READING MUNICIPAL LIGHT DEPARTMENT

CY2022 BUDGET

October 1, 2021

Revision 1: October 14, 2021

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2022 OPERATING BUDGET

2022 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 CY20)

SERVICE TERRITORY	51 square miles serving Reading, North Reading, Wilmington, and part of Lynnfield
TOTAL OPERATING REVENUES	$85,572,332
POWER PURCHASED	$57,292,309
NUMBER OF CUSTOMERS/ ACTIVE METERS	30,321
ANNUAL PEAK DEMAND	163,970 kW on July 28, 2020, hour ending 2:00 pm
ANNUAL SALES	651,179,904
PLANT VALUE	Gross: $164,059,000 Net: $82,772,000
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	340.5 miles
UNDERGROUND PRIMARY LINES	155.85 miles
DISTRIBUTION TRANSFORMERS	4,010 transformers – 313.675 MVA Capacity
STATION TRANSFORMER CAPACITY	370 MVA Capacity
UTILITY POLES	18,105 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 Forecast Pro Forecasting Futura Great Plains/Cogsdale Home Energy Audits Yukon ISO-NE Key Accounts CenturionCARES Team Gantt Itron LexisNexis ManagerPlus MIlsoft – WindMil Map/LightTable NEPOOL GIS Office 365 E3 PoleForeman Replicon SagLine SharePoint SpryPoint Survalent (OMS) Tangent AMP VMware Windows 10 Windows Server 2016, 2012 Adobe Creative Cloud CivicPlus
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 and Finance	Wendy Markiewicz email: wmarkiewicz@rmld.com
Director of Engineering & Operations	Hamid Jaffari email: hjaffari@rmld.com
Director of Human Resources	Janet Walsh email: jwalsh@rmld.com
Director of Information Technology	Brian Hatch email: bhatch@rmld.com
Director of Integrated Resources	Gregory Phipps email: gphipps@rmld.com
GOVERNING BODY	
	Robert Coulter David Hennessy Philip B. Pacino John Stempeck David Talbot
Number of Employees	73
Year Founded	1894

2022 CAPITAL BUDGET

PLANNED PROGRAMS

READING MUNICIPAL LIGHT DEPARTMENT

Capital Improvements CY22 thru CY27

$ Shown in thousands

LINE #	PAGE #	TOWN	PROJ #	FERC #	PROJECT NAME	CY21 BUDGET	CY21 EST.	CY22 PLAN EST.	CY23	CY24	CY25	CY26	CY27	BRIEF DESCRIPTION
1	**n/a**	A	129	390	Master Facilities Site Plan (ON-HOLD)									Town economic development plan impact. Master Facilities Site Plan - on hold. Evaluate maintenance only. 2021 BOC Goal: Convene joint public meeting with the Select Board and Town Planning staff to jointly discuss and share ideas on long-term Ash Street campus site planning.
2	**17**	R/NR/W	104	361/373	RMLD Lighting (LED) Upgrade Program	125	75	125						CY21-22: Convert existing interior/exterior lighting to LED fixtures - Ash Street Campus and Stations 3 and 4 per 2021 Physical Security study Assessment and recommendations made by Burns & McDonnell.
3	**19**	R/NR/W	095	390	Building/Grounds Upgrades	270	132	259	250	50	125	50	50	CY21: AC Cooling Project complete at Station 4. *CY21/22:* Transformer Rack/Pole Yard Proactive Design and Upgrade at Station 3. CY21/22: Station 3 back-up generator delivery and install.
4	**21**	R	098	391	Office Upgrades -230 Ash Street	105	15	110	70	30	30	30	30	CY22: Office upgrade of Grid Assets & Communication, Collection Manager, Billing Manager, and Materials Management office. CY21/22: Audio Visual upgrades for all conference rooms.
5	**23**	R	136		Credit Union Renovation	0	0	85						Renovation of the interior building element (lighting, ceiling tiles, paint, carpet, door repairs).
6	**25**	A	119	398	Security Upgrades - All Sites	250	87	106	106	30	30	30	30	CY21: Physical Security Assessment complete. CY21/22/23: Implement physical security assessment recommendations and upgrades.
7	**27**	A	118	392	Rolling Stock Replacement	620	289	744	350	350	350	350	350	Scheduled vehicle replacement, following Fuel Efficiency OP 19-07 FM, is based on Fleet Assessment and the Electrification Program. Carry-over (from 2021): material handler ($284K- CY22 delivery); dump truck with sander ($85K) in procurement process (CY22 delivery). CY22: SUV, van, trouble truck.
8	**31**	A	099	392	Electric Vehicle Supply Equipment (EVSE)	100	40	744	360	280	240	240	240	Installation of L2 (5 units) and L3 DC fast chargers (5 units) in all four communities to encourage the development of EV charging infrastructure. MassEVIP grant(s): $78k awarded in 2021 for five L2 EV chargers. CY22: Construction of five L2 chargers in Reading and Wilmington. CY22: An additional $99k grant is anticipated for five DCFC (L3).
9	**35**	A	127	382	Hardware Upgrades	89	97	105	115	125	0	125	130	Miscellaneous workstations: replacements/new employees; CY21: Improved network security at RMLD substations.
10	**37**	A	128	383	Software and Licensing	438		190	100	100	100	110	110	CY22: Adhoc software needs; Customer Relationship Management Engagement Software (carry-over); IT Asset Manager; HRIS; Information Security
11	**39**	A	138	383	Customer Portal (Mobile APP)			100	100					CY22-23: Develop two-way facing customer portal mobile customer application
12	**41**	A	139	382	IT Infrastructure Enhancements			370				500	300	CY22: Additional servers to accommodate growth (MDM, security, etc.); network redesign
13	**43**	A	140	382/383	IT Security			305	100	100	100	285	250	CY22: Multi-Factor Authentication; add firewalls; network visibility software; security information event manager
14	**45**	A	122	382	New Production Environment Disaster Recovery		420							CY21: Design and develop a data backup system to include essential components to align with the Disaster Recovery Plan. This project was an add-on to the 2021 Budget. The CAB and BOC approved spending for this project at the June 3, 2021, meetings.
15	**51**	R	133	362	Station 4 CCVT Replacement			140	62					CY22-23: Replacement of all the 115Kv CCTV's at Station 4 needed to comply with the planned relay upgrade work by National Grid and Eversource.
16	**53**	A	110	370	Primary Metering Inspection and Upgrade Program	516	250	100	80					CY21-23: A condition assessment program has been established for all RMLD primary metering equipment. This project will consist of the purchase, upgrade, and construction associated with replacing all primary equipment that is in need of repair or replacement.
17	**55**	R	130	362	Relay Protection Upgrades - Station 4	100	70	150	80					CY21-23: Northeast Power Coordinating Council (NPCC) Directory 1 requires installing high speed, relay protection upgrades between National Grid's Tewksbury Station #17 and Reading Station #494. Design change made to replace both system 1 and system 2 relays at RMLD's BES Substation 4. Project completion date pushed out to CY2023 due to delays by NGrid/Eversource.
18	**57**	W/R/ NR	102	367	Pad-mount Switchgear Upgrade at Industrial Parks	799	799	764	212					FY18-CY23: Starting in FY18, replace all 15 kV pad-mount switchgear at industrial parks. Fourteen units have been replaced as of August 2021; seven additional switches will be replaced in the fall of 2021. CY22: RMLD will purchase and install the next six units (four per the existing bid plus two additional motor operated units).
19	**59**	W	105		**NEW WILMINGTON SUBSTATION**									
20				360	Purchase Land in Wilmington	599	71	650						CY22: Land purchase.
				361/362/ 366/367	Wilmington Substation Construction & Commissioning	195	0	195	4,696	4,975				CY22-24: Conceptual design, permitting, procurement of materials, construction, commissioning, and all required materials and labor to bring the proposed Wilmington substation online.
21	**n/a**	W	124	364/365	MA-125 Pole Line Installation for New Wilmington Substation				374	374				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.
22	**n/a**	W	TBD	365	Distribution Improvements Associated with New Wilmington Substation					158	158			The proposed Wilmington substation's main objective will be to transfer the existing Station 5 circuits to the new Wilmington Substation. 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.
23	**63**	A	103		**GRID MODERNIZATION & OPTIMIZATION**									**Fifteen-year plan to implement Technology Road Map for grid efficiency, reduction of losses, etc.**
				365	*Scada- Mate Switches*	297	297	300	315	325	334	344	344	Installation of 4 switches/year plus IntelliTeam licenses
				365	*IntelliRupter®*	138	138	139	146	150	155	159	159	Installation of 2 switches/year plus IntelliTeam licenses
				365	*ABB Reclosers*	225	225	208		115	110			Installation of new/replacement of older reclosers on the system.
				383	*Cap Bank Automation*	36	36	49	34	36	36	36	36	Adding feeder cap banks and making them SCADA controlled
				383	*Software Integration*	21	21	26	21	21	21	21	21	Integration of AMI/Scada-Mate switches/OMS
				397	*Communication to Field Devices*			156	100	100	100	100	100	Implement study recommendations done in CY21 by Burns & McDonnell.
				383	*Meter Data Management (MDM)*			281						Software for long-term data storage and management of data delivered by smart metering systems to accommodate meter data analytics. Integrates multiple data sources (AMI/AMR, billing systems, and GIS as needed). CY21: Katama Technologies to create RFP for both MDM and AMI/AMR metering project. This project will be a carry-over; it was previously included in the IT Software budget for 2021.
					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)									Installation of Integrated Voice Response (IVR) in progress - scheduled for completion in CY21.
				383	OMS Module: Crew Management	136	0							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. On hold for further evaluation.

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Capital Improvements CY22 thru CY27

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				383	OMS Module: Power Factor Correction/VVR		154							Installation of new SCADA module that 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. Software module installed and integrated with OMS in CY21. Testing for implementation will continue in CY22.
24	**71**	A	112	361/370	AMI Mesh Network Expansion & Meter Replacement	2,000	0	1,211	3,273	3,161				CY21: RMLD hired an MDM - AMI/AMR consultant (Katama Technologies) to prepare RFPs for MDM/AMI following the evaluation study done in CY20 by Limmerhirt Consulting. CY22-24: Upgrade the existing AMI/AMR system to the new mesh metering AMI technology.
25	**73**	A	117	370	Meters and Primary Meters (for stock)	40	40	80	40	40	20	20	20	Purchase primary meters and meters (with disconnect option as available) for new construction, upgrades and failures.
26	**75**	R	214	364/365/ 373	Force Account (MassDOT): Main & Hopkins, R		51	98						Widen Main Street and install traffic lights at the intersections of Hopkins and Main, and Summer and Main.
27	**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.
28					**GETAWAY UPGRADES**									
29	**77**	NR	125	364/367	3W18 Getaway Improvements	211	108	108						Construction/improvements of OH/UG to result in significant added capacity to 3W18 and moderate increase in capacity to remaining Station 3 circuits.
30	**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 feeder capacity and improved reliability.
31	**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.
32	**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 capacity and improved reliability.
33	**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 capacity and improved reliability.
34	**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 capacity and improved reliability.
35		R	TBD	364/367	4W30 Getaway Replacement								225	Station 4: Replace 2,300 feet of underground getaway to 750 mcm for increased capacity and improved reliability.
36	**79**	A	116	365/366/ 367/368	Transformers and Capacitors Purchase (Stock and Projects)	418	418	751	444	457	471	485	499	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)									
37	**81**	A	458	365	Secondary and Main Replacement Program - All Towns	257	753	309	272	280	289	298	298	Repair as necessary secondary/main services and connectors prioritized by age as determined by system-wide inspection. CY22 targeted areas: Middlesex Avenue, Reading.
38	**83**	A	107	365	13.8kV Upgrade (Step-down Area, etc.) - All Towns	506	506	623	140	131	333	302	307	Convert step-down areas to 13.8kV. Remove antiquated equipment and step-downs to lower losses and improve system efficiency. CY22 targeted area: Middlesex Avenue , Reading. This is the only area targeted for upgrade due to its large size and the cost associated with the upgrade.
39	**85**	A	106	366/367/ 368	UG Facilities Upgrades (URDs, Manholes, etc.) - All Towns	525	525	622	400	412	424	437	437	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. CY22: King James Grant and Wildwood Estates, Lynnfield; Blanchard Road, Wilmington; Parkwood Estates and Takoma Circle, North Reading.
40	**87**	R	134	366/367	Gazebo Circle, Reading, Underground Feed Relocation			284						Gazebo Circle is currently fed through the woods off Summer Avenue. Current work with Town extended the three-phase line on Hopkins Street to the entrance of Gazebo Circle. Obtain easement from Gazebo Circle, excavate, and install new UG feed from Hopkins Street to Gazebo Circle and removing existing feed through the woods
41	**89**	A	668	366/367/ 368	Aged/Overloaded Transformer Replacement Program	443	349	641	660	680	700	721	743	Labor associated with aged transformer replacements.
42	**91**	R/NR	175	364	Pole Replacement Program, R and NR	336	336	298	307	316	326	336	346	Replace poles identified through the Pole Inspection Program (700 poles/year inspected). This will include transfers and replacement of secondary services as necessary. To replace 50 poles per year.
43	**93**	R/NR/W	111	362	Substation Equipment Upgrade	10	10	90	30	30	30	30	30	Upgrade various equipment at substations as needed per RMLD's Preventative Maintenance Programs. CY22: Purchase of spare 35Kv breaker, lighting arrester, and insulator for Station 4 and Station 5.
44	**n/a**	n/a	n/a	n/a	Communication Equipment (Fiber Optic)	49	49							In 2022 this item is being moved to Grid Modernization & Optimization: Communication to Field Devices
45	**95**	A	115	394/395	Power/Lab and Tool Equipment	156	96	110	30	30	30	30	30	CY22: Power tools and equipment as necessary including Shop Meter Tester, Flir Thermal Camera, and miscellaneous items as needed.
46	**97**	A	various	369	Service Connections (Residential and Commercial) - All Towns	151	96	153	158	162	167	172	178	Install new and upgraded residential and commercial services as requested. Includes hardware, brackets, wires and connectors.
47	**99**	A	various	various	Routine Construction - All Towns	1,488	1,949	1,445	1,488	1,533	1,579	1,626	1,675	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)
48	**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.
49	**n/a**	R	TBD	364/365	4W24 Partial Circuit Reconductoring					356	30			Station 4: Upgrade main feeder of overhead circuit 4W24 to 556 to address voltage and conductor capacity issues.
50	**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.
					TOTAL	**11,648**	**8,504**	**13,226**	**15,151**	**15,450**	**6,869**	**7,565**	**7,057**	

READING MUNICIPAL LIGHT DEPARTMENT

Capital Improvements CY22 thru CY27

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	CY21 BUDGET	CY21 EST.	CY22 PLAN EST.	CY23	CY24	CY25	CY26	CY27
Total Additions:	**11,648**	**8,504**	**13,226**	**15,151**	**15,450**	**6,869**	**7,565**	**7,057**
TABLE 1: PLANT VALUES & DEPRECIATION EXPENSE:								
Plant in Service (Beginning)	165,144	164,058	171,562	183,788	197,938	212,389	218,257	224,823
Additions	**11,648**	**8,504**	**13,226**	**15,151**	**15,450**	**6,869**	**7,565**	**7,057**
Adjustments (Property Retirement)	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000
Plant in Service (Ending)	175,792	171,562	183,788	197,938	212,389	218,257	224,823	230,879
Less Land and Land Rights	-2,007	-1,266	-1,266	-1,266	-1,266	-1,266	-1,266	-1,266
Depreciable Plant in Service	173,785	170,296	182,522	196,673	211,123	216,992	223,557	229,614
Accumulated Reserve For Depreciation	-87,171	-86,170	-91,279	-96,754	-102,654	-108,988	-115,498	-122,205
Net Plant in Service	88,620	85,392	92,509	101,184	109,734	109,269	109,325	108,675
TABLE 2: DEPRECIATION FUND BALANCES:								
Beginning Balance	9,397	10,329	11,784	9,043	6,205	3,255	4,820	4,364
Depreciation Rate (3%)	3%	3%	3%	3%	3%	3%	3%	3%
Depreciation Expense	**4,916**	**4,884**	**5,109**	**5,476**	**5,900**	**6,334**	**6,510**	**6,707**
Bond Proceeds and Other Fund Sources	100	76	376	337	100	100	100	100
Operating Fund Transfer	5,000	5,000	5,000	6,500	6,500	2,000	500	300
	19,413	20,289	22,269	21,356	18,705	11,689	11,930	11,471
Capital Improvements	-11,648	-8,504	-13,226	-15,151	-15,450	-6,869	-7,565	-7,057
Ending Balance	**7,765**	**11,784**	**9,043**	**6,205**	**3,255**	**4,820**	**4,364**	**4,414**
TABLE 3: BOND PROCEEDS & OTHER FUND SOURCES:								
Force Account (MassDOT): Main & Hopkins, R	0	51	98	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)			177					
Interest Income	100	25	100	100	100	100	100	100
	100	76	376	337	100	100	100	100

CAPITAL PROJECTS

Facilities

CAPITAL PROJECT SUMMARY

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

Project Schedule: 2021-2022 **Project Manager:** Paul McGonagle, Facilities Manager

Reason for Expenditure:
Energy conservation.

Brief Description/Scope:
RMLD continues to replace old and obsolete lighting fixtures and bulbs with LED fixtures. To complete this effort, RMLD will replace the site lighting on the Ash Street campus and Substation 3 and 4.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
Substation lighting was reviewed as part of the physical security assessment completed in 2021, and the RMLD is implementing the recommendations of this assessment. The office building fluorescent light fixtures that were once removed from this project have been included again for LED conversion.

Status Update From Prior Fiscal Year:
In 2021 an electrical engineering firm will be hired to prepare bid specs for the construction and installation of the lighting fixtures.

CAPITAL PROJECT COST SHEET

PROJECT NAME: RMLD Lighting (LED) Upgrade Program **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0	Station (3 and 4) Upgrade (interior and exterior lighting)				$25,000
			$0	$0	$0	Ash Street Campus Upgrade (interior and exterior lighting)				$100,000
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$125,000**

PROJECT TOTAL: $125,000

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:
Repairs and upgrades to RMLD buildings and grounds.

Brief Description/Scope:
The backup generator at Station 3 needs to be replaced due to age. The existing generator will be replaced with a similar generator. This is a proactive approach to eliminate the possibility of a significant failure of the equipment. The design and bid process has been completed, and the new generator has been ordered. Due to COVID and supply chain issues, the generator will be delivered and installed in 2022.

The Transformer Rack and Pole Yard Redesign Project (at Station 3) is a proactive approach to include a complete redesign of the pole yard. This includes:

- relocating the current spill containment,
- installing rack shelving to store the transformers, and
- installing a 32-foot-wide asphalt driveway to improve vehicle access, operations, deliveries, and snow removal.

A construction specification will be developed by the end of 2021 and construction will be completed in the Spring of 2022.

Barriers:
None anticipated at this time.

Change in Scope of Work from Prior Fiscal Year:
The original transformer rack project included a multitiered shelving system to be located at Station 3 to store transformers currently being stored in the Barbas Warehouse. This would reduce storage costs and space by 20%. This design was determined not feasible due to operational logistics and testing of equipment. Therefore, the scope of the project was changed to include a redesign of the entire pole yard at Station 3.

Status Update:
The Station 4 Cooling Project was completed in 2021.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Building/Grounds Upgrades **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0	Station 3 New Backup Generator (carry-over)				$59,000
			$0	$0	$0	Transformer Racks and Pole Yard Redesign (carry-over)				$200,000
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$259,000**

PROJECT TOTAL: $259,000

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:
General office upgrades at 230 Ash Street.

Brief Description/Scope:
In 2021 an architect/designer will be hired to develop a bid specification and construction drawings to build offices and redirect the ceiling HVAC system and other building systems. Also, a feasibility review will be performed for the possible installation of a roof-top thermal energy heat pump for the leased area in the garage building.

In 2021-2022, RMLD will evaluate integrated AV technology for installation in the Winfred Spurr AV Room, General Manager's Conference Room, and the E&O Conference Room to facilitate meetings, webinars, training, etc.

In 2022, office upgrades will be scheduled for construction for the following staff:

- General Foreman Grid Asset and Communications
- Assistant Materials Manager
- Collection Manager
- Billing Manager

Barriers:
Scheduling of projects has been negatively impacted due to COVID 19 and the resulting equipment supply chain delays and increased material costs.

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

Status Update:
RMLD is expecting to complete the installation of the auto/visual equipment in the Winfred Spurr AV Room by the end of 2021 or early 2022.

The construction of a Facilities/Grid Asset Conference Room will be moved to 2023.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Office Upgrades - 230 Ash Street **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0	General Foreman Grid Asset and Communications Office				$15,000
			$0	$0	$0	Assistant Materials Manager Office				$15,000
			$0	$0	$0	Modernization and installation of AV equipment in the Winfred Spurr AV Room, General Manager's Conference Room, and E&O Conference Room.				$50,000
						Collection Manager Office				$15,000
			$0	$0	$0	Billing Manager Office				$15,000
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$110,000**

PROJECT TOTAL: $110,000

CAPITAL PROJECT SUMMARY

Project Name: Credit Union Renovation **Project #:** 136

Project Schedule: 2022 **Project Manager:** Paul McGonagle, Facilities Manager

Reason for Expenditure:

To upgrade the office space in the leased area of 218 Ash Street, currently occupied by the private entity “Reading Mass Town Employees Federal Credit Union.”

Brief Description/Scope:

In 2021 an architect/designer will be hired under Project 098 (Office Upgrades) to develop a basic layout and renovation plan for this area and the 230 Ash Street offices. This leased space consists of three rooms that have seen minimal upgrades over the years.

In 2022, the leased space will be renovated to include lighting, ceiling tiles, paint, carpet, door repairs, and other improvements. The Credit Union will need to be relocated temporarily. The existing floor tile contains asbestos and will have to be abated. The renovation is expected to start in April 2022.

The designer will specifically review the feasibility and cost-benefit of eliminating the existing window air conditioning units and replacing them with a roof top thermal energy heat pump system.

Barriers:
Scheduling of projects has been negatively impacted due to COVID 19 and the resulting equipment supply chain delays and increased material costs.

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

Status Update:
Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Credit Union Renovation **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0	Renovation				$85,000
			$0	$0	$0					
			$0	$0	$0					
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$85,000**

PROJECT TOTAL: $85,000

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:

This project represents an annual allotment for security upgrades as needed at all RMLD facilities.

A physical security consultant performed a physical security risk assessment of all RMLD properties in 2021 and provided recommendations to improve the existing security systems and equipment. A work group has been formed to review, approve, and implement the security recommendations.

Brief Description/Scope:
The security work group will meet monthly to develop a security program and discuss the specifics of each of the security consultant's recommendations to secure the RMLD properties and substations. Security equipment and systems will be procured and installed per the assessment and recommendation of the work group.

Barriers:
None anticipated at this time.

Change in Scope of Work from Prior Fiscal Year:

Not applicable.

Status Update:
Physical security risk assessment was completed in 2021.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Security Upgrades - All Sites **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0	Comprehensive Security System Upgrade. Implement recommendations such as site access, intrusion detection, foliage clearing, increased signage, etc.	1	$106,292.00	1	$106,292
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$106,292**

PROJECT TOTAL: $106,292

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:
Scheduled vehicle replacement, following Fuel Efficiency OP 19-07 FM, and based on the Electrification Program and the "8 to 10" 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 2022 delivery of the following:

- Small SUV
- Van
- Trouble Truck

Barriers:
None anticipated at this time.

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

Status Update:

- Digger Derrick (carry-over from 2020) was delivered in 2021.
- Material Handler was bid and ordered in 2021; delivery expected in 2022.
- Dump Truck will be bid and ordered in 2021; delivery expected in 2022.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Rolling Stock Replacement **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0	Small SUV	each	$50,000.00	1	$50,000
			$0	$0	$0	Van	each	$75,000.00	1	$75,000
			$0	$0	$0	Trouble Truck	each	$250,000.00	1	$250,000
			$0	$0	$0	Material Handler (carry-over)	each	$284,049.00	1	$284,049
			$0	$0	$0	Small Dump Truck w/Sander Attachment (carry-over)	each	$85,000.00	1	$85,000
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$744,049**

PROJECT TOTAL: $744,049

CAPITAL PROJECTS

Integrated Resources

CAPITAL PROJECT SUMMARY

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

Project Schedule: On-going **Project Manager:** Tom Ollila, Resource Engineer

Reason for Expenditure:

The goal of the EVSE project is to plan and install public charging infrastructure for electric vehicles within RMLD's service territory. This project will consist of Level 2 and DC Fast Charger (DCFC) systems. The goal of the DCFC portion of the project is to deploy high-speed, plug-in, electric vehicle chargers to provide short-duration charging cycles for EVs operated within the RMLD service territory.

This project increases the deployment of EV technology and availability of remote rapid charging capability for use by customers, thereby supporting state and local efforts to reduce carbon emissions in both the transportation and energy sectors.

Brief Description/Scope:

RMLD is working with each of the four towns to determine prioritized locations for installing Level 2 and DCFC charging stations in parking areas owned by the towns. All charging stations will be owned and operated by RMLD.

Barriers:

None anticipated at this time although changes to parking related policies will take persistence to resolve and then adapt as all parties learn more.

Change in Scope of Work from Prior Fiscal Year:

This project continues to evolve and expand. In 2021 RMLD received funding from a MassEVIIP Level 2 grant.

Status Update:

RMLD was awarded a $78,150 state grant in July 2021 to install five Level 2 chargers: three dual-head units in Reading and two dual-head units Wilmington. It is anticipated that these units will be installed in 2022.

RMLD has applied to MassEVIP for a DCFC grant ($99,136) to install rapid charging stations within RMLD's service territory. If awarded, this grant money would supplement the RMLD budget and hopefully enable us to install more DCFC units earlier.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Electric Vehicle Supply Equipment (EVSE) **SCHEDULE:** CY2022

	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)							
ITEM/TASK	Straight Time	OT	Straight Time	OT	Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
			$7,290	**$7,077**	**$920**					
			$0	$0	$0	DC Fast Charger (DCFC) Equipment	each	$70,000.00	5	$350,000
						Contractor design and install DCFC chargers	each	$35,000.00	5	$175,000
						Level 2 (L2) Charger Equipment	each	$10,000.00	5	$50,000
						Contractor design and install L2 chargers	each	$26,000.00	5	$130,000
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
Project Management	192.0		$18,439	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
Metering	50.0		$3,305	$0	$1,050					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management	100.0		$11,259	$0		**Police Details**	**weeks**	**$2,427**	**2.0**	**$4,855**
TOTAL LABOR/VEHICLES			**$33,003**	**$0**	**$1,050**	**TOTAL MATERIALS/OTHER**				**$709,855**

PROJECT TOTAL: $743,908

CAPITAL PROJECTS

Information Technology

CAPITAL PROJECT SUMMARY

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

Project Schedule: Annual **Project Manager:** Brian Hatch, Director of IT

Reason for Expenditure:
Each year RMLD must replace failed or obsolete computers and related equipment, as well as purchase equipment for new users.

Brief Description/Scope:
Miscellaneous hardware will be purchased to replace user workstations and purchase hardware for new employees as necessary.

Barriers:
None anticipated at this time.

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

Status Update:
In 2021 IT sought and received Board and CAB approval to initiate a New Production Environment Disaster Recovery system. The new EMC data domain which was scheduled for 2021 will be accommodated as part of this new disaster recovery system.

The new firewalls for SCADA domain were installed along with separate vLans for security.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Hardware Upgrades **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0	Miscellaneous Hardware (computers, laptops, printers)				$105,000
			$0	$0	$0					
			$0	$0	$0					
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$8,000**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$105,000**

PROJECT TOTAL: $105,000

CAPITAL PROJECT SUMMARY

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

Project Schedule: Annual **Project Manager:** Brian Hatch, Director of IT

Reason for Expenditure:

Each year RMLD purchases miscellaneous new software for new users and to update existing users. Additional new software projects may be added at the request of various operating units as outlined below:

Brief Description/Scope:

- *Customer Relationship Management (CMR) Engagement Software:* Cloud-based CRM software that will fully integrate SpryPoint with the Great Plans/Cogsdale system. This item is a carry-over from 2021.
- *HRIS: Software t*o assist with previsioning and deprovisioning users at the employee lifecycle.
- *IT Asset Manager:* This software will allow IT to barcode and asset-tag all equipment as it comes in and efficiently track the user and location of that equipment. This will help IT better maintain their asset inventory and will help in depreciating and replacing equipment.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

Not applicable.

Status Update:

The migration of the Yukon AMI metering system, which was planned for 2021, has been cancelled. This will be accommodated as part of the MDM and AMI projects scheduled to start in 2022.

The Work Order Management (WOMS)/Futura Staking Software was installed in 2021. Testing and implementation to be completed in 2022 after the GIS integration is completed. The cloud-based phone system is being re-evaluated and will likely not require any additional in-house assets. Meter Data Management (now included with Grid Modernization and Optimization) will be purchased and implemented in 2022.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Software and Licensing **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0	Miscellaneous Software				$100,000
			$0	$0	$0	Customer Relationship Management (CMR)/SpryPoint Engagement Software (carryover)				$20,000
			$0	$0	$0	HRIS				$30,000
			$0	$0	$0	IT Asset Manager				$40,000
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$190,000**

PROJECT TOTAL: $190,000

CAPITAL PROJECT SUMMARY

Project Name: Customer Portal (Mobile APP) **Project #:** 138

Project Schedule: 2022-23 **Project Manager:** Gregory Phipps, Director of Integrated Resources

Reason for Expenditure:
Residential as well as commercial and industrial customers are now accustomed to accessing information and account data via secure applications on their mobile devices.

As electrification increases and electricity costs increase due to the recently passed climate bill and other legislation, customers are likely to more actively control their energy use. RMLD is adding new rates, including additional time-of-use options to further encourage customers to take a more active role in their energy use and associated costs.

A customer portal will be an additional communication avenue (ultimately two-way) keeping customers up-to-date and allowing them to compare rates, initiate incentive participation, and check on their monthly bill status, as examples.

Brief Description/Scope:
The RMLD will subcontract software development and integration of this customer portal. Where possible, the RMLD will attempt to use as much off-the-shelf software as possible. It is anticipated that this software application will interface with several RMLD databases; this requires noteworthy cyber security provisions.

The Customer Portal will have several sections including: news, usage, billing, events, UAN, rebate status, and rate comparison. The login will be secure and the RMLD data and network will remain secure, as will customer data.

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: Customer Portal (Mobile APP) **SCHEDULE:** CY2022-2023

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
			$7,290	$7,077	$920					
			$0	$0	$0	Subcontracted development of Customer Portal (Mobile APP)				$200,000
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			$8,000	N/A	$2,080					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			$6,991	N/A	$400					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			$106	$103						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			$96	$93						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			$87	$85	$21					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			$66	$64	$21					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			$113	$109						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$200,000**

PROJECT TOTAL:	**$200,000**

2022 ESTIMATED SPENDING	**$100,000**
2023 ESTIMATED SPENDING	**$100,000**

CAPITAL PROJECT SUMMARY

Project Name: IT Infrastructure Enhancements **Project #:** 139

Project Schedule: 2022 **Project Manager:** Brian Hatch, Director of IT

Reason for Expenditure:
The RMLD must continually evaluate its IT infrastructure to be sure the environment will accommodate system growth and change, and to remain up to date with current technology and best practices.

Brief Description/Scope:
In 2022 we will address the following items:

- *Servers:* The RMLD will expand its current virtual server environment to meet growing data needs. The addition of the meter data management software and its underlying database, the need for additional data in the transformer load management tool, and the expected exponential growth in the Yukon database, requires IT to plan to add additional resources to its current environment.

- *Network Redesign*: RMLD will be replacing its core networking stack as well as other network switches that are well beyond their useful life. Additionally, the current networking environment needs to be overhauled in order to be better aligned, be more secure, and to take advantage of IT best practices. This overhaul and implementation will provide RMLD with a more robust and reliable network infrastructure.

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: IT Infrastructure Enhancements **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
			$7,290	$7,077	$920					
			$0	$0	$0	Servers	each	$60,000.00	2	$120,000
			$0	$0	$0	Network Re-Design				$250,000
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$370,000**

PROJECT TOTAL: $370,000

CAPITAL PROJECT SUMMARY

Project Name: IT Security **Project #:** 140

Project Schedule: 2022 **Project Manager:** Brian Hatch, Director of IT

Reason for Expenditure:
The RMLD is continually monitoring both the cyber and internal environments to assess and respond to threats. Systems must be added and/or updated to respond to these threats. The projects listed below are planned for 2022 in order to maintain the security and integrity of RMLD data assets.

Brief Description/Scope:

- *Multi-Factor Authentication*: RMLD will implement a multi-factor authentication service to improve overall security for RMLD servers and workstations. This will provide all RMLD users with a token that will need to be used to authenticate users logging into any RMLD device. This helps prevent any external sources from accessing any RMLD equipment.

- *Firewalls:* RMLD plans to expand its current firewall environment to improve the overall security of the RMLD network. RMLD will segment RMLD workstations from the RMLD server environment with two firewalls in a high availability pair between these two environments. This will allow IT to have greater control over what communication is allowed between user workstations and RMLD servers. This will improve the overall security posture of RMLD and provide greater defense over potential attacks.

- *Network Visibility Software:* Implement software to allow IT better optics on the current network infrastructure, and to provide tools for monitoring the flow of data and provide insight on how the network can be improved and alleviate any bottlenecks.

- *Security Information Event Manager (SIEM):* Implement a SIEM that will allow for greater optics on all RMLD IT enterprise systems. This will provide dashboards and tools that will allow IT to monitor and remediate any security events that may happen to any appliances in real time. This allows IT to have better optics for our environment and provide greater security for the network.

- *Information Security (Miscellaneous):* This is an allotment to address any unforeseen security issues which may arise during the year.

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: IT Security **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
			$7,290	$7,077	$920					
			$0	$0	$0	Muti-Factor Authentication	project			$25,000
						Firewalls	each	$15,000.00	2	$30,000
						Network Visibility Software	project			$50,000
			$0	$0	$0	Security Information Event Manager	project			$100,000
			$0	$0	$0	Information Security (miscellaneous)				$100,000
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$305,000**

PROJECT TOTAL: $305,000

CAPITAL PROJECT SUMMARY

Project Name: New Production Environment Disaster Recovery **Project #:** 122

Project Schedule: 2021 **Project Manager:** Brian Hatch, Director of IT

Reason for Expenditure:
RMLD does not have a proper industry standard data backup system or the essential components in place for disaster recovery. We currently are using external hard drives to backup RMLD data nightly. These drives are written over and over they start to cause corruption and it will become impossible to restore our data assets in the event of a small or large disaster. Plus, when tested our backups we have seen missing backups, corruption, and not full complete backups.

Brief Description/Scope:
Overall, need for two separate sites (Reading data center and an off-site data center rack) to separate the corporate and SCADA servers. Connect both sites with a high-speed WAN connection to a separate location outside of New England. As well as, repurposing all of our data storage and servers to use in disaster recovery location (outside of New England).

Phase 1 (Backup system with off-site replication): Purchase two backup systems. The first backup system will stay on-site at our data center at 230 Ash Street. We then deploy an agent on each server. That will continuously provide reliable backups nightly for one to 14 days. Then connect the second backup system to the first backup system, to hydrate the data from the first backup system to the second backup system. Upon completion, we ship the second backup system off-site to a designated disaster recovery site and connect the Reading data center to the disaster recovery site for nightly replication.

Phase 2 (New Production and repurposing our existing servers and storage): Purchase new production servers and storage and add it to RMLD existing network. Migrate all of the current production servers (including SCADA) to the new production device. Once all the virtual servers have been successfully moved, dismantle and erase all data and storage and repurpose the former hardware and ship it out to disaster recovery.

Phase 3 (A minute-by-minute backup and restoration): A minute-by-minute application will be replicated as an intermediary between the two sites and has a DVR like function and replication to synchronize the sites on a minute-by-minute basis. It also gives us a month of good backups every minute. For example, if we were hit with the ransomware attack, we would just identify that attack, then use minute-by-minute application to restore all of the data on the server or every server in the environment on a minute-by-minute basis.

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:
It is anticipated that this project will be completed by the end of 2021.

CAPITAL PROJECT COST SHEET

PROJECT NAME: New Production Environment Disaster Recovery **SCHEDULE:** CY2021

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
			$7,290	$7,077	$920					
			$0	$0	$0	RMLD Server Storage Upgrade				$420,000
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$420,000**

PROJECT TOTAL: $420,000

CAPITAL PROJECTS

System

CAPITAL PROJECT SUMMARY

Project Name: Station 4 CCVT Replacement **Project #:** 133

Project Schedule: 2022-2023 **Project Manager:** Nick D'Alleva, Assistant General Foreman, Grid Assets & Communications

Reason for Expenditure:
This project is to replace the existing Coupled - Capacitive Voltage Transformers (CCVT's) at Substation 4 in Reading. The existing CCVT's are more than 40 years old and need replacement.

Brief Description/Scope:
Purchase direct replacement CCVT's that will be installed on the existing structures at the Bulk Electric Supply (BES) - Station 4. The replacements consist of the two sets of three CCTV's on each supply line and seven individual CCTV's on each of 115Kv bus sections.

Barriers:
The replacement of the supply line CCTV's is contingent upon the relay upgrade work proposed by National Grid and Eversource.

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: Station 4 CCVT Replacement **SCHEDULE:** CY2022 - CY2023

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
			$7,290	**$7,077**	**$920**					
CCTV Installation	3.0		$21,869	$0	$2,760	Engineering services to design new protection scheme				$12,500
						Testing services				$40,000
						CCTV	each	$12,000.00	7	$84,000
			$0	$0	$0	Miscellaneous materials				$10,000
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
Installation of equipment	180.0		$15,734	$0	$3,780					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management	100.0		$11,259	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$48,863**	**$0**	**$6,540**	**TOTAL MATERIALS/OTHER**				**$146,500**

PROJECT TOTAL:	**$201,903**

2022 ESTIMATED SPENDING	**$140,000**
2023 ESTIMATED SPENDING	**$61,903**

CAPITAL PROJECT SUMMARY

Project Name: Primary Metering Inspection and Upgrade Program **Project #:** 110

Project Schedule: 2021-2023 **Project Manager:** Nick D'Alleva, Assistant General Foreman Grid Assets & Communications

Reason for Expenditure:
RMLD has initiated an inspection program of all primary metering revenue equipment. It is predicted that many of these installations will need to be replaced due to age and/or condition. Some primary metering customers are expected to be converted to secondary metering during implementation. This project will cover the cost of any necessary upgrades.

Brief Description/Scope:
Equipment will be repaired, upgraded and/or replaced as necessary based on the results of the assessment.

Barriers:
None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
The primary metering review team is working internally and with its primary metering customers to remove existing primary metering equipment and install more conventional metering equipment. These efforts have reduced the scope and spending originally proposed for this project.

Status Update From Prior Fiscal Year:
Replacement primary current and voltage transformers have been ordered and will all be received by the end of 2021. Aged primary metering installations are being replaced after review by the primary metering review team.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Primary Metering Upgrade and Replacement Program **SCHEDULE:** CY2021-2023

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
Primary metering make ready and installation	10.0	4.0	$72,898	$28,308	$12,880	Potential Transformers	each	$1,000.00	50	$50,000
			$0	$0	$0	Current Transformers	each	$1,000.00	70	$70,000
			$0	$0	$0	Miscellaneous equipment (racks, secondary control wire, meter sockets, and test switches)	each	$500.00	38	$19,000
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	100.0		$10,637	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
Primary metering installation coordination and design	160.0	80.0	$15,366	$7,459						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
Primary metering construction	960.0		$83,917	$0	$20,160					$0
Primary metering installation coordination and design		160.0	$0	$13,578	$3,360					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management	160.0	40.0	$18,015	$4,372		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$200,832**	**$53,717**	**$36,400**	**TOTAL MATERIALS/OTHER**				**$139,000**

PROJECT TOTAL:	**$429,949**

2021 ESTIMATED SPENDING	**$250,000**
2022 ESTIMATED SPENDING	**$100,000**
2023 ESTIMATED SPENDING	**$79,949**

CAPITAL PROJECT SUMMARY

Project Name: Relay Protection Upgrades – Station 4 **Project #:** 130

Project Schedule: 2021-2023 **Project Manager:** Nick D'Alleva, Assistant General Foreman Grid Assets & Communications

Reason for Expenditure:
NSTAR is replacing existing static wires with optical ground wire to provide a means for diverse fiber communications on the NSTAR system. This project will address the need for fiber to support Northeast Power Coordinating Council (NPCC) Directory 1, high speed, relay protection upgrades required on 211-503 and 211-504 between National Grid's Tewksbury Station #22, Eversource's Woburn #211 Substation and Reading Station #494. This will also enable RMLD to migrate its remote terminal unit (RTU) communications.

Brief Description/Scope:
Replace existing relay protection on the 211-503 and 211-504 transmission lines. The primary and secondary relay protection scheme will be a fully functional three terminal line protection scheme between Station 4, Woburn Substation and Tewksbury. This protection scheme will communicate over fiber installed on the 115Kv transmission lines.

Barriers:
National Grid and Eversource scheduling of their relay upgrades. The RMLD cannot proceed with our construction until the investor-owned utilities proceed with theirs.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
Both primary and secondary relay schemes are being completely replaced. This is a change from the original design proposed by National Grid and Eversource.

Status Update From Prior Fiscal Year:
The majority of the RMLD engineering and design for this project is completed. The RMLD is waiting for National Grid and Eversource to complete their design of the new relay protection system. This delay has prevented the RMLD from purchasing the new relays and equipment that were originally scheduled for 2021.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Relay Protection Upgrades - Station 4 **SCHEDULE:** CY2021 - 2023

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
Installation of equipment	300.0		$26,224	$0	$6,300	Engineering services to design new protection scheme				$90,000
Wiring and testing	180.0		$15,734	$0	$3,780	Testing services				$40,000
						Communication equipment				$20,000
						Relays	each	$10,000.00	4	$50,000
						Associated equipment for relays	per relay	$1,250.00	10	$12,500
						Misc. materials				$16,000
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**	**$21**					
Supervision/Project Management	175.0		$19,703	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$61,662**	**$0**	**$10,080**	**TOTAL MATERIALS/OTHER**				**$228,500**

PROJECT TOTAL:	**$300,242**

2021 ESTIMATED SPENDING	**$70,000**
2022 ESTIMATED SPENDING	**$150,000**
2023 ESTIMATED SPENDING	**$80,242**

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 2022 the RMLD will receive and install the last four units of a three-year bid.

Additionally, we will purchase two new motor operated units for River Park Drive. These units will be dead front with provisions for remote/supervisor control and motor operated positions to incorporate into the existing 4W10 and 3W13 automatic transfer schemes.

Barriers:
Delivery of three switchgear ordered in FY18 was significantly delayed, which has pushed back the installation schedule for all switchgear. The River Park units will need to be bid out in 2022.

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

The two motor operated units for River Park Drive were originally slated for purchase in 2023.

Status Update From Prior Fiscal Year:
Installation of fourteen switchgear has been completed (as of August 2021):

- *Jonspin Road, Wilmington*: Switch-1 (FY18), Switch-2 and Switch-3 (CY19), Switch-4 and Switch-5 (CY19), and Switch-6 (CY20)
- *River Park Drive, North Reading:* Switch-2 in (FY18), *Switch-1 (CY20) Switch-5 (CY21)*
- *Concord Street, North Reading*: Switch-2 and Switch-3 in (FY18)
- *Reading Square (Haven Street), Reading: Switch-1 (CY20)*
- *80 Industrial Way, Wilmington: Switch-1 and Switch-2 in (CY21)*

CAPITAL PROJECT COST SHEET

PROJECT NAME: Pad-Mount Switchgear Upgrade at Industrial Parks **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
Replace pad-mount switchgear (with contractor assist)		2.0	$0	$14,154	$1,840	Innovative Switchgear	each	$72,125.00	4	$288,500
Make up t-bodies and LB elbows (with contractor assist)	3.0		$21,869	$0	$2,760	Innovative Switchgear - MOS Style	each	$90,000.00	2	$180,000
Splice out line and load side primary cables (with contractor assist)	6.0		$43,739	$0	$5,520	T-bodies, LB elbows, reducers, caps, inserts, fused elbows, miscellaneous connectors per switchgear	per switch	$3,000.00	6	$18,000
						Splices for line and load side primaries (up to 12 per switchgear)	per switch	$3,000.00	6	$18,000
						Primary cable for piece outs	foot	$20.00	960	$19,200
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
Replace pad-mount switchgear (assist RMLD crews)	2.0		$13,982		$800					$0
Make up t-bodies and LB elbows (assist RMLD crews)	3.0		$20,974		$1,200					$0
Splice out line and load-side primary cables (assist RMLD crews)	6.0		$41,947		$2,400					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	92.0	64.0	$9,786	$6,609						$0
Engineering: unit rate in hours			**$96**	**$93**						
Prepare switching order, coordinate outages, ad modifications, order materials, etc.	100.0	64.0	$9,604	$5,967						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
Test cable, switchgear and rotation (2 techs)	120.0	48.0	$10,490	$4,073	$3,528					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Energize and test switchgear and relays	120.0	48.0	$13,511	$5,246		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$185,901**	**$36,050**	**$18,048**	**TOTAL MATERIALS/OTHER**				**$523,700**

PROJECT TOTAL: $763,699

CAPITAL PROJECT SUMMARY

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

Project Schedule: FY17-CY24 **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 the substation operational. The new Wilmington substation will be a replacement for Substation 5, while also providing added benefit 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 in the route MA-125 / Ballardvale Street Area.

CAPITAL PROJECT COST SHEET

PROJECT NAME: New Wilmington Substation
Land Purchase

SCHEDULE: CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0		Land Purchase				$650,000
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$650,000**

PROJECT TOTAL: $650,000

CAPITAL PROJECT COST SHEET

PROJECT NAME: New Wilmington Substation
Construction and Commissioning

SCHEDULE: CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
Oversite and Management of Project	285.0		$27,370	$0		National Grid system impact study				$42,000
			$0	$0		Engineering consultant for permitting, interconnection, procurement, etc.				$73,500
			$0	$0		Survey, Civil, Permit, etc.				$52,500
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$27,370**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$168,000**

PROJECT TOTAL: $195,370

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, Systems 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 the Grid Modernization/Optimization Road Map including installation and integration of smart switches, IntelliRupters, and capacitor banks and controls. 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 2021 a study is being conducted to evaluate communication between the various field devices. This study will provide a comprehensive plan to seamlessly integrate communication amongst all devices and provide guidance for future expansion. We have added a component to this project “Communication to Field Devices,” which will be used to implement the recommendations of this study. Communication to Field Devices will replace Capital Project #126 - “Communications Equipment (Fiber Optic).”

Status Update:
Four Scada-Mate switches and two IntelliRupters were received in 2021 and all were installed. This brings the total number of devices in the field to 24 Scada-Mate switches, and eight IntelliRupters.

RMLD continues to update capacitor bank controllers to prepare for implementation of the communication study results. The V.V.O. software which automates the capacitor banks has been installed and is in the testing phase. Integrated Voice Response is completed. Meter Data Management will be a carried-over from 2021. Crew Management has been cancelled.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization
Scada-Mate Switches

SCHEDULE: CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
Install Scada-Mate switches and controls	1.0		$7,290	$0	$920	Scada-Mate CX Switch	each	$30,139.10	4	$120,556
Replace pole, install bypass disconnects, transfer primary, secondary, etc.	7.0		$51,029	$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	$2,500.00	4	$10,000
Install three (3) repeaters/radios per switch	0.4		$2,916	$0	$368	S&C repeaters/radios	each	$3,000.00	12	$36,000
Install antennas	1.5		$10,935	$0	$1,380	Antennas for radios	each	$600.00	6	$3,600
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	120.0		$12,764	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
PoleForeman, construction drawings, etc.	40.0		$3,841	$0						$0
Prepare switching orders, order materials, establish communication	40.0		$3,841	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
Controls, programming, commissioning, etc.	64.0		$5,594	$0	$1,344					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Controls, programming, commissioning, etc.	32.0		$3,603	$0		**Police Details**	**weeks**	**$2,427**	**4.0**	**$9,710**
TOTAL LABOR/VEHICLES			**$101,813**	**$0**	**$10,452**	**TOTAL MATERIALS/OTHER**				**$187,866**

PROJECT TOTAL: $300,132

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization IntelliRupters

SCHEDULE: CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
Install IntelliRupter Switches	1		$7,290	$0	$920	IntelliRupter Switches	each	$37,289.50	2	$74,579
Replace pole, install bypass disconnects, transfer primary, secondary, etc.	3		$21,869	$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	$2,500.00	2	$5,000
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	40.0		$4,255	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
PoleForeman, construction drawings, etc.	24		$2,305	$0						$0
Prepare switching orders, order materials, establish communication	24		$2,305	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
Controls, programming, commissioning, etc.	64		$5,594	$0	$1,344					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Controls, programming, commissioning, etc.	16		$1,801	$0		**Police Details**	**weeks**	**$2,427**	**2.0**	**$4,855**
TOTAL LABOR/VEHICLES			**$45,420**	**$0**	**$5,024**	**TOTAL MATERIALS/OTHER**				**$88,434**

PROJECT TOTAL: $138,878

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization
ABB Reclosers

SCHEDULE: CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**7,290**	**$7,077**	**$920**					
Install reclosers and controls	1.0		7,290	$0	$920	ABB Reclosers	each	$20,000.00	4	$80,000
Replace pole, install bypass disconnects, transfer primary, secondary, etc.	7.0		51,029	$0	$6,440	55' pole, x-arms, brackets, guys, anchors, miscellaneous hardware, etc.	per recloser	$2,000.00	4	$8,000
			$0	$0	$0	Bypass disconnects	each	$350.00	12	$4,200
			$0	$0	$0	Contractor assist with recloser settings	per recloser	$1,800.00	4	$7,200
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	120.0		$12,764	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
PoleForeman, construction drawings, etc.	40.0		$3,841	$0						$0
Prepare switching orders, order materials, establish communication	40.0		$3,841	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
Controls, programming, commissioning, etc.	80.0		$6,993	$0	$1,680					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Controls, programming, commissioning, etc.	40.0		$4,504	$0		**Police Details**	**weeks**	**$2,427**	**4.0**	**$9,710**
TOTAL LABOR/VEHICLES			**$90,262**	**$0**	**$9,040**	**TOTAL MATERIALS/OTHER**				**$109,110**

PROJECT TOTAL: $208,412

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization
Capacitor Bank Automation

SCHEDULE: CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
Install CAP controllers	1.0		$8,000		$2,080	CBC 8000 CAP Controller	each	$1,800.00	10	$18,000
						RADIO	each	$800.00	6	$4,800
			$0		$0	Miscellaneous	per controller	$400.00	3	$1,200
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	12.0		$1,276	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
Connecting to Eaton System and SCADA switching	80.0		$7,683	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
Controls, programming, commissioning, installation, etc.	24.0		$2,098	$0	$504					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Controls, programming, commissioning, installation, etc.	6.0		$676	$0		**Police Details**	**weeks**	**$2,427**	**1.2**	**$2,913**
TOTAL LABOR/VEHICLES			**$19,733**	**$0**	**$2,584**	**TOTAL MATERIALS/OTHER**				**$26,913**

PROJECT TOTAL: $49,230

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization
Software Integration

SCHEDULE: CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0	Services from vendor for integration of AMI and various devices				$15,000
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
Work with vendor for software integration	80.0		$7,683	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
Work with vendor for software integration	24.0		$2,098	$0	$504					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision	8.0		$901	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$10,682**	**$0**	**$504**	**TOTAL MATERIALS/OTHER**				**$15,000**

PROJECT TOTAL: $26,186

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization
Communication to Field Devices

SCHEDULE: CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
Install Radio Antenna	1.2		$8,748	$0	$1,104	Radio	Each	$800.00	24	$19,200
			$0	$0	$0	Miscellaneous Fiber Optic Equipment				$53,460
		0	$0	$0	$0	Contractor to make connections to SCADA	Each	$2,000.00	24	$53,460
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
		0.0	$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	24.0	0.0	$2,553	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
Prepare construction documents, PoleForeman, 605As, outage setup, outages, GIS updates	72.0	0.0	$6,915	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
	0.0	0.0	$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
Install devices.	24.0	0.0	$1,586	$0	$504					$0
Technical Services Manager: unit rate in hours			**$112.59**	**$109**						
Supervision of Meter crews	24.0		$2,702	$0		**Police Details**	**weeks**	**$2,427**	**2.4**	**$5,826**
TOTAL LABOR/VEHICLES			**$22,504**	**$0**	**$1,608**	**TOTAL MATERIALS/OTHER**				**$131,946**

PROJECT TOTAL: $156,058

CAPITAL PROJECT COST SHEET

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

SCHEDULE: CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0	Meter Data Management Software				$280,700
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
										$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$280,700**

PROJECT TOTAL: $280,700

CAPITAL PROJECT SUMMARY

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

Project Schedule: 2022-2024 **Project Manager:** John McDonagh, Assistant Director of E&O and Nick D'Alleva, Assistant General Foreman Grid Assets & Communications

Reason for Expenditure:
The RMLD has ~28,600 Itron non-AMI/AMR meters that are not capable of providing end-of-line voltage. End-of-line voltage readings would provide the ability to monitor voltage, current, demand, power factor and power quality for these locations. Of these ~28,000 non-AMI meters, there are 3,600 commercial, industrial, and time-of-use meters that are not capable of communicating with the RMLD Outage Management System (OMS). Customers with these meters are not able to receive outage and restoration notifications.

Brief Description/Scope:
The RMLD hired a consultant who performed a system-wide evaluation of the current AMI/AMR mesh network and metering system and made recommendations for system upgrades to accommodate current deficiencies as outlined above and to address future metering needs. The RMLD then hired Katama Technologies, Inc., to prepare RFPs for both the AMI and MDM systems based on the recommendations of the consultant evaluation. Once the RFPs are created and the technical specifications are generated, it will be put out to bid in 2022. The MDM procurement will take place first followed by the AMI procurement in 2022. Once an AMI vendor is selected through the bidding process, and we have procured the materials, the headend and communication infrastructure installation will commence in 2022 followed by the full deployment of meters in years 2023 and 2024.

Barriers:
Supply chain concerns.

Change in Scope of Work From Prior Fiscal Year: Increase (Decrease)
Implementation has been pushed back 2022.

Status Update From Prior Fiscal Year:
In 2021 RMLD proceeded to hire an AMI/MDM consultant to prepare RFPs for both the MDM and AMI systems. The actual implementation starts in 2022 and will be completed by 2024.

CAPITAL PROJECT COST SHEET

PROJECT NAME: AMI Mesh Network Expansion and Meter Replacement **SCHEDULE:** CY2022 - 2024

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0	Headend				$60,000
						Infrastructure				$224,000
						Meters				$5,401,000
						Installation				$949,000
			$0	$0	$0	Project Management and Delivery				$1,011,000
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
				$0						
						Police Details	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$7,645,000**

PROJECT TOTAL: $7,645,000

2022 ESTIMATED SPENDING	**$1,211,400**
2023 ESTIMATED SPENDING	**$3,272,800**
2024 ESTIMATED SPENDING	**$3,160,800**

CAPITAL PROJECT SUMMARY

Project Name: Meters and Primary Meters (for Stock) **Project #:** 117

Project Schedule: Annual **Project Manager:** Nick D'Alleva,
Assistant General Foreman
Grid Assets &
Communications

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

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

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 and Primary Meters (for stock) **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0	Residential meters for stock (with disconnect option as available)	each	$300.00	200	$60,000
			$0	$0	$0	Secondary current transformers	each	$300.00	40.0	$12,000
			$0	$0	$0	CT Rated Meter Sockets	each	$400.00	20	$8,000
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$80,000**

PROJECT TOTAL: $80,000

CAPITAL PROJECT SUMMARY

Project Name: Force Account: Mass DOT
Main and Hopkins Street, Reading

Project #: 214

Project Schedule: 2021-22

Project Manager: Peter Price,
Senior Distribution
Engineer

Reason for Expenditure:

Reimbursable Force Account Project

Brief Description/Scope:

MassDOT roadway improvement and signalization project will require Verizon to set 12 poles and the RMLD to set three poles along Main Street and Hopkins Street in Reading. RMLD to transfer one three-phase spacer cable circuit and associated laterals, transformers, guys, streetlights, secondaries, and risers. This project also involves the relocation of the secondary riser for the restaurant at 107 Main Street.

Barriers:

Waiting for MassDOT to move forward with the project. As of August of 2021, MassDOT is moving forward with the project. RMLD is still waiting on a ‘Notice to Proceed” notification from MassDOT.

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

Not applicable.

Status Update From Prior Fiscal Year:

The project is anticipated to start in September of 2021 and be completed in 2022.

CAPITAL PROJECT COST SHEET

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

SCHEDULE: CY21-22

	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
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**				
RMLD to transfer on 11 poles and attach to 4 new poles on Main Street.	8.4	1	$61,236	$7,077	$8,648	Spacer cable brackets, insulators, etc.	per pole	$400	12
RMLD to transfer three-phase secondary underground service to restaurant		1	$0	$7,077	$920	Secondary brackets	per pole	$40	12
			$0	$0	$0	Guy wire and hardware	each	$200.00	10
			$0	$0	$0	Cutouts, crossarms, risers, etc.	each	$300.00	15
			$0	$0	$0	Miscellaneous hardware	per pole	$250.00	15
			$0	$0	$0	55'-1 poles	per pole	$1,200.00	3.0
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**				
			$0		$0				
			$0		$0				
			$0		$0				
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**				
Work with contractor on UG to the restaurant at 107 Main Street	1		$6,991		$400	U-Guard, riser ties, connectors, miscellaneous hardware	each	$500.00	1.0
			$0		$0				
			$0		$0				
Line Operations Supervision: unit rate in hours			**$106**	**$103**					
Supervision of Line crews	60		$6,360	$0					
Engineering: unit rate in hours			**$96**	**$93**					
PoleForeman, telco correspondence, pole petition hearings, construction plans, switching, planned outages, GIS updates, etc.	60	40	$5,760	$3,720					
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**				
Rotation (6 customers)		40	$0	$3,400	$840				
			$0	$0	$0				
Technical Services Manager: unit rate in hours			**$113**	**$109**					
			$0	$0		**Police Details**	**week**	**$2,427**	**7.2**
			$0	$0					
TOTAL			**$80,347**	**$21,274**	**$10,808**				

PROJECT TOTAL:	**$149,537**

2021 ESTIMATED SPENDING	**$51,197**
2022 ESTIMATED SPENDING	**$98,340**

CAPITAL PROJECT SUMMARY

Project Name: 3W18 Getaway Improvements **Project #:** 125

Project Schedule: 2021-2022 **Project Manager:** Emmanuel Agouridis, Senior Distribution Engineer

Reason for Expenditure:
The objective of this project is to have the 3W18 circuit separated from the existing duct bank at Station 3. At a high level, the plan is to run the circuit out of Station 3 in a separate duct bank and ultimately to Chestnut Street via newly built overhead lines installed on the existing pole line running from Chestnut Street down the driveway to Station 3. This will improve the rating of the 3W18 circuit, while also improving the ratings of the remaining circuits in the duct bank due to reduced heating and inherent thermal relief.

Brief Description/Scope:
Install new underground cable from Station 3 to a new riser installed in 2020. Perform all overhead line work to tie the new 3W18 riser to the existing overhead 3W18 circuit located on Chestnut Street. 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: 3W18 Getaway Improvements **SCHEDULE:** CY2021 - CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
Replace five poles w/ 55' CL1 poles	2.0		$14,580	$0	$1,840	55' - class 1 poles	each	$800.00	5	$4,000
Frame 15 poles for added circuit	2.0		$14,580	$0	$1,840	15kV, 556 AL spacer cable	foot	$2.02	5280	$10,666
Set-up for (1,000') messenger wire	2.0		$14,580	$0	$1,840	0.052 messenger wire	foot	$1.23	1760	$2,165
Pull in and install (3,000') 556 spacer cable	2.0		$14,580	$0	$1,840	Riser pole hardware	per pole	$1,700.00	1	$1,700
Move 3W15-3W6 and 3W15-3W18 tie switches	2.0		$14,580	$0	$1,840	15 kV Hendrix brackets, misc. hardware, misc. primary connectors (spacers, insulators, etc.)	per pole	$300.00	15	$4,500
Install underground cable, splice, term (with contractor assist)	2.0		$14,580	$0	$1,840	Gang operated air break switch	each	$3,040.00	2	$6,080
Wreck out underground (with contractor assist)	1.0		$7,290	$0	$920	15kV cable, 750 MCM	foot	$14.43	1500	$21,645
						600V, 4/0 CU cable	foot	$3.08	500	$1,540
						Terminations	each	$70.64	6	$424
						Splices	each	$443.56	3	$1,331
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
Install underground cable, splice, term (assist RMLD crews)	2		$13,982		$800					$0
Wreck out underground (assist RMLD crews)	1		$6,991		$400					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	100.0		$10,637	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
Design, work order, material procurement	80		$7,683	$0						$0
Oversight	40		$3,841	$0						$0
Switching: draft, review and execute	16		$1,537	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
Switching: review and execution	16		$1,399	$0	$336					$0
Test cable	4		$350	$0	$84					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Switching: review and execution	16		$1,801	$0		**Police Details**	**weeks**	**$2,427**	**2.0**	**$4,855**
TOTAL LABOR/VEHICLES			**$142,989**	**$0**	**$13,580**	**TOTAL MATERIALS/OTHER**				**$58,905**

PROJECT TOTAL:	**$215,473**

2021 ESTIMATED SPENDING	**$107,737**
2022 ESTIMATED SPENDING	**$107,737**

CAPITAL PROJECT SUMMARY

Project Name: Transformers and Capacitors Purchase (Stock and Projects) **Project #:** 116

Project Schedule: Annual **Project Manager:** Vaughan Bryan, Senior 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:
In 2022 additional single-phase pad-mount transformers will be purchased to expedite replacing aged transformers.

Status Update:
Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Transformers and Capacitors **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0	Three-phase pad-mount transformers for proposed commercial services and stock	average per transformer	$9,200	27	$248,400
			$0	$0	$0	Single-phase pad-mount transformers for proposed subdivisions and stock.	average per transformer	$2,875	91	$261,625
			$0	$0	$0	Three-phase pole-mount transformers for proposed commercial services and stock	average per transformer	$4,888	17	$83,096
			$0	$0	$0	Single-phase pole-mount transformers for proposed residential services and stock	average per transformer	$2,300	65	$149,500
			$0	$0	$0	1,200 kVar capacitor banks	average per transformer	$1,400	6	$8,400
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$751,021**

PROJECT TOTAL: $751,021

CAPITAL PROJECT SUMMARY

Project Name: Secondary and Main Replacement Program
All Towns

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 Stepdown Area Conversions. The Middlesex Avenue area in Reading will be targeted for upgrade in 2022 in conjunction with the 13.8kV Upgrade (Step-down Areas) – Project 107.

Barriers:

The Middlesex Avenue area in Reading is an RMLD set area, so no barriers are anticipated.

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

Not applicable.

Status Update from Prior Fiscal Year:

The Linda Lane area is predicted to be completed by the end of 2021.
The North Main Street/Lowell Street area in Lynnfield was completed 2021.
The Wisser Street and Brand Avenue area in Wilmington was completed in 2021.
Southwick Road was completed in 2021.
The Central Street area in North Reading was completed in 2021.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Secondary and Main Replacement Program **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
Frame up to 120 poles	6		$43,739	$0	$5,520	4/0-3/C secondary cable	foot	$2	10,000	$20,000
Install 10,000' of secondary cable	12		$87,478	$0	$11,040	Secondary hardware, brackets, connectors, etc.	per pole	$75	120	$9,000
Replace services	8		$58,319	$0	$7,360	120' of 1/0 - 3/C service wire for each service	per service	$100	100	$10,000
			$0	$0	$0					
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	80.0		$8,509	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
Prepare construction documents, PoleForeman, outage set-up, GIS updates	200		$19,207	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**	**12.0**	**$29,130**
TOTAL LABOR/VEHICLES			**$217,252**	**$0**	**$23,920**	**TOTAL MATERIALS/OTHER**				**$68,130**

PROJECT TOTAL: $309,302

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

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:
It is expected that at the conclusion of all work in the step-down conversion areas in 2021 that there will be 21 step-down areas remaining in the RMLD service territory awaiting conversion to 13.8kV. 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. The only area targeted for 2022 is the Middlesex Avenue area in Reading given its large size and cost associated for the upgrade.

Barriers:
None

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

Status Update:
The Central Street area in North Reading was converted in 2021. The area off of Summer Avenue in Reading that feeds Willow Street and Austin Prep is underway and is awaiting customer upgrades to complete the conversion. The areas surrounding Linda Lane in Wilmington are in progress. The areas in Reading off of South Street are awaiting some final pole sets from Verizon and RMLD expects to complete this area prior to the end of the year. Finally, a large section of North Lynnfield along Lowell and Main Streets was also converted with only a small side street remaining that requires upgrades to the underground distribution for completion.

CAPITAL PROJECT COST SHEET

PROJECT NAME: 13.8kV Upgrades (Step-down Areas, etc.) **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
RMLD to set up to 100 poles	20		$145,797	$0	$18,400	40' poles	each	$400.00	100	$40,000
RMLD to frame 110 poles for new primary cable (guying and anchors as needed)	12		$87,478	$0	$11,040	Hardware, insulators, connectors, guys, cutouts, taps, brackets, ground rods, etc.	per pole	$210.00	110	$23,100
Install 19,500' of single-phase primary cable, energize and cutover	12		$87,478	$0	$11,040	1/0 AAAC primary	foot	$0.87	19,500	$16,965
Replace twenty five (25) pole-mount transformers	6		$43,739	$0	$5,520					
Remove old primary cable	4		$29,159	$0	$3,680					
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	120.0		$12,764	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
PoleForeman, 605As, construction drawings, switching orders, etc.	400		$38,415	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
			$0	$0		**Police Details**	**weeks**	**$2,427**	**20.0**	**$48,550**
TOTAL LABOR/VEHICLES			**$444,829**	**$0**	**$49,680**	**TOTAL MATERIALS/OTHER**				**$128,615**

PROJECT TOTAL: $623,124

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:** All Engineers

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. Areas targeted for 2022 include King James Grant and Wildwood Estates in Lynnfield, Blanchard Road in Wilmington, and Parkwood Estates and Takoma Circle in North Reading. In 2022 we will continue with inspection of manholes to determine which manholes will need to be scheduled for replacement.

Barriers:

Availability of underground crews.

Change in Scope of Work From Prior Fiscal Year:

No notable change.

Status Update:

Area upgrades either completed or expected to be completed by the end of 2021 include:

- Pocahontas Way, Hampton Court/Midland Street, Carter Road/Willard Lane, and Kimberly Terrace (completed) in Lynnfield
- Gandolf Way at Glen Acres Estate (completed), Elmwood Village, Juniper Ridge, Scaltrito Drive (completed), and Corum Meadows in Wilmington
- Sandspur Lane, Pine Glen Drive (completed), and Gloria Lane (completed) in North Reading

CAPITAL PROJECT COST SHEET

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

SCHEDULE: CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
Replace approximately 18,400 feet of underground and neutral cable (with contractor assist)	20		$145,797	$0	$18,400	#2 CU 15 kV cable and neutral	foot	$3.00	18,400	$55,200
Splice, terminate, elbows, grounding, etc. (with contractor assist)	6		$43,739	$0	$5,520	Splices, elbows, terminations, tape connectors, hardware, etc.	each	$200.00	56	$11,200
Transformer replacement and crabbing (with contractor assist)	5		$36,449	$0	$4,600	Transformer box pads	each	$310.00	24	$7,440
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
Replace approximately 15,000 feet of URD and neutral cables (assist RMLD crews)	20		$139,824		$8,000					$0
Splice, terminate, elbows, grounding, etc. (assist RMLD crews)	6		$41,947		$2,400					$0
Transformer replacement and crabbing (assist RMLD crews)	5		$34,956		$2,000					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	200.0		$21,273	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
Switching, scheduling, notices, plans, etc.	216		$20,744	$0						$0
Inspection 35 manholes.	120		$11,524	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
Testing cables and transformers	48		$4,196	$0	$1,008					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management	8		$901	$0		**Police Details**	**weeks**	**$2,427**	**2.0**	**$4,855**
TOTAL LABOR/VEHICLES			**$501,350**	**$0**	**$41,928**	**TOTAL MATERIALS/OTHER**				**$78,695**

PROJECT TOTAL: $621,973

Note: Transformers for this project are purchased under Project 116

CAPITAL PROJECT SUMMARY

Project Name: Gazebo Circle, Reading Underground Feed Relocation

Project #: 134

Project Schedule: 2022

Project Manager: Brian Smith, System Engineer

Reason for Expenditure:
Improve reliability and access to the feed to Gazebo Circle, which is currently overhead through the woods off Summer Street. Current feed is not accessible by truck and requires an outage to the entire Gazebo Circle complex to complete any maintenance or trimming (approximately 215 customers).

Brief Description/Scope:
Staff will survey and obtain easement for a new underground feed off Hopkins Street to Gazebo Circle. Crews will then install approximately three manholes and 1,200 feet of four-inch conduit, as well as approximately 750 circuit feet of new underground cable. Crews will then remove overhead feed from the woods off Summer Avenue.

Barriers:
Obtaining easements from the Town and Gazebo Circle condo association.

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: Gazebo Circle, Reading - Underground Feed Relocation **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
			$7,290	**$7,077**	**$920**					
Installation of new conduit and wire, splice and install elbows as needed	3.0		$21,869	$0	$2,760	1,200 feet of conduit	foot	$6.00	1200.0	$7,200
			$0	$0	$0	2,000' of primary cable	foot	$4.00	2000.0	$8,000
						750 feet of ground wire	foot	$2.00	750.0	$1,500
						Miscellaneous hardware (fittings, splice kits, elbows, etc.)				$5,000
			$0	$0	$0	Surveyor and legal costs to obtain and record easements				$20,000
			$0	$0	$0	4-Manholes/Frames/Covers	each	$2,500.00	4.0	$10,000
			$0	$0	$0	Contractor excavation for manholes and duct-bank, repave driveway in area of excavations				$102,000
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
Removal of old overhead line through woods	4.0		$32,000		$8,320					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
Installation of new conduit and wire, splice and install elbows as needed	6.0		$41,947		$2,400					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	40.0		$4,255	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
Design/run project	100.0		$9,604	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
Testing	32.0		$2,797	$0	$672					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management	8.0		$901	$0		**Police Details**	**weeks**	**$2,427**	**1.0**	**$2,427**
TOTAL LABOR/VEHICLES			**$113,373**	**$0**	**$14,152**	**TOTAL MATERIALS/OTHER**				**$156,127**

PROJECT TOTAL: $283,652

CAPITAL PROJECT SUMMARY

Project Name: Aged/Overloaded Transformer Replacement Program

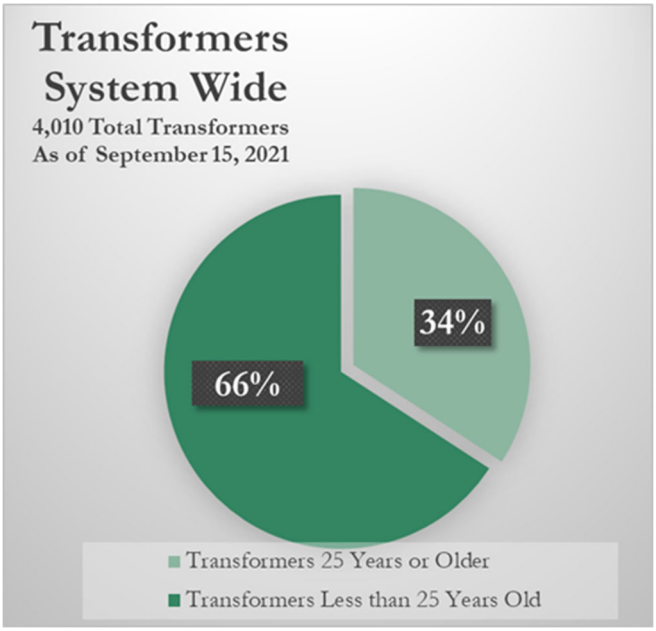
Project #: 668

Project Schedule: Annual

Project Manager: Vaughan Bryan, Senior Distribution Engineer

Reason for Expenditure:

In order to expedite the replacement of aged and over-loaded transformers on the system, the RMLD formalized the Aged/Overloaded Transformer Replacement Program as a separate capital project in 2020. RMLD plans to replace 120-150 aged or overloaded transformers annually either as part of this program or one of the other reliability programs (i.e., URD Upgrades, Stepdown Upgrades, Secondary and Main Upgrades).



Transformers Replaced 2021
108 Total YTD (through August)

	Pad-mount	Pole-Mount
Single Phase	26	75
Three Phase	3	4
Total	**29**	**79**

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 one of the reliability programs, will be replaced under this project. RMLD crews, augmented by contract crews, will replace these transformers.

Barriers:

Difficulties scheduling outages with continued schooling and work from home due to the COVID-19 pandemic.

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

Status Update:
Year-to-date (through August) a total of 108 aged transformers have been replaced as part of this program or one of the other reliability projects as noted above.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Aged/Overloaded Transformer Replacement Program **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
Replace three-phase pad-mount transformers system wide.		6.5	$0	$46,001	$5,980	Miscellaneous underground connectors, elbows, hardware and pads.	per transformer	$1,400.00	60	$84,000
Replace single-phase pad-mount transformers system side.	9.4		$68,524	$0	$8,648					
Replace three-phase pole-mount transformers system wide.		5.25	$0	$37,155	$4,830	Miscellaneous overhead connectors, poles, and hardware	per transformer	$1,000.00	35	$35,000
Replace single-phase pole-mount transformers system wide.	3.5		$25,514		$3,220					
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
Replace single-phase pole-mount transformers system wide.	3.5		$28,000		$7,280					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
Replace single-phase pad-mount transformers system side.	9.4		$65,717		$3,760					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	340.0	168.0	$36,164	$17,348						$0
Engineering: unit rate in hours			**$96**	**$93**						
Prepare construction documents, PoleForeman, 605As, outage setup, outages, GIS updates.	640.8	217.2	$61,540	$20,250						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
Test UG cable connections; commercial customers being off hours	184.7	217.2	$16,145	$18,432	$8,440					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
Test rotation of commercial application; commercial customers being off hours	159.0	104.0	$10,510	$6,674	$5,523					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management	28.6		$3,214	$0		**Police Details**	**weeks**	**$2,427**	**5.4**	**$13,108**
TOTAL LABOR/VEHICLES			**$315,330**	**$145,859**	**$47,681**	**TOTAL MATERIALS/OTHER**				**$132,108**

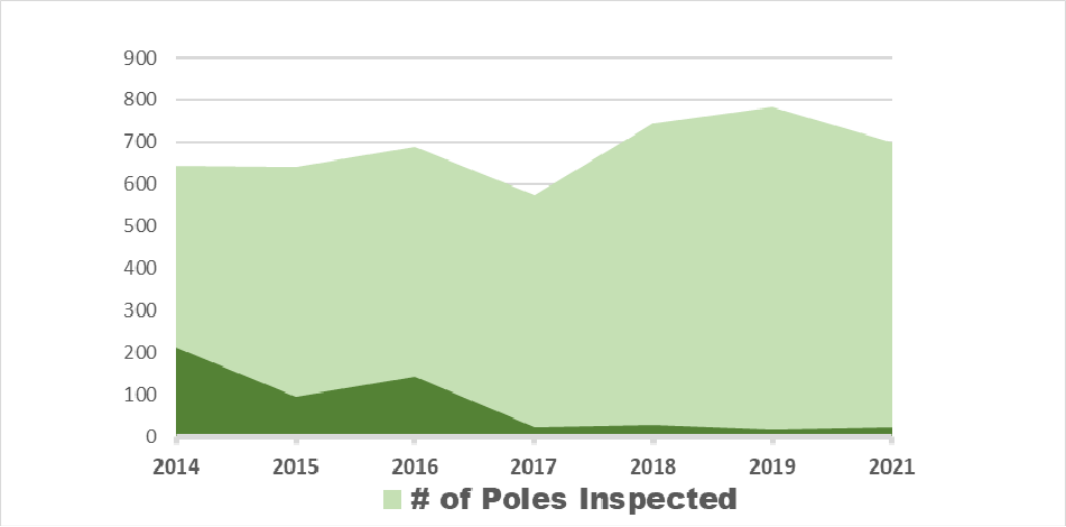
PROJECT TOTAL: $640,979

CAPITAL PROJECT SUMMARY

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

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

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 technologies including resistorgraph technology. This Inspection Program provides RMLD with verifiable data on pole condition. Annual testing takes place each year in the fall. Testing (through 2021), has identified 541 poles that were recommended for replacement. The chart below shows the decline in the number of poles identified as "failed".



Note: Testing was not performed in 2020.

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 replacing 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 302 poles have been replaced, and 281 transfers have been completed (as of September 15, 2021).

CAPITAL PROJECT COST SHEET

PROJECT NAME: Pole Replacement Program, R/NR **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0					$0
			$0	$0	$0					$0
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
Set and transfer 50 poles.	20.0		$160,000		$41,600	Poles	each	$400.00	50.0	$20,000
			$0		$0	Miscellaneous hardware	per pole	$90.00	50.0	$4,500
Service upgrades as necessary	1.2		$9,600		$2,496	Connectors and wires (for service upgrades)	per service	$213.00	50.0	$10,650
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	200.0		$21,273	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
Prepare PoleForemans and Digsafes	40.0		$3,841	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**	**10.0**	**$24,275**
TOTAL LABOR/VEHICLES			**$194,715**	**$0**	**$44,096**	**TOTAL MATERIALS/OTHER**				**$59,425**

PROJECT TOTAL: $298,235

CAPITAL PROJECT SUMMARY

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

Project Schedule: Annual **Project Manager:** Nick D'Alleva,
Assistant General Foreman Grid
Assets & Communications

Reason for Expenditure:
This is a proactive, preventive maintenance program for RMLD substations to increase reliability and prevent premature failure of long-lead substation equipment. United Power Group and RMLD personnel have identified substation equipment that needs to be replaced or upgraded as a result of their condition assessment. The equipment includes breakers, lightning arresters, potential transformers, bushings, and insulators at all substations.

Brief Description/Scope:

In 2022 the RMLD will purchase a spare 35Kv breaker, lightning arresters, and replacement insulator for installation at Station 4 and Station 5.

Barriers:
Availability of replacement parts.

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

Status Update From Prior Fiscal Year:
In 2021 the RMLD replaced the 35Kv lightning arresters for 115/35Kv transformers at Station 4.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Substation Equipment Upgrades **SCHEDULE:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
Insulator replacements	2.7		$19,683	$0	$2,484	35Kv Breaker	each	$45,000.00	1	$45,000
			$0	$0	$0	Lightning arresters	each	$400.00	6	$2,400
			$0	$0	$0	Replacement Insulators	each	$200.00	24	$4,800
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
Testing and installation of lightning arresters	48.0		$4,196	$0	$1,008					$0
Insulator replacements	96.0		$8,392	$0	$2,016					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$32,270**	**$0**	**$5,508**	**TOTAL MATERIALS/OTHER**				**$52,200**

PROJECT TOTAL: $89,978

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:
This annual project is for the purchase of test equipment and tools. These purchases include the replacement or upgrade of existing equipment and new tools and equipment that assist line workers and technicians in performing their jobs safer and more efficiently.

Brief Description/Scope:

In 2022 the Grid Asset and Communications group plans to purchase a meter tester and thermal camera for detecting overheated equipment in order to schedule replacement before premature failure. The RMLD performs quarterly inspection of all substations, underground switches, and capacitor banks to detect any overheated and/or overloaded equipment system wide.

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:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
			$0	$0	$0	Shop Meter Tester	each	$50,000.00	1	$50,000
			$0	$0	$0	Flir Thermal Camera	each	$45,000.00	1	$45,000
			$0	$0	$0	Miscellaneous equipment as needed				$15,000
			$0	$0	$0					
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$0**	**$0**	**$0**	**TOTAL MATERIALS/OTHER**				**$110,000**

PROJECT TOTAL: $110,000

CAPITAL PROJECT SUMMARY

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

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

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 (Residential and Commercial)

SCHEDULE: CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
Install new and upgraded service connections at approximately 350 units.	12.0		$87,478	$0	$11,040	Secondary hardware, brackets, connectors, etc.	per service	$56.00	350	$19,600
			$0	$0	$0	120' of 1/0 - 3/C service wire for each service	per service	$100.00	350.0	$35,000
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
			$0		$0					$0
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews			$0	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
			$0	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**		**$0**
TOTAL LABOR/VEHICLES			**$87,478**	**$0**	**$11,040**	**TOTAL MATERIALS/OTHER**				**$54,600**

PROJECT TOTAL: $153,118

CAPITAL PROJECT SUMMARY

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

Project Schedule: Annual **Project Manager:** Various

Reason for Expenditure:
Routine Construction covers unplanned 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:** CY2022

	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	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			**$7,290**	**$7,077**	**$920**					
Capital Construction	30.0	10.0	$218,695	$70,771	$36,800	Materials as necessary				$300,000
Street Light Installations	4.0		$29,159	$0	$3,680	Materials as necessary				$50,000
			$0	$0	$0					$0
Overhead Contractor 2-man crew - unit rate in weeks			**$8,000**	**N/A**	**$2,080**					
Pole Setting/Transfers	30		$240,000		$62,400	Materials as necessary				$95,000
			$0		$0					$0
Underground Contractor 2-man crew - unit rate in weeks			**$6,991**	**N/A**	**$400**					
Underground Construction	5		$34,956		$2,000	Materials as necessary				$125,000
			$0		$0					$0
			$0		$0					$0
Line Operations Supervision: unit rate in hours			**$106**	**$103**						
Supervision of Line crews	110.0		$11,700	$0						$0
Engineering: unit rate in hours			**$96**	**$93**						
Project Management	400.0		$38,415	$0						$0
			$0	$0						$0
Senior Tech: unit rate in hours			**$87**	**$85**	**$21**					
			$0	$0	$0					$0
			$0	$0	$0					$0
Meter Tech: unit rate in hours			**$66**	**$64**	**$21**					
			$0	$0	$0					$0
Technical Services Manager: unit rate in hours			**$113**	**$109**						
Supervision/Project Management			$0	$0		**Police Details**	**weeks**	**$2,427**	**52.0**	**$126,229**
TOTAL LABOR/VEHICLES			**$572,925**	**$70,771**	**$104,880**	**TOTAL MATERIALS/OTHER**				**$696,229**

PROJECT TOTAL: $1,444,804

2022 OPERATING BUDGET

Reading Municipal Light Department
Six Year Plan
CY22-CY27

	CY22 BUDGET	CY23 BUDGET	CY24 BUDGET	CY25 BUDGET	CY26 BUDGET	CY27 BUDGET
FORECASTED kWh SALES	**663,883,547**	**669,226,164**	**674,649,452**	**680,061,792**	**685,525,136**	**691,040,020**
OPERATING REVENUES						
SALES OF ELEC - BASE	$ 30,099,569	$ 32,040,746	$ 33,897,404	$ 34,251,312	$ 34,596,577	$ 35,464,316
SALES OF ELEC - FUEL	26,522,356	26,607,312	28,566,880	31,399,268	31,434,068	32,186,758
SALES OF ELEC - CAPACITY/TRANSMISSION	** 35,435,495	** 36,922,346	38,516,244	40,074,578	41,865,322	43,773,392
FORFEITED DISCOUNTS	902,987	961,222	1,016,922	1,027,539	1,037,897	1,063,929
EFFICIENCY ELECTRIFICATION	1,991,651	2,007,678	2,023,948	2,040,185	2,056,575	2,073,120
NYPA	(1,057,302)	(1,069,990)	(1,082,830)	(1,095,824)	(1,108,974)	(1,122,281)
TOTAL OPERATING REVENUES	93,894,755	97,469,315	102,938,568	107,697,059	109,881,465	113,439,234
OPERATING EXPENSES						
PURCHASED POWER - FUEL	25,465,054	25,537,322	27,484,050	30,303,444	30,325,094	31,064,477
PURCHASED POWER - CAPACITY	16,978,311	17,226,785	17,485,484	17,615,344	17,877,814	18,150,827
PURCHASED POWER - TRANSMISSION	18,457,184	19,695,561	21,030,760	22,459,234	23,987,508	25,622,565
EFFICIENCY AND ELECTRIFICATION EXPENSE	2,441,101	2,821,348	3,079,398	2,040,185	2,056,575	2,073,120
OPERATING & MAINTENANCE EXPENSE	6,559,972	6,756,771	6,959,474	7,168,259	7,168,259	7,383,306
GENERAL & ADMINISTRATIVE EXPENSE	13,124,771	13,518,514	13,924,070	14,341,792	14,341,792	14,772,045
DEPRECIATION EXPENSE	5,108,876	5,475,656	5,900,186	6,333,686	6,509,756	6,706,706
TOWN PAYMENTS - 2% NET PLANT	1,707,839	1,850,182	2,023,689	2,194,685	2,185,391	2,186,496
TOTAL OPERATING EXPENSES	89,843,108	92,882,139	97,887,110	102,456,628	104,452,189	107,959,543
OPERATING INCOME	4,051,647	4,587,176	5,051,458	5,240,430	5,429,277	5,479,691
NON-OPERATING REVENUES (EXPENSES)						
INTEREST INCOME	300,000	300,000	300,000	300,000	300,000	300,000
OTHER INCOME	850,000	850,000	850,000	850,000	850,000	850,000
VOLUNTARY PAYMENT TO READING	(2,528,587)	(2,550,081)	(2,573,391)	(2,593,356)	(2,614,252)	(2,635,305)
LOSS ON DISPOSAL OF ASSETS	(100,000)	(100,000)	(100,000)	(100,000)	(100,000)	(100,000)
CUSTOMER DEPOSIT INTEREST EXP	(40,000)	(40,000)	(40,000)	(40,000)	(40,000)	(40,000)
TOTAL NON-OPERATING REVENUES (EXPENSES)	(1,518,587)	(1,540,081)	(1,563,391)	(1,583,356)	(1,604,252)	(1,625,305)
NET INCOME	$ 2,533,060	$ 3,047,095	$ 3,488,067	$ 3,657,075	$ 3,825,024	$ 3,854,386
RATE OF RETURN	**5.20%**	**5.28%**	**5.30%**	**5.49%**	**5.66%**	**5.74%**

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 non-operating expenses.
****CY22-CY23 Portion of Projected Increase Supplemented by Rate Stabilization Fund**

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

	CY20 BUDGET	CY20 ACTUAL	CY20 BUDGET/ACTUAL % CHANGE	CY21 BUDGET	CY21 8 MOS ACTUAL 4 MOS BUDGET	CY21 BUDGET/ACTUAL % CHANGE	CY22 BUDGET
Operating Revenues							
Base Revenue	$ 29,040,738	$ 27,563,289	(5.09%)	$ 28,292,988	$ 27,686,586	(2.14%)	$ 30,099,569
Fuel Revenue	28,063,578	25,190,503	(10.24%)	27,894,454	26,082,849	(6.49%)	26,522,356
Purchased Power Capacity & Transmission	37,709,613	32,421,014	(14.02%)	35,465,548	33,865,547	(4.51%)	35,435,495
Forfeited Discounts	871,222	825,514	(5.25%)	929,005	969,027	4.31%	902,987
Energy Conservation Revenue	658,683	642,683	(2.43%)	653,994	659,193	0.80%	1,991,651
NYPA Credit	(1,138,021)	(1,070,670)	(5.92%)	(1,143,574)	(1,155,827)	1.07%	(1,057,302)
Total Operating Revenues	95,205,813	85,572,333	(10.12%)	92,092,414	88,107,375	(4.33%)	93,894,755
Expenses							
Power Expenses							
555 Purchased Power - Fuel	26,925,557	25,060,119	(6.93%)	26,750,880	26,373,346	(1.41%)	25,465,054
555 Purchased Power - Capacity	22,457,141	18,181,263	(19.04%)	17,687,368	16,537,603	(6.50%)	16,978,311
565 Purchased Power - Transmission	15,252,472	14,016,892	(8.10%)	17,778,180	16,951,257	(4.65%)	18,457,184
Total Purchased Power	64,635,170	57,258,273	(11.41%)	62,216,428	59,862,206	(3.78%)	60,900,549
Operating and Maintenance Expenses							
580 Supervision and Engineering	1,127,868	1,040,014	(7.79%)	1,143,193	1,029,422	(9.95%)	1,153,589
581 Station/Control Room Operators	476,641	485,450	1.85%	497,935	479,534	(3.70%)	538,942
582 Station Technicians	543,129	442,272	(18.57%)	448,015	519,774	16.02%	674,564
583 Line General Labor	468,999	584,261	24.58%	1,058,760	696,990	(34.17%)	1,124,845
586 Meter General	166,732	159,674	(4.23%)	192,017	201,069	4.71%	197,788
588 Materials Management	504,493	442,388	(12.31%)	455,963	441,064	(3.27%)	471,160
593 Maintenance of Lines - Overhead	1,003,333	400,587	(60.07%)	558,801	462,425	(17.25%)	552,225
593 Maintenance of Lines - Tree Trimming	899,090	631,152	(29.80%)	918,849	696,410	(24.21%)	907,776
594 Maintenance of Lines - Underground	112,590	56,754	(49.59%)	80,896	51,539	(36.29%)	88,139
595 Maintenance of Lines - Transformers	223,438	188,975	(15.42%)	227,331	313,869	38.07%	373,160
598 Line General Leave Time Labor	569,169	414,901	(27.10%)	447,878	380,853	(14.97%)	477,783
Total Operating and Maintenance Expenses	6,095,483	4,846,427	(20.49%)	6,029,637	5,272,947	(12.55%)	6,559,972
General & Administrative Expenses							
903 Customer Collection	1,181,516	1,293,878	9.51%	969,389	1,035,390	6.81%	1,176,246
904 Uncollectible Accounts	105,000	41,701	(60.28%)	105,000	105,000	0.00%	105,000
916 Integrated Resources	647,519	655,991	1.31%	601,419	743,600	23.64%	987,280
916 Efficiency and Electrification Expense	958,765	986,585	2.90%	1,214,035	1,954,751	61.01%	2,441,101
920 Administrative and General Salaries	2,109,933	2,038,351	(3.39%)	2,251,022	1,886,955	(16.17%)	2,373,838
921 Office Supplies	20,000	8,504	(57.48%)	20,000	20,000	0.00%	20,000
923 Outside Services - Legal	498,400	544,220	9.19%	497,000	482,625	(2.89%)	455,918
923 Outside Services - Contract	361,250	349,362	(3.29%)	508,400	518,489	1.98%	735,700
923 Outside Services - Education	266,975	61,935	(76.80%)	257,821	152,769	(40.75%)	329,826
924 Property Insurance	437,500	383,382	(12.37%)	489,700	443,616	(9.41%)	556,500
925 Injuries and Damages	7,678	3,723	(51.51%)	25,600	34,078	33.12%	25,600
926 Employee Pensions and Benefits	3,702,391	4,766,532	28.74%	3,697,458	3,697,432	(0.00%)	3,821,325
930 Miscellaneous General Expense	317,286	257,187	(18.94%)	506,290	478,511	(5.49%)	580,127
931 Rent Expense	212,000	194,542	(8.24%)	212,000	207,530	(2.11%)	212,000
933 Vehicle Expense	333,600	279,023	(16.36%)	388,600	361,234	(7.04%)	379,000
933 Vehicle Expense - Capital	(225,125)	(336,159)	49.32%	(354,544)	(351,628)	(0.82%)	(276,428)
935 Maintenance of General Plant - Technology	394,440	544,988	38.17%	463,775	511,054	10.19%	713,120
935 Maintenance of Building & Garage	908,880	1,178,224	29.63%	933,475	847,549	(9.20%)	929,718
Total General & Administrative Expenses	12,238,008	13,251,970	8.29%	12,786,440	13,128,954	2.68%	15,565,872
Other Operating Expenses							
403 Depreciation	4,734,000	4,699,207	(0.73%)	4,916,345	4,883,756	(0.66%)	5,108,876
408 Voluntary Payments to Towns	1,617,660	1,607,009	(0.66%)	1,654,460	1,655,434	0.06%	1,707,839
Total Other Expenses	6,351,660	6,306,216	(0.72%)	6,570,805	6,539,190	(0.48%)	6,816,715
Operating Income	5,885,492	3,909,446	(33.57%)	4,489,104	3,304,079	(26.40%)	4,051,647
Non-operating Revenues (Expenses)							
415 Contributions in Aid of Construction	-	-	0.00%	300,000	30,000	0.00%	50,000
419 Interest Income	350,000	390,425	11.55%	500,000	192,000	(61.60%)	300,000
419 Other Income	850,000	546,048	(35.76%)	795,000	645,000	(18.87%)	710,000
421 Intergovernmental Grants	-	451,761	0.00%	90,000	240,000	0.00%	90,000
426 Return on Investment Payment to Reading	(2,480,506)	(2,480,506)	(0.00%)	(2,480,506)	(2,480,506)	0.00%	(2,528,587)
426 Loss on Disposal	(100,000)	(163,530)	63.53%	(100,000)	(100,000)	0.00%	(100,000)
431 Interest Expense	(25,000)	(27,777)	11.11%	(45,000)	(45,000)	0.00%	(40,000)
Total Non-operating Revenues (Expenses)	(1,405,506)	(1,283,579)	(8.67%)	(940,506)	(1,518,506)	61.46%	(1,518,587)
Net Income	$ 4,479,987	$ 2,625,868	(41.39%)	$ 3,548,598	$ 1,785,573	(49.68%)	$ 2,533,060

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

	CY22 BUDGET	CY21 BUDGET	Change in Budget %
Operating Revenues			
Base Revenue	$ 30,099,569	$ 28,292,988	6.39%
Fuel Revenue	26,522,356	27,894,454	(4.92%)
Purchased Power Capacity/Transmission	35,435,495	35,465,548	(0.08%)
Forfeited Discounts	902,987	929,005	13.40%
Energy Conservation Revenue	1,991,651	653,994	204.54%
NYPA	(1,057,302)	(1,143,574)	(7.54%)
Total Operating Revenues	93,894,755	92,092,414	2.12%
Expenses			
Power Expenses			
555 Purchased Power - Fuel	25,465,054	26,750,880	(4.81%)
555 Purchased Power - Capacity	16,978,311	17,687,368	(4.01%)
565 Purchased Power - Transmission	18,457,184	17,778,180	3.82%
Total Purchased Power	60,900,549	62,216,428	(2.12%)
Operating and Maintenance Expenses			
580 Supervision and Engineering	1,153,589	1,143,193	0.91%
581 Station/Control Room Operators	538,942	497,935	8.24%
582 Station Tech	674,564	448,015	50.57%
583 Line General Labor	1,124,845	1,058,760	6.24%
586 Meter General	197,788	192,017	3.01%
588 Materials Management	471,160	455,963	3.33%
593 Maintenance of Lines - Overhead	552,225	558,801	(1.18%)
593 Maintenance of Lines - Tree Trimming	907,776	918,849	(1.21%)
594 Maintenance of Lines - Underground	88,139	80,896	8.95%
595 Maintenance of Lines - Transformers	373,160	227,331	64.15%
598 Line General Leave Time Labor	477,783	447,878	6.68%
Total Operating and Maintenance Expenses	6,559,972	6,029,637	8.80%
General & Administrative Expenses			
903 Customer Collection	1,176,246	969,389	21.34%
904 Uncollectible Accounts	105,000	105,000	0.00%
916 Integrated Resources	987,280	601,419	64.16%
916 Efficiency and Electrification Expense	2,441,101	1,214,035	101.07%
920 Administrative and General Salaries	2,373,838	2,251,022	5.46%
921 Office Supplies	20,000	20,000	0.00%
923 Outside Services-Legal	455,918	497,000	(8.27%)
923 Outside Services-Contract	735,700	508,400	44.71%
923 Outside Services-Education	329,826	257,821	27.93%
924 Property Insurance	556,500	489,700	13.64%
925 Injuries and Damages	25,600	25,600	0.00%
926 Employee Pensions and Benefits	3,821,325	3,697,458	3.35%
930 Miscellaneous General Expense	580,127	506,290	14.58%
931 Rent Expense	212,000	212,000	0.00%
933 Vehicle Expense	379,000	388,600	(2.47%)
933 Vehicle Expense - Capital	(276,428)	(354,544)	(22.03%)
935 Maintenance of General Plant - Technology	713,120	463,775	53.76%
935 Maintenance of Building & Garage	929,718	933,475	(0.40%)
Total General & Administrative Expenses	15,565,872	12,786,440	21.74%
Other Operating Expenses			
403 Depreciation	5,108,876	4,916,345	3.92%
408 Voluntary Payments to Towns	1,707,839	1,654,460	3.23%
Total Other Expenses	6,816,715	6,570,805	3.74%
Operating Income	4,051,647	4,489,104	(6.39%)
Non-operating Revenues (Expenses)			
415 Contributions in Aid of Construction	50,000	300,000	(83.33%)
419 Interest Income	300,000	500,000	(40.00%)
419 Other Income	710,000	795,000	(10.69%)
421 Intergovernmental Grants	90,000	90,000	0.00%
426 Return on Investment Payment to Reading	(2,528,587)	(2,480,506)	1.94%
426 Loss on Disposal	(100,000)	(100,000)	0.00%
431 Interest Expense	(40,000)	(45,000)	(11.11%)
Total Non-operating Revenues (Expenses)	(1,518,587)	(940,506)	61.46%
Net Income	$ 2,533,060	$ 3,548,598	(24.38%)

Reading Municipal Light Department
Operating Budget Supplemental Information
Budgeted and Actual Fixed and Semi-Variable Costs

	CY 20 BUDGET	CY 20 ACTUAL	CY 21 BUDGET	CY 21 8 MOS ACTUAL 4 MOS BUDGET	CY 22 BUDGET	CY 22 % OF BUDGET
FIXED COSTS						
Purchased Power - Fuel	$ 26,925,557	$ 25,060,119	$ 26,750,880	$ 26,373,346	$ 25,465,054	27.53%
Purchased Power - Capacity	22,457,141	18,181,263	17,687,368	16,537,603	16,978,311	18.35%
Purchased Power - Transmission	15,252,472	14,016,892	17,778,180	16,951,257	18,457,184	19.95%
						65.82%
Depreciation Expense	4,734,000	4,699,207	4,916,345	4,883,756	5,108,876	5.52%
Return on Investment Payment to Reading	2,480,506	2,480,506	2,480,506	2,480,506	2,528,587	2.73%
Town Payments - 2% of Net Plant	1,617,660	1,607,009	1,654,460	1,655,434	1,707,839	1.85%
Loss on Disposal of Assets	100,000	163,530	100,000	100,000	100,000	0.11%
TOTAL FIXED COSTS	73,567,336	66,208,525	71,367,739	68,981,902	70,345,851	**76.04%**
SEMI-VARIABLE COSTS						
Labor Expense	8,787,642	7,896,138	8,352,246	7,817,430	9,405,351	10.17%
Labor - Capital	(1,167,165)	(1,608,870)	(1,216,814)	(1,561,885)	(1,483,143)	-1.60%
						8.56%
Overtime Expense	1,051,800	1,042,373	1,066,200	1,108,684	1,036,780	1.12%
Overtime - Capital	(176,732)	(333,903)	(190,534)	(310,528)	(184,731)	-0.20%
						0.92%
Employee Benefits/Pension	4,413,754	5,287,591	4,508,090	4,059,694	4,782,020	5.17%
Employee Benefits/Pension - Capital	(774,085)	(521,059)	(810,632)	(362,262)	(960,695)	-1.04%
						4.13%
Other Operating and Maintenance Expense	1,650,981	2,513,183	2,161,285	2,236,177	2,575,148	2.78%
Efficiency and Electrification Expense	958,765	986,585	1,214,035	1,954,751	2,441,101	2.64%
Tree Trimming Services	899,090	591,686	918,849	696,410	907,776	0.98%
Contract/Consulting Services	361,250	349,362	508,400	518,489	735,700	0.80%
Software/Hardware Maintenance	394,440	544,988	463,775	511,054	713,120	0.77%
Property Insurance	437,500	383,382	489,700	443,616	556,500	0.60%
Legal Expense	498,400	544,220	497,000	482,625	455,918	0.49%
Vehicle Expense	333,600	279,023	388,600	361,234	379,000	0.41%
Vehicle Expense - Capital	(225,125)	(336,159)	(354,544)	(351,628)	(276,428)	-0.30%
Transformer Maintenance (Hazardous Material)	210,000	186,275	215,000	313,869	360,000	0.39%
Training & Tuition Reimbursement Expense	266,975	61,935	257,821	152,769	329,826	0.36%
Rent Expense	212,000	194,542	212,000	207,530	212,000	0.23%
Bad Debt Expense	105,000	41,701	105,000	105,000	105,000	0.11%
Injuries & Damages	70,400	3,723	25,600	34,078	25,600	0.03%
RMLB/CAB	30,000	10,954	30,000	9,795	30,000	0.03%
Office Supplies	20,000	8,504	20,000	20,000	20,000	0.02%
TOTAL SEMI-VARIABLE COSTS	18,358,491	18,126,175	18,861,077	18,446,900	22,165,844	**23.96%**
TOTAL	$ 91,925,827	$ 84,334,700	$ 90,228,816	$ 87,428,802	$ 92,511,695	**100.00%**

2022 POWER SUPPLY

Description of RMLD's Power Supply Resources for 2022

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. 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 MWs

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. RMLD has a Life of Unit (LOU) entitlement for 19.516% of the unit which is equivalent to approximately 33 MWs. 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 MWs

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 market 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. 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 MWs

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. RMLD has a Life of Unit (LOU) entitlement for 0.635% or approximately 8 MWs of the unit. This is a non-carbon generating resource and RMLD is entitled to the associated output certificates for its share of the facility.

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 MWs

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 has been paid off as of 2018. RMLD has a LOU agreement for 0.404% of the units which equates to approximately 4.6 MWs. This is a non-carbon generating resource and RMLD is entitled to the associated output certificates for its share of the facility.

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 MWs

New York Power Authority (NYPA)

RMLD receives inexpensive hydroelectric power from NYPA at its generating stations in Niagra and St. Lawrence NY. 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. This is a non-carbon

generating resource and RMLD is entitled to the associated output certificates for its share of the facility.

Hydro-Quebec Interconnection

The Hydro-Quebec Interconnection Phase 1 is an approximate 2,000 MW, DC 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 electric utitilies. RMLD has an entitlement of approximately 0.47% of the capacity of the facility from this contract. Currently, RMLD sells it share of the facility's capacity.

The Hydro-Quebec Interconnection Phase 2 is a 450 kV DC electric transmission line connecting the Canadian utility, Hydro Quebec's hydro facilities at La Grande in James Bay with Sandy Pond in Massachusetts. This was a joint effort between Hydro Quebec and a number of New England electric utilities. RMLD receives approximately 0.48% of the capacity of the facility from this contract. Currently, RMLD sells it share of the facility's capacity.

NextEra: TFA

In December, 2017 RMLD signed a Master Supply 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 2025. Under the TFA, RMLD has currently secured 284,947 MWHs for 2022, 174,373 MWHs for 2023, 82,300 MWHs for 2024 and 5,363 MWHs for 2025.

Eagle Creek Energy Holdings

In March, 2011 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. 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. These are non-carbon generating resources and RMLD is entitled to the associated output certificates for its share of the facilities.

- **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).

- **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).

- **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).

- **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).

Collins Hydro

In August, 2013, RMLD signed a purchase power agreement 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. RMLD receives enery only from this contract. The average annual generation is approximately 5,667 MWHs per year. This is a non-carbon generating resource and RMLD is exploring acquisiton of the associated output certificates for the facility.

Pioneer Hydro

In August, 2013, RMLD signed a purchase power agreement 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. RMLD receives enery only from this contract. The average annual generation is approximately 4,480 MWHs per year. This is a non-carbon generating resource and RMLD is exploring acquisition of the associated output certificates for the facility.

Hoisery Mills Hydro

In March, 2014, RMLD signed a purchase power agreement 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, 2024. RMLD receives enery only from this contract. The average annual generation is approximately 2,046 MWHs per year. This is a non-carbon generating resource and RMLD is exploring acquisition of the associated output certificates for the facility.

Aspinook Hydro

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

a non-carbon generating resource and RMLD is exploring acquisition of the associated output certificates for the facility.

Saddleback Ridge Wind

In December, 2013, 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. RMLD receives enery plus all attributes under this contract. The average annual generation is estimated to be approximately 15,820 MWHs per year. This is a non-carbon generating resource and RMLD is entitled to the associated output certificates for its share of the facility.

Jericho Wind

In November, 2014, RMLD signed a purchase power agreement 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 into commercial operation in December, 2015. RMLD receives energy plus all attributes from this contract. The average annual generation is estimated to be approximately 10,788 MWHs per year. This is a non-carbon generating resource and RMLD is entitled to the associated output certificates for its share of the facility.

One Burlington - Solar

In March, 2015, RMLD signed a purchase power agreement with CREECA Energy, LLC for the output of 2 MW 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 MWHs per year. This is a non-carbon generating resource and RMLD is exploring acquisition of the associated output certificates for the facility, once the 40 quarters of Solar (SRECs) has run its course.

Altus Power – Community Solar

In March, 2016, RMLD signed a purchase power agreement with ECA Solar, LLC for the output of a 1MW 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 twenty years. The average annual generation is estimated to be approximately 1,700 MWHs 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. This is a non-carbon generating resource and RMLD is exploring acquisition of the associated output certificates for the facility, once the 40 quarters of Solar (SRECs) has run its course.

Kearsage – Community Solar

In October, 2017, RMLD signed a purchase power agreement with Kearsage Wilmington, LLC for the output of 1.8MW 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 twenty years. The average annual generation is estimated to be approximately 2,376 MWHs per year. This project is RMLD's second Solar Choice project and is fully subscribed by 617 residential and commercial customers. This is a non-carbon generating resource and RMLD is exploring acquisition of the associated output certificates for the facility, once the 40 quarters of Solar (SRECs) has run its course.

Battery Energy Storage System – NextEra

In December, 2017, RMLD was 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 MW 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, RMLD signed a purchase power agreement with FirstLight Power Resources Management, LLC. for 10.3% of the output of the Shepaug 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. This is a non-carbon generating resource and RMLD is entitled to the associated output certificates for its share of the facility.

Gravity Renewables

RMLD has executed contracts with Gravity Renewables for hydroelectric generation at Cabot-Turners Falls and a facility in southern Conecticut. The Cabot-Turners Falls contract is anticipated to deliver 22,254 MWHs in 2022, 37,571 MWHs in 2023, and 33,728 MWHs from 2024 through 2030. The southern Connecticut plant is expected to produce 25,000 MWHs annually from 2021 through 2030.

RMLD has signed a Letter of Intent to purchase the output of the Dahowa Plant in Upstate New York beginning in 2021. Output from the plant is expected to be 35,000 MWHs annually from 2022 thorugh 2045. RMLD is in active negotiations for the output from Plant #4, another Upstate New York facility that is expected to deliver 25,000 MWHs annually beginning in 2022 and running through 2045. These are non-carbon generating resources and RMLD is entitled to the associated output certificates for its share of the facilities.

NextEra

RMLD has purchased a 5 MW block of around the clock power for the years 2022-2024. This is a bilateral purchase picked up at an opportunistic price and does not identify the source of the enegy. Energy delivereed under the contract will be 43,800 MWHs annually.

RoxWind

RMLD has contracted for 50% of the output from 4 wind turbines being constructed in Maine; RMLD's share of the annual output from these units will be 25,200 MWHs per year, beginning in the 4th quarter of 2021 and continuing for 20 years, through 2041. This is a non-carbon generating resource and RMLD is entitled to the associated output certificates for its share of the facility.