READING MUNICIPAL LIGHT DEPARTMENT

2020 BUDGET

September 30, 2019

TABLE OF CONTENTS

2020 OPERATING BUDGET

2020 POWER SUPPLY

READING MUNICIPAL LIGHT DEPARTMENT

Mission Statement

RMLD is committed to providing excellent customer service, including competitively priced electricity through due diligence of power supply, risk management, system reliability, safety, and overall business efficiency.

Vision Statement

RMLD has transitioned from a reactive to a proactive approach in all aspects of the utility business to ensure efficiency, safety, and competitive rates. The Be Efficient – Get Greener – Go Paperless, Peak Performance, and Shred the Peak, campaigns, have been integrated into a core business and include sustained procedural changes in the areas of long-term planning, technology road mapping, talent managing, customer communication, system maintenance and power supply portfolio balancing.

SYSTEM PROFILE

(based on CY18)

SERVICE TERRITORY	51 square miles serving Reading, North Reading, Wilmington, and part of Lynnfield
TOTAL OPERATING REVENUES	$99,598,462
POWER PURCHASED	700,331,299 kWh
NUMBER OF CUSTOMERS/ ACTIVE METERS	29,881
ANNUAL PEAK DEMAND	163,635 kW on August 29, 2018, at 3:00 pm
ANNUAL SALES	679,293,226 kWh
PLANT VALUE	$152,132,400 (Gross) $78,483,314 (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 341 miles
UNDERGROUND PRIMARY LINES	All 146 miles
DISTRIBUTION TRANSFORMERS	4,071 transformers – 312 MVA Capacity
STATION TRANSFORMER CAPACITY	370 MVA Capacity
UTILITY POLES	18,033 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	
	ChargePoint Cloud Services CMARS Constant Contact EFI (Energy Federation) eRequester ESRI eTrack Facility Dude Filezilla Forecasting Futura Great Plains/Cogsdale Home Energy Audits Hootsuite ISO-NE Key Accounts LexisNexis ManagerPlus MIlsoft - WindMil/LightTable NEPOOL GIS Office 365 E3 PoleForeman Replicon SagLine SharePoint SpryMobile SpryPoint Survalent (OMS) Tangent AMP VMware Windows 10 Windows Server 2016, 2012
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 and Technology	Wendy Markiewicz email: wmarkiewicz@rmld.com
Director of Engineering and Operations	Hamid Jaffari email: hjaffari@rmld.com
Director of Human Resources	Janet Walsh email: jwalsh@rmld.com
Director of Integrated Resources	Charles Underhill email: cunderhill@rmld.com
GOVERNING BODY	
	David Hennessy Thomas O'Rourke Philip B. Pacino John Stempeck David Talbot
Number of Employees	67
Year Founded	1894

2020 CAPITAL BUDGET

PLANNED PROGRAMS

READING MUNICIPAL LIGHT DEPARTMENT

Capital Improvements CY20 thru CY25

$ Shown in thousands

LINE #	PAGE #	TOWN	PROJ #	FERC #	PROJECT NAME	CY19 BUDGET	CY19 EST.	CY20 PLAN EST.	CY21	CY22	CY23	CY24	CY25	BRIEF DESCRIPTION
1	**n/a**	A	129	390	Master Facilities Site Plan (ON-HOLD)									Town economic development plan impact. Master-hold. Evaluate maintenance only.
2	**17**	A	095	390	Building Upgrades	125	395	215	100	125	250	50	50	CY19: OSHA remediation: deck and emergency lighting, and Station 1 Generator (not budgeted); CY20: cooling system for equipment at Station 4; transformer storage unit at Station 3
3	**19**	A	098	391	Office Upgrades -230 Ash Street	120	114	95	30	30	30	30	30	Create Offices for Tech Services and Materials Mgmt., and Tech Services/Facilities Conf. Room. Minor upgrades in AV Room and GM Conf Room.
4	**21**	A	119	398	Security Upgrades All Sites	30	20	300	30	30	30	30	30	Upgrades to existing Access Control equipment and alarm monitoring. For CY20 Increase number of surveillance cameras at Substations, replace all cameras with wireless cameras, install Facial Recognition System and Finger Scanning equipment. In the coming years continue repairs and upgrades to RMLD Properties, such as, repair perimeter fencing, site lighting, and physical security improvements.
5	**23**	A	118	392	Rolling Stock Replacement	325	75	650	300	300	300	300	300	Scheduled vehicle replacement is based on Fleet Assessment and the Electrification Program. CY19 (carry-over) for underground utility vehicle to be delivered in CY20: Forklift for Station 3 Transformer Storage Project; pole trailer, Hybrid SUV, heavy duty vehicle.
6	**29**	A	099	392	Electric Vehicle Supply Equipment (EVSE)	60	22	199	143	100	100	100	100	Installation of L2 chargers to encourage the development of EV charging infrastructure. FY20: 4 public chargers and 7 for Analog Devices.
7	**33**	A	127	382	Hardware Upgrades	78	115	114	119	119	119	119	119	General hardware upgrades; EMC data domain (replace); new firewalls; new servers in VMware.
8	**35**	A	128	383	Software and Licensing	405	90	295	339	239	239	239	239	General software purchases/custom programming. Migrate systems to cloud (GP/Cogsdale, metering system); Customer Relationship Management Software.
9	**39**	W	120	367	Marion Street Line Extension, W (Phase I & II)	102	102	368						Phase I (2019): Upgrade existing line from single-phase to three-phase feeding Eleanor Drive (to be completed by the end of 2019); Phase II (2020): Extend the underground line on Marion Street in Wilmington to create a backup feed meeting with the three-phase URD.
10	**41**	W/R/ NR	102	367	Pad-mount Switchgear Upgrade at Industrial Parks	436	**765**	528	452	452	180			Starting in FY18, replace all 15 kV pad-mounted switchgear at industrial parks (i.e., River Park Drive, Jonspin Road, Haven Street, etc.) There are 29 switches system-wide. We have replaced 6 of the 29 units as of 9/16/19. Three additional will be replaced in the fall of FY19, leaving 20 units for replacement. In CY20 we will purchase and replace the next five units slated for replacement and install two switches remaining from CY19.
11	**43**	W	105		**NEW WILMINGTON SUBSTATION**									
				360	Purchase Land in Wilmington		75	570						Land purchase. Other associated appraisal and permitting costs are included with Wilmington Substation Construction & Commissioning (see below).
				361/362/ 366/367	Wilmington Substation Construction & Commissioning	69	0	185	4,472	4,738				Conceptual design, permitting, procurement of materials, construction, commissioning, and all required materials and labor to bring the proposed Wilmington substation online. Estimated Total Cost: $10.1m
12	**47**	W	124	364/365	MA-125 Pole Line Installation for New Wilmington Substation	5	0	5	368	368				This project covers an ~3,000 foot proposed pole line that will span MA-125 from Ballardvale Street to Andover Street, which will be used for riser pole getaways from the proposed Wilmington substation, and will interconnect the new substation to RMLD's existing overhead distribution system.
13	**n/a**	W	TBD	365	Distribution Improvements Associated with New Wilmington Substation					150	150			The proposed Wilmington substation's main objective will be to feed the existing Station 5 circuits. The new station will be designed for growth of load on Station 5 circuits, and will provide capacity relief to Stations 3 and 4. This line item will account for distribution modifications to provide load relief to Stations 3 and 4.
14	**49**	A	103		**GRID MODERNIZATION & OPTIMIZATION**									**Fifteen-year plan to implement Technology Road Map for grid efficiency, reduction of losses, etc.**
				365	*Scada- Mate Switches*	267	283	282	291	300	309	318	327	4 switches/year plus IntelliTeam licenses
				365	*IntelliRupter®*	125	141	131	135	139	143	148	152	2 switches/year plus IntelliTeam licenses
				383	*Cap Bank Automation*	66	66	20	20	20	20	20	20	Adding feeder cap banks and making them SCADA controlled
				383	*Software Integration*	14	14	15	15	15	15	15	15	Integration of AMI/Scada-Mate switches/OMS
				383	*Meter Data Management Software (MDM)*			150						Software for long-term data storage and management for data delivered by smart metering systems. Also incorporates meter data analytics. Integrates multiple data sources (i.e., Itron and Yukon systems, billing systems and GIS as needed).
					OUTAGE MANAGEMENT SYSTEM (OMS)									Outage Management System and supplemental modules to automate outage response and customer/public communication during outage events.
				383	*OMS Module: Integrated Voice Response (IVR)*	52	63							Integrated Voice Response (IVR) in progress - scheduled for completion in CY19.
				383	*OMS Module: Crew Management*	60	45	49						From the OMS, field crews can receive job notifications, view work orders, display the network model and outage map in real-time, report their progress, and close job tickets - Purchase of licenses (CY19) and server including installation, setup and training (CY20).
				383	*OMS Module: Power Factor Correction/VVR*			171						License for Distribution Power Flow which computes and presents phase voltages, currents, and losses on the entire distribution network. License for Volt/VAR optimization which coordinates the control of reactive power and voltage. Includes installation and training for both applications.
15	**57**	A	112	361/370	AMI Mesh Network Expansion & Meter Replacement	300	300	2,078	1,000	1,000	1,000	1,000	1,000	Install gateways, relays, and meters to expand the AMI mesh network. Replace 1,600 residential time-of-use and small commercial meters and 2,000 commercial meters. This will allow power outage notification/restoration and end-of-the-line voltage readings. 5-year plan to upgrade all meters.
16	**59**	A	117	370	Meters and Primary Meters	80	68	173	108	108	108	108	108	Purchase primary meters and meters (with disconnect option as available) for new construction, upgrades and failures.

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Capital Improvements CY20 thru CY25

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LINE #	PAGE #	TOWN	PROJ #	FERC #	PROJECT NAME	CY19 BUDGET	CY19 EST.	CY20 PLAN EST.	CY21	CY22	CY23	CY24	CY25	BRIEF DESCRIPTION
17	**61**	R	214	364/365/ 373	Force Account (MassDOT): Main & Hopkins, R	225	0	174						Widen Main Street and install traffic lights at the intersections of Hopkins and Main , and Summer and Main.
18	**n/a**	W	TBD	364/365/ 373	Force Account (MassDOT): Lowell at Woburn Street, W				237					Widen Lowell Street and Woburn Street; upgrade traffic signals. Up to 21 poles to be relocated, RMLD to set 17 poles, VAZ to set 6.
19					**GETAWAY UPGRADES**									
20	**63**	NR	125	364/367	3W15 Getaway Improvements			192						Improvements to result in significant added capacity to 3W15 and moderate increase in capacity to remaining Station 3 circuits.
21	**n/a**	NR	TBD	364/367	3W18 Getaway Improvements				293					Improvements to result in significant added capacity to 3W18 and moderate increase in capacity to remaining Station 3 circuits.
22	**n/a**	R	TBD	364/367	4W28 Getaway Replacement					316				Station 4: Replace 3,400 feet of underground getaway to 750 mcm cu for increased reliability.
23	**n/a**	W	TBD	364/367	5W4/5W5 Getaway Replacement					119				Station 5: Upgrade feeders from substation to risers to increase feeders' ampacity. This project will be revisited after the new Wilmington Substation is built.
24	**n/a**	R	TBD	364/367	4W7 Getaway Replacement						177			Station 4: Replace 1,900 feet of underground getaway to 750 mcm cu for increased reliability.
25	**n/a**	R	TBD	364/367	4W10 Getaway Replacement						177			Station 4: Replace 1,900 feet of underground getaway to 750 mcm cu for increased reliability.
26	**n/a**	R	TBD	364/367	4W4 Getaway Replacement							316		Station 4: Replace 3,400 feet of underground getaway to 750 mcm cu for increased reliability.
27	**n/a**	R	TBD	364/367	4W24 Getaway Replacement								350	Station 4: Replace 3,725 feet of underground getaway to 750 mcm cu for increased reliability.
28	**65**	A	116	365/366/ 367/368	Transformers and Capacitors Purchase (Stock and Projects)	617	**691**	602	614	627	639	652	665	Purchase units for stock, new construction and reliability projects including Aged/Overloaded Transformer Replacement, Secondary and Main Replacement , 13.8kV Upgrades (Step-down Areas), and Underground Facilities Upgrades (listed below). Refer to Project Cost Sheet and Summary for details including labor and additional materials for these reliability programs.
					LONG-TERM UPGRADE RELIABILITY PROJECTS (NO TRANSFORMERS)									
29	**67**	A	458	365	Secondary and Main Replacement Program - All Towns	344	344	221	238	243	316	274	276	Repair as necessary secondary/main services and connectors prioritized by age as determined by system-wide inspection. CY20: North Main Street/Lowell Street Area, Lynnfield (including step-down upgrade) and Chapel Hill Road, Reading.
30	**69**	A	107	365	13.8kV Upgrade (Step-down Area, etc.) - All Towns	331	346	390	356	313	367	423	449	Convert step-down areas to 13.8kV. Remove antiquated equipment and step-downs to lower losses and improve system efficiency. CY20 : North Main Street/Lowell Street Area, Lynnfield (including secondary and main upgrade)
31	**71**	A	106	366/367/ 368	UG Facilities Upgrades (URDs, Manholes, etc.) - All Towns	332	78	564	575	587	599	611	623	Replace primary and neutral cables and pad-mount transformers as needed in various aging URDs. Improved reliability. For the next five years, 2-3 subdivisions are planned to be upgraded per year.
32	**73**	A	668	366/367/ 368	Aged/Overloaded Transformer Replacement Program			713	713	713	713	713	713	Labor associated with transformers.
33	**75**	NR/R	175	364	Pole Replacement Program, R and NR	263	292	307	313	320	326	333	339	Replace poles identified through the Pole Inspection Program (700 poles/year inspected). This will include transfers and replacement of secondary services as necessary. Fifty poles scheduled for replacement each year.
34	**77**	A	111	362	Substation Equipment Upgrade	66	66	13	30	30	30	30	30	Upgrade various equipment at substations. CY20: Two Hydran Oil Monitoring Units - one on each transformer at Station 3.
35	**79**	A	126	397	Communication Equipment (Fiber Optic)	49	30	49	49	49	49	49	49	Materials to accommodate expanded use of fiber optic network for distribution automation and Eaton AMI system.
36	**81**	A	115	394/395	Power/Lab and Tool Equipment	84	86	81	68	20	20	20	20	Power tools and equipment as necessary including phasing meter /hi-pot units (6); four-point battery hydraulic presses (2), Cibano 500 breaker test equipment, and miscellaneous items.
37	**83**	A	various	369	Service Connections (Residential and Commercial) - All Towns	142	142	148	152	157	161	166	171	Install new and upgraded residential and commercial services as requested.
38	**85**	A	various	various	Routine Construction - All Towns	1,078	1,600	1,468	1,497	1,527	1,557	1,588	1,620	Miscellaneous capital expenses including: overhead and underground system upgrades, pole hits, station upgrades, porcelain cutout replacements, street light connections (new equipment), pole setting/transfers, new construction (underground divisions)
39	**n/a**	W	TBD	361/362/ 366/367	Analog Devices Substation						1,500	1,500	500	Partnership with Analog to build a dedicated substation with feeds to back up feeders out of Substation 4.
40	**n/a**	W	TBD	364/365	Industrial Way, Wilmington - Pole Line Upgrade						226	226		Replace approximately twenty-five (25) 55' poles and upgrade to H1 class poles to accommodate pole loading. Poles are under classed and are over 40 years old. There are currently 4 circuits on the Industrial Way pole line, 4W4, 4W12, 4W24 and 4W28.
41	**n/a**	R	TBD	364/365	4W24 Partial Circuit Reconductoring							656		Station 4: Upgrade main feeder of overhead circuit 4W24 to 556 to address voltage and conductor capacity issues.
42	**n/a**	W	TBD	364/365	Butters Row, Wilmington - Pole Line Upgrade								378	Verizon to replace/upgrade 25 aged/under-class poles on Butters Row between Main Street and Chestnut Street. Replace cable, upgrade transformers, and transfer secondary cable, services and street lights. Benefit to long-term reliability.

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Capital Improvements CY20 thru CY25

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43	**n/a**		104	361/373	RMLD Lighting (LED) Upgrade Program	200	100							Upgrade Ash Street and other RMLD facilities including substations with new interior/exterior LED fixtures. A Designer will perform an energy audit and provide guidance with a Bid Spec. Installation of fixtures by an electrical contractor.
44	**n/a**	R	140	390	Parking Lot Upgrade - 230 Ash Street	230	200							Reconfigure parking lot at 230 Ash Street to include accommodations for future connection for EV charging stations.
45	**n/a**	NR	101	363	Battery Storage Unit at Station 3	20	55							5MW battery storage at Station 3. Substation integration into battery unit.
46	**n/a**	R	130	397	211-503 and 211-504 Fiber Line Extension to Substation 4	534	300							Fiber to support communication between RMLD Station 4 and Eversource Convex dispatching center..
47	**n/a**	R	132	361/364/ 367	4W6 Getaway Replacement	157	161							Station 4: Upgrade to approximately 1,700 circuit feet of UG cable on West Street, Reading, to 750 mcm cu for increased reliability and capacity per Booth Reliability Study recommendations.
48	**n/a**	R	135	361/364/ 367	4W16 Getaway Replacement	206	206							Station 4: Upgrade to approximately 2,250 circuit feet of underground cable on Causeway Road/Lowell Street, Reading, to 750 mcm cu for increased reliability and capacity.
49	**n/a**	R	122	361/364/ 367	4W5/4W12 Getaway Improvements	117	384							Station 4: Improvements to result in added capacity to 4W5/4W12 and all south-side circuits at Station 4. FY19 carry-over
50	**n/a**	W	121	365	5W5 Andover Access Road Upgrade, W	89	91							Upgrade 1,000 feet of open wire primary to 556 AL spacer to improve reliability of 5W5 cable between Andover Street and Salem Street along I-93.
				TOTAL		**7,804**	**7,926**	**11,513**	**13,059**	**13,252**	**9,850**	**10,033**	**8,674**	

COMPLETED OR SCHEDULED TO BE COMPLETED BY 12/31/19.

Year-end Estimate Includes Carry-over

	CY19 BUDGET	CY19 EST.	CY20 PLAN EST.	CY21	CY22	CY23	CY24	CY25
TABLE 1: PLANT VALUES & DEPRECIATION EXPENSE:								
Plant in Service (Beginning)	152,585	152,132	159,058	169,572	181,631	193,883	202,733	211,766
Additions	**7,804**	**7,926**	**11,513**	**13,059**	**13,252**	**9,850**	**10,033**	**8,674**
Adjustments (Property Retirement)	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000
Plant in Service (Ending)	159,389	159,058	169,572	181,631	193,883	202,733	211,766	219,440
Less Land and Land Rights	-1,777	-1,266	-1,266	-2,007	-2,007	-2,007	-2,007	-2,007
Depreciable Plant in Service	157,612	157,793	168,306	179,624	191,876	200,726	209,760	217,433
Accumulated Reserve For Depreciation	-78,566	-78,175	-82,909	-87,958	-93,347	-99,103	-105,125	-111,418
Net Plant in Service	80,823	80,883	86,663	93,673	100,536	103,630	106,642	108,023
TABLE 2: DEPRECIATION FUND BALANCES:								
Beginning Balance	6,573	7,615	7,098	6,592	4,919	3,156	4,162	4,251
Depreciation Rate (3%)	3%	3%	3%	3%	3%	3%	3%	3%
Depreciation Expense	**4,524**	**4,526**	**4,734**	**5,049**	**5,389**	**5,756**	**6,022**	**6,293**
Bond Proceeds and Other Fund Sources	301	384	274	337	100	100	100	100
Operating Fund Transfer	1,000	2,500	6,000	6,000	6,000	5,000	4,000	4,000
	12,398	15,024	18,106	17,979	16,408	14,012	14,284	14,644
Capital Improvements	-7,804	-7,926	-11,513	-13,059	-13,252	-9,850	-10,033	-8,674
Ending Balance	**4,594**	**7,098**	**6,592**	**4,919**	**3,156**	**4,162**	**4,251**	**5,970**
TABLE 3: BOND PROCEEDS & OTHER FUND SOURCES:								
Bond Proceeds for New Wilmington Substation								
Force Account (MassDOT): Main & Hopkins, R	225	0	174	0	0	0	0	0
Force Account (MassDOT): Lowell at Woburn Street, W		0	0	237	0	0	0	0
Electric Vehicle Supply Equipment (EVSE)	6							
BESS Battery Storage Unit	20							
Interest Income	50	384	100	100	100	100	100	100
	301	384	274	337	100	100	100	100

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CAPITAL PROJECTS

Facilities

CAPITAL PROJECT SUMMARY

Project Name: Building Upgrades **Project #:** 095

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

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

Brief Description/Scope:

Station 4 is having difficulty with high temperatures that are negatively impacting sensitive electronic equipment. In CY20, an equipment cooling system will be installed to cool the building.

Also in CY20, shelving racks for transformer storage will be purchased and installed at Station 3. This project will reduce the amount of space leased at the Barbas Warehouse.

Barriers:
None anticipated at this time.

Change in Scope of Work from Prior Fiscal Year:
Not applicable.

Status Update:
The lobby insulation project will be complete by the end of CY19. OSHA remediation continues. The deck replacement project is the largest item identified for remediation and is scheduled for completion by the end of CY19.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Building Upgrades **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0	Equipment cooling system for Station 4				$65,000
			$0	$0	$0	Shelving racks for transformer storage at Station 3				$150,000
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
TOTAL			**$0**	**$0**	**$0**					**$215,000**

PROJECT TOTAL: $215,000

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 CY20, the following office upgrades will be made:

- create an additional office in the Tech Services area;
- create a conference room in the Facilities area to accommodate both Facilities and Tech Services;
- AV Room and the General Manager's Conference Room will be painted, and the carpet replaced;
- new camera and projection system will be installed in the AV Room; and
- create an additional office for the Assistant Materials Manager.

Barriers:
None anticipated at this time.

Change in Scope of Work from Prior Fiscal Year:
Not applicable.

Status Update:
In CY19, upgrades were completed in Integrated Resource Division (IRD) to accommodate increased staffing. Upgrades included new cubicles, relocation of break room, and reconfiguration of storage room. Additionally, the Facilities area was rearranged to create a more productive working area.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Office Upgrades **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0	Tech Services Office				$25,000
			$0	$0	$0	GM Conference room and Av Room (carpet and painting)				$15,000
			$0	$0	$0	AV Room (camera and projection system)				$20,000
			$0	$0	$0	Facilities/Tech Services Conference Room				$15,000
			$0	$0	$0	Assistant Materials Manager Office				$20,000
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$0**	**$0**	**$0**					**$95,000**

PROJECT TOTAL: $95,000

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:

Annual allotment for security upgrades. In CY20, security is will be the responsibility of the IT Department. IT will design a comprehensive security upgrade system to replace the 2017 security system at the Ash Street campus and Substations.

Brief Description/Scope:
Access control and surveillance systems upgrades over the next year:

- Design and install a Comprehensive Security System.
- Replace existing cameras with wire-less cameras.
- Install a Finger-Scanning Access System to allow employee access to the building and clock-in their time to improve time card reporting.
- Install a Facial Recognition System to verify employee prior to granting access the building.
- Perform a physical security assessment by a Security Consultant

Access control and surveillance systems upgrades over the next five (5) years:

- Add security fencing to server room
- Repair and replace system equipment as needed annually
- Repair/replace site lighting as needed annually
- Re-key buildings and sensitive areas as needed

Barriers:
None anticipated at this time.

Change in Scope of Work from Prior Fiscal Year:

Not applicable.

Status Update:
Repaired 200 feet of perimeter fence at Station 4.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Security Upgrades - All Sites **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0	Comprehensive Security System Upgrade				$300,000
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$0**	**$0**	**$0**					**$300,000**

PROJECT TOTAL: $300,000

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 the new electrification plan and an eight to ten-year cycle to reduce maintenance costs and improve reliability. Vehicles removed from the fleet will be traded-in to the dealer providing the new vehicle.

Brief Description/Scope:

Specifications, bids, and purchase orders will be completed for CY20 delivery of the following:

- one new forklift for Station 3 shelving storage area
- one new pole trailer to replace a discarded trailer
- one new hybrid SUV with trade-in of one gas pick-up truck
- one new heavy-duty vehicle with trade-in of one heavy-duty vehicle

Barriers:
None anticipated at this time.

Change in Scope of Work from Prior Fiscal Year: Increase (Decrease)
Not applicable.

Status Update:

- The forklift was received in August 2019.
- The underground utility truck will be ordered by the end of the year, but is not expected to be delivered until 2020.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Rolling Stock Replacement (vehicles, trailers, fork trucks)

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0	Forklift	each	$75,000	1	$75,000
			$0	$0	$0	Pole Trailer	each	$25,000	1	$25,000
			$0	$0	$0	Hybrid SUV	each	$75,000	1	$75,000
			$0	$0	$0	Heavy-Duty Vehicle	each	$275,000	1	$275,000
			$0	$0	$0	Heavy Duty Underground Utility Truck (carry-over from CY19)	each	$200,000	1	$200,000
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$0**	**$0**	**$0**					**$650,000**

PROJECT TOTAL: $650,000

Light Duty Vehicles

Vehicle ID #	Year	Last Mileage Date	Current Mileage	Average Annual Maintenance Costs 2008-present	Department	Vehicle Type	CY 19	CY 20
36	2009	7/15/19	156,156	$2,031.24	Engineering	Ford F-150 PU	Trade/36	-
1	2008	7/15/19	128,882	$1,967.68	Engineering	Ford Escape	Trade/1	-
New (36)	2020	X	X	X	Engineering	TBD	$75,000.00	
New (1)	2020	X	X	X	Engineering	TBD		$75,000.00

Heavy Duty Line Trucks

Vehicle ID #	Year	Last Mileage Date	Current Mileage	Average Annual Maintenance Costs 2008-present	Department	Vehicle Type	CY 19	CY 20
34	2001	7/15/19	84,041	$6,894.00	Line	36' Bucket Truck	Trade/34	-
5	2005	7/15/19	62,843	$12,666.00	Line	47' Digger	-	Trade/5
New (34)	2020	X	X	X	Line	Underground Utility Vehicle	$200,000.00	
New (5)	2020	X	X	X	Line	47' Digger		$275,000.00

Fork Lift

Vehicle ID #	Year	Last Hour Date	Current Hours	Average Annual Maintenance Costs 2009-present	Department	Vehicle Type	CY 19	CY 20
FT-1	1999	7/15/19	772.5	0	Stock / Line / Station	Yale Fork Truck	Trade/FT1	-
New (FT-1)	2019	X	X	X	Stock / Line / Station	Fork Truck	$60,500.00	
New (FT- 4)	2020	X	X	X	Stock / Line / Station	Fork Truck		$75,000.00

Trailer

Vehicle ID #	Year	Last Hour Date	Current Hours	Average Annual Maintenance Costs 2009-present	Department	Vehicle Type	CY 19	CY 20
New (T- 8)	2020	X	X	X	Line	Pole Trailer		$25,000.00
						FY Totals:	$335,500.00	$450,000.00
							CY 19	CY 20

CAPITAL PROJECTS

Integrated Resources

CAPITAL PROJECT SUMMARY

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

Project Schedule: On-going **Project Manager:** David Doskocil, EV Program Coordinator

Reason for Expenditure:

The goal of the EVSE project is to establish the plug-in electric vehicle infrastructure within RMLD's service territory. The program will provide a highly visible pathway for customers who desire to support the effort to reduce carbon emissions in both the transportation and energy sectors while offsetting declining electricity sales.

Brief Description/Scope:

RMLD will work with each town within its service territory to determine the level of interest and best location for the installation of a highly visible dual port charger in parking areas owned by the town. In addition, RMLD plans to install seven dual port charging stations at a large industrial customer's site. RMLD will own all these charging stations.

Barriers:

Although coordination with towns may take some time, we do not anticipate any economic barriers.

Change in Scope of Work from Prior Fiscal Year:

RMLD has increased the number of charging stations to be installed.

Status Update:

Additional help has been retained to develop and implement RMLD's EV program. Considerable effort has been spent organizing and formalizing the EVSE program and preparing for the expansion of EV's in RMLD's territory as part of RMLD's Electrification effort.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Electrical Vehicle Supply Equipment (EVSE) **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)					
ITEM/TASK	Straight Time	OT	Straight Time	Overtime		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
						Purchase and install public EV charging units including required software.	each	$7,500	4	$30,000
						Contractor installation of public chargers.	each	$10,000	4	$40,000
						Purchase and install EV charging units including required software for installation at Analog Devices facilities.	each	$7,500	7	$52,500
Build and frame riser pole (at Analog)	0.4		$2,735	$0	$368					
Installation of UG primary conductors, splicing and terminating, transformer delivery (at Analog)	1		$6,838	$0	$920	UG primary wire, terminations, elbows (at Analog)				$14,000
						Contractor: Design, write spec, and installation of secondary service for EV charging units (at Analog)				$40,000
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
										$0
										$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
Contractor Assist	1		$6,645.60		$320					
										$0
										$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews	12		$1,260.96	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
Oversight of Project (Analog)	40		$3,513.60	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$20,993**	**$0**	**$1,608**					**$176,500**

PROJECT TOTAL: $199,101

CAPITAL PROJECTS

Information Technology

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:
Each year RMLD must replace failed or obsolete computers and related equipment, as well as purchase equipment for new users. Additionally, miscellaneous new hardware may be purchased at the request of various operating units. This item includes these purchases as well as more specific items outlined below.

Brief Description/Scope:
In addition to the standard purchases described above, we anticipate the following:

- Replace old/obsolete user workstations with small form factor Windows 10 PCs.
- New EMC data domain to replace five-year old DD160. The current data domain (DD160) will be used as a backup.
- New firewall(s) for SCADA domain to replace current firewall with “mainstream” brand with more robust security features.
- Replace aging HP ESXi Servers in VMware Cluster #2. Current hardware is seven years old and will not accept the current firmware to allow update to ESXi 6.7.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
Not applicable.

Status Update:
Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Hardware Upgrades **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks+			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0	Miscellaneous Hardware				$40,000
			$0	$0	$0	Form Factor Windows 10 PC's	each	$800	10	$8,000
			$0	$0	$0	EMC Unity Data Domain	each	$26,000	1	$26,000
			$0	$0	$0	Firewalls for SCADA	each	$5,000	2	$10,000
			$0	$0	$0	Servers to replace HP ESXi Cluster	each	$10,000	3	$30,000
			$0	$0	$0					
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$0**	**$0**	**$0**					**$114,000**

PROJECT TOTAL: $114,000

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 licenses and ad hoc purchases as well as more specific items (outlined below).

Brief Description/Scope:

In addition to the standard software and licensing and ad hoc purchases described above, we anticipate the following projects:

- *Great Plains/Cogsdale ERP System:* Migrate Great Plains Dynamics and Cogsdale Utility Billing software to Microsoft Azure (Cloud) in order to remove all required hardware from on-premise to cloud. This will keep the system "future proof" and relieve the burden of RMLD IT staff with regards to OS and RDM's updated patches, administration, etc.
- *Yukon AMI Metering System:* Migrate Yukon (Cooper-Eaton) metering system (application server and database servers) to Cooper-Eaton's data center. The system is growing too large for RMLD's hardware to house and it is not cost-effective to keep upgrading.
- *Customer Relationship Management (CRM):* Cloud-based CRM software that is fully integrated with Great Plains/Cogsdale. We are performing a pilot program (2019) with key accounts only.
- *Office 365/SharePoint Online Update:* Office 365 and related security settings, which are extensive, are being 'adjusted' and suited for RMLD's environment. SharePoint is being re-designed to better fit within our business model and also to take advantage of many new features of Office 365 and SharePoint overall.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
The Work Order Management System, originally budgeted for CY19-20 ($75k per year), has been moved out to CY21.

Status Update:
Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Software and Licensing **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0	Miscellaneous/Ad Hoc Software				$100,000
			$0	$0	$0	GP/Cogsdale ERP to Cloud	project	$70,000	1.0	$70,000
			$0	$0	$0	Yukon AMI Metering to Cloud	project	$53,000	1.0	$53,000
			$0	$0	$0	Customer Relationship Mangement (CMR) Software	project	$50,000	1.0	$50,000
			$0	$0	$0	SharePoint Online Update	project	$22,000	1.0	$22,000
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$0**	**$0**	**$0**					**$295,000**

PROJECT TOTAL: $295,000

CAPITAL PROJECTS

System

CAPITAL PROJECT SUMMARY

Project Name: Marion Street Line Extension, W Phase I and Phase II **Project #:** 120

Project Schedule: CY20 **Project Manager:** Vaughan Bryan, Distribution Engineer

Reason for Expenditure:
A 25-lot subdivision was added at the end of Eleanor Drive. There is another 16 plus acres at the back of this subdivision that could potentially be developed in the future. In 2019 (Phase 1) RMLD will complete construction to upgrade (to three-phase) the existing line which feeds Eleanor Drive. Phase 2 of this project (scheduled for 2020) will create a redundant feed to this area in order to support future development in the area behind Eleanor Drive.

Brief Description/Scope:
This area is a Verizon set area. Verizon will set and frame 29 poles. RMLD crews will run 3,000 feet of overhead three-phase spacer cable, and upgrade existing overhead transformers. To upgrade the underground portion, crews will install approximately 2,300 feet of underground cable, make terminations, splices, and elbows. Existing underground transformers, secondary mains, and service cables will be upgraded as necessary.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
Not applicable.

Status Update From Prior Fiscal Year:
Phase 1 of this project is scheduled for completion by the end of the year.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Marion Street Line Extension, W (Phase II) **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
Inspect, rope and pull in three-phase underground cable	2		$13,676	$0	$1,840	15kV #2 CU URD cable	foot	$3.00	6900	$20,700
Slice elbows, riser and terminations	1		$6,838	$0	$920	600 volt #2 CU neutral cable	foot	$1.00	2300	$2,300
Frame poles, and install overhead primary cables (approximately 3000')	10	4	$68,379	$26,553	$12,880	Miscellaneous underground splice terminations and riser hardware	point	$200.00	6	$1,200
Replace transformers and upgrade secondary cable, and transfer street lights	8		$54,703	$0	$7,360	Cutouts, crossarms, transformer hardware	point	$100.00	15	$1,500
Upgrade secondary service	6		$41,028	$0	$5,520	Guy wires and hardware	per pole	$200.00	11	$2,200
Remove single phase primary and secondary cable	4		$27,352	$0	$3,680	Miscellaneous hardware	per pole	$50.00	29	$1,450
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0	Miscellaneous pole frame hardware bracket and spacers	per pole	$250.00	29	$7,250
			$0		$0	15 KV spacer cable AAAC N STR 1/0	foot	$0.81	9000	$7,290
			$0		$0	Triplex secondary cable 4/0	foot	$1.55	3300	$5,115
			$0		$0	Triplex secondary cable 1/0	foot	$0.84	1700	$1,428
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
Underground contractor assist	3		$19,937		$960					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews	32		$3,363	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
Switching, scheduling, notices, plans, pole analysis, 605A etc.	126		$11,068	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
Splice, elbow and termination testing	16		$1,423	$0	$336					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
Assist with testing and scheduling	4		$425	$0		**Police Details**	**week**	**$2,427**	**4.0**	**$9,710**
			$0	$0						
TOTAL			**$248,191**	**$26,553**	**$33,496**					**$60,143**

PROJECT TOTAL: $368,383

CAPITAL PROJECT SUMMARY

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

Project Schedule: FY18-CY23 **Project Manager:** Peter Price, Senior Distribution Engineer

Reason for Expenditure:
Increase distribution system protection in the underground industrial parks in Wilmington and North Reading as well as the three-phase underground distribution areas in Reading, i.e., River Park Drive, Jonspin Road, Haven Street, Woburn Street, Industrial Way, etc.

Brief Description/Scope:
Purchase new units to replace live front pad-mounted switchgear. New units will be dead front with provisions for remote/supervisor control. There are currently 29 units systemwide. In CY20 we will replace two units received in 2019, and purchase and replace five additional units.

Barriers:
Delivery of three switchgear ordered in FY18 was significantly delayed, which has pushed back the installation schedule for all switchgear.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
Two of the five switches received in CY19, will be installed in CY20. This will result in a carryover of funds to accommodate the installation of these switches.

Status Update From Prior Fiscal Year:
Installation has been completed on six switchgear:

- *Jonspin Road, Wilmington*: Switch-1 (FY18), Switch-2 and Switch-3 in (CY19)
- *River Park Drive, North Reading*: Switch-2 in (FY18)
- *Concord Street, North Reading*: Switch-2 and Switch-3 in (FY18)

Five switches were recently received, and we anticipate the installation of three of these switchgear by the end of 2019.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Pad-mount Switchgear Upgrades at Industrial Parks **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
Replace pad-mount switchgear		2.6	$0	$17,260	$2,392	Innovative Switchgear (2-200A, 2-600A positions)	each	$62,500	5	$312,500
Make up t-bodies and LB elbows	2.6		$17,779	$0	$2,392	T-bodies, LB elbows, reducers, caps, inserts, fused elbows, miscellaneous connectors per switchgear	per switch-gear	$3,000	7	$21,000
Splice out line and load side primary cables		2.6	$0	$17,260	$2,392	Splices for line and load side primaries (up to 12 per switchgear)	per switch-gear	$3,000	7	$21,000
			$0	$0	$0	Primary cable for piece outs	foot	$20	1000	$20,000
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
Replace pad-mount switchgear (RMLD assist)	2.6		$17,279		$832					$0
Make up t-bodies and LB elbows (RMLD assist)	2.6		$17,279		$832					$0
Splice out line and load side primary cables (RMLD assist)	2.6		$17,279		$832					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews	60	40	$6,305	$4,081						$0
Engineering: unit rate in hours			**$88**	**$85**						
Prepare switching order, coordinate outages, pad modifications, order materials, etc.	60	64	$5,270	$5,458						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
Testing of cable, switchgear & rotation (2 techs)	112		$9,962	$0	$2,352					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
Energizing & testing of switchgear & relays	56		$5,944	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$97,096**	**$44,058**	**$12,024**					**$374,500**

PROJECT TOTAL: $527,678

CAPITAL PROJECT SUMMARY

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

Project Schedule: FY17-CY22 **Project Manager:** Emmanuel Agouridis, Senior Distribution Engineer

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. The New Wilmington Substation will be a replacement for Substation 5, while also providing added benefits to RMLD.

Brief Description/Scope:
Install a new 115kV / 13.8 kV substation in Wilmington in the Ballardvale area. The new substation will include two (2) 60 MVA transformers and 15kV switchgear with eight (8) (or more as needed) feeder breaker positions. It shall also provide backup and load relief for both Substation 3 and Substation 4.

Barriers:
Availability of land.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
Not applicable.

Status Update From Prior Fiscal Year:
RMLD continues to explore options for location of the new substation. RMLD is still in pursuit of land on MA-125 in Wilmington, MA.

CAPITAL PROJECT COST SHEET

PROJECT NAME: New Wilmington Substation
Land Purchase

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0		Land Purchase				$570,000
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$0**	**$0**	**$0**					**$570,000**

PROJECT TOTAL: $570,000

CAPITAL PROJECT COST SHEET

PROJECT NAME: New Wilmington Substation
Construction and Commissioning

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
Oversite and management of project	285		$25,000	$0		National Grid System Impact Study				$40,000
			$0	$0		Engineering consultant assist for permitting, interconnection, procurement, etc.				$70,000
			$0	$0		Survey, Civil, Permit, etc.				$50,000
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$25,000**	**$0**	**$0**					**$160,000**

PROJECT TOTAL: $185,000

CAPITAL PROJECT SUMMARY

Project Name: MA-125 New Pole Line for New Wilmington Substation **Project #:** 124

Project Schedule: CY20-22 **Project Manager:** Emmanuel Agouridis, Senior Distribution Engineer

Reason for Expenditure:
To construct a pole line to interconnect the proposed Wilmington substation to RMLD's existing distribution system. The new pole line shall go from the proposed Wilmington substation, west to Ballardvale Street, and east to Andover Street. This shall include design, labor, and materials for all overhead line construction for this purpose.

Brief Description/Scope:
The aforementioned reason for expenditure covers an estimated 3,000 foot pole line that shall span MA-125 from Ballardvale Street to Andover Street. An estimated 30 poles shall be required. This pole line shall be used for riser pole getaways from the proposed Wilmington substation, and shall interconnect the new substation to RMLD's existing overhead distribution system. Budgeted costs in CY20 are associated with design, permitting, and approvals. This project **shall exclude** design, labor, and materials for underground getaways, ducts banks, cables, isolation disconnects and associated work at riser poles that shall be included in "New Wilmington Substation" budget line item.

Barriers:
This project shall coincide with the proposed Wilmington substation. If the location of the substation is moved, this capital project shall be revisited/reprioritized accordingly.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
Not applicable.

Status Update From Prior Fiscal Year:
The time-line for this project has been pushed to CY20-22.

CAPITAL PROJECT COST SHEET

PROJECT NAME: MA-125 Pole Line Installation for New Wilmington Substation

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
Set (30) 55' class 1 poles	6		$61,920		$8,160	55'-class 1 poles	pole	$800.00	30	$24,000
Frame (30) poles for four (4) circuits	6		$61,920		$8,160	15 kV Hendrix brackets, miscellaneous hardware, primary connectors (spacers, insulators, etc.) - four (4) circuits	per pole	$800.00	30	$24,000
Set up for 12,000' spacer install	8		$82,560		$10,880	0.052 messenger wire	foot	$1.23	12,000	$14,760
Pull-in and install 12,000' of 556	8		$82,560		$10,880	15kV, 556 AL spacer cable	foot	$2.02	36,000	$72,720
Tie in Scada-Mate switches	2		$20,640		$2,720	Scada-Mate switches for tie switches to backup	each	$26,900.00	6	$161,400
			$0		$0	Scada-Mate 6801 IntelliTeam License	each	$2,562.50	6	$15,375
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews	120		$12,610	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
Prepare construction documents, PoleForeman, and 605s	120		$10,541	$0						$0
Switching: draft, review and execute	60		$5,270	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
Switching: review and execution	48		$4,270	$0	$1,008					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
Switching: review and execution	**48**		$5,095	$0		**Police Details**	**week**	**$2,427**	**16.0**	**$38,840**
			$0	$0						
TOTAL			**$347,385**	**$0**	**$41,808**					**$351,095**

PROJECT TOTAL:	**$740,288**

CY20 ESTIMATED SPENDING	**$5,095**
CY21 ESTIMATED SPENDING	**$367,597**
CY22 ESTIMATED SPENDING	**$367,597**

CAPITAL PROJECT SUMMARY

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

Project Schedule: On-going **Project Manager:** Hamid Jaffari, Director of Engineering & Operations
Peter Price, Senior Distribution Engineer
Brian Smith, Senior Distribution 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:
Continue implementation of grid modernization/optimization road map including installation and integration of smart switches, IntelliRupters, and capacitor banks and controls. Integration of outage management system (OMS) with Crew Management and Power Factor Correction/VVR modules will take place in CY20. 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:

In 2020, RMLD will purchase meter data management (MDM) software that performs long-term data storage and management for the vast quantities of data delivered by a smart metering system. MDM's also incorporate meter data analytics, the analysis of data emitted by electric smart meters that record consumption of electric energy. It will also integrate multiple data sources (i.e., the Itron and Yukon systems, billing systems and GIS, as needed) and cleans up the data via EEV (Energy Efficiency Verification).

Status Update:
Six Scada-Mate switches and three Intellirupters were received in 2019; of those, five Scada-Mate and two Intellirupters should be installed by the end of the year, leaving one of each as a spare. This will bring the total number in the field to 16 Scada-Mate Switches, and four Intellirupters. The outage management system (OMS), customer portal and outage dashboard, and WebSurv have been installed and are operational internally. Integration of outage management system (OMS) with the IVR system to optimize outage restoration process is expected to be complete by the end of the year.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization
Scada-Mate Switches

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
Install Scada-Mate switches and controls	1		$6,838	$0	$920	Scada-Mate CX Switch	each	26,990.00	4	$107,960
Replace pole, install by-pass disconnects, transfer primary, secondary, etc.	7		$47,866	$0	$6,440	55' pole, x-arms, brackets, guys, anchors, miscellaneous hardware, etc.	per switch	2,000.00	4	$8,000
			$0	$0	$0	6801 IntelliTeam License	per switch	2,562.50	4	$10,250
Install three (3) repeaters/radios per switch	0.4		$2,735	$0	$368	S&C repeaters/radios	each	3,000.00	12	$36,000
Install antennas	1.5		$10,257	$0	$1,380	Antennas for radios	each	600.00	6	$3,600
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews	120		$12,610	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
PoleForeman, construction drawings, etc.	40		$3,514	$0						$0
Prepare switching orders, order materials, establish communication	40		$3,514	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
Controls, programming, commissioning, etc.	64		$5,693	$0	$1,344					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
Controls, programming, commissioning, etc.	32		$3,396	$0		**Police Details**	**week**	**$2,427**	**4.0**	**$9,710**
TOTAL			**$96,422**	**$0**	**$10,452**					**$175,520**

PROJECT TOTAL: $282,394

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization IntelliRupters **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
Install IntelliRupter Switches	1		$6,838	$0	$920	IntelliRupter Switches	each	$34,560.00	2	$69,120
Replace pole, install by-pass disconnects, transfer primary, secondary, etc.	3		$20,514	$0	$2,760	55' pole, cross-arms, brackets, guys, anchors, miscellaneous hardware, etc.	per switch	$2,000.00	2	$4,000
			$0	$0	$0	IntelliRupter License/IntelliTeam License	each	$2,562.50	2	$5,125
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews	40		$4,203	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
PoleForeman, construction drawings, etc.	24		$2,108	$0						$0
Prepare switching orders, order materials, establish communication	24		$2,108	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
Controls, programming, commissioning, etc.	64		$5,693	$0	$1,344					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
Controls, programming, commissioning, etc.	16		$1,698	$0		**Police Details**	**week**	**$2,427**	**2.0**	**$4,855**
			$0	$0						
TOTAL			**$43,162**	**$0**	**$5,024**					**$83,100**

PROJECT TOTAL: $131,286

PROJECT NAME: Grid Modernization & Optimization
Capacitor Bank Automation

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0	CBC 800 CAP controller	each	$2,200	1	$2,200
			$0	$0	$0	RFN 1200 radio	each	$800	1	$800
			$0	$0	$0	Miscellaneous	per controller	$400.00	1	$400
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
Connecting to Eaton System and SCADA switching	48		$4,216	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
Controls, programming, commissioning, installation, etc.	64		$5,693	$0	$1,344					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
Controls, programming, commissioning, installation, etc.	48		$5,095	$0		**Police Details**	**week**	**$2,427**		**$0**
TOTAL			**$15,004**	**$0**	**$1,344**					**$3,400**

PROJECT TOTAL: $19,748

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization
Software Integration

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0	Services from vendor for integration of AMI and various devices				$10,000
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
Work with vendor for software integration	24		$2,108	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
Work with vendor for software integration	24		$2,135	$0	$504					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$4,243**	**$0**	**$504**					**$10,000**

PROJECT TOTAL: $14,747

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization — Meter Data Management (MDM) Software

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0	Meter Data Management Software				$150,000
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$0**	**$0**	**$0**					**$150,000**

PROJECT TOTAL: $150,000

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimizaiton
OMS Module: Crew Manager

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0	Survalent Implementation Services (remote services, onsite services, and training)				$35,000
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
Work with new vendor and Survalent for project integration	160		$14,054	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$14,054**	**$0**	**$0**					**$35,000**

PROJECT TOTAL: $49,054

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization
OMS Module: Power Factor Correction/VVR

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0	OMS Power Factor Correction Module				$90,000
			$0	$0	$0	Implementation Services (set-up, remote services, onsite services, and training)				$60,000
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
Work with new vendor and Survalent for project integration	240		$21,082	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$21,082**	**$0**	**$0**					**$150,000**

PROJECT TOTAL: $171,082

CAPITAL PROJECT SUMMARY

Project Name: AMI Mesh Network Expansion and Meter Replacement **Project #:** 112

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

Reason for Expenditure:
The RMLD has ~28,600 non-AMI meters that are not capable of providing end-of-line voltage. RMLD's AMI mesh network must be expanded by adding gateways, relays, and new meters, in order to provide end of the line voltage, and give RMLD the ability to monitor voltage, current, demand, power factor and power quality. Replacement meters will have remote disconnect, end-of-line voltage capability, and time-of-use (TOU) rate programmability from RMLD's office at Ash Street.

Of these ~28,000 non-AMI meters, there are 3,600 commercial, industrial and TOU meters that are not capable of communicating with the RMLD Outage Management System. Customers with these meters are not able to receive outage and restoration notification. These (3,600) meters will be prioritized for replacement in 2020. Beginning in CY21, the RMLD is proposing to implement a five-year plan to replace the remaining 25,000 residential meters.

Brief Description/Scope:
In 2020, the RMLD will use a contractor to replace the ~3,600 commercial, industrial and time-of-use meters incapable of communicating with the Outage Management System. These new meters will have remote disconnect, end-of-line voltage capability, and TOU rate programmability from RMLD's office at Ash Street. Additional gateways and relays will be installed to strengthen and expand the mesh network.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
Replacement of the non-OMS commercial, industrial, and TOU meters from a six- year replacement plan to replacement of all 3,600 meters in one year utilizing a contractor. Adding the replacement of ~25,000 residential meters from CY21 to CY25.

Status Update From Prior Fiscal Year:
Two hundred and fifty retro-fit meters, 150 commercial meters, 200 residential meters, 35 relays and two gateways have been installed (as of September 27, 2019).

CAPITAL PROJECT COST SHEET

PROJECT NAME: AMI Mesh Network Expansion and Meter Replacement Program

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
Project Oversite	100		$10,614	$0		Fiber enclosure equipment	each	$5,000	4	$20,000
			$0	$0		Contractor installation of fiber enclosures	job	$240,000	1	$240,000
			$0	$0		Purchase various meters with disconnect option as available	avg per meter	$399	3602	$1,438,993
			$0	$0		Contractor installation of meters	avg per meter	$41	3602	$149,353
			$0	$0		Relays	each	$260	250	$65,000
						Contractor installation of relays	job	$125,000	1	$125,000
			$0	$0		Gateways	each	$4,700	4	$18,800
			$0	$0		Contractor installation of gateways	job	$5,000	1	$5,000
						Police Details	**week**	**$2,427**	**2.0**	**$4,855**
TOTAL			**$10,614**	**$0**	**$0**					**$2,067,001**

PROJECT TOTAL: $2,077,615

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:
Four hundred residential meters as well as forty-eight primary meters, and miscellaneous hardware will be purchased for stock.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
Not applicable.

Status Update:
Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Meters **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in week2			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0					$0
			$0	$0	$0	Residential meters for stock with disconnect option as available.	each	$300	400	$120,000
			$0	$0	$0	Primary Meters	each	$1,100	48.0	$52,800
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$0**	**$0**	**$0**					**$172,800**

PROJECT TOTAL: $172,800

CAPITAL PROJECT SUMMARY

Project Name: Force Account - Massachusetts Department of Transportation: Main and Hopkins, R **Project #:** 214

Project Schedule: CY20 **Project Manager:** Peter Price, Senior Distribution Engineer

Reason for Expenditure:
MassDOT has plans to improve the traffic flow at the intersection of Main Street and Hopkins Street in Reading. They plan to widen Main Street and install traffic signals.

Brief Description/Scope:
This project will require the RMLD to relocate/replace eleven (11) poles, and petition and install four (4) poles along Main Street and Hopkins Street.

Barriers:
Verizon set area. Verizon will petition the pole relocations. MassDOT will need to secure easements as needed for poles, anchors, and guys at several locations. Project also involves the relocation of the underground service to the restaurant at 107 Main Street.

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

Not applicable.

Status Update From Prior Fiscal Year:
The MassDOT pushed this project back from CY19 and it is now scheduled for CY20.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Main & Hopkins Street, Reading
MassDOT Force Account Project

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
RMLD to transfer on 11 poles and attach to 4 new poles on Main Street.	10	2	$68,379	$13,277	$11,040	Spacer cable brackets, insulators, etc.	per pole	$250	12	$3,000
RMLD to transfer three-phase secondary underground service to restaurant	2	1	$13,676	$6,638	$2,760	Secondary brackets	per pole	$20	12	$240
			$0	$0	$0	Guy wire and hardware	each	$200.00	10	$2,000
			$0	$0	$0	Cutouts, crossarms, risers, etc.	each	$100.00	15	$1,500
			$0	$0	$0	Miscellaneous hardware	per pole	$100.00	15	$1,500
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
Work with contractor on UG to the restaurant at 107 Main Street	1		$6,646		$320	U-Guard, riser ties, connectors, misccellaneous hardware	each	$500.00	1.0	$500
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
PoleForeman, telco correspondence, pole petition hearings, construction plans, switching, planned outages, GIS updates, etc.	120		$10,541	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
Rotation (6 customers)	24		$2,135	$0	$504					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**	**12.0**	**$29,130**
			$0	$0						
TOTAL			**$101,376**	**$19,915**	**$14,624**					**$37,870**

PROJECT TOTAL: $173,785

CAPITAL PROJECT SUMMARY

Project Name: 3W15 Getaway Improvements **Project #:** 125

Project Schedule: CY20 **Project Manager:** Emmanuel Agouridis, Senior Distribution Engineer

Reason for Expenditure:

The objective of this project is to have the 3W15 circuit separated from the existing duct bank at Station 3. The high-level plan is to run it out of Station 3 in a separate duct bank and ultimately to Chestnut Street overhead via the existing overhead lines currently being utilized by the 3W15. This will improve the ratings of the 3W15 circuit drastically, while also improving the rating of the remaining circuits in the duct bank due to reduced heating and inherent thermal relief.

Brief Description/Scope:

Perform work to complete conduit system from Station 3 to new riser pole location. Install new riser pole. Install new underground cable from Station 3 to new riser. Perform all overhead line work to tie the new 3W15 riser to the existing overhead distribution located two poles away. After all new construction is in place, cutover from existing feed to new feed.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
Not applicable.

Status Update:
Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: 3W15 Getaway Improvements **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
Riser pole construction: includes new pole set, framing, etc.	1		$6,838	$0	$920	55' - class 1 poles	pole	$633.00	1	$633
Extend 3W15 overhead (two pole spans)	1		$6,838	$0	$920	15kV, 556 AL spacer cable	foot	$2.20	450	$990
			$0	$0	$0	0.052 messenger wire	foot	$1.23	150	$185
			$0	$0	$0	Riser pole hardware	per pole	$1,700.00	1	$1,700
Install underground cable, splice, term	3		$20,514	$0	$2,760					$0
Wreck out underground	1		$6,838	$0	$920					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
Riser pole construction (RMLD assist)	1		$10,320		$1,360					$0
Extend 3W15 overhead: 2 poles (RMLD assist)	1		$10,320		$1,360					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
Install underground cable, splice, term (RMLD assist)	3		$19,937		$960	15kV cable, 750 MCM	foot	$14.43	1500	$21,645
Wreck out underground (RMLD assist)	1		$6,646		$320	600V, 4/0 CU cable	foot	$3.08	500	$1,540
			$0		$0	Terminations	each	$70.64	6	$424
			$0		$0	Splices	each	$443.56	3	$1,331
			$0		$0	Excavation contractor	per job	$50,000.00	1	$50,000
			$0		$0	Conduit and associated materials	per job	$500.00	1	$500
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews	40		$4,203	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
Design, work order, material procurement	40		$3,514	$0						$0
Oversight	40		$3,514	$0						$0
Switching: draft, review and execute	16		$1,405	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
Switching: review and execution	8		$712	$0	$168					$0
Test cable	4		$356	$0	$84					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
Switching: review and execution	8		$849	$0						$0
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
TOTAL			**$102,802**	**$0**	**$9,772**					**$78,947**

PROJECT TOTAL: $191,521

CAPITAL PROJECT SUMMARY

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

Project Schedule: Annual **Project Manager:** Vaughan Bryan, Distribution Engineer

Reason for Expenditure:
All transformers and capacitors for planned and ad hoc projects are purchased under this project.

Brief Description/Scope:
Transformer and capacitor bids will be prepared, and units purchased as outlined on the Cost Sheet.

These transformers and capacitors will be used for new construction, as well as reliability projects including Secondary and Main Replacement, 13.8kV Upgrade (Step-down Areas), Underground Facilities Upgrades, and Aged/Overloaded Transformer Replacement.

Barriers:
None anticipated at this time

Change in Scope of Work From Prior Fiscal Year:
The Department will formalize its reliability project for Aged/Overloaded Transformer Replacements, with a target of 150 aged/overloaded transformers replaced annually beginning in 2020.

Status Update:
Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Transformers and Capacitors **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0	Three-phase pad-mount transformers for proposed commercial services and stock	average per transformer	$9,200	17	$156,400
			$0	$0	$0	Single-phase pad-mount transformers for proposed subdivisions and stock.	average per transformer	$2,875	55	$158,125
			$0	$0	$0	Three-phase pole-mount transformers for proposed commercial services and stock	average per transformer	$4,888	14	$68,425
			$0	$0	$0	Single-phase pole-mount transformers for proposed residential services and stock	average per transformer	$2,300	90	$207,000
			$0	$0	$0	1,200 kVar capacitor banks	average per transformer	$12,500	1	$12,500
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$0**	**$0**	**$0**					**$602,450**

PROJECT TOTAL: $602,450

CAPITAL PROJECT SUMMARY

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

Project Schedule: Annual **Project Manager:** Leo Keefe, General Line Foreman
All Engineers

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 secondary upgrades and service drop upgrades as needed. Pole replacements, primary cable replacement and transformer upgrades will be done in conjunction with the step-down area conversions. The North Main Street/Lowell Street area in Lynnfield will be targeted for upgrade in CY20 in conjunction with the 13.8kV Upgrade (Step-down Areas) – Project 107.

Barriers:

The area targeted for CY20 is in Verizon's set territory and could result in pole setting delays.

Change in Scope of Work from Prior Fiscal Year: Increase (Decrease)
Not applicable.

Status Update from Prior Fiscal Year:

The Gerry Road (Drury Road) area in Lynnfield; and Thomas Road (Putney, Bancroft, and Atherton) area in Lynnfield are currently being upgraded as part of 13.8 kV (Step-down) Upgrades. Secondary and Mains in these areas will be replaced as needed as part of this upgrade. These areas are expected to be completed by the end of 2019.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Secondary & Main Replacement Program: North Main Street/Lowell Street Area, Lynnfield (including Step-down Upgrade) and Chapel Hill Road, Reading

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
Frame up to 86 poles	6.5		$44,447	$0	$5,980	4/0-3/C secondary cable	foot	$2	10,300	$20,600
Install secondary cable	8.5		$58,122	$0	$7,820	Secondary hardware, brackets, connectors, etc.	per pole	$56	86	$4,816
Replace services	2.3		$15,727	$0	$2,116	120' of 1/0 - 3/C service wire for each service	per service	$100	37	$3,700
Replace transformers	3.4		$23,249	$0	$3,128					
			$0	$0	$0					
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews	61		$6,410	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
Prepare construction documents, PoleForeman, outage set-up, GIS updates	181		$15,899	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**	**3.7**	**$8,982**
			$0	$0						
TOTAL			**$163,854**	**$0**	**$19,044**					**$38,098**

PROJECT TOTAL: $220,996

***NOTE**: Transformers for this project are purchased under Project 116.*

CAPITAL PROJECT SUMMARY

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

Project Schedule: Annual **Project Manager:** All Engineers

Reason for Expenditure:
There are 32 step-down areas left in the RMLD service territory that can be converted. These areas on the RMLD distribution system were originally fed from 4.16 kV distribution circuits. When RMLD began moving load over to the 13.8kV distribution circuits, most areas were converted but 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, and overhead transformers, as needed, in the various step-down areas. Convert areas to 13.8kV and remove step-down transformers. The secondary cable and service upgrades will be done in conjunction with Project 458.

Barriers:
Some areas are Verizon set areas.

Change in Scope of Work From Prior Fiscal Year:
Not applicable.

Status Update:
Conversions have been completed in the Essex Street (Jordan Road) area in Lynnfield; and on McDonald Drive in Wilmington (in 2019). Step-down conversions in the Gerry Road (Drury Road) area in Lynnfield; and Thomas Road (Putney, Bancroft, and Atherton) area in Lynnfield are currently underway and are expected to be completed by the end of 2019.

CAPITAL PROJECT COST SHEET

PROJECT NAME: 13.8kV Upgrade (Step-down Areas, etc.)
North Main Street/Lowell Street Area, Lynnfield

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
Frame up to 55 Verizon set poles for new primary cable/assist with pole sets	6		$41,028	$0	$5,520	Hardware, insulators, connectors, guys, cutouts, taps, brackets, ground rods, etc.	each pole	$180.00	55	$9,900
Install 3,000' of single-phase primary cable	4		$27,352	$0	$3,680	1/0 AAAC primary	foot	$0.87	3,000	$2,610
Replace twelve (12) pole-mount transformers	5	2	$34,190	$13,277	$6,440					
Install circuit length 3,600' of three-phase primary cable	12	4	$82,055	$26,553	$14,720	1/0 AAAC primary	foot	$0.87	10,800	$9,396
Remove old three-phase primary cable	4		$27,352	$0	$3,680					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews	140		$14,711	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
PoleForeman, 605As, construction drawings, switching orders, etc.	200		$17,568	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
Testing and rotation three-phase service	8		$712	$0	$168					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
Supervision/Project Management	2		$212	$0		**Police Details**	**week**	**$2,427**	**20.0**	**$48,550**
			$0	$0						
TOTAL			**$245,179**	**$39,830**	**$34,208**					**$70,456**

PROJECT TOTAL: $389,673

NOTE *: Transformers for this project are purchased under Project 116.*

CAPITAL PROJECT SUMMARY

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

Project Schedule: Annual **Project Manager:** Vaughan Bryan, Distribution Engineer

Reason for Expenditure:

There are 210 +/- underground residential subdivisions in the RMLD service territory, of which, 80 +/- 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 7,970 volts. 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. The new transformers will be placed on box-pads that will raise the transformers out of the mulch beds preventing premature rusting and corrosion of the transformers. Manholes in the underground areas are also aging and may need repairs.

Brief Description/Scope:
Replace primary and neutral cables, and padmount transformers as needed in the various URDs. The precast transformer pads will be replaced with fiberglass box pads as needed for elevation requirements. Certain areas will be targeted each year.

Additionally, in 2020 RMLD will inspect (and photograph) approximately 300 manholes for deterioration. Approximately thirty manholes deemed in need of repair from previous inspections are scheduled for repair in CY20.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
RMLD will schedule repairs for 30 manholes identified through the inspection program.

Status Update:
Area upgrades completed in 2019 (to date) include:

- Lynnfield: Woodwinds Estate, Friendship Lane, Morgan Road.
- North Reading: Gloria Lane
- Reading: Gazebo Circle, Bay State Road Extension, Lafayette Road
- Wilmington: Andover Street, Ohio Street, Great Neck Drive, Cushing Drive, Earles Row.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Underground Facilities Upgrades (URDs, Manholes, etc.)

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
Replace approximately 13,500 feet of underground and neutral cable.	10		$68,379	$0	$9,200	#2 CU 15 kV cable and neutral	foot	$3.00	13,500	$40,500
Splice, terminate, elbows, grounding, etc.	4.3		$29,403	$0	$3,956	splices, elbows, terminations, tape connectors, hardware, etc.	each	$200.00	48	$9,600
Transformer replacement and crabbing.	3.7		$25,300	$0	$3,404	transformer box pads	each	$310.00	20	$6,200
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
Assist RMLD crews with replacing approximately 13,500 feet of URD and neutral cables with contractor assist.	10		$66,456		$3,200					$0
Assist RMLD crews with splice, terminate, elbows, grounding, etc.	4.3		$28,576.08		$1,376					$0
Assist RMLD crews with transformer replacement and crabbing	3.7		$24,588.72		$1,184					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews	236		$24,798.88	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
Switching, scheduling, notices, plans, etc.	272		$23,892.48	$0						$0
										$0
Bid preparation for manhole replacement; permitting, Digsafes, inspect/photograph 300 manholes.	160		$14,054.40	$0		Excavation contract to repair 30 manhole chimneys	each	$5,500	30	$165,000
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
Testing cables and transformers	41		$3,646.95	$0	$861					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
Supervision/Project Management	8		$849.12	$0		**Police Details**	**week**	**$2,427**	**4.0**	**$9,710**
			$0	$0						
TOTAL			**$309,945**	**$0**	**$23,181**					**$231,010**

PROJECT TOTAL: $564,136

NOTE *: Transformers for this project are purchased under Project 116.*

CAPITAL PROJECT SUMMARY

Project Name: Aged/Overloaded Transformer Replacement Program **Project #:** 668

Project Schedule: On-going **Project Manager:** Vaughan Bryan, Distribution Engineer

Reason for Expenditure:

Since 2014, the RMLD has replaced 390 overhead and 160 pad-mount transformers system wide. These transformers have been replaced as part of one of RMLD's Reliability Programs (i.e.,URD Upgrades, Stepdown Upgrades, Secondary and Main Upgrades) or Routine Construction.

Starting in 2020 RMLD will expedite its Aged/Overloaded Transformer Replacement Program in order to reduce the percentage of aged/overloaded transformers on the system. RMLD plans to replace 120-150 aged or overloaded transformers annually. The chart below shows the current number of transformers 25-years or older system wide:

AGED TRANSFORMERS

	SYSTEM-WIDE TOTAL	25-YEARS OR OLDER	% OF TRANSFORMERS 25-YEARS OR OLDER
OVER-HEAD			
Single-Phase	2712	1092	40.27%
Three-Phase	310	149	48.06%
PAD-MOUNT			
Single-Phase	798	216	27.07%
Three-Phase	251	57	22.71%
TOTAL	**4071**	**1514**	**37.19%**

As of September 24, 2019

Brief Description/Scope:
All transformers over 25 years old have been prioritized for replacement based on age, physical condition, and load. Additionally, the transformer load management program will further identify transformers that need replacement. Any transformer replacement, *which is not part of an area upgrade for the reliability programs* noted above, will be replaced under this project. RMLD crews, augmented by contract crews, will replace these transformers.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
Not applicable.

Status Update:
Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Aged/Overloaded Transformer Replacement Program

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
Replace three-phase pad-mount transformers system wide.		3.6	$0	$23,898	$3,312	Miscellaneous underground connectors, elbows, hardware and pads.	each	$1,400	54	$75,600
Replace single-phase pad-mount transformers system side.	3.6		$24,617	$0	$3,312					
Replace three-phase pole-mount transformers system wide.		4.4	$0	$29,209	$4,048	Miscellaneous overhead connectors, poles, and hardware	each	$1,000	96	$96,000
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
Replace single-phase pole-mount transformers system side.	17		$175,440		$23,120					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
Replace three-phase pad-mount transformers system wide.		$4	$0		$0					$0
Replace single-phase pad-mount transformers system side.	3.6		$23,924		$1,152					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews	430		$45,184.40	$0.00						$0
Engineering: unit rate in hours			**$88**	**$85**						
Prepare construction documents, PoleForeman, 605As, outage setup, outages, GIS updates	951	230	$83,535.84	$19,614.40						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
Test UG cable connections; commercial customers being off hours	160	105	$14,232.00	$9,067.80	$5,565					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$53**	**$51**	**$21**					
Test rotation of commercial application; commercial customers being off hours	159	104	$8,415.87	$5,343.52	$5,523					
Technical Services Manager: unit rate in hours			**$106**	**$103**						
Project oversight meter and station techs.	27		$2,865.78	$0		**Police Details**	**week**	**$2,427**	**12.4**	**$30,101**
TOTAL			**$378,215**	**$87,133**	**$46,032**					**$201,701**

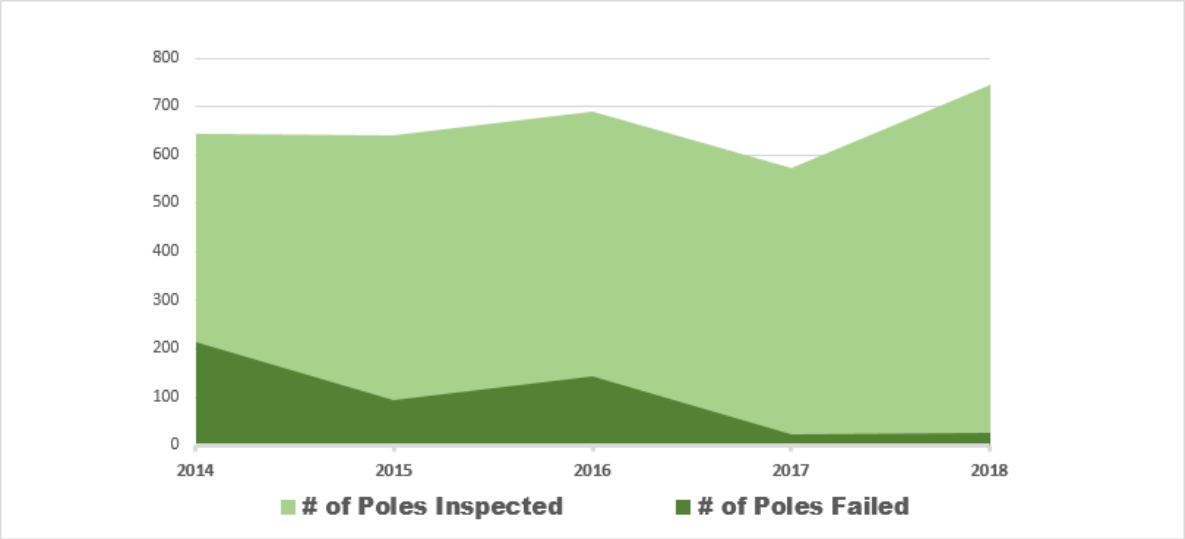
PROJECT TOTAL: $713,080

CAPITAL PROJECT SUMMARY

Project Name: Pole Replacement Program, R, NR **Project #:** 175

Project Schedule: Annual **Project Manager:** Leo Keefe, General Line Foreman

Reason for Expenditure:
In 2014 RMLD initiated a Pole Inspection Program. Ten percent of RMLD-owned poles (Reading and North Reading) are inspected annually by an outside contractor using various technology including resistorgraph technology. The Pole Inspection Program provides RMLD with verifiable data on pole condition. Testing (through 2018), has identified 502 poles that were recommended for replacement. Annual testing takes place each year in the fall. The chart below shows the decline in the number of poles identified as "failed" over the past five years.



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)
Not applicable.

Status Update From Prior Fiscal Year:
Since the inception of the Pole Inspection Program a total of 268 poles have been replaced, and 240 transfers have been completed (as of September 2019).

CAPITAL PROJECT COST SHEET

PROJECT NAME: Pole Replacement Program, R/NR **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
Set and transfer 50 poles.	20		$206,400		$27,200	Poles	each	$400.00	50	$20,000
			$0		$0	Miscellaneous hardware	per pole	$90.00	50	$4,500
Service upgrades as necessary	1.2		$12,384		$1,632	Connectors and wires (for service upgrades)	per service	$213.00	50	$10,650
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews	200		$21,016	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
Pole Foreman and Digsafes	40		$3,514	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$243,314**	**$0**	**$28,832**					**$35,150**

PROJECT TOTAL: $307,296

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 substation equipment that needs to be replaced or upgraded. This item is an amount reserved annually for upgrade of equipment as necessary.

Brief Description/Scope:

In CY20 the RMLD will replace the hydran oil monitoring unit on the two transformers at Station 3.

Barriers:
Availability of replacement parts.

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

Status Update From Prior Fiscal Year:
By the end of 2019, we will replace the 115kV grounding equipment for Station 3 and 4.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Substation Equipment Upgrade **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
Replace Hydran Units	20		$1,779	$0	$420	Hydran Oil Monitoring Unit	each	$5,000	2	$10,000
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
Supervision	8		$849	$0		**Police Details**	**week**	**$2,427**		**$0**
			$0	$0						
TOTAL			**$2,628**	**$0**	**$420**					**$10,000**

PROJECT TOTAL: $13,048

CAPITAL PROJECT SUMMARY

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

Project Schedule: Annual **Project Manager:** Peter Price, Senior Distribution Engineer
Brian Smith, Senior Distribution 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:

Status Update:
Nodes were anticipated, but not required in FY19 because we were able to expand the communication system by using SpeedNet radios to communicate with the Scada-Mate switches. As distribution automation equipment is installed further away from the fiber optic loop, the Department will need to expand the fiber optic network to establish communications with the devices that are planned for installation in FY20 and beyond.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Communication Equipment (Fiber Optic) **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0	Siemens RS900, nine-port managed ethernet switch	each	$1,500.00	12	$18,000
			$0	$0	$0	Fiber optic patch cords SC - SC	each	$5.00	72	$360
			$0	$0	$0	Pole-mount fiber optic cable enclosure with patch panel and UPS	each	$2,500.00	3	$7,500
			$0	$0	$0	ADSS fiber optic cable 72	foot	$1.00	10,000	$10,000
			$0	$0	$0	Contractor: Fiber optic cable splicing and materials.	day	$1,600.00	5	$8,000
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**	**2.0**	**$4,855**
			$0	$0						
TOTAL			**$0**	**$0**	**$0**					**$48,715**

PROJECT TOTAL: $48,715

CAPITAL PROJECT SUMMARY

Project Name: Power/Lab and Tool Equipment **Project #:** 115

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

Reason for Expenditure:
This is an amount reserved annually for purchase of power/lab and tool equipment.

Brief Description/Scope:
Refer to the project cost sheet for planned purchases for CY20.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
Not applicable.

Status Update From Prior Fiscal Year:
Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Power/Lab and Tool Equipment **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
			$0	$0	$0	Electric phasing meter/hi-pot	each	$3,000	6	$18,000
			$0	$0	$0	Four point battery hydraulic press	each	$3,800	2	$7,600
			$0	$0	$0	Cibano 500 substation breaker test equipment	each	$45,000	1	$45,000
			$0	$0	$0	Miscellaneous equipment as needed.				$10,000
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
TOTAL			**$0**	**$0**	**$0**					**$80,600**

PROJECT TOTAL: $80,600

CAPITAL PROJECT SUMMARY

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

Project Schedule: Annual **Project Manager:** Leo Keefe, General Line Foreman

Reason for Expenditure:
Installation of 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
Not applicable.

Status Update:
Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Service Connections (Commercial and Residential)

SCHEDULE: CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
Install new and upgraded service connections at approximately 350 units	12		$82,055	$0	$11,040	Secondary hardware, brackets, connectors, etc.	per service	$56.00	350	$19,600
			$0	$0	$0	120' of 1/O - 3/C service wire for each service	per service	$100.00	350	$35,000
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0						
			$0	$0		**Police Details**	**week**	**$2,427**		**$0**
TOTAL			**$82,055**	**$0**	**$11,040**					**$54,600**

PROJECT TOTAL: $147,695

CAPITAL PROJECT SUMMARY

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

Project Schedule: Annual **Project Manager:** various

Reason for Expenditure:
Routine Construction covers routine activity as well as capital construction projects that develop during the year including, but not limited to items shown below.

Brief Description/Scope:
- Overhead and underground system upgrades
- Miscellaneous projects
- Pole damage
- Station upgrades
- Porcelain cutout replacements
- Street Light Connections – new equipment installation
- Pole setting/transfers
- Underground subdivisions (new construction)

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:
Not applicable.

Status Update:
Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Routine Construction **SCHEDULE:** CY20

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	Overtime	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$6,838**	**$6,638**	**$920**					
Capital Construction	30	10	$205,138	$66,384	$36,800	Materials as necessary				$300,000
Street Light Installations	4		$27,352	$0	$3,680	Materials as necessary				$50,000
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$10,320**		**$1,360**					
Pole Setting/Transfers	30		$309,600		$40,800	Materials as necessary				$95,000
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,646**		**$320**					
Underground Construction	5		$33,228.00		$1,600	Materials as necessary				$125,000
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$105**	**$102**						
Supervision of Line crews	110		$11,559	$0						$0
Engineering: unit rate in hours			**$88**	**$85**						
Project Management	400		$35,136	$0						$0
			$0	$0						$0
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$89**	**$86**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$106**	**$103**						
			$0	$0		**Police Details**	**week**	**$2,427**	**52.0**	**$126,229**
			$0	$0						
TOTAL			**$622,012**	**$66,384**	**$82,880**					**$696,229**

PROJECT TOTAL: $1,467,505

***NOTE** : Transformers for this project are purchased under Project 116.*

2020 OPERATING BUDGET

SIX YEAR PLAN
CY20-25

	FY19 BUDGET	FY19 Jul 2018-Dec 2018 ACTUAL		CY19 BUDGET	CY 19 8 MOS ACTUAL 4 MOS BUDGET		CY20 BUDGET	change	CY21 BUDGET	change	CY22 BUDGET	change	CY23 BUDGET	change	CY24 BUDGET	change	CY25 BUDGET
FORECASTED kWh SALES	655,923,460	357,928,503	0.00%	659,048,638	655,630,948	-0.50%	655,732,411	0.00%	655,732,411	0.00%	655,732,411	0.00%	655,732,411	0.00%	655,732,411	0.00%	655,732,411
OPERATING REVENUES:																	
SALES OF ELEC - BASE	$ 27,786,190	$ 14,706,006	0.00%	$ 27,761,148	$ 27,396,674	0.00%	$ 29,040,738	* 3.00%	$ 29,911,960	* 3.00%	$ 30,809,319	* 3.00%	$ 31,733,599	2.00%	$ 32,368,270	2.00%	$ 33,015,636
SALES OF ELEC - FUEL	33,390,196	15,187,938		30,326,893	27,710,367		28,063,578		28,014,997		28,076,933		28,179,210		29,547,913		29,982,285
SALES OF ELEC - CAPACITY/TRANSMISSION	37,877,303	20,242,495		37,756,892	36,347,563		37,709,613		36,057,107		35,213,250		35,456,028		36,516,647		36,731,541
FORFEITED DISCOUNTS	833,586	442,095		832,834	827,229		871,222		897,359		924,280		952,008		971,048		990,469
ENERGY CONSERVATION	655,924	346,618		662,081	675,605		658,683	2.00%	671,857	2.00%	685,294	2.00%	699,000	2.00%	712,980	2.00%	727,239
NYPA	(1,200,000)	(461,710)		(1,200,000)	(1,245,859)		(1,138,021)		(1,138,021)		(1,138,021)		(1,138,021)		(1,138,021)		(1,138,021)
TOTAL OPERATING REVENUES	99,343,198	50,463,442		96,139,849	91,711,579		95,205,813		94,415,259		94,571,054		95,881,823		98,978,837		100,309,149
OPERATING EXPENSES:																	
PURCHASED POWER - FUEL	32,190,196	15,590,014		29,126,893	28,055,455		26,925,557		26,876,976		26,938,912		27,041,189		28,409,892		28,844,264
PURCHASED POWER - CAPACITY	22,884,320	11,530,182		22,789,837	22,188,713		22,457,141		20,060,612		18,472,732		18,606,612		19,557,624		19,662,198
PURCHASED POWER - TRANSMISSION	14,992,983	7,607,108		14,967,055	13,300,136		15,252,472		15,996,495		16,740,518		16,849,416		16,959,023		17,069,343
OPERATING & MAINTENANCE EXPENSE	5,599,394	2,536,244		5,836,044	5,369,411		6,074,243	3.00%	6,256,470	3.00%	6,444,164	3.00%	6,637,489	3.00%	6,836,614	3.00%	7,041,712
GENERAL & ADMINISTRATIVE EXPENSE	11,990,777	4,764,023		12,224,071	11,807,612		12,259,247	3.00%	12,627,024	3.00%	13,005,835	3.00%	13,396,010	3.00%	13,797,891	3.00%	14,211,827
DEPRECIATION EXPENSE	4,516,000	2,231,977		4,524,000	4,526,000		4,734,000		5,049,000		5,389,000		5,756,000		6,022,000		6,293,000
TOWN PAYMENTS - 2% NET PLANT	1,569,789	767,705		1,570,860	1,569,666		1,617,660		1,733,260		1,873,460		2,010,720		2,072,600		2,132,840
TOTAL OPERATING EXPENSES	93,743,459	45,027,253		91,038,760	86,816,993		89,320,320		88,599,838		88,864,622		90,297,437		93,655,644		95,255,185
TOTAL OPERATING INCOME	5,599,739	5,436,189		5,101,088	4,894,586		5,885,492		5,815,421		5,706,433		5,584,387		5,323,194		5,053,965
NONOPERATING REVENUES (EXPENSES):																	
INTEREST INCOME	250,000	274,217		175,000	383,528		350,000		250,000		250,000		250,000		250,000		250,000
OTHER INCOME	850,000	405,543		850,000	1,032,252		850,000		850,000		850,000		850,000		850,000		850,000
VOLUNTARY PAYMENT TO READING	(2,480,506)	(1,240,253)		(2,480,506)	(2,480,506)		(2,480,506)		(2,480,506)		(2,480,506)		(2,480,506)		(2,480,506)		(2,480,506)
LOSS ON DISPOSAL OF ASSETS	(150,000)	(58,061)		(100,000)	(100,000)		(100,000)		(100,000)		(100,000)		(100,000)		(100,000)		(100,000)
CUSTOMER DEPOSIT INTEREST EXP	(16,000)	(7,197)		(16,000)	(29,478)		(25,000)		(25,000)		(25,000)		(25,000)		(25,000)		(25,000)
TOTAL NONOPERATING REVENUES (EXPENSES)	(1,546,506)	(625,751)		(1,571,506)	(1,194,203)		(1,405,506)		(1,505,506)		(1,505,506)		(1,505,506)		(1,505,506)		(1,505,506)
NET INCOME	$ 4,053,232	$ 4,810,438		$ 3,529,582	$ 3,700,382		$ 4,479,987		$ 4,309,915		$ 4,200,927		$ 4,078,881		$ 3,817,688		$ 3,548,459
RATE OF RETURN	7.93%	6.06%		7.29%	7.92%		7.69%		7.09%		6.50%		6.18%		5.77%		5.44%
PROJECTED CAPITAL IMPROVEMENTS	$ 7,570,000	$ 2,487,549		$ 7,804,000	$ 7,926,000		$ 11,513,000		$ 13,059,000		$ 13,252,000		$ 9,850,000		$ 10,033,000		$ 8,674,000

The RMLD is allowed up to 8% rate of return, however strategic planning targets a balance of keeping rates low, funding the capital infrastructure plan and supporting nonoperating expenses.

***2% Supplemented by Rate Stabilization Fund**

Town of Reading, Massachusetts
Municipal Light Department
Statement of Budgeted Revenues and Expenses

	FY19 BUDGET	FY19 JUL 2018 - DEC 2018 ACTUAL	CY19 BUDGET	CY19 8 MOS ACTUAL 4 MOS BUDGET	CY20 BUDGET
Operating Revenues					
Base Revenue	$ 27,786,190	$ 14,706,006	$ 27,761,148	$ 27,396,674	$ 29,040,738
Fuel Revenue	33,390,196	15,187,938	30,326,893	27,710,367	28,063,578
Purchased Power Capacity/Transmission	37,877,303	20,242,495	37,756,892	36,347,563	37,709,613
Forfeited Discounts	833,586	442,095	832,834	827,229	871,222
Energy Conservation Revenue	655,924	346,618	662,081	675,605	658,683
NYPA	(1,200,000)	(461,710)	(1,200,000)	(1,245,859)	(1,138,021)
Total Operating Revenues	99,343,198	50,463,442	96,139,849	91,711,579	95,205,813
Expenses					
Power Expenses:					
547 Purchased Power - Fuel	32,190,196	15,590,014	29,126,893	28,055,455	26,925,557
555 Purchased Power - Capacity	22,884,320	11,530,182	22,789,837	22,188,713	22,457,141
565 Purchased Power - Transmission	14,992,983	7,607,108	14,967,055	13,300,136	15,252,472
Total Purchased Power	70,067,499	34,727,304	66,883,785	63,544,304	64,635,170
Operating and Maintenance Expenses:					
580 Supervision and Engineering	1,075,757	464,121	1,083,959	1,024,782	1,127,868
581 Station/Control Room Operators	502,112	280,427	481,952	474,622	476,641
582 Station Tech	504,300	258,533	522,365	445,168	543,129
583 Line General Labor	24,818	145,717	30,309	185,738	395,885
585 Street Lighting	43,968	159,817	50,722	76,905	73,114
586 Meter General	212,933	61,943	217,383	151,320	145,492
588 Materials Management	440,005	226,646	442,061	402,873	504,493
593 Maintenance of Lines - Overhead	783,322	193,255	890,537	862,867	1,003,333
593 Maintenance of Lines - Tree Trimming	898,865	409,232	899,534	796,929	899,090
594 Maintenance of Lines - Underground	484,399	35,920	527,427	399,839	112,590
595 Maintenance of Line Transformers	392,072	55,845	406,496	199,722	223,438
598 Line General Leave Time Labor	236,844	244,788	283,300	348,646	569,169
Total Operating and Maintenance Expenses	5,599,394	2,536,244	5,836,044	5,369,411	6,074,243
General & Administrative Expenses:					
902 Meter Reading	31,741	3,501	34,100	14,201	21,240
903 Customer Collection	1,114,877	697,502	1,154,199	1,115,046	1,093,978
904 Uncollectible Accounts	105,000	27,722	105,000	105,000	105,000
916 Integrated Resources	495,754	268,001	504,550	484,798	647,519
916 Energy Conservation	975,712	506,642	984,118	722,837	958,765
920 Administrative and General Salaries	1,988,492	851,694	2,050,263	2,038,711	2,197,471
921 Office Supplies	20,000	4,891	20,000	13,543	20,000
923 Outside Services-Legal	467,900	425,077	532,900	416,860	498,400
923 Outside Services-Contract	344,008	97,257	385,700	355,964	361,250
923 Outside Services-Education	243,893	81,113	243,893	180,221	266,975
924 Property Insurance	426,200	170,238	426,200	374,689	437,500
925 Injuries and Damages	47,449	33,640	56,411	57,333	43,522
926 Employee Pensions and Benefits	3,772,990	960,507	3,581,615	3,791,390	3,666,547
930 Miscellaneous General Expense	485,659	89,196	493,477	509,683	317,286
931 Rent Expense	212,000	88,193	212,000	219,846	212,000
933 Vehicle Expense	311,200	141,842	311,200	307,990	333,600
933 Vehicle Expense - Capital Clearing	(284,440)	(170,093)	(253,362)	(297,578)	(225,125)
935 Maintenance of General Plant	335,148	105,574	385,000	439,684	394,440
935 Maintenance of Building & Garage	897,195	381,525	996,808	957,394	908,880
Total General & Administrative Expenses	11,990,777	4,764,023	12,224,071	11,807,612	12,259,247
Other Operating Expenses:					
403 Depreciation	4,516,000	2,231,977	4,524,000	4,526,000	4,734,000
408 Voluntary Payments to Towns	1,569,789	767,705	1,570,860	1,569,666	1,617,660
Total Other Expenses	6,085,789	2,999,682	6,094,860	6,095,666	6,351,660
Operating Income	5,599,739	5,436,189	5,101,088	4,894,586	5,885,492
Non Operating Revenues (Expenses):					
419 Interest Income	250,000	274,217	175,000	383,528	350,000
419 Other Income	850,000	405,543	850,000	1,032,252	850,000
426 Voluntary PILOT Payment to Reading	(2,480,506)	(1,240,253)	(2,480,506)	(2,480,506)	(2,480,506)
426 Loss on Disposal	(150,000)	(58,061)	(100,000)	(100,000)	(100,000)
431 Interest Expense	(16,000)	(7,197)	(16,000)	(29,478)	(25,000)
Total Non Operating Revenues (Expenses)	(1,546,506)	(625,751)	(1,571,506)	(1,194,203)	(1,405,506)
Net Income	$ 4,053,232	$ 4,810,438	$ 3,529,582	$ 3,700,382	$ 4,479,987

READING MUNICIPAL LIGHT DEPARTMENT
CALENDAR YEAR 2020 OPERATING BUDGET
ACTUAL AND PROJECTED FIXED AND SEMI-VARIABLE COSTS

	FY 19 OPERATING BUDGET	FY 19 JUL 2018 - DEC 2018 ACTUAL	CY 19 OPERATING BUDGET	CY 19 8 MOS ACTUAL 4 MOS BUDGET	CY 20 OPERATING BUDGET	CY 20 % OF PROJECTED
FIXED COSTS:						
Purchased Power - Fuel	$ 32,190,196	$ 15,573,186	$ 29,126,893	$ 28,055,455	$ 26,925,557	29.29%
Purchased Power - Capacity	22,884,320	11,530,182	22,789,837	22,188,713	22,457,141	**70.31%** 24.43%
Purchased Power - Transmission	14,992,983	7,607,108	14,967,055	13,300,136	15,252,472	16.59%
Depreciation Expense	4,516,000	2,231,977	4,524,000	4,526,000	4,734,000	5.15%
Voluntary Payment to Reading	2,480,506	1,223,314	2,480,506	2,480,506	2,480,506	2.70%
Town Payments - 2% of Net Plant	1,569,789	767,705	1,570,860	1,569,666	1,617,660	1.76%
Loss on Disposal of Assets	150,000	75,000	100,000	100,000	100,000	0.11%
SUB-TOTAL	78,783,794	39,008,471	75,559,151	72,220,476	73,567,336	80.03%
SEMI VARIABLE COSTS:						
Labor	7,781,163.22	3,769,146.48	7,890,211.28	7,879,519.34	8,787,641.69	**8.29%** 9.56%
Labor - Capital Portion	(1,358,066.22)	(861,496.33)	(1,227,368.28)	(1,776,970.94)	(1,167,165.30)	-1.27%
Overtime	1,071,200.25	615,242.06	1,072,399.96	1,150,154.08	1,051,800.00	**0.95%** 1.14%
Overtime - Capital Portion	(99,469.25)	(178,998.28)	(82,090.96)	(233,812.02)	(176,731.72)	-0.19%
Employee Benefits/Pension	4,583,380.00	1,233,590.47	4,299,674.35	4,232,503.10	4,413,754.00	**3.99%** 4.80%
Employee Benefits/Pension - Capital Portion	(810,390.00)	(273,082.97)	(718,059.35)	(441,113.16)	(747,206.93)	-0.81%
Other Operating and Maint Expenses	2,005,418.00	995,332.32	2,202,755.00	2,516,067.21	1,650,981.35	1.80%
Conservation Expenses	975,712.00	506,642.37	984,118.00	722,837.25	958,765.05	1.04%
Tree Trimming	898,865.00	409,232.37	899,534.00	796,929.42	899,090.44	0.98%
Contract Services	344,008.00	96,431.99	385,700.00	355,963.80	361,250.00	0.39%
Legal Expense	467,900.00	425,901.51	532,900.00	416,860.58	498,400.00	0.54%
Property Insurance	426,200.00	170,237.76	426,200.00	374,688.84	437,500.00	0.48%
Software/Hardware Maintenance	335,148.00	105,574.29	385,000.00	409,684.26	394,440.26	0.43%
Transformer (hazardous material)	300,000.00	52,755.58	300,000.00	199,122.18	210,000.00	0.23%
Training/Tuition	243,893.00	81,112.74	243,893.00	180,221.22	266,975.00	0.29%
Vehicle	311,200.00	185,438.62	311,200.00	307,989.65	333,600.00	0.36%
Vehicle Capital Clearing	(284,440.00)	(170,092.75)	(253,362.00)	(297,578.29)	(225,125.00)	-0.24%
Rent Expense	212,000.00	88,192.89	212,000.00	219,846.08	212,000.00	0.23%
Bad Debt Expense	105,000.00	27,721.75	105,000.00	105,000.00	105,000.00	0.11%
Injuries & Damages	76,600.00	39,212.79	82,600.19	65,128.66	70,400.00	0.08%
Injuries & Damages - Capital Portion	(29,151.00)	(5,573.12)	(26,189.19)	(7,795.40)	(26,877.95)	-0.03%
RMLB/CAB	30,000.00	7,436.77	30,000.00	17,711.59	30,000.00	0.03%
Office Supplies	20,000.00	4,333.57	20,000.00	13,543.29	20,000.00	0.02%
SUB-TOTAL	17,606,171.00	7,324,292.88	18,076,116.00	17,206,500.73	18,358,490.88	19.97%
TOTALS	$ 96,389,965	$ 46,332,764	$ 93,635,266	$ 89,426,977	$ 91,925,827	100.00%

2020 POWER SUPPLY

Description of RMLD's Power Supply

Stony Brook Intermediate Unit

The Stony Brook Intermediate Unit is a 354-megawatt, combined-cycle power plant that entered commercial operation in 1981.

The unit's three gas turbines generate electricity using either No. 2 oil or natural gas, with additional electricity produced using a single steam turbine in the combined-cycle process. MMWEC completed construction of a natural gas pipeline to serve the Intermediate Unit in September 2002. The RMLD has a Life of Unit (LOU) entitlement for 14.453% of the unit or approximately 51 MWs. RMLD has paid off the debt service associated with this project.

Quick Facts – Stonybrook Intermediate Unit

Location	Ludlow, Massachusetts
On-Line Date	1981
Fuel	No. 2 oil/natural gas
Principal Owner/Operator	MMWEC
Total Capacity	354 megawatts

Stony Brook Peaking Unit

The Stony Brook Peaking Unit is a 172-megawatt peaking plant that entered commercial operation in 1982.

The unit's two turbines generate electricity using No. 2 oil. The RMLD has a Life of Unit (LOU) entitlement for 19.516% of the unit which is equivalent to approximately 33 MWs. The RMLD has paid off the debt service associated with this project.

Quick Facts – Stonybrook Peaking Unit

Location	Ludlow, Massachusetts
On-Line Date	1982
Fuel	No. 2 oil
Principal Owner/Operator	MMWEC
Total Capacity	172 megawatts

Braintree Electric Light Department - Watson Unit

The simple-cycle gas fired plant is powered by the first two Rolls-Royce Trent 60 gas turbines built for the U.S. power generation market – known as Watson Units #1 and #2. The units entered commercial operation on June 23, 2009.

Both Watson Units are bid into the ISO New England markety system daily and are dispatched based on their bid price.

The units two turbines generate electricity using natural gas, with No. 2 oil as backup fuel. The RMLD has a 20 year entitlement for 10% of the unit which is equivalent to about 10 MWs.

Quick Facts – Watson Unit

Location	Braintree, Massachusetts
On-Line Date	2009
Fuel	Natural gas/No. 2 oil
Principal Owner/Operator	BELD
Total Capacity	100 megawatts

Seabrook Station

Seabrook Station is a 1,244-megawatt nuclear generating plant located in Seabrook, New Hampshire. An operating license for Seabrook was issued in 1986, but the plant did not begin commercial operation until 1990. The principal owner and operator of Seabrook Station is NextEra Energy Resources LLC, a subsidiary of Florida based FPL

Group, Inc. NextEra owns 88.2% of Seabrook Station. The other owners are MMWEC (11.59%) and two Massachusetts municipal utilities, the Taunton Municipal Lighting Plant (0.13%) and Hudson Light & Power Department (0.08%).

On March 12, 2019, NextEra received an extension of its Seabrook operating license from the current license expiration of 2030 out to March 15, 2050. RMLD signed 3 different projects to finance Seabrook, Mix 1, Project 4, and Project 5. The debt service associated with these projects will be paid-off in 2014, 2017 & 2018 respectively. The RMLD has a Life of Unit (LOU) for 0.635% or approximately 8 MWs of the unit.

Quick Facts – Seabrook Station

Location	Seabrook, New Hampshire
On-Line Date	1990
Fuel	Nuclear – Pressurized Water Reactor
Principal Owner/Operator	NextEra Energy Resources, LLC
Total Capacity	1,244 megawatts

Millstone Unit 3

Millstone Unit 3 is a 1,237-megawatt nuclear generating plant located in Waterford, Connecticut. Millstone Unit 3, which began operation in 1986, is the newest and largest of the Millstone Station's three nuclear units, one of which is retired from service. The principal owner and operator of Millstone Station is Dominion Nuclear Connecticut, Inc., a subsidiary of Virginia-based Dominion Resources, Inc. Dominion Connecticut owns 93.4% of Millstone Unit 3.

The Nuclear Regulatory Commission (NRC) on November 28, 2005 approved Dominion Nuclear Connecticut's request for a 20-year operating license extension for Millstone's Unit 3 reactor. The license now expires in November, 2045. RMLD signed two different projects to finance Millstone #3, Mix 1 and Project 3. The debt service associated with these projects will be paid off in 2014 & 2018 respectively. The RMLD has a LOU agreement for 0.404% of the units which equates to approximately 4.6 MWs.

Quick Facts – Millstone Station

Location	Waterford, Connecticut
On-Line Date	1986
Fuel	Nuclear – Pressurized Water Reactor
Principal Owner/Operator	Dominion Nuclear Connecticut, Inc.
Total Capacity	1,237 megawatts

New York Power Authority (NYPA)

The RMLD receives inexpensive hydroelectric power from the NYPA. RMLD receives capacity and energy from this contract. The Massachusetts Department of Public Utilities (DPU) has appointed MMWEC as the administrator of this contract. The current contract expires in 2025.

Hydro-Quebec Interconnection

The Hydro-Quebec Interconnection is an approximate 2000 Mw, direct current electric transmission line connecting central New England with the Canadian utility Hydro Quebec. Construction of the U.S. portion of the interconnection, which stretches from Groton/Ayer, in Massachusetts to the Canadian border in northern Vermont, was a joint effort of many New England utitilies. The RMLD receives approximately 4.5 Ms of capacity from this contract.

Exelon: Block Purchase

In May, 2015 the RMLD signed a system power contract with Exelon that is effective from January 1, 2016 through December 31, 2019. The RMLD receives energy only from this contract. The amount of energy purchased fluctuates on a monthly basis for both the on-peak and off-peak periods. RMLD secured fixed pricing for this contract.

NextEra: Block Purchase

In June, 2016 the RMLD signed a system power contract with NextEra that is effective from January 1, 2019 through December 31, 2020. The RMLD receives energy only

from this contract. The amount of energy purchased fluctuates on a monthly basis for both the on-peak and off-peak periods. RMLD secured fixed pricing for this contract.

NextEra: TFA

In December, 2017 the RMLD signed a master agreement as well as a Transaction Facilitation Agreement with NextEra that enables RMLD to leverage NextEra's trade floor. RMLD approved a Risk Management Strategy that secures transactions based on price and time triggers. The Risk Management Strategy will permit RMLD to take advantage of price opportunities consistently over the next several years and beyond. This strategy will allow RMLD to secure monthly quantities that are below the four year average versus locking in annual quantities. Additionally, the strategy of utilizing time triggers will smooth out variations in the market over time. The TFA has prompted RMLD to purchase on-peak and off-peak energy blocks out to the year 2023. Under the TFA, RMLD secured around 107,000 MWHs for 2020, 40,000 MWhs for 2021, 31,000 MWhs for 2022 and 20,000 MWhs for 2023.

NextEra: Load Following Pilot

In February, 2019 the RMLD signed a Pilot transaction for Physical Load Following that provides a layered purchasing strategy to meet monthly on-peak and off-peak needs by combining both fixed and intermentent resource supplies. This hedging strategy takes into account the uncertainty in wholesale pricing and consumption volumes of RMLD and provides a price stable premium for nearly 80-90% of RMLD's load. The pilot contract started on March 1, 2019 and expires December 31, 2019.

Eagle Creek Energy Holdings

In March, 2011 the RMLD signed purchase power agreements with Swift River Hydro LLC for the output of four hydro systems located in Massachusetts that are effective from February 1, 2011 through January 31, 2026. The Swift River Trading Company is the lead market participant for and represents these hydroelectric generators with a total nameplate capacity of approximately 7 Mws and average annual generation of 25,000 megawatt-hours per year.

These facilities include the Woronoco Hydro facility in Russell, MA, Pepperell Hydro in Pepperell, MA; Indian River Power Supply in Russell, MA; and Turners Falls Hydro in Turners Falls, MA. Each of these facilities is owned by a special purpose entity, e.g.,

the Woronoco facility is owned by Woronoco Hydro LLC. In 2016, Swift River Trading Company assigned the projects to Eagle Creek Energy Holdings. The four facilities are now managed by the Eagle Creek Energy Holdings as the lead market participant for each of the facilities. RMLD is the only buyer.

- **Pepperell Hydro:** 15 year term beginning on February 1, 2011 and ending January 31, 2026. RMLD is purchasing all of the products produced by or attributable to the facility. The facility has a nameplate capacity of 1.9 MWs. The products include, but are not limited to, Energy, Installed Capacity, Ancillary Services, Renewable Energy Certificates and Environmental Attributes (to the extent not included in the RECs). The contract price for these products is $100/MWh for the first year, escalated 2.25% thereafter.

- **Woronoco Hydro:** 15 year term beginning on February 1, 2011 and ending January 31, 2026. RMLD is purchasing all of the products produced by or attributable to the facility. The facility has a nameplate capacity of 2.7 Mws. The products include, but are not limited to, Energy, Installed Capacity, Ancillary Services, Renewable Energy Certificates and Environmental Attributes (to the extent not included in the RECs). The contract price for these products is $100/Mwh for the first year, escalated 2.25% thereafter. The facility is not currently qualified for FCM. Until the Seller qualifies the facility for FCM the contract price is reduced by $5.00/MWh.

- **Turners Falls Hydro:** 15 year term beginning on February 1, 2011 and ending January 31, 2026. RMLD is purchasing all of the products produced by or attributable to the facility. The facility has a nameplate capacity of 1 Mw. The products include, but are not limited to, Energy, Installed Capacity, Ancillary Services, Renewable Energy Certificates and Environmental Attributes (to the extent not included in the RECs). The contract price for these products is $100/MWh for the first year, escalated 2.25% thereafter. The facility is not currently qualified for FCM. Until the Seller qualifies the facility for FCM the contract price is reduced by $5.00/MWh.

- **Indian River Hydro:** 15 year term beginning on February 1, 2011 and ending January 31, 2026. RMLD is purchasing all of the products produced by or attributable to the facility. The facility has a nameplate capacity of 1.4 Mws. The products include, but are not limited to, Energy, Installed Capacity, Ancillary Services, Renewable Energy Certificates and Environmental Attributes (to the extent not included in the RECs). The contract price for these products is $100/MWh for the first year, escalated 2.25% thereafter. The facility is not

currently qualified for FCM. Until the Seller qualifies the facility for FCM the contract price is reduced by $5.00/MWh.

Collins Hydro

In August, 2013 the RMLD signed a purchase power agreements with Swift River Hydro LLC.for the output of Collins Hydro located in between Ludlow and Wilbraham Massachusetts. The contract with Swift River Hydro is effective from September 1, 2013 through August 31, 2028. The RMLD receives enery only from this contract. The average annual generation is approximately 5,667 megawatt-hours per year.

Pioneer Hydro

In August, 2013 the RMLD signed a purchase power agreements with Ware River Power Inc. for the output of Pioneer Hydro located in Ware, Massachusetts. The contract for Pioneer Hydro is effective from September 1, 2013 through August 31, 2028. The RMLD receives enery only from this contract. The average annual generation is approximately 4,480 megawatt-hours per year.

Hoisery Mills Hydro

In March, 2014 the RMLD signed a purchase power agreements with Silver Street Hydro Inc. for the output of Hosiery Mills located in Hillsborough, New Hampshire. The contract for Hosiery Mills Hydro is effective from March 1, 2014 through February 28, 2034. The RMLD receives enery only from this contract. The average annual generation is approximately 2,046 megawatt-hours per year.

Aspinook Hydro

In August, 2016 the RMLD signed a purchase power agreements with Aspinook Hydro Inc. for the output of Aspinook Hydro located in Connecticut. The contract is effective from August, 2016 through August, 2017. The RMLD receives enery only from this contract. The average annual generation is approximately 9,300 megawatt-hours per year.

Saddleback Ridge Wind

In December, 2013 the RMLD signed a purchase power agreement with Saddleback Ridge Wind, LLC for the output of Saddleback Ridge Wind located in Carthage, Maine. The contract for Saddleback Ridge Wind is effective from January 1, 2015 through December 31, 2035. The RMLD receives enery plus all attributes this contract. The average annual generation is estimated to be approximately 15,820 megawatt-hours per year.

Jericho Wind

In November, 2014 the RMLD signed a purchase power agreements with Jericho Power, LLC for the output of Jericho Wind located in Berlin, New Hampshire. The contract for Jericho Wind is for 20 years. The project went Commercial December, 2015. The RMLD receives energy plus all attributes from this contract. The average annual generation is estimated to be approximately 10,788 megawatt-hours per year.

One Burlington - Solar

In March, 2015 the RMLD signed a purchase power agreement with CREECA Energy LLC for the output of 2,000 kW AC solar array located at One Burlington Ave., Wilmington, Massachusetts. The solar array went on-line in November, 2015. The term of the contract for One Burlington is effective for ten years. The average annual generation is estimated to be approximately 3,450 megawatt-hours per year.

Altus Power – Community Solar

In March, 2016 the RMLD signed a purchase power agreement with ECA Solar LLC for the output of 1,000 kW AC solar array located at 326 Ballardvale Street, Wilmington, Massachusetts. The solar array went on-line in June, 2017. In May, 2017 the contract was assigned to Altus Power America, Inc DBA WL MA Solar LLC. The term of the contract for WL MA Solar LLC is effective for twenty years. The average annual generation is estimated to be approximately 1,700 megawatt-hours per year. RMLD has developed a Community Shared Solar program called Solar Choice. This project is RMLD's first Solar Choice project and is fully subscribed by 500 residential customers.

Kearsage – Community Solar

In October, 2017 the RMLD signed a purchase power agreement with Kearsage Wilmington LLC for the output of 1,800 kW AC solar array located at 40-50 Fordham Road, Wilmington, Massachusetts. The solar array went on-line in February, 2018. The term of the contract for Kearsage Wilmington LLC is effective for twenty years. The average annual generation is estimated to be approximately 2,376 megawatt-hours per year. This project is RMLD's second Solar Choice project and is fully subscribed by 617 residential/commercial customers.

Battery Energy Storage System – NextEra

In December, 2017 (RMLD) was recently awarded a $1 million grant for the installation of an energy storage unit at its North Reading substation. The grant is funded by the Masssachusetts Department of Energy Resources (DOER). RMLD's project consists of a 5-megawatt Lithium Ion Battery unit with 10 MWhs of storage capacity at its North Reading substation to reduce peak demand, thereby lowering future transmission and capacity costs related to the purchase of wholesale electricity. The battery unit will be co-located with RMLD's new 2.5-megawatt Distributed Generator. RMLD is negotiating a Battery Energy Storage System (BESS) Agreement with NextEra. BESS was placed in service on June 1, 2019.

FirstLight Hydro

In March, 2019 the RMLD signed a purchase power agreement with FirstLight Power Resources Management, LLC. for the 10.3% of the output of the Sheqaug Hydroelectric Station and 7.3% of the output of the Stevenson Hydroelectric Station. The contract for Firstlight Hydro is effective from May, 2019 through December, 2023. The average annual generation is approximately 12,000 MWhs per year on-peak and 8,000 MWhs per year off-peak.