cost	$6,129.49	$920				per week	
TOTAL		$392,767.85	$57,500	$265,063	$28,560	$300,000		

TOTAL ESTIMATED PROJECT COST: $1,043,891