

READING MUNICIPAL LIGHT DEPARTMENT



2023 BUDGET

October 1, 2022

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RMLD

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 CY21)

SERVICE TERRITORY	51 square miles serving Reading, North Reading, Wilmington, and part of Lynnfield
TOTAL OPERATING REVENUES	\$86,403,502
POWER PURCHASED	\$60,291,708
NUMBER OF CUSTOMERS/ACTIVE METERS	30,504
ANNUAL PEAK DEMAND	167,600 kW on June 29, 2021, hour ending 2:00 pm
ANNUAL SALES	658,344,436 kWh
PLANT VALUE	Gross: \$171,234,000 Net: \$86,032,000
SUPPLY VOLTAGE	115 Kv
SUPPLY CAPACITY (tie points)	<p>Station 4:</p> <ul style="list-style-type: none"> (3) 60 MVA Transformers (2) 35 MVA Transformers – feeds Station 5 250 MVA Connected, 190 MVA Firm <p>Station 3:</p> <ul style="list-style-type: none"> (2) 60 MVA Transformers 120 MVA Connected, 60 MVA Firm
DISTRIBUTION SYSTEM VOLTAGE	13,800 volt wye 4,160 volt wye
OVERHEAD PRIMARY LINES	382.01 miles
UNDERGROUND PRIMARY LINES	156.25 miles
DISTRIBUTION TRANSFORMERS	4,029 Transformers – 318.072 MVA Capacity
STATION TRANSFORMER CAPACITY	370 MVA Capacity
UTILITY POLES	<p>18,135 poles</p> <p><i>Pole Ownership:</i> 50% Verizon, 50% RMLD</p> <p><i>Pole Custodial By Town:</i></p> <ul style="list-style-type: none"> North Reading – RMLD Lynnfield – Verizon Reading <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • all poles with 35 kV sub-transmission circuits, and Concord Street – RMLD • all other locations in Wilmington – Verizon

APPLICATION SOFTWARE	
	<div> <div> 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 </div> <div> LexisNexis Meraki ManagerPlus MIIsoft – 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 Fortinet </div> </div>
CONTACT INFORMATION	
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Fax:	781-942-2409
Website:	www.rmld.com
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KEY PERSONNEL	
Interim General Manager	Gregory Phipps email: gphipps@rmld.com
Director of Business and Finance	Benjamin Bloomenthal email: bbloomenthal@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	John Pelletier email: jpelletier@rmld.com
Director of Integrated Resources	Gregory Phipps email: gphipps@rmld.com
GOVERNING BODY	
	Marlena Bitá Robert Coulter Philip B. Pacino John Stempeck David Talbot
Number of Employees	76
Year Founded	1894

2023 CAPITAL BUDGET

PLANNED PROGRAMS

READING MUNICIPAL LIGHT DEPARTMENT														
Capital Improvements CY23 thru CY28														
\$ Shown in thousands														
LINE #	PAGE #	TOWN	PROJ #	FERC #	PROJECT NAME	CY22 BUDGET	CY22 EST.	CY23 PLAN EST.	CY24	CY25	CY26	CY27	CY28	BRIEF DESCRIPTION
1	n/a	A	129	390	Master Facilities Site Plan (ON-HOLD)									Master Facilities Site Plan to be updated in CY23 in the context of renewed progress with the Town of Reading during 2022. During 2022, RMLD and Reading Select Board and Town Planning staff have renewed discussions on long-term Ash Street campus site planning, in coordination with the Barbas family. RMLD leadership will provide updates and solicit input from CAB.
2	19	R	104	361/373	RMLD Lighting (LED) Upgrade Program	125	29	100						CY23: Convert existing interior/exterior lighting to LED fixtures - Ash Street Campus.
3	21	A	095	390	Building/Grounds Upgrades	259	69	150	50	50	50	50	50	CY22: Station 3 - Back-up Generator to be completed. Transformer Rack/Pole Yard Design and Upgrade at Station 3 - cancelled. CY23: access road to pole yard at Station 3 to be paved.
4	23	R	098	391	Office Upgrades - 230 Ash Street	110	80	200	30	30	30	30	30	CY22: design services for 230 Ash Street office renovations; AV equipment purchased and installed. CY23: 230 Ash Street office renovations will be completed.
5	25	A	119	398	Security Upgrades - All Sites	106	145	325	325	30	30	30	30	Physical Security Assessment complete. CY23-CY24: New security system to be designed, purchased and implemented.
6	27	A	118	392	Rolling Stock Replacement (vehicles, trailers, fork trucks)	744	377	1,247	425	640	425	640	425	Scheduled vehicle replacement, following Fuel Efficiency OP 19-07 FM, is based on Fleet Assessment and the Electrification Program. CY22: received material handler (\$284K- CY2021 carry-over); dump truck with sander (\$85K - 2021 carry-over); SUV and Grid Asset Van in procurement process. CY23: van and trouble truck (carry-over from CY22); digger derrick, two electric pickup trucks, and one ePTO material handler to be bid and purchased.
7	31	A	099	392	Electric Vehicle Supply Equipment (EVSE)	744	518	964	844	835	700	528	361	CY22: Five dual-head L2 units installed (three in Reading; two in Wilmington) (CY21 carryover); one DCFC and seven L2 units will be installed by the end of 2022. CY23: nine Level 2 and four DCFC units to be purchased and installed; one L2 (FY22 carryover) to be installed.
8	35	A	127	382	Hardware Upgrades	105	70	135	125	125	125	130	135	CY23: Miscellaneous workstations: replacements/new employees. Replace roughly 1/3 of workforce workstations.
9	37	A	128	383	Software and Licensing	190	14	175	100	100	110	110	115	CY23: Adhoc software needs; IT asset/device manager (carry-over); and CMR system for customer relationship management for key accounts (carry-over).
10	39	A	138	383	Customer Portal (Mobile APP)	100	25	175						CY22-23: Develop two-way facing customer portal mobile customer application
11	43	A	139	382	IT Infrastructure Enhancements	370	98	150			500	300	200	CY23: Implement further enhancements to network by replacing switches at the core and substations.
12	45	A	140	382/383	IT Security	305	40	250	100	100	285	250	250	CY23: Add network visibility and SIEM software to environment. Provide miscellaneous security upgrades throught the year.
13	49	R	133	362	Station 4 CCTV Replacement	140	48	193						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.
14	51	R	130	362	Relay Protection Upgrades - Station 4	150	50	219						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 National Grid/Eversource. CY22: Engineering design. CY23: materials and labor.
15	53	W/R/ NR	102	367	Pad-mount Switchgear Upgrade at Industrial Parks	764	406	615						FY18-CY23: Starting in FY18, replace all 15 kV pad-mount switchgear at industrial parks. Twenty units have been replaced as of September 2022; one additional switches will be replaced in the fall of 2022. CY23: RMLD will install the next six units (including two MOS units).
16	55	A	110	370	Primary Metering Inspection and Upgrade Program	100	100	170	100	80				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	57	R	109	364/367	35kV Underground Cable Upgrade - 4P9 Substation 4			398						Upgrade 35 kV underground cables that make up circuit 4P9. CY22: 350 MCM cable ordered. CY23: poles and terminations to be ordered and installed.
18	59	W	136	364/365	Pole Line Upgrade - Fordham Road, Wilmington			473						Pole Line Upgrade to extend 3W13 circuit for Fordham Road BESS Project.
19	61	W	132	364/367	5W4/5W5 Getaway Improvements			269						Station 5: Upgrade feeders from substation to risers to increase feeders' ampacity.
	63	W	105		NEW WILMINGTON SUBSTATION									
20				360	Purchase Land in Wilmington	650	4,215							
21				361/362/ 366/367	Wilmington Substation Construction & Commissioning	195	0	2,993	10,513	2,070				Conceptual design, permitting, procurement of materials, construction, commissioning, and all required materials and labor to bring the proposed Wilmington substation online.
22	n/a	W	124	364/365	MA-125 Pole Line Installation for New Wilmington Substation				372	372				This project covers a ~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.
23	n/a	W	TBD	365	Distribution Improvements Associated with New Wilmington Substation				1,000	1,000	500			The main objective of the new Wilmington substation will be to transfer existing Station 4 circuits. The new Wilmington substation will be designed for load growth 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.
24	65	A	103		GRID AUTOMATION, MODERNIZATION & OPTIMIZATION									Fifteen-year plan to implement Technology Road Map for grid efficiency, reduction of losses, etc.
				365	Scada- Mate Switches	300	300	315	409	450	495	545	599	Installation of 4 switches/year plus IntelliTeam licenses
				365	IntelliRupter®	139	139	150	196	215	237	260	286	Installation of 2 switches/year plus IntelliTeam licenses
				365	ABB Reclosers	208	107	264	290	319	351	386	100	Installation of new/replacement of older reclosers on the system.
				383	Cap Bank Automation	49	49							Cap bank automation will be accomodated through "Communication to Field Devices" program.
				383	Software Integration	26	26	37	39	41	43	45	47	Integration of AMI/Scada-Mate switches/OMS
				397	Communication to Field Devices	156	156	552	302	302	302	302	302	Implement study recommendations completed in CY22 by Burns & McDonnell.

READING MUNICIPAL LIGHT DEPARTMENT														
Capital Improvements CY23 thru CY28														
\$ Shown in thousands														
LINE #	PAGE #	TOWN	PROJ #	FERC #	PROJECT NAME	CY22 BUDGET	CY22 EST.	CY23 PLAN EST.	CY24	CY25	CY26	CY27	CY28	BRIEF DESCRIPTION
				383	Meter Data Management (MDM)	281		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 create RFP for both MDM and AMI/AMR metering project. CY22: Project manager hired (PSE). CY23-Q1: installation.
				383	Power Factor Correction/VVO		77							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 CY22. Testing for implementation will be completed in CY22.
25	73	A	112	361/370	AMI Mesh Network Expansion & Meter Replacement	1,211	0	1,290	2,509	2,458	2,531			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. CY22-26: PSE hired to upgrade the existing AMI/AMR system to the new mesh metering AMI technology.
26	77	A	117	370	Meters and Primary Meters (for stock)	80	80	60	40	20	20	20	20	Purchase primary meters and meters (with disconnect option as available) for new construction, upgrades and failures.
27	79	W	202	364/365/373	Force Account (MassDOT): Lowell at Woburn Street, W			383						Mass DOT to widen Lowell Street and Woburn Street; upgrade traffic signals. RMLD to set 17 poles, Verizon to set/relocate eight poles. RMLD to transfer all construction.
28	n/a	W	TBD	364/365/373	Force Account (MassDOT): Route 38 Bridge over MBTA, W				166					DOT to install bridge. Verizon to set eleven poles; RMLD to transfer construction to new poles.
29	n/a	W	TBD	364/365/373	Force Account (MassDOT): Butters Row over MBTA, W				200					DOT will replace Butters Row bridge and re-align the Cross Street/Butters Row/Main Street intersection. Verizon to replace ten poles; RMLD to transfer existing construction on Main Street and run new primary over bridge.
30	81	A	116	365/366/367/368	Transformers and Capacitors Purchase (Stock and Projects)	751	1,168	5,759	2,000	2,000	2,000	2,000	2,000	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)									
31	83	A	458	365	Overhead Upgrade Program (Primary, Secondary and Main Replacements) All Towns	309	409	460	380	389	398	398	398	Repair as necessary secondary/main services and connectors prioritized by age as determined by system-wide inspection. Various areas targeted in CY23 (see project description).
32	85	A	107	365	13.8kV Upgrade (Step-down Area, etc.) - All Towns	623	632	134	200	333	302	307	316	Convert step-down areas to 13.8kV. Remove antiquated equipment and step-downs to lower losses and improve system efficiency. Various areas targeted in CY23 (see project description).
33	87	A	106	366/367/368	UG Facilities Upgrades (URDs, Manholes, etc.) - All Towns	622	300	569	412	424	437	437	450	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. Various areas targeted in CY23 (see project description).
34	89	R	742	366/367	Gazebo Circle, Reading, Underground Feed Relocation	284	15	340						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
35	91	A	668	366/367/368	Aged/Overloaded Transformer Replacement Program	641	150	512	527	543	559	576	593	Labor associated with aged transformer replacements.
36	93	R/NR	175	364	Pole Replacement Program, R and NR	298	200	599	617	307	316	326	336	Replace poles identified through the Pole Inspection Program (~700 poles/year inspected). This will include transfers and replacement of secondary services as necessary. CY23-24: replace 100 poles per year; 50 poles forecast for 2025-2028.
37	95	R/NR/W	111	362	Substation Equipment Upgrade	90	80	177	50	30	30	30	30	Upgrade various equipment at substations as needed per RMLD's Preventative Maintenance Programs. CY23: Purchase of spare 115Kv vacuum breaker, transformer breathers, and insulators.
38	97	A	115	394/395	Power/Lab and Tool Equipment	110	116	105	30	30	30	30	30	CY23: Power tools and equipment including hydraulic cable cutters, DC hi-potential tester and miscellaneous items as needed.
39	99	A	various	369	Service Connections (Residential and Commercial) - All Towns	153	100	205	211	217	224	231	238	Install new and upgraded residential and commercial services as requested. Includes hardware, brackets, wires and connectors.
40	101	A	various	various	Routine Construction - All Towns	1,445	1,750	1,458	1,501	1,546	1,593	1,640	1,690	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)
41	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 four circuits on the Industrial Way pole line, 4W4, 4W12, 4W24 and 4W28.
42	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.
43	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. RMLD will replace cable, upgrade transformers, and transfer secondary cable, services and street lights. Benefit to long-term reliability.
44	n/a	R	136		Credit Union Renovation	85	0							Change in scope of work; walls painted and AC units replaced in CY22; no other work anticipated.
45	n/a	A	122	382	New Production Environment Disaster Recovery		13							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.
46	n/a	R	214	364/365/373	Force Account (MassDOT): Main & Hopkins, R	98	150							Widen Main Street and install traffic lights at the intersections of Hopkins and Main, and Summer and Main.
47	n/a	NR	125	364/367	3W18 Getaway Improvements	108	240							Construction/improvements of OH/UG to result in significant added capacity to 3W18 and moderate increase in capacity to remaining Station 3 circuits.
TOTAL						13,226	12,540	22,850	24,646	15,314	13,000	9,600	9,031	

Scheduled to be completed in 2022.

	CY22 BUDGET	CY22 EST.	CY23 PLAN EST.	CY24	CY25	CY26	CY27	CY28
Total Additions:	13,226	12,540	22,850	24,646	15,314	13,000	9,600	9,031
TABLE 1: PLANT VALUES & DEPRECIATION EXPENSE:								
Plant in Service (Beginning)	171,562	171,233	182,773	204,623	228,269	242,583	254,583	263,183
Additions	13,226	12,540	22,850	24,646	15,314	13,000	9,600	9,031
Adjustments (Property Retirement)	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000
Plant in Service (Ending)	183,788	182,773	204,623	228,269	242,583	254,583	263,183	271,214
Less Land and Land Rights	-1,266	-1,266	-1,266	-1,266	-1,266	-1,266	-1,266	-1,266
Depreciable Plant in Service	182,522	181,507	203,357	227,003	241,317	253,317	261,917	269,948
Accumulated Reserve For Depreciation	-91,279	-90,300	-95,746	-101,846	-108,656	-115,896	-123,495	-131,353
Net Plant in Service	92,509	92,473	108,878	126,423	133,927	138,687	139,688	139,861
TABLE 2: DEPRECIATION FUND BALANCES:								
Beginning Balance	11,784	11,960	11,371	2,450	3,371	1,967	2,307	3,406
Depreciation Rate (3%)	3%	3%	3%	3%	3%	3%	3%	3%
Depreciation Expense	5,109	5,099	5,445	6,101	6,810	7,240	7,600	7,858
Bond Proceeds and Other Fund Sources	376	352	483	12,466	100	100	100	100
Operating Fund Transfer	5,000	6,500	8,000	7,000	7,000	6,000	3,000	1,000
Capital Funds Ending Balance	22,269	23,911	25,300	28,016	17,281	15,306	13,006	12,363
Capital Improvements	-13,226	-12,540	-22,850	-24,646	-15,314	-13,000	-9,600	-9,031
Ending Balance	9,043	11,371	2,450	3,371	1,967	2,307	3,406	3,332
TABLE 3: BOND PROCEEDS & OTHER FUND SOURCES:								
Municipal Bonds/Grants				12,000				
New Funding Source								
Force Account (MassDOT): Main & Hopkins, R	98	150						
Force Account (MassDOT): Lowell at Woburn Street, W			383					
Force Account (MassDOT): Route 38 Bridge over MBTA, W				166				
Force Account (MassDOT): Butters Row over MBTA, W				200	0	0	0	0
Electric Vehicle Supply Equipment (EVSE)	177	177						
Interest Income	100	25	100	100	100	100	100	100
	376	352	483	12,466	100	100	100	100

CAPITAL PROJECTS

Facilities

	Page #	Project #
⌘ RMLD Lighting (LED) Upgrade Program	19	104
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⌘ Rolling Stock Replacement (vehicles, trailers, fork trucks)	27	118

CAPITAL PROJECT SUMMARY

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

Project Schedule: 2021-2023 **Project Manager:** Facilities Manager

Reason for Expenditure:
Energy conservation.

Brief Description/Scope:

RMLD continues to replace old and obsolete lighting fixtures with LED fixtures. To complete this effort, RMLD will replace the site lighting at the Ash Street campus in 2023.

Barriers:

None anticipated at this time.

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

No significant change made from the CY 2022 plan.

Status Update From Prior Year:

In 2022 Station 3, 4 and 5 lighting was upgraded. An electrical engineering firm was hired to prepare bid specs for the construction and installation of the office lighting fixtures at 230 Ash Street.

CAPITAL PROJECT COST SHEET

PROJECT NAME: RMLD Lighting (LED) Upgrade Program

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Ash Street Campus Lighting Upgrade				\$100,000
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$0	\$0	\$0	TOTAL MATERIALS/OTHER				\$100,000

PROJECT TOTAL: \$100,000

CAPITAL PROJECT SUMMARY

Project Name: Building/Grounds Upgrades

Project #: 095

Project Schedule: Annual

Project Manager: Facilities Manager

Reason for Expenditure:

Annual budget allotment for miscellaneous upgrades to RMLD buildings and grounds.

Brief Description/Scope:

In 2023 RMLD will pave the pole yard access road at Station 3. Paving this area was included as part of the scope of work for the transformer storage rack project, which has been canceled. However, RMLD would like to move forward with paving to allow safer and easier access to the location for all staff, in particular large line operations trucks. Snow removal during inclement weather will also be much safer and easier with this upgrade.

Barriers:

None anticipated at this time.

Change in Scope of Work from Prior Year:

The original transformer rack project included a multi-tiered shelving system to be located at Station 3 to store transformers currently being stored in the Barbas Warehouse. Through the design process, the scope and cost of this project has proven to be prohibitive. As an alternative, the location of the proposed Wilmington substation identified in 2022 could potentially be developed to accommodate off-site storage for transformers as well as other large stock items.

Status Update:

The backup generator at Station 3 is scheduled for delivery and installation by the end of 2022.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Building/Grounds Upgrades

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Paving Access Road at Station 3 Pole Yard				\$150,000
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$0	\$0	\$0	TOTAL MATERIALS/OTHER				\$150,000

PROJECT TOTAL: \$150,000

CAPITAL PROJECT SUMMARY

Project Name: Office Upgrades - 230 Ash Street

Project #: 098

Project Schedule: Annual

Project Manager: Facilities Manager

Reason for Expenditure:

Annual budget allotment for miscellaneous office upgrades at 230 Ash Street to accommodate staffing changes and promote efficiency.

Brief Description/Scope:

In 2022 an architect/designer will be hired to redesign and develop construction drawings for various office areas at the Ash Street office building.

Areas in need of upgrade/redesign include:

- Grid Asset and Communications (General Foreman office)
- Materials Management
- Engineering & Operations
- Administration

Barriers:

The 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 Year:

Office redesign has been expanded to include Administration to remove the wall and install five new cubicles, Engineering & Operations to create two new offices and install four new cubicles. Collections/Billing has been removed from the scope.

Status Update:

RMLD is expected to complete the installation of audio/visual equipment in the Winfred Spurr AV Room, as well as the General Manager's, T&D and E&O conference rooms by the end of 2022. This equipment will facilitate hybrid meetings, webinars, training, etc.

The feasibility review for the possible installation of a roof-top thermal energy heat pump for the leased area in the garage building (included as part of this project in 2022) will not be completed due to a change in scope for the Credit Union (leased area) Renovations (CY2022 Project 136).

CAPITAL PROJECT COST SHEET

PROJECT NAME: Office Upgrades - 230 Ash Street

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Redesign and construction of various office spaces at 230 Ash Street Campus				\$200,000
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
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

CAPITAL PROJECT SUMMARY

Project Name: Security Upgrades – All Sites

Project #: 119

Project Schedule: Annual

Project Manager: Facilities Manager

Reason for Expenditure:

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

Brief Description/Scope:

In 2021 a security consultant was hired to perform a physical security risk assessment for all RMLD properties. This risk assessment outlines a number of recommendations to enhance security at all RMLD facilities. An internal working group has been formed to review and discuss the specifics of each recommendation and then approve and implement recommendations, as necessary.

Barriers:

None anticipated at this time.

Change in Scope of Work from Prior Year:

New security equipment and systems, including perimeter access control, video management systems, and IP camera infrastructure will be procured and installed in 2023 and 2024.

Status Update:

The security working group continued its review of the risk assessment and addressed a number of issues internally. With guidance from the security consultant, a new security system to include perimeter access control, video management systems, and IP camera infrastructure improvements is being designed, and an RFP will be issued by the end of 2022. These systems will further mitigate the physical security issues identified in the risk assessment.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Security Upgrades - All Sites

SCHEDULE: CY2023-2024

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Comprehensive Security System Upgrade. Implement recommendations of security consultant such as site access, intrusion detection, increased signage, etc.				\$650,000
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
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

2022 ESTIMATED SPENDING	\$325,000.00
2023 ESTIMATED SPENDING	\$325,000.00

CAPITAL PROJECT SUMMARY

Project Name: Rolling Stock Replacement

Project #: 118

Project Schedule: Annual

Project Manager: 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 in 2023 for the following:

- one digger derrick
- one ePTO material handler
- two electric pick-up trucks

Barriers:

Supply chain issues have caused delays in delivery of vehicles.

Change in Scope of Work from Prior Year:

Not applicable.

Status Update:

- Material handler (2021 carry-over) was received in 2022.
- Small dump truck with sander attachment (2021 carry-over) was received in 2022.
- Small SUV has been ordered; delivery date is pending.
- Trouble truck was bid and ordered in 2022; delivery expected in 2023.
- Van (Grid Asset Management) is expected to be bid and ordered in 2022; delivery is expected in 2023.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Rolling Stock Replacement

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Van - Grid Asset Management (carry-over)	each	\$75,000.00	1	\$75,000
			\$0	\$0	\$0	Trouble Truck - Ordered (carry-over)	each	\$252,419.00	1	\$252,419
			\$0	\$0	\$0	Digger Derrick	each	\$300,000.00	1	\$300,000
			\$0	\$0	\$0	Pick-up Trucks (electric)	each	\$85,000.00	2	\$170,000
			\$0	\$0	\$0	ePTO Material Handler	each	\$450,000.00	1	\$450,000
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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$0	\$0	\$0	TOTAL MATERIALS/OTHER				\$1,247,419

PROJECT TOTAL: \$1,247,419

CAPITAL PROJECTS

Integrated Resources

	Page #	Project #
⌘ Electrical Vehicle Supply Equipment (EVSE)	31	099

CAPITAL PROJECT SUMMARY

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

Project Schedule: On-going **Project Manager:** Gregory Phipps, Interim General Manager

Reason for Expenditure:

The goal of the EVSE Project is to expand public charging infrastructure for electric vehicles operating 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 electric vehicles. This project increases the deployment of EV technology and availability of remote rapid charging capability, thereby supporting State and local efforts to reduce carbon emissions in both the transportation and energy sectors.

Given that ~80% of EV charging occurs at the residence and another portion at work, RMLD anticipates installing only a couple of dozen public chargers within each town. Installations will take place over the next 7-10 years, with the pace of installations partially driven by utilization and EV adoption.

Brief Description/Scope:

In coordination with town leadership, RMLD identified initial locations for the first few chargers in each of the four towns for installing Level 2 and DCFC charging stations in public parking areas owned by the towns.

All charging stations in this deployment project will be owned, maintained, and operated by RMLD. Commercial and industrial customers continue to have the option to install their own EV chargers on their properties.

Barriers:

None anticipated at this time although changes to public parking policies will take persistence to resolve and then adapt as all parties learn more. In addition, certain locations will require electric supply upgrades.

Change in Scope of Work from Prior Year:

This project continues to evolve and expand.

Status Update:

RMLD was awarded a \$78,150 state grant in July 2021 to install five dual-head units Level 2 chargers: three in Reading and two dual-head units in Wilmington. These units were installed in spring 2022 and have been operational since June 2022.

Sites for EV chargers in Lynnfield and North Reading have been identified. As of this writing (September 2022), two Level 2 chargers are to be installed in Lynnfield and three Level 2 chargers are to be installed in North Reading by the end of 2022.

RMLD also applied to MasseVIP for a DCFC grant (\$99,136) to install the first rapid charging stations (DCFC) within RMLD's service territory. This grant was awarded in June 2022 and will be used to purchase the first DCFC which will be installed in early 2023, based on delivery of hardware.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Electric Vehicle Supply Equipment (EVSE)

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)					
	Straight Time	OT	Straight Time	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	DC Fast Charger (DCFC) Equipment	each	\$100,000.00	4	\$400,000
						Contractor design and install DCFC chargers	each	\$40,000.00	4	\$160,000
						Level 2 (L2) Charger Equipment	each	\$12,000.00	9	\$108,000
						Contractor design and install L2 chargers	each	\$26,000.00	9	\$234,000
						Contractor design and install L2 chargers (CY22 Carry-over)	each	\$26,000.00	1	\$26,000
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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
Project Management	200.0		\$20,964	\$0						\$0
			\$0	\$0						\$0
Station Techs: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
Metering	100.0		\$6,941	\$0	\$2,100					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management	50.0		\$5,912	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$33,817	\$0	\$2,100	TOTAL MATERIALS/OTHER				\$928,000

PROJECT TOTAL:	\$963,917
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CAPITAL PROJECTS

Information Technology

	Page #	Project #
⌘ Hardware Upgrades	35	127
⌘ Software and Licensing	37	128
⌘ Customer Portal (Mobile APP)	39	138
⌘ IT Infrastructure Enhancements	43	139
⌘ IT Security	45	140

CAPITAL PROJECT SUMMARY

Project Name: Hardware Upgrades

Project #: 127

Project Schedule: Annual

Project Manager: John Pelletier, Director 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:

RMLD will continue to replace one-third of its workstations annually as well as procure ad hoc hardware as needed. Additionally, IT will purchase hardware for new employees, as necessary.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Year:

Not applicable.

Status Update:

In 2022 RMLD replaced one-third of the user workstations as well as various hardware and equipment. Most of the work force was transitioned to Dell laptop workstations with docking station desktops set up for mobility.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Hardware Upgrades

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Miscellaneous Hardware (computers, laptops, printers)				\$135,000
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$0	\$0	\$0	TOTAL MATERIALS/OTHER				\$135,000

PROJECT TOTAL:	\$135,000
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CAPITAL PROJECT SUMMARY

Project Name: Software and Licensing

Project #: 128

Project Schedule: Annual

Project Manager: John Pelletier, IT Director

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 2021/2022.
- *IT Asset Manager:* This software will allow IT to barcode and asset-tag all equipment as it is added to the production environment. This will help IT better maintain their asset inventory and will help in depreciating and replacing equipment. This item is a carry-over from 2022.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Year:

Not applicable.

Status Update:

The Work Order Management (WOMS)/Futura Staking Software was installed in 2021 with additional work completed in 2022. Testing and implementation is currently in progress and is expected to be completed by end of 2022.

The HRIS system is currently being implemented and is expected to be in place by the end of the year.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Software and Licensing

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Miscellaneous Software				\$115,000
			\$0	\$0	\$0	Customer Relationship Management (CMR)/SpryPoint Engagement Software (carryover)				\$20,000
			\$0	\$0	\$0	IT Asset Manager				\$40,000
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$0	\$0	\$0	TOTAL MATERIALS/OTHER				\$175,000

PROJECT TOTAL:	\$175,000
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CAPITAL PROJECT SUMMARY

Project Name: Customer Portal (Mobile APP)

Project #: 138

Project Schedule: 2022-2023

Project Manager: Gregory Phipps, Interim
General Manager

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 and electricity costs increase due to the 2021 Climate Law and other legislation/regulation, customers will likely want to control their energy use more actively. 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 on news, peak and storm alerts, and allowing them to compare rates, initiate participation in incentive programs, EV charging options, and also 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, utility authorization (UAN), rebate status, and rate comparison. The login will be secure and the RMLD data and network will remain secure, as will customer data.

This will be a multi-year project with a pilot in early 2023, followed by Ver. 1.0 release in late 2023. There will then be ongoing updates and upgrades, including integration with next generation AMI, MDM and billing.

Barriers:

None anticipated at this time.

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

There has been no significant change to the financial scope of this project, however, features and functionality have been refined.

Status Update from Prior Year:

In 2022 the following items were completed:

- a) features/functionality list was expanded and prioritized (by version/update).
- b) initial discussions with other utilities (especially Florida Power and Light and Potomac Electric Power Company) regarding their experiences in developing and using customer mobile apps.
- c) initial discussions with potential development partners as part of pre-bid research.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Customer Portal (Mobile APP)

SCHEDULE: CY2022-2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)					
	Straight Time	OT	Straight Time	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
			\$7,403	\$7,187	\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$87	\$85	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
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	\$25,000
2023 ESTIMATED SPENDING	\$175,000

CAPITAL PROJECT SUMMARY

Project Name: IT Infrastructure Enhancements

Project #: 139

Project Schedule: 2023

Project Manager: John Pelletier, IT Director

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 2023 we will address the following items:

- *Network Enhancements:* RMLD will be replacing its core networking stack and substation networking equipment that is well beyond their useful life. 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 Year: Increase (Decrease)

Not applicable.

Status Update from Prior Fiscal Year:

New Aruba switches were purchased for distribution, and they should be installed by the end of 2022. Additional networking work is planned for 2023 to continue cleaning up and upgrading the RMLD network.

CAPITAL PROJECT COST SHEET

PROJECT NAME: IT Infrastructure Enhancements

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Core redesign, substation tech refresh				\$150,000
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$0	\$0	\$0	TOTAL MATERIALS/OTHER				\$150,000

PROJECT TOTAL:	\$150,000
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CAPITAL PROJECT SUMMARY

Project Name: IT Security

Project #: 140

Project Schedule: Annual

Project Manager: John Pelletier, IT Director

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 2023 in order to maintain the security and integrity of RMLD data assets.

Brief Description/Scope:

- *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 unforeseen security issues which may arise during the year.

Barriers:

None anticipated at this time.

Change in Scope of Work from Prior Year:

Not applicable.

Status Update:

RMLD implemented new perimeter and SCADA firewalls in 2022 as well as added an XDR platform to compliment the EDR platform to strengthen RMLD security posture.

CAPITAL PROJECT COST SHEET

PROJECT NAME: IT Security

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
			\$7,403	\$7,187	\$920					
						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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$0	\$0	\$0	TOTAL MATERIALS/OTHER				\$250,000

PROJECT TOTAL: \$250,000

CAPITAL PROJECTS

System

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⌘ Service Connections (Residential and Commercial) - All Towns	99	Various
⌘ Routine Construction – All Towns	101	Various

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 Year: Increase (Decrease)

Not applicable.

Status Update From Prior Year:

The CCTV's have been ordered.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Station 4 CCVT Replacement

SCHEDULE: CY2022 - CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
			\$7,403	\$7,187	\$920					
CCTV Installation	3.0		\$22,208	\$0	\$2,760	Engineering services to design new protection scheme				\$12,500
						Testing services				\$40,000
						CCVT	each	\$12,000.00	10	\$120,000
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
Installation of equipment	180.0		\$17,738	\$0	\$3,780					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management	100.0		\$11,823	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$51,769	\$0	\$6,540	TOTAL MATERIALS/OTHER				\$182,500

PROJECT TOTAL: \$240,809

2022 ESTIMATED SPENDING	\$48,000
2023 ESTIMATED SPENDING	\$192,809

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. Availability of equipment due to supply chain issues.

Change in Scope of Work From Prior 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 Year:

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. The new relays and equipment are going to bid in the fall of 2022.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Relay Protection Upgrades - Station 4

SCHEDULE: CY2021 - 2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
Installation of equipment	300.0		\$29,563	\$0	\$6,300	Engineering services to design new protection scheme				\$142,500
Wiring and testing	180.0		\$17,738	\$0	\$3,780	Testing services				\$40,000
						Communication equipment				\$20,000
						Relays	each	\$12,500.00	4	\$50,000
						Associated equipment for relays	per relay	\$1,250.00	10	\$12,500
						Misc. materials				\$16,000
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115	\$21					
Supervision/Project Management	175.0		\$20,690	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$67,991	\$0	\$10,080	TOTAL MATERIALS/OTHER				\$281,000

PROJECT TOTAL: \$359,071

2021 ACTUAL SPENDING	\$89,639
2022 ESTIMATED SPENDING	\$50,000
2023 ESTIMATED SPENDING	\$219,432

CAPITAL PROJECT SUMMARY

Project Name: Pad-mount Switchgear Upgrade at Industrial Parks

Project #: 102

Project Schedule: FY18-CY23

Project Manager: Peter Price,
System 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. In 2023 the RMLD will install the last four units including two motor operated style switchgear, which will be bid and ordered in CY2022.

Barriers:

Delivery of three switchgear ordered in FY18 was significantly delayed, which has pushed back the installation schedule for all switchgear. Supply chain issues in 2022 has delayed the delivery and installation of switches including two motor operated style units to be bid and ordered in 2022.

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

Installation of four regular switchgear, and receipt and installation of two motor operated switchgear will be delayed until 2023.

Status Update From Prior Year:

Installation of twenty switchgear has been completed (as of August 2022):

- *Jonspin Road, Wilmington:* Switch-1 (FY18); Switch-2, Switch-3, Switch-4 and Switch-5 (CY19), and Switch-6 (CY20)
- *River Park Drive, North Reading:* Switch-2 (FY18); Switch-1 (CY20); Switch-5 and Switch 7 (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 (CY21)
- *Reading Woods, Reading:* Switch 1 (CY21)
- *30 New Crossing Road, Reading:* Switch 1 (CY21)
- *Archstone Circle, Reading:* Switch 1 and Switch 2 (CY22)
- *Summit Towers, Reading:* (CY22)

One additional switchgear is expected to be installed by the end of CY22.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Pad-Mount Switchgear Upgrade at Industrial Parks

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
Replace pad-mount switchgear (with contractor assist)		6.0	\$0	\$43,120	\$5,520	Innovative Switchgear - MOS Style (carry-over)	each	\$130,000.00	2	\$260,000
Make up t-bodies and LB elbows (with contractor assist)	9.0		\$66,625	\$0	\$8,280	T-bodies, LB elbows, reducers, caps, inserts, fused elbows, miscellaneous connectors per switchgear	per switch	\$3,000.00	6	\$18,000
Splice out line and load side primary cables (with contractor assist)	9.0		\$66,625	\$0	\$8,280	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	600	\$12,000
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			\$7,691	N/A	\$440					
Replace pad-mount switchgear (assist RMLD crews)	3.0		\$23,074		\$1,320					\$0
Make up t-bodies and LB elbows (assist RMLD crews)	3.0		\$23,074		\$1,320					\$0
Splice out line and load-side primary cables (assist RMLD crews)	3.0		\$23,074		\$1,320					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	40.0	32.0	\$4,468	\$3,470						\$0
Engineering: unit rate in hours			\$105	\$102						
Prepare switching order, coordinate outages, ad modifications, order materials, etc.	80.0	32.0	\$8,386	\$3,256						\$0
Station Techs: unit rate in hours			\$99	\$96	\$21					
Test cable, switchgear and rotation (2 techs)	40.0	20.0	\$3,942	\$1,913	\$1,260					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Energize and test switchgear and relays	40.0	32.0	\$4,729	\$3,673		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$223,996	\$55,433	\$27,300	TOTAL MATERIALS/OTHER				\$308,000

PROJECT TOTAL: \$614,728

CAPITAL PROJECT SUMMARY

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

Project Schedule: On-going **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:

Possible lead time for equipment due to supply chain disruptions.

Change in Scope of Work From Prior Year:

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 Year:

Aged primary metering installations are being replaced or redesigned to secondary metering equipment after review by the primary metering review team.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Primary Metering Upgrade and Replacement Program

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)					
	Straight Time	OT	Straight Time	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
Primary metering make ready and installation	10.0	0.5	\$74,027	\$3,737	\$9,678	Potential Transformers	each	\$1,000.00	6	\$6,000
			\$0	\$0	\$0	Current Transformers	each	\$1,000.00	6	\$6,000
			\$0	\$0	\$0	Padmounted Primary Metering Units	each	\$30,000.00	2	\$60,000
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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	5.3		\$588	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
Primary metering installation coordination and design	4.2	8.4	\$440	\$855						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
Primary metering construction	50.6		\$4,986	\$0	\$1,063					\$0
Primary metering installation coordination and design		8.4	\$0	\$804	\$176					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management	2.1	8.4	\$248	\$964		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$80,290	\$6,360	\$10,917	TOTAL MATERIALS/OTHER				\$72,000

PROJECT TOTAL:

\$169,567

CAPITAL PROJECT SUMMARY

Project Name: 35 kV Underground Cable
Upgrade - 4P9 Station 4

Project #: 109

Project Schedule: 2023

Project Manager: Brian Smith
System Engineer

Reason for Expenditure:

The 35 kV underground cables that make up circuit 4P9 running from Station 4 to Station 5 are the original cables and are near end of life.

Brief Description/Scope:

The RMLD will replace the 350CU underground cable on 4P9 running from the 35kV structure at the back of Station 4 to the structure by the entrance of Station 4. This cable runs under Route 93 along the railroad tracks. Crews will also replace the 350CU underground cable at Station 5 from the structure to the transformer.

Barriers:

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

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

Not applicable.

Status Update From Prior Year:

Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: 35kV Underground Cable Upgrade
4P9 Substation 4, R

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
			\$7,403	\$7,187	\$920					
Remove and install 4,500' of 35kV, 350CU UG cable - Station 4 UG	5		\$37,014	\$0	\$4,600	35kV cable, 350 CU	foot	\$18.60	10500	\$195,300
Terminations/splicing of cable	2		\$14,805	\$0	\$1,840	Termination/splice kits	each	\$500.00	60	\$30,000
Reconstruct 35kV riser structure	3.5		\$25,910	\$0	\$3,220	Poles/miscellaneous materials	each	\$1,000.00	5	\$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			\$7,691	N/A	\$440					
Contractor assist for RMLD crews.	7.0		\$53,839		\$3,080					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	40		\$4,468	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
Project management, switching/ tagging	40		\$4,193	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
Testing, switching, tagging	80		\$7,883	\$0	\$1,680					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management	40.0		\$4,729	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$152,841	\$0	\$14,420	TOTAL MATERIALS/OTHER				\$230,300

PROJECT TOTAL: \$397,561

CAPITAL PROJECT SUMMARY

Project Name: Pole Line Upgrade: Fordham Road
Wilmington

Project #: 136

Project Schedule: 2023

Project Manager: Brian Smith,
System Engineer

Reason for Expenditure:

Extend a circuit to allow additional battery storage capacity on Fordham Road in Wilmington.

Brief Description/Scope:

Reconfigure underground feeds from River Park/Concord Street to Fordham Road, replacing underground cable as necessary, to bring circuit 3W13 to the beginning of Fordham Road. Replace approximately four poles on Concord Street at risers to allow reconfiguration. Replace approximately ten poles on Fordham Road and install approximately 2,000 circuit feet of 336AL spacer cable to extend 3W13.

Barriers:

Reconfiguration of the underground feed. Riser poles will be challenging to replace. Possible long lead times for stock.

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

Not applicable.

Status Update From Prior Year:

Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Pole Line Upgrade - Fordham Road, Wilmington

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
			\$7,403	\$7,187	\$920					
Reconfigure UG feed to Fordham Road: Replace approximately 1,000 circuit feet of 500CU as needed	3.0		\$22,208	\$0	\$2,760	500CU 15kV UG cable	foot	\$25.00	3,000	\$75,000
						#2CU 600V	foot	\$2.50	1,000	\$2,500
Terminate/splice cable	1.0		\$7,403	\$0	\$920	Miscellaneous terminations/splices	each	\$300.00	18	\$5,400
Replace approximately 19 poles with 55-1 poles	8.0	1.2	\$59,222	\$8,624	\$8,464	55-1 poles	each	\$750.00	19	\$14,250
Transfer and frame new poles	11.2	1.2	\$82,911	\$8,624	\$11,408	Miscellaneous hardware: arms, hendrix brackets, etc.	per pole	\$500.00	19	\$9,500
Install approximately 2,000 circuit feet of 336 spacer cable	4.0		\$29,611	\$0	\$3,680	336AL spacer cable	foot	\$5.00	6,000	\$30,000
			\$0	\$0	\$0	Messenger wire	foot	\$2.00	2,000	\$4,000
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			\$7,691	N/A	\$440					
Assist RMLD Crews: Replace approximately 1,000 circuit feet of 500CU as needed, splicing/terminations	4.0		\$30,765		\$1,760					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	40.0		\$4,468	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
Design, digsafes, scheduling, customer outages	80.0	24.0	\$8,386	\$2,442						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
Customer outages		24.0	\$0	\$1,617	\$504					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management		24.0	\$0	\$2,755		Police Details	weeks	\$2,427	14.0	\$33,978
TOTAL LABOR/VEHICLES			\$244,973	\$24,062	\$29,496	TOTAL MATERIALS/OTHER				\$174,628

PROJECT TOTAL: \$473,159

CAPITAL PROJECT SUMMARY

Project Name: 5W4/5W5 Getaway Improvements **Project #:** 132

Project Schedule: 2023 **Project Managers:** Johnny Duong, Senior Distribution Engineer and Daniel Trant, Senior Distribution Engineer

Reason for Expenditure:

The existing 5W4 and 5W5 getaway cables at Station 5 are 500 MCM 15kV CU cable and are original to the Station, which was built in 1980. These circuits service the Wilmington area, which has seen significant load increases. Crews will replace these getaways with 750 MCM 15kV CU cable, which will increase ampacity. This increased ampacity will assist with the battery storage on Fordham Road and the additional load anticipated at Upton Park.

Brief Description/Scope:

Crews will remove existing infrastructure and install new underground cable from Station 5 to the existing riser poles (30 and 31) on Wildwood Street in Wilmington. Crews will perform all overhead and underground line work to install new circuits to the new 5W4/5W5 risers.

Barriers:

None anticipated at this time.

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

Not applicable.

Status Update From Prior Year:

Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: SW4/5W5 Getaway Improvements

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
			\$7,403	\$7,187	\$920					
Replace Two Poles w/55' CI 1 poles	2.0		\$14,805	\$0	\$1,840	55'- class 1 pole	each	\$800.00	2	\$1,600
Frame 2 Poles for 5w4 & 5w5 circuits	2.0		\$14,805	\$0	\$1,840		foot	\$28.99	3600.0	\$104,364
Install Underground cable,splice,term (with contractor Assist)	4.0		\$29,611	0	\$3,680	600v, 4/0 CU - Neutral	foot	\$5.48	1200	\$6,576
Overhead Contractor 2-man crew - unit rate in weeks			\$8,000	N/A	\$2,080					
			\$0		\$0	Terminations	each	\$70.64	6.0	\$424
			\$0		\$0	Riser pole Hardware	per pole	\$1,700.00	2.0	\$3,400
Underground Contractor 2-man crew - unit rate in weeks			\$7,691	N/A	\$440					
Wreck out underground	4.0		\$30,765		\$1,760	Splices	each	\$443.56	6.0	\$2,661
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	100.0		\$11,169	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
Design,work order,material procurement	160.0		\$16,771	\$0						\$0
Switching:Draft,review and execute Oversight	40.0		\$4,193	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
Switching: review and execute	32.0		\$3,153	\$0	\$672					\$0
Test cable	8.0		\$788	\$0	\$168					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management Switching: review and execution	40.0		\$4,729	\$0		Police Details	weeks	\$2,427	4.0	\$9,708
TOTAL LABOR/VEHICLES			\$130,791	\$0	\$9,960	TOTAL MATERIALS/OTHER				\$128,733

PROJECT TOTAL: \$269,485

CAPITAL PROJECT SUMMARY

Project Name: New Wilmington Substation

Project #: 105

Project Schedule: FY17-CY2025

Project Manager: Hamid Jaffari, Director of Engineering & Operations

Reason for Expenditure:

Substation 5 in Wilmington has reached the end of its useful life. Both the 34.5kV and 13.8kV transformers, and the 15 kV switchgear need major upgrades/repairs to keep the substation operational. The new Wilmington substation will replace Substation 5, while also providing added benefit to RMLD by providing additional capacity for electrification and load growth in the north Wilmington area.

Brief Description/Scope:

RMLD will build a new 115kV/13.8 kV substation in Wilmington in the Ballardvale area. The new substation will include two 75 MVA transformers and one 15kV switchgear with eight (or more as needed) feeder/breaker positions. Once construction and energization is completed, the entire load from Substation 5 will be transferred to the new Wilmington substation. This new substation will also provide backup and load relief for both Substation 3 and Substation 4.

Barriers:

Obtaining easement access crossing National Grid's 115 kV lines and installing 15kV distribution facilities on a private road to connect Ballardvale Street to the Upton Drive area.

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

\$3.35m increase in the cost of land, plus 37% increase in the cost of materials due to supply-chain disruptions.

Status Update From Prior Year:

In CY2022 RMLD will complete the process to purchase 3.4 acres of land located at 326 Ballardvale Street, Wilmington. This site abuts National Grid's 115kV lines (T145 and T146). An ALTA survey and Phase 1 Environmental Assessment were completed, and application for PTF-RNS was sent to ISO to conduct a system impact study. The Town zoning and permitting process is planned for October/November.

CAPITAL PROJECT COST SHEET

PROJECT NAME: New Wilmington Substation
Construction and Commissioning

SCHEDULE: CY2023-25

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Power Transformers				\$2,600,000
			\$0	\$0	\$0	15kV Switchgear				\$3,500,000
			\$0	\$0	\$0	Substation Equipment Package				\$750,000
			\$0	\$0	\$0	Construction Contractor				\$2,400,000
			\$0	\$0	\$0	Testing and Commssioning				\$120,000
			\$0	\$0	\$0	Getaways				\$3,000,000
			\$0	\$0	\$0	Indirects				\$320,000
			\$0	\$0	\$0	Distribution (Overhead)				\$1,710,000
			\$0	\$0	\$0	Fiber				\$75,000
			\$0	\$0	\$0	Contingency				\$1,000,000
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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
Oversite and Management of Project	954.0		\$100,000	\$0						\$0
			\$0	\$0						\$0
Station Techs: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Technical Services Manager: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$100,000	\$0	\$0	TOTAL MATERIALS/OTHER				\$15,475,000

PROJECT TOTAL: \$15,575,000

2023 ESTIMATED SPENDING	\$2,992,500
2024 ESTIMATED SPENDING	\$10,512,500
2025 ESTIMATED SPENDING	\$2,070,000

CAPITAL PROJECT SUMMARY

Project Name: Grid Automation, Modernization
& Optimization

Project #: 103

Project Schedule: On-going **Project Manager:** Hamid Jaffari, Director of
Engineering & Operations
Peter Price, System Engineer
Brian Smith, System Engineer
Vaughan Bryan, Senior
Distribution Engineer

Reason for Expenditure:

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

Brief Description/Scope:

Continue implementation of the Grid Automation, Modernization and Optimization Road Map including installation and integration of smart switches, IntelliRupters, capacitor banks and Volt Var Optimization (VVO) and controls, cyber security, simulators, fiber rationale connections, Fault Detection Isolation and Restoration (FDIR), economic dispatch, and overall system integration, including GIS and AMI/MDM.

Barriers:

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

Change in Scope of Work From Prior Year:

In 2022, the communication study was completed with a recommendation that RMLD use a cellular base system to communicate to field IED devices that cannot be connected directly to RMLD's existing fiber loop. This was determined to be the most economical and reliable approach. RMLD is currently working on a pilot program with US Cellular to test this type of communication. RMLD is also in the process of completing a reliability and resilience study with S&C to review the existing and future IEDs to place switches/IEDs at optimum locations on the feeders for implementation of fault location, and isolation and restoration. RMLD is installing VVO software on its SCADA to minimize system losses by turning capacitor banks on/off as system load demands KVAR. This is system is being tested for functionality to be available as soon as the cellular communication system is tested and accepted. Both VVO and FDIR modules will be integrated with SCADA and OMS for optimizing system performance and minimizing outage durations when customers experience outages due to system faults.

Status Update From Prior Year:

Four Scada-Mate switches and two IntelliRupters were ordered and received in 2022. This brings the total number of devices in the field to 26 Scada-Mate switches, and eight IntelliRupters.

RMLD continues to update capacitor bank controllers to prepare for implementation of the communication study results. The VVO software, which automates the capacitor banks has been installed and will be tested as soon as US Cellular communication is established after proof of concept. Meter Data Management will be completed in 2022.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization
Scada-Mate Switches

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
Install Scada-Mate switches and controls	1.0		\$7,403	\$0	\$920	Scada-Mate CX Switch	each	\$32,000.00	4	\$128,000
Replace pole, install bypass disconnects, transfer primary, secondary, etc.	7.0		\$51,819	\$0	\$6,440	55' pole, x-arms, brackets, guys, anchors, miscellaneous hardware, etc.	per switch	\$3,000.00	4	\$12,000
			\$0	\$0	\$0	6801 IntelliTeam License	per switch	\$2,500.00	4	\$10,000
Install three (3) repeaters/radios per switch	0.4		\$2,961	\$0	\$368	S&C repeaters/radios	each	\$3,000.00	12	\$36,000
Install antennas	1.5		\$11,104	\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	120.0		\$13,403	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
PoleForeman, construction drawings, etc.	40.0		\$4,193	\$0						\$0
Prepare switching orders, order materials, establish communication	40.0		\$4,193	\$0						\$0
Station Techs: unit rate in hours			\$99	\$96	\$21					
Controls, programming, commissioning, etc.	64.0		\$6,307	\$0	\$1,344					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Controls, programming, commissioning, etc.	32.0		\$3,783	\$0		Police Details	weeks	\$2,427	4.0	\$9,708
TOTAL LABOR/VEHICLES			\$105,166	\$0	\$10,452	TOTAL MATERIALS/OTHER				\$199,308

PROJECT TOTAL: \$314,926

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization
IntelliRupters

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
Install IntelliRupter Switches	1		\$7,403	\$0	\$920	IntelliRupter Switches	each	\$41,000.00	2	\$82,000
Replace pole, install bypass disconnects, transfer primary, secondary, etc.	3		\$22,208	\$0	\$2,760	55' pole, cross-arms, brackets, guys, anchors, miscellaneous hardware, etc.	per switch	\$3,100.00	2	\$6,200
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	40.0		\$4,468	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
PoleForeman, construction drawings, etc.	24		\$2,516	\$0						\$0
Prepare switching orders, order materials, establish communication	24		\$2,516	\$0						\$0
Station Techs: unit rate in hours			\$99	\$96	\$21					
Controls, programming, commissioning, etc.	64		\$6,307	\$0	\$1,344					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Controls, programming, commissioning, etc.	16		\$1,892	\$0		Police Details	weeks	\$2,427	2.0	\$4,854
TOTAL LABOR/VEHICLES			\$47,309	\$0	\$5,024	TOTAL MATERIALS/OTHER				\$98,054

PROJECT TOTAL: \$150,387

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization
ABB Reclosers

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			7,403	\$7,187	\$920					
Install reclosers and controls	1.0		7,403	\$0	\$920	ABB Reclosers	each	\$30,000.00	4	\$120,000
Replace pole, install bypass disconnects, transfer primary, secondary, etc.	7.0		51,819	\$0	\$6,440	55' pole, x-arms, brackets, guys, anchors, miscellaneous hardware, etc.	per recloser	\$3,000.00	4	\$12,000
			\$0	\$0	\$0	Bypass disconnects	each	\$1,000.00	12	\$12,000
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	120.0		\$13,403	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
PoleForeman, construction drawings, etc.	40.0		\$4,193	\$0						\$0
Prepare switching orders, order materials, establish communication	40.0		\$4,193	\$0						\$0
Station Techs: unit rate in hours			\$99	\$96	\$21					
Controls, programming, commissioning, etc.	80.0		\$7,883	\$0	\$1,680					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Controls, programming, commissioning, etc.	40.0		\$4,729	\$0		Police Details	weeks	\$2,427	4.0	\$9,708
TOTAL LABOR/VEHICLES			\$93,623	\$0	\$9,040	TOTAL MATERIALS/OTHER				\$160,908

PROJECT TOTAL: \$263,571

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization
Software Integration

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Services from vendor for integration of AMI and various devices				\$25,000
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
Work with vendor for software integration	80.0		\$8,386	\$0						\$0
Station Techs: unit rate in hours			\$99	\$96	\$21					
Work with vendor for software integration	24.0		\$2,365	\$0	\$504					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision	8.0		\$946	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$11,696	\$0	\$504	TOTAL MATERIALS/OTHER				\$25,000

PROJECT TOTAL:

\$37,200

CAPITAL PROJECT COST SHEET

PROJECT NAME: Grid Modernization & Optimization
Communication to Field Devices

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Contractor: Cellular System Install and Network Configuration	each	\$89,160.00	1	\$89,160.00
			\$0	\$0	\$0	Configuration and Installation of 31 distribution automation devices	each	\$13,077.70	31.0	\$405,408.65
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
Assit With Device installation	248.0		\$25,995	\$0						\$0
			\$0	\$0						\$0
Station Techs: unit rate in hours			\$99	\$96	\$21					
Assit With Device installation	248.0		\$24,439	\$0	\$5,208					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
		0.0	\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118.23	\$115						
Supervision of Meter crews		0.0	\$0	\$0		Police Details	weeks	\$2,427	0.9	\$2,257
TOTAL LABOR/VEHICLES			\$50,434	\$0	\$5,208	TOTAL MATERIALS/OTHER				\$496,826

PROJECT TOTAL:	\$552,468
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CAPITAL PROJECT COST SHEET

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

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Techs: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
			\$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: 2022-2026

Project Managers: Hamid Jaffari, Director of
Engineering & Operations
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 ~28,600 non-full AMI meters, there are 3,200 commercial, industrial, and time-of-use meters that cannot produce last gasp signals and communicate with the Outage Management System (OMS). Therefore, 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 AMI system upgrades to accommodate current deficiencies as outlined above and to address future metering and data needs. The consultant also recommended RMLD purchase and install Meter Data Management (MDM) for housing metering data and data analytics. Katama Technologies, Inc., was then hired to prepare RFPs for both AMI and MDM systems based on the consultant's recommendations. In 2022, RMLD hired PSE (Power System Engineering) to review the RFPs and manage the project from procurement through full implementation. MDM procurement, which is part of the Grid Automation, Modernization and Optimization (Project 103) will take place 2022, followed by the AMI procurement starting in 2023. Once an AMI vendor is selected and materials have been procured, the headend and communication infrastructure installation will commence followed by the full deployment of meters in years 2023 through 2026. An outside contractor will be hired to remove the old meters and install the new meters.

The new AMI/MDM systems will be integrated with OMS/SCADA, Cogsdale-Harris CIS, and billing systems. Metering data obtained from this new system will be used by the Integrated Resources Division for data analytics, load forecasting, demand side management, and demand response programs.

Barriers:

Supply chain disruptions concerns.

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

Implementation has been moved to 2023.

Status Update from Prior Year:

In 2022 RMLD hired PSE to manage the project including: review RFPs, manage the procurement and vendor selection process, infrastructure installation, and oversee contractor work to replace meters.

CAPITAL PROJECT COST SHEET

PROJECT NAME: AMI Mesh Network Expansion and Meter Replacement

SCHEDULE: CY2023 - 2026

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Headend				\$108,500
						Infrastructure				\$245,000
						Meters				\$6,381,173
						Installation				\$1,001,279
			\$0	\$0	\$0	Project Management and Delivery				\$1,052,276
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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
				\$0						
TOTAL LABOR/VEHICLES			\$0	\$0	\$0	Police Details	weeks	\$2,427		\$0
			TOTAL MATERIALS/OTHER							\$8,788,228

PROJECT TOTAL: \$8,788,228

2023 ESTIMATED SPENDING	\$1,290,200
2024 ESTIMATED SPENDING	\$2,509,163
2025 ESTIMATED SPENDING	\$2,457,798
2026 ESTIMATED SPENDING	\$2,531,067

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 Year:

Not applicable.

Status Update:

Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Meters and Primary Meters (for stock)

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Residential meters for stock (with disconnect option as available)	each	\$300.00	140	\$42,000
			\$0	\$0	\$0	Secondary current transformers	each	\$300.00	32.0	\$9,600
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$0	\$0	\$0	TOTAL MATERIALS/OTHER				\$59,600

PROJECT TOTAL: \$59,600

CAPITAL PROJECT SUMMARY

Project Name: Force Account: Mass DOT
Lowell at Woburn Street, Wilmington

Project #: 202

Project Schedule: 2023

Project Manager: Peter Price,
System Engineer

Reason for Expenditure:

The Massachusetts Department of Transportation is widening and re-aligning the roads and intersection of Lowell and Woburn Streets in Wilmington. This is a reimbursable force account project.

Brief Description/Scope:

RMLD will relocate/replace 17 poles along Lowell Street and transfer construction. There are three (3) primary spacer cable circuits, two (2) aerial cable circuits, secondary cable, services, and streetlights. The aerial cables will require additional work to switch out and ground to accommodate the additional aerial cable that will need to be installed to get the cables over to the new poles.

Verizon will relocate/replace eight (8) poles on Woburn Street. Because of the distance of the relocations on Woburn Street, the RMLD will install new primary cable, secondary cable, and services on these poles. Streetlights will be transferred to the new poles.

Barriers:

RMLD work is dependent upon MassDOT scheduling for this project.

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

Not applicable.

Status Update From Prior Year:

Not applicable.

CAPITAL PROJECT COST SHEET

Force Account: Mass DOT
PROJECT NAME: Lowell at Woburn Street, Wilmington

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
			\$7,403	\$7,187	\$920					
Set (17) seventeen 55'-H1 poles along Lowell Street	7.0		\$51,819	\$0	\$6,440	Poles, anchors, guys, insulators, crossarms, brackets, spacer cable, misc hardware and connectors	1	\$35,000.00	1	\$35,000
Transfer circuits 4W10, 4W13 & 4W23 spacer cable circuits and 4W7 & 4W23 aerial cable circuits	12.0	2.0	\$88,833	\$14,373	\$12,880					\$0
Install new primary and secondary cables on Woburn Street and related outages and cutovers	8.0	2.0	\$59,222	\$14,373	\$9,200					\$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			\$7,691	N/A	\$440					
Splice, piece out, reterminate aerial 4W7 and 4W23 aerial cables	1.0		\$7,691		\$440	splices, terminations, aerial cable, sleeves	1	\$10,000.00	1.0	\$10,000
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	80.0	40.0	\$8,936	\$4,337						\$0
Engineering: unit rate in hours			\$105	\$102						
Pole loading analysis, construction plans, design, switching etc	120.0	40.0	\$12,578	\$4,070						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
Rotation for outages		24.0	\$0	\$2,296	\$504					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management		24.0	\$0	\$2,755		Police Details	weeks	\$2,427	15.5	\$37,619
TOTAL LABOR/VEHICLES			\$229,079	\$42,205	\$29,464	TOTAL MATERIALS/OTHER				\$82,619

PROJECT TOTAL: \$383,367

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:

Supply chain issues have impacted both pricing and delivery time for most transformers.

Change in Scope of Work From Prior Year:

In 2023 additional transformers will be purchased in response to supply chain issues and to meet RMLD new minimum stock requirements.

Status Update:

Not applicable.

CAPITAL PROJECT COST SHEET

Transformers and Capacitors Purchase
PROJECT NAME: (Stock and Projects)

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Three-phase pad-mount transformers for proposed commercial services and stock	average per transformer	\$60,000	20	\$1,200,000
			\$0	\$0	\$0	Single-phase pad-mount transformers for proposed subdivisions and stock.	average per transformer	\$20,000	78	\$1,560,000
			\$0	\$0	\$0	Three-phase pole-mount transformers for proposed commercial services and stock	average per transformer	\$20,000	13	\$260,000
			\$0	\$0	\$0	Single-phase pole-mount transformers for proposed residential services and stock	average per transformer	\$5,000	274	\$1,370,000
						1,200 kVar capacitor bank	each	\$15,000	1	\$15,000
			\$0	\$0	\$0	CY22 Transformer Purchase (Carry-over)				\$1,353,950
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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$0	\$0	\$0	TOTAL MATERIALS/OTHER				\$5,758,950

PROJECT TOTAL: \$5,758,950

CAPITAL PROJECT SUMMARY

Project Name: Overhead Upgrade Program
(Primary, Secondary and Main
Replacement) - All Towns

Project #: 458

Project Schedule: Annual

Project Manager: 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 Faulkner Avenue area in Wilmington, the Linwood Road area in North Reading, the Edwards Avenue area in Lynnfield, the Whitehall Lane area in Reading and the Orchard Drive area in North Reading will be targeted for upgrade in 2023 in conjunction with the 13.8kV Upgrade (Step-down Areas) – Project 107.

Barriers:

Transformer supply chain issues may impact the completion of each area.

Change in Scope of Work from Prior Year:

Not applicable.

Status Update:

Areas completed in 2022 include:

- Gleason Road area in Reading
- Heather Drive and Curtis Street areas in Reading.

The Middlesex Avenue area in Reading is expected to be completed by the end of 2022.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Overhead Upgrades (Primary, Secondary and Main Replacement) Program

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
Frame up to 160 poles	12		\$88,833	\$0	\$11,040	4/0-3/C secondary cable	foot	\$3	10,000	\$30,000
Install 15,000' of secondary cable	16		\$118,444	\$0	\$14,720	Secondary hardware, brackets, connectors, etc.	per pole	\$125	120	\$15,000
Replace services	8		\$59,222	\$0	\$7,360	120' of 1/0 - 3/C service wire for each service	per service	\$175	100	\$17,500
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	80.0		\$8,936	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
Prepare construction documents, PoleForeman, outage set-up, GIS updates	200		\$20,964	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427	28.0	\$67,956
TOTAL LABOR/VEHICLES			\$296,398	\$0	\$33,120	TOTAL MATERIALS/OTHER				\$130,456

PROJECT TOTAL: \$459,974

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 2022 that there will be 11 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 areas targeted for 2023 are Faulkner Avenue in Wilmington, Linwood Avenue in North Reading, Orchard Drive in North Reading, Edwards Avenue in Lynnfield, and Whitehall Lane in Reading.

Barriers:

Transformer supply chain issues may prevent the area conversions from being completed until we receive delivery of the 2023 pole-mount transformers.

Change in Scope of Work From Prior Year:

Not applicable.

Status Update:

Areas completed in 2022 include:

- Gleason Road area in Reading
- Heather Drive and Curtis Street area in Reading
- Locust and Auburn Street areas in Reading
- Willow Street area in Reading
- Magnolia Road area in North Reading

The Middlesex Avenue area in Reading is expected to be completed by the end of 2022.

CAPITAL PROJECT COST SHEET

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

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)					
	Straight Time	OT	Straight Time	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
RMLD to frame 20 poles for new primary cable (guying and anchors as needed). NOTE: Verizon Set	4		\$29,611	\$0	\$3,680	Hardware, insulators, connectors, guys, cutouts, taps, brackets, ground rods, etc.	per pole	\$300.00	20	\$6,000
Install 2,500' of single-phase primary cable, energize and cutover	4		\$29,611	\$0	\$3,680	1/0 AAAC primary	foot	\$1.44	2,500	\$3,600
Transfer (6) pole-mount transformers	2		\$14,805	\$0	\$1,840					
Remove old primary cable	2		\$14,805	\$0	\$1,840					
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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	24.0		\$2,681	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
PoleForeman, 605As, construction drawings, switching orders, etc.	24		\$2,516	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
			\$0	\$0		Police Details	weeks	\$2,427	8.0	\$19,416
TOTAL LABOR/VEHICLES			\$94,029	\$0	\$11,040	TOTAL MATERIALS/OTHER				\$29,016

PROJECT TOTAL: \$134,085

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 to be replaced.

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 2023 include Winterberry Lane, Baldwin Lane, Acorn Knoll, and Hidden Pond Lane, North Reading; Serenoa Lane, Nelson Way and Flynn Way in Wilmington; and Sanborn Village, Zachary Lane, and Anson Lane, in Reading. In 2023 we will continue with inspection of manholes to determine which manholes will need to be scheduled for replacement.

Barriers:

Availability of transformers due to supply chain issues.

Change in Scope of Work From Prior Year:

No notable change.

Status Update:

Area upgrades either completed or expected to be completed by the end of 2022 include:

- Bryant Street, Lynnfield
- Fletcher Lane and Morgan Road (Completed), Ox Bow Drive, Blanchard Road, Ring and Biggar Avenue, Wilmington
- Sandspur Lane (Completed), Aldersgate Way (Completed) and Strawberry Acres in North Reading

CAPITAL PROJECT COST SHEET

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

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
Replace underground and neutral cable (with contractor assist)	15		\$114,002	\$0	\$14,168	#2 CU 15 kV cable and neutral	foot	\$6.00	23,100	\$138,600
Splice, terminate, elbows, grounding, etc. (with contractor assist)	3		\$22,208	\$0	\$2,760	Splices, elbows, terminations, tape connectors, hardware, etc.	each	\$200.00	60	\$12,000
Transformer replacement and crabbing (with contractor assist)	3		\$22,208	\$0	\$2,760	Transformer box pads	each	\$500.00	20	\$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			\$7,691	N/A	\$440					
Assist RMLD crews to replace URD and neutral cables (assist RMLD crews)	15		\$118,446		\$6,776					\$0
Splice, terminate, elbows, grounding, etc. (assist RMLD crews)	3		\$23,074		\$1,320					\$0
Transformer replacement and crabbing (assist RMLD crews)	3.0		\$23,074		\$1,320					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	146		\$16,260	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
Switching, scheduling, notices, plans, etc.	240		\$25,157	\$0						\$0
Station Techs: unit rate in hours			\$99	\$96	\$21					
Testing cables and transformers	60		\$5,913	\$0	\$1,260					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management	20		\$2,365	\$0		Police Details	weeks	\$2,427	2.0	\$4,854
TOTAL LABOR/VEHICLES			\$372,707	\$0	\$30,364	TOTAL MATERIALS/OTHER				\$165,454

PROJECT TOTAL: \$568,525

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

CAPITAL PROJECT SUMMARY

Project Name: Gazebo Circle, Reading
Underground Feed Relocation

Project #: 742

Project Schedule: 2022-2023

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 (approximately 215 customers) to complete any maintenance or trimming.

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 Year: Increase (Decrease)

Not applicable.

Status Update From Prior Year:

Town booster station has not been started yet so construction will be pushed back to 2023. Survey and easement plan has been completed and staff is working to complete easement from condo association in 2022.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Gazebo Circle, Reading - Underground Feed Relocation

SCHEDULE: CY2023-2024

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
			\$7,403	\$7,187	\$920					
Installation of new conduit and wire, splice and install elbows as needed	3.0		\$22,208	\$0	\$2,760	1,200 feet of conduit	foot	\$12.00	1800.0	\$21,600
			\$0	\$0	\$0	2,000' of primary cable	foot	\$5.00	2000.0	\$10,000
						750 feet of ground wire	foot	\$2.50	750.0	\$1,875
						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				\$150,000
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			\$7,691	N/A	\$440					
Installation of new conduit and wire, splice and install elbows as needed	6.0		\$46,148		\$2,640					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	40.0		\$4,468	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
Design/run project	100.0		\$10,482	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
Testing	32.0		\$3,153	\$0	\$672					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management	8.0		\$946	\$0		Police Details	weeks	\$2,427	1.0	\$2,427
TOTAL LABOR/VEHICLES			\$119,405	\$0	\$14,392	TOTAL MATERIALS/OTHER				\$220,902

PROJECT TOTAL: \$354,700

2022 ESTIMATED SPENDING	\$15,000
2023 ESTIMATED SPENDING	\$339,700

CAPITAL PROJECT SUMMARY

Project Name: Aged/Overloaded Transformer Replacement Program

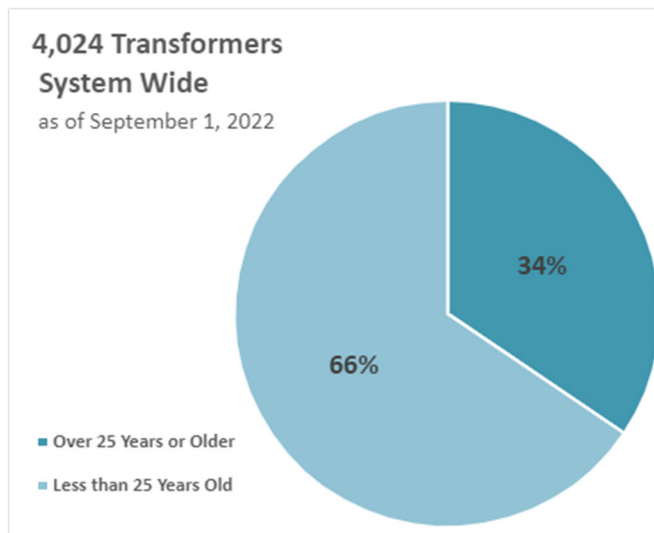
Project #: 668

Project Schedule: Annual

Project Manager: Vaughan Bryan,
Senior Distribution Engineer

Reason for Expenditure:

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 with a target of 120-150 aged or overloaded transformers replaced annually. RMLD replaces aged transformers 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 2022 38 Total YTD (through July)

	Pad-mount	Pole-Mount
Single Phase	18	15
Three Phase	2	8
Total	20	18

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 that is not part of an area upgrade under one of the reliability programs, will be replaced under this project.

Barriers:

Supply chain issues have had an adverse impact on transformer inventory. Costs have increased dramatically, and delivery times have been delayed. Therefore, RMLD plans to slow this program for the near future and focus on replacing only those transformers that pose imminent danger of failure or leaking.

Change in Scope of Work From Prior Year:

RMLD has reduced the number of aged transformers targeted for replacement under this program to 80 (25 pad mount and 55 pole mount) for 2023. This number will be contingent on receipt of pending transformer orders and current inventory.

Status Update:

Year-to-date (through July) 38 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: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
Replace three-phase pad-mount transformers system wide.		2.5	\$0	\$17,967	\$2,300	Miscellaneous underground connectors, elbows, hardware and pads.	per transformer	\$1,400.00	25	\$35,000
Replace single-phase pad-mount transformers system side.	4		\$29,611	\$0	\$3,680					
Replace three-phase pole-mount transformers system wide.		1.75	\$0	\$12,577	\$1,610	Miscellaneous overhead connectors, poles, and hardware	per transformer	\$1,000.00	55	\$55,000
Replace single-phase pole-mount transformers system wide.	8.8		\$64,774		\$8,050					
Overhead Contractor 2-man crew - unit rate in weeks			\$8,000	N/A	\$2,080					
Replace single-phase pole-mount transformers system wide.	8.8		\$70,000		\$18,200					\$0
Underground Contractor 2-man crew - unit rate in weeks			\$7,691	N/A	\$440					
Replace single-phase pad-mount transformers system side.	4.0		\$30,765		\$1,760					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	220.0	60.0	\$24,573	\$6,506						\$0
Engineering: unit rate in hours			\$105	\$102						
Prepare construction documents, PoleForeman, 605As, outage setup, outages, GIS updates.	512.0	78.0	\$53,668	\$7,937						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
Test UG cable connections; commercial customers being off hours	74.0	78.0	\$7,292	\$7,462	\$3,192					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
Test rotation of commercial application; commercial customers being off hours	159.0	104.0	\$11,036	\$7,008	\$5,523					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management	40.0	40.0	\$4,729	\$4,591		Police Details	weeks	\$2,427	7.0	\$16,989
TOTAL LABOR/VEHICLES			\$296,448	\$64,048	\$44,315	TOTAL MATERIALS/OTHER				\$106,989

PROJECT TOTAL: \$511,800

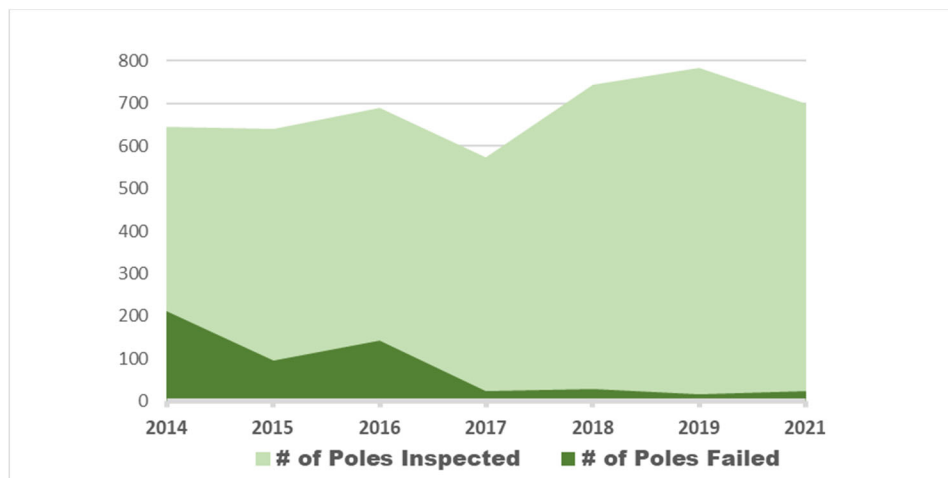
CAPITAL PROJECT SUMMARY

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

Project Schedule: Annual **Project Manager:** General Foreman Operations

Reason for Expenditure:

In 2014 RMLD initiated a Pole Inspection Program, which provides RMLD with verifiable data on pole condition. Ten percent of RMLD-owned poles (in Reading and North Reading) are inspected annually (in the fall) by an outside contractor using various technologies. Testing (through 2021) has identified 541 poles that were recommended for replacement. The chart below shows the steady decline in the number of poles identified as “failed”.



Note: Testing was not performed in 2020.

Brief Description/Scope:

RMLD will replace poles that are identified as part of the Pole Inspection Program. In 2023 100 poles are budgeted to be replaced. This includes setting poles, transfers, and replacing secondary services as needed.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Year:

RMLD has increased the number of poles scheduled to be replaced from 50 to 100.

Status Update:

Since the inception of the Pole Inspection Program a total of 324 poles have been replaced, and 316 transfers have been completed (as of September 7, 2022).

CAPITAL PROJECT COST SHEET

PROJECT NAME: Pole Replacement Program (R, NR)

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$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 100 poles.	40.0		\$320,000		\$83,200	Poles	each	\$400.00	100.0	\$40,000
			\$0		\$0	Miscellaneous hardware	per pole	\$90.00	100.0	\$9,000
Service upgrades as necessary	2.4		\$19,200		\$4,992	Connectors and wires (for service upgrades)	per service	\$213.00	100.0	\$21,300
Underground Contractor 2-man crew - unit rate in weeks			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	400.0		\$44,678	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
Prepare PoleForemans and Digsafes	80.0		\$8,386	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427	20.0	\$48,540
TOTAL LABOR/VEHICLES			\$392,263	\$0	\$88,192	TOTAL MATERIALS/OTHER				\$118,840

PROJECT TOTAL:	\$599,295
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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. RMLD personnel have identified substation equipment that needs to be replaced or upgraded as a result of their condition assessment.

Brief Description/Scope:

Due to the lack of availability and long lead times for electrical equipment, a spare 115Kv vacuum breaker has been identified as an asset that needs to be purchased. This beaker can be utilized at Station 3, Station 4 or the proposed new Station 6 in Wilmington. Other miscellaneous equipment includes lightning arresters, bushings, and insulators are utilized at all substations.

Barriers:

Availability of equipment due to supply chain issues.

Change in Scope of Work From Prior Year:

Not applicable.

Status Update From Prior Year:

In 2022 the RMLD purchased and received a spare 35Kv breaker, lightning arresters and insulators.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Substation Equipment Upgrades

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
Insulators replacement	1.5		\$11,104	\$0	\$1,380	Spare 115Kv Vacuum Breaker	each	\$150,000.00	1	\$150,000
			\$0	\$0	\$0	Transformer Breathers	each	\$4,000.00	2	\$8,000
			\$0	\$0	\$0	Replacement Insulators	each	\$200.00	10	\$2,000
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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
Insulators replacement	40.0		\$3,942	\$0	\$840					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$15,046	\$0	\$2,220	TOTAL MATERIALS/OTHER				\$160,000

PROJECT TOTAL: \$177,266

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 2023 the Grid Asset and Communications group plans to purchase a DC high-potential tester that will be utilized to test new and existing underground primary cables.

The Line Operations group will purchase two (2) large hydraulic cable cutters to replace aged and broken units. The cutters are sized to cut our largest cables while providing ergonomic employee positioning. The replacement cutters are similar in material, operation, and construction as the original, broken cutters.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Year:

Not applicable.

Status Update:

Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Power/Lab and Tool Equipment

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)					
	Straight Time	OT	Straight Time	OT		DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
			\$0	\$0	\$0	Large Hydraulic Cable Cutters	each	\$5,000.00	2	\$10,000
			\$0	\$0	\$0	DC High-Potential Tester	each	\$80,000.00	1	\$80,000
						Miscellaneous equipment as needed				\$15,000
			\$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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Station Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
AMI Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Grid Assets & Communications Management: unit rate in hours			\$118	\$115						
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: Service Connections (Residential and Commercial) – All Towns **Project #:** various

Project Schedule: Annual **Project Manager:** 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 Year:

Not applicable.

Status Update:

Not applicable.

CAPITAL PROJECT COST SHEET

Service Connections
PROJECT NAME: (Residential and Commercial)

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
Install new and upgraded service connections at approximately 350 units.	12.0		\$88,833	\$0	\$11,040	Secondary hardware, brackets, connectors, etc.	per service	\$125.00	350	\$43,750
			\$0	\$0	\$0	120' of 1/0 - 3/C service wire for each service	per service	\$175.00	350	\$61,250
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			\$7,691	N/A	\$440					
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews			\$0	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
			\$0	\$0						\$0
			\$0	\$0						\$0
Senior Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
Meter Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Technical Services Manager: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427		\$0
TOTAL LABOR/VEHICLES			\$88,833	\$0	\$11,040	TOTAL MATERIALS/OTHER				\$105,000

PROJECT TOTAL:

\$204,873

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 Year:

Not applicable.

Status Update:

Not applicable.

CAPITAL PROJECT COST SHEET

PROJECT NAME: Routine Construction

SCHEDULE: CY2023

ITEM/TASK	LABOR					MATERIALS/OTHER				
	# of Units		Labor Total (unit rate x labor units)		Vehicle (labor units x vehicle rate)	DESCRIPTION	Unit	Unit Rate	# of Units	TOTAL
	Straight Time	OT	Straight Time	OT						
RMLD Line Crews 2-man crew - unit rate in weeks			\$7,403	\$7,187	\$920					
Capital Construction	30.0	10.0	\$222,082	\$71,867	\$36,800	Materials as necessary				\$300,000
Street Light Installations	4.0		\$29,611	\$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			\$7,691	N/A	\$440					
Underground Construction	5		\$38,457		\$2,200	Materials as necessary				\$125,000
			\$0		\$0					\$0
			\$0		\$0					\$0
Line Operations Supervision: unit rate in hours			\$112	\$108						
Supervision of Line crews	110.0		\$12,286	\$0						\$0
Engineering: unit rate in hours			\$105	\$102						
Project Management	400.0		\$41,928	\$0						\$0
			\$0	\$0						\$0
Senior Tech: unit rate in hours			\$99	\$96	\$21					
			\$0	\$0	\$0					\$0
			\$0	\$0	\$0					\$0
Meter Tech: unit rate in hours			\$69	\$67	\$21					
			\$0	\$0	\$0					\$0
Technical Services Manager: unit rate in hours			\$118	\$115						
Supervision/Project Management			\$0	\$0		Police Details	weeks	\$2,427	52.0	\$126,204
TOTAL LABOR/VEHICLES			\$584,364	\$71,867	\$105,080	TOTAL MATERIALS/OTHER				\$696,204

PROJECT TOTAL:

\$1,457,515

2023 OPERATING BUDGET

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⌘ Six Year Plan CY23-CY28	105
⌘ Statement of Budgeted and Actual Revenues and Expenses CY21-CY23	107
⌘ Statement of Budgeted Revenue and Expenses CY22-CY23	109
⌘ Fixed and Semi-Variable Costs Budgeted and Actual CY21-CY23	111

**Reading Municipal Light Department
Six Year Plan
CY23-CY28**

	CY23	CY24	CY25	CY26	CY27	CY28
	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET	BUDGET
FORECASTED kWh SALES	667,000,000	671,000,000	676,000,000	683,000,000	690,500,000	698,100,000
OPERATING REVENUES						
SALES OF ELEC - BASE	\$ 32,116,223	\$ 34,014,820	\$ 36,084,496	\$ 38,271,985	\$ 39,827,605	\$ 41,039,799
SALES OF ELEC - FUEL	41,106,033	41,733,577	37,754,716	37,049,384	38,511,669	39,292,185
SALES OF ELEC - CAPACITY/TRANSMISSION	34,515,988	35,923,582	35,180,462	35,496,204	36,385,094	37,354,774
FORFEITED DISCOUNTS	963,487	1,020,445	1,082,535	1,148,160	1,194,828	1,231,194
EFFICIENCY ELECTRIFICATION	2,001,000	2,013,000	2,028,000	2,049,000	2,071,500	2,094,300
NYPA	(1,162,000)	(1,184,491)	(1,198,233)	(1,212,080)	(1,224,201)	(1,236,443)
TOTAL OPERATING REVENUES	109,540,730	113,520,933	110,931,976	112,802,653	116,766,495	119,775,809
OPERATING EXPENSES						
PURCHASED POWER - FUEL	39,944,033	40,549,086	36,556,483	35,837,304	37,287,468	38,055,742
PURCHASED POWER - CAPACITY	15,289,599	15,264,018	13,397,247	12,510,607	12,135,289	11,771,230
PURCHASED POWER - TRANSMISSION	19,226,389	20,659,564	21,783,215	22,985,597	24,249,805	25,583,544
EFFICIENCY AND ELECTRIFICATION EXPENSE	3,064,243	2,800,000	2,700,000	2,600,000	2,500,000	2,500,000
OPERATING & MAINTENANCE EXPENSE	7,208,088	7,496,412	7,758,786	7,721,304	7,991,550	8,261,795
GENERAL & ADMINISTRATIVE EXPENSE	15,213,452	15,821,990	16,375,760	16,296,650	16,867,033	17,437,415
DEPRECIATION EXPENSE	5,445,000	6,101,000	6,810,000	7,240,000	7,600,000	7,858,000
TOWN PAYMENTS - 2% NET PLANT	1,772,440	2,023,689	2,194,685	2,185,391	2,186,496	2,173,502
TOTAL OPERATING EXPENSES	107,163,244	110,715,758	107,576,175	107,376,853	110,817,640	113,641,228
OPERATING INCOME	2,377,487	2,805,175	3,355,800	5,425,800	5,948,855	6,134,580
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	(2,548,972)	(2,569,407)	(2,585,766)	(2,601,417)	(2,622,083)	(2,647,271)
LOSS ON DISPOSAL OF ASSETS	(10,000)	(10,000)	(10,000)	(10,000)	(10,000)	(10,000)
CUSTOMER DEPOSIT INTEREST EXP	(10,000)	(10,000)	(10,000)	(10,000)	(10,000)	(10,000)
TOTAL NON-OPERATING REVENUES (EXPENSES)	(1,418,972)	(1,439,407)	(1,455,766)	(1,471,417)	(1,492,083)	(1,517,271)
NET INCOME	\$ 958,514	\$ 1,365,768	\$ 1,900,034	\$ 3,954,383	\$ 4,456,771	\$ 4,617,309
Rate of Return	3.13%	3.28%	3.79%	5.69%	6.20%	6.30%

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.

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

	CY21	CY21	CY21	CY22	CY22	CY22	CY23
	BUDGET	ACTUAL	BUDGET/ACTUAL % CHANGE	BUDGET	8 MOS ACTUAL 4 MOS BUDGET	BUDGET/ACTUAL % CHANGE	BUDGET
Operating Revenues							
Base Revenue	\$ 28,292,988	\$ 27,745,068	(1.94%)	\$ 30,099,569	\$ 30,961,600	2.86%	\$ 32,116,223
Fuel Revenue	27,894,454	27,389,758	(1.81%)	26,522,356	35,515,024	33.91%	41,106,033
Purchased Power Capacity & Transmission	35,465,548	30,817,328	(13.11%)	35,435,495	31,216,676	(11.91%)	34,515,988
Forfeited Discounts	929,005	789,491	(15.02%)	902,987	896,372	(0.73%)	963,487
Energy Conservation Revenue	653,994	718,346	9.84%	1,991,651	1,966,897	(1.24%)	2,001,000
NYPA Credit	(1,143,574)	(1,056,489)	(7.62%)	(1,057,302)	(1,237,655)	17.06%	(1,162,000)
Total Operating Revenues	92,092,414	86,403,502	(6.18%)	93,894,756	99,318,914	5.78%	109,540,729
Expenses							
Power Expenses							
555 Purchased Power - Fuel	26,750,880	27,791,132	3.89%	25,465,054	34,702,936	36.28%	39,944,033
555 Purchased Power - Capacity	17,687,368	16,775,810	(5.15%)	16,978,311	15,203,197	(10.46%)	15,469,599
565 Purchased Power - Transmission	17,778,180	15,688,571	(11.75%)	18,457,184	16,485,971	(10.68%)	19,226,389
Total Purchased Power	62,216,428	60,255,513	(3.15%)	60,900,549	66,392,105	9.02%	74,640,021
Operating and Maintenance Expenses							
580 Supervision and Engineering	1,143,193	1,078,789	(5.63%)	1,153,589	1,117,062	(3.17%)	978,439
581 Station/Control Room Operators	497,935	499,810	0.38%	538,942	497,782	(7.64%)	508,095
582 Station Technicians	448,015	632,404	41.16%	674,564	552,244	(18.13%)	1,337,458
583 Line General Labor	1,059,760	613,382	(42.12%)	1,124,845	678,028	(39.72%)	600,755
585 Street Lighting	-	-	-	-	-	-	-
586 Meter General	192,017	175,030	(8.85%)	197,788	189,324	(4.28%)	270,245
588 Materials Management	455,963	459,245	0.72%	471,160	467,509	(0.77%)	588,589
593 Maintenance of Lines - Overhead	557,801	449,829	(19.36%)	552,225	461,502	(16.43%)	568,743
593 Maintenance of Lines - Tree Trimming	918,849	1,111,606	20.98%	907,776	1,385,388	52.61%	1,589,788
594 Maintenance of Lines - Underground	80,896	24,048	(70.27%)	88,139	118,837	34.83%	194,974
595 Maintenance of Lines - Transformers	227,331	331,530	45.84%	373,160	301,236	(19.27%)	355,040
598 Line General Leave Time Labor	447,878	412,713	(7.85%)	477,783	453,779	(5.02%)	215,963
Total Operating and Maintenance Expenses	6,029,637	5,788,385	(4.00%)	6,559,972	6,222,692	(5.14%)	7,208,088
General & Administrative Expenses							
903 Customer Collection	969,389	1,081,720	11.59%	1,176,246	1,082,216	(7.99%)	1,299,608
904 Uncollectible Accounts	105,000	35,550	(66.14%)	105,000	13,050	(87.57%)	75,000
916 Integrated Resources	601,419	773,481	28.61%	987,280	977,265	(1.01%)	1,071,429
916 Efficiency and Electrification Expense	1,214,035	1,568,595	29.21%	2,441,101	2,361,198	(3.27%)	3,064,243
920 Administrative and General Salaries	2,251,022	1,974,774	(12.27%)	2,373,838	2,040,777	(14.03%)	3,224,132
921 Office Supplies	20,000	16,285	(18.57%)	20,000	17,203	(13.99%)	20,000
923 Outside Services - Legal	497,000	574,723	15.64%	455,918	629,880	38.16%	785,800
923 Outside Services - Contract	508,400	325,411	(35.99%)	735,700	335,524	(54.39%)	740,100
923 Outside Services - Education	257,821	40,296	(84.37%)	329,826	54,794	(83.39%)	329,150
924 Property Insurance	489,700	428,186	(12.56%)	556,500	383,807	(31.03%)	541,550
925 Injuries and Damages	25,600	32,543	27.12%	25,600	22,709	(11.29%)	25,600
926 Employee Pensions and Benefits	3,697,458	758,037	(79.50%)	3,821,325	3,176,606	(16.87%)	4,568,626
930 Miscellaneous General Expense	506,290	425,834	(15.89%)	580,127	426,930	(26.41%)	601,400
931 Rent Expense	212,000	201,320	(5.04%)	212,000	204,754	(3.42%)	212,000
933 Vehicle Expense	388,600	367,746	(5.37%)	379,000	316,957	(16.37%)	389,000
933 Vehicle Expense - Capital	(354,544)	(368,169)	3.84%	(276,428)	(397,695)	43.87%	(510,268)
935 Maintenance of General Plant - Technology	463,775	606,381	30.75%	713,120	568,874	(20.23%)	668,767
935 Maintenance of Building & Garage	933,475	842,662	(9.73%)	929,718	971,887	4.54%	991,558
Total General & Administrative Expenses	12,786,440	9,685,375	(24.25%)	15,565,872	13,186,735	(15.28%)	18,097,695
Other Operating Expenses							
403 Depreciation	4,916,345	4,883,756	(0.66%)	5,108,876	5,099,000	(0.19%)	5,445,000
408 Voluntary Payments to Towns	1,654,460	1,655,433	0.06%	1,707,839	1,688,037	(1.16%)	1,772,440
Total Other Expenses	6,570,805	6,539,189	(0.48%)	6,816,715	6,787,037	(0.44%)	7,217,440
Operating Income	4,489,104	4,135,040	(7.89%)	4,051,648	6,730,345	66.11%	2,377,486
Non-operating Revenues (Expenses)							
415 Contributions in Aid of Construction	-	-	0.00%	50,000	50,000	0.00%	50,000
419 Interest Income	500,000	-	(100.00%)	300,000	300,000	0.00%	300,000
419 Other Income	1,185,000	-	(100.00%)	710,000	710,000	0.00%	710,000
421 Intergovernmental Grants	-	-	0.00%	90,000	-	0.00%	90,000
426 Return on Investment Payment to Reading	(2,480,506)	(2,620,120)	5.63%	(2,528,587)	(2,413,411)	(4.55%)	(2,548,972)
426 Loss on Disposal	(100,000)	-	(100.00%)	(100,000)	-	(100.00%)	(10,000)
431 Interest Expense	(45,000)	(5,550)	(87.67%)	(40,000)	4,994	(112.49%)	(10,000)
Total Non-operating Revenues (Expenses)	(940,506)	(2,625,669)	179.18%	(1,518,587)	(1,348,417)	(11.21%)	(1,418,972)
Net Income	\$ 3,548,599	\$ 1,509,371	(57.47%)	\$ 2,533,061	\$ 5,381,928	112.47%	\$ 958,514

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

	CY23 BUDGET	CY22 BUDGET	Change in Budget %
Operating Revenues			
Base Revenue	\$ 32,116,223	\$ 30,099,569	6.70%
Fuel Revenue	41,106,033	26,522,356	54.99%
Purchased Power Capacity/Transmission	34,515,988	35,435,495	(2.59%)
Forfeited Discounts	963,487	902,987	6.70%
Energy Conservation Revenue	2,001,000	1,991,651	0.47%
NYPA	(1,162,000)	(1,057,302)	9.90%
Total Operating Revenues	109,540,730	93,894,756	16.66%
Expenses			
Power Expenses			
555 Purchased Power - Fuel	39,944,033	25,465,054	56.86%
555 Purchased Power - Capacity	15,469,599	16,978,311	(8.89%)
565 Purchased Power - Transmission	19,226,389	18,457,184	4.17%
Total Purchased Power	74,640,021	60,900,549	22.56%
Operating and Maintenance Expenses			
580 Supervision and Engineering	978,439	1,153,589	(15.18%)
581 Station/Control Room Operators	508,095	538,942	(5.72%)
582 Station Tech	1,337,458	674,564	98.27%
583 Line General Labor	598,755	1,124,845	(46.77%)
585 Street Lighting	2,000	-	0.00%
586 Meter General	270,245	197,788	36.63%
588 Materials Management	588,589	471,160	24.92%
593 Maintenance of Lines - Overhead	568,743	552,225	2.99%
593 Maintenance of Lines - Tree Trimming	1,589,788	907,776	75.13%
594 Maintenance of Lines - Underground	194,974	88,139	121.21%
595 Maintenance of Lines - Transformers	355,040	373,160	(4.86%)
598 Line General Leave Time Labor	215,963	477,783	(54.80%)
Total Operating and Maintenance Expenses	7,208,088	6,559,972	9.88%
General & Administrative Expenses			
903 Customer Collection	1,299,608	1,176,246	10.49%
904 Uncollectible Accounts	75,000	105,000	(28.57%)
916 Integrated Resources	1,071,429	987,280	8.52%
916 Efficiency and Electrification Expense	3,064,243	2,441,101	25.53%
920 Administrative and General Salaries	3,224,132	2,373,838	35.82%
921 Office Supplies	20,000	20,000	0.00%
923 Outside Services-Legal	785,800	455,918	72.36%
923 Outside Services-Contract	740,100	735,700	0.60%
923 Outside Services-Education	329,150	329,826	(0.20%)
924 Property Insurance	541,550	556,500	(2.69%)
925 Injuries and Damages	25,600	25,600	0.00%
926 Employee Pensions and Benefits	4,568,626	3,821,325	19.56%
930 Miscellaneous General Expense	601,400	580,127	3.67%
931 Rent Expense	212,000	212,000	0.00%
933 Vehicle Expense	389,000	379,000	2.64%
933 Vehicle Expense - Capital	(510,268)	(276,428)	84.59%
935 Maintenance of General Plant - Technology	668,767	713,120	(6.22%)
935 Maintenance of Building & Garage	991,558	929,718	6.65%
Total General & Administrative Expenses	18,097,695	15,565,872	16.27%
Other Operating Expenses			
403 Depreciation	5,445,000	5,108,876	6.58%
408 Voluntary Payments to Towns	1,772,440	1,707,839	3.78%
Total Other Expenses	7,217,440	6,816,715	5.88%
Operating Income	2,377,487	4,051,648	(41.32%)
Non-operating Revenues (Expenses)			
415 Contributions in Aid of Construction	50,000	50,000	0.00%
419 Interest Income	300,000	300,000	0.00%
419 Other Income	710,000	710,000	0.00%
421 Intergovernmental Grants	90,000	90,000	0.00%
426 Return on Investment Payment to Reading	(2,548,972)	(2,528,587)	0.81%
426 Loss on Disposal	(10,000)	(100,000)	(90.00%)
431 Interest Expense	(10,000)	(40,000)	(75.00%)
Total Non-operating Revenues (Expenses)	(1,418,972)	(1,518,587)	(6.56%)
Net Income	\$ 958,515	\$ 2,533,061	(62.16%)

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

	CY 21	CY 21	CY 22	CY 22	CY 23	CY 23	
	BUDGET	ACTUAL	BUDGET	8 MOS ACTUAL 4 MOS BUDGET	BUDGET	% OF BUDGET	
FIXED COSTS							
Purchased Power - Fuel	\$ 26,750,880	\$ 27,791,132	\$ 25,465,054	\$ 18,418,892	\$ 39,944,033		36.40%
Purchased Power - Capacity	17,687,368	16,775,810	16,978,311	7,650,770	15,469,599	66.59%	14.10%
Purchased Power - Transmission	17,778,180	15,688,571	18,457,184	8,986,449	19,226,389		17.52%
Depreciation Expense	4,916,345	4,883,756	5,108,876	4,970,579	5,445,000		4.96%
Return on Investment Payment to Reading	2,480,506	2,620,120	2,528,587	2,413,411	2,548,972		2.32%
Town Payments - 2% of Net Plant	1,654,460	1,655,433	1,707,839	1,688,037	1,772,440		1.62%
Loss on Disposal of Assets	100,000	-	100,000	-	10,000		0.01%
TOTAL FIXED COSTS	71,367,739	69,414,821	70,345,851	44,128,138	84,416,433		76.93%
SEMI-VARIABLE COSTS							
Labor Expense	8,352,246	-	9,405,351	-	10,928,640	7.84%	9.96%
Labor - Capital	(1,216,814)	6,433,115	(1,483,143)	6,634,579	(2,692,323)		-2.45%
Overtime Expense	1,066,200	-	1,036,780	-	1,063,560	0.76%	0.97%
Overtime - Capital	(190,534)	800,261	(184,731)	790,448	(263,974)		-0.24%
Employee Benefits/Pension	4,508,090	758,037	4,782,020	1,176,606	5,649,100	4.34%	5.15%
Employee Benefits/Pension - Capital	(810,632)	-	(960,695)	-	(1,080,474)		-0.98%
Other Operating and Maintenance Expense	2,161,285	2,208,544	2,575,148	2,595,240	3,400,525		3.10%
Efficiency and Electrification Expense	1,214,035	1,568,595	2,441,101	1,361,198	3,064,243		2.79%
Tree Trimming Services	918,849	1,111,606	907,776	1,385,388	1,589,788		1.45%
Contract/Consulting Services	508,400	325,411	735,700	335,524	740,100		0.67%
Software/Hardware Maintenance	463,775	606,381	713,120	568,874	668,767		0.61%
Property Insurance	489,700	428,186	556,500	383,807	541,550		0.49%
Legal Expense	497,000	574,723	455,918	629,880	785,800		0.72%
Vehicle Expense	388,600	367,746	379,000	316,957	389,000		0.35%
Vehicle Expense - Capital	(354,544)	(368,169)	(276,428)	(397,695)	(510,268)		-0.47%
Transformer Maintenance (Hazardous Material)	215,000	330,841	360,000	300,547	350,000		0.32%
Training & Tuition Reimbursement Expense	257,821	40,296	329,826	54,794	329,150		0.30%
Rent Expense	212,000	201,320	212,000	204,754	212,000		0.19%
Bad Debt Expense	105,000	35,550	105,000	13,050	75,000		0.07%
Injuries & Damages	25,600	32,543	25,600	22,709	25,600		0.02%
RMLB/CAB	30,000	8,038	30,000	11,059	30,000		0.03%
Office Supplies	20,000	16,285	20,000	17,203	20,000		0.02%
TOTAL SEMI-VARIABLE COSTS	18,861,077	15,479,310	22,165,844	16,404,921	25,315,783		23.07%
TOTAL	\$ 90,228,816	\$ 84,894,131	\$ 92,511,695	\$ 60,533,058	\$ 109,732,215		100.00%

2023 POWER SUPPLY

	Page #
⌘ Bulk Power Cost Projections	115
⌘ Description of RMLD's Power Supply	117-125

Bulk Power Cost Projections
Reading Municipal Light Department
Total 2023 (Jan-Dec)

FCA8

System Peak Demand (KW)

System Energy Requirements (MWH)

686,137.09

14%

RESOURCES	(KW)	FIXED COSTS			ENERGY VARIABLE COSTS			TRANS. COSTS		TOTAL COSTS	
		Budget		CF	MWH	Budget		Budget (\$)	Budget (\$)	Budget	
		(\$/KW-MO)	(\$)	(%)		(\$/MWH)	(\$)			(\$)	(\$/MWH)
NYPA	4,102	4.12	\$ 202,783.68		27,610.42	\$ 4.92	\$ 135,843.25	\$ 519,054.43	\$ 857,681.36		31.06
Millstone Mix 1	2,911	19.55	\$ 682,742.51		22,793.78	\$ 6.30	\$ 143,600.57	\$ 26,600.36	\$ 852,943.44		37.42
Millstone Project 3	2,075	19.45	\$ 484,084.82		16,245.51	\$ 6.30	\$ 102,346.91	\$ 18,954.75	\$ 605,386.47		37.26
Seabrook Mix 1	300	15.82	\$ 56,872.25		2,281.92	\$ 4.66	\$ 10,632.64	\$ 164.27	\$ 67,669.15		29.65
Seabrook Project 4	6,801	15.55	\$ 1,269,495.98		51,816.73	\$ 4.66	\$ 241,441.96	\$ 3,720.09	\$ 1,514,658.03		29.23
Seabrook Project 5	839	16.00	\$ 161,023.20		6,391.37	\$ 4.66	\$ 29,780.88	\$ 458.90	\$ 191,262.97		29.93
=====			=====		=====		=====	=====	=====		=====
SUBTOTAL - BASE	13,304		\$ 2,857,002.43		127,139.72		\$ 663,646.20	\$ 568,952.79	\$ 4,089,601.42		32.17
ISO FCM Costs			\$ 4,852,877.88		-	\$ -	\$ -	\$ -	\$ 4,852,877.88		0.00
FCM Payments from LP			\$ (238,138.50)		-	\$ -	\$ -	\$ -	\$ (238,138.50)		0.00
			\$ -		-	\$ -	\$ -	\$ -			
Saddleback Wind			\$ -		14,670.31	\$ 95.00	\$ 1,393,679.32	\$ -	\$ 1,393,679.32		95.00
Indian River Hydro			\$ -		2,875.85	\$ 128.67	\$ 370,048.99	\$ -	\$ 370,048.99		128.67
Pepperell Hydro			\$ -		6,888.70	\$ 128.74	\$ 886,862.99	\$ -	\$ 886,862.99		128.74
Turners Falls Hydro			\$ -		1,489.34	\$ 128.20	\$ 190,937.12	\$ -	\$ 190,937.12		128.20
Woronoco Hydro			\$ -		7,065.38	\$ 130.29	\$ 920,543.64	\$ -	\$ 920,543.64		130.29
Collins Hydro			\$ -		4,446.53	\$ 92.24	\$ 410,163.37	\$ -	\$ 410,163.37		92.24
Pioneer Hydro			\$ -		6,748.98	\$ 92.18	\$ 622,149.22	\$ -	\$ 622,149.22		92.18
Silver St Hydro			\$ -		3,738.07	\$ 68.00	\$ 254,188.90	\$ -	\$ 254,188.90		68.00
Wyre Wind Hydro			\$ -		11,612.48	\$ 65.34	\$ 758,814.22	\$ -	\$ 758,814.22		65.34
Jericho Wind			\$ -		7,332.22	\$ 110.00	\$ 806,544.06	\$ -	\$ 806,544.06		110.00
NextEra			\$ -		130,561.60	\$ 35.59	\$ 4,646,251.79	\$ -	\$ 4,646,251.79		35.59
Shepaug			\$ -		13,642.76	\$ 52.73	\$ 719,360.93	\$ -	\$ 719,360.93		52.73
Stevenson			\$ -		6,763.58	\$ 51.90	\$ 351,057.51	\$ -	\$ 351,057.51		51.90
Solar - Altus			\$ -		1,518.30	\$ 78.84	\$ 119,709.76	\$ -	\$ 119,709.76		78.84
Solar - Marina			\$ -		2,788.16	\$ 77.78	\$ 216,865.16	\$ -	\$ 216,865.16		77.78
Solar - Kearsarge			\$ -		2,303.13	\$ 75.00	\$ 172,734.63	\$ -	\$ 172,734.63		75.00
Quinebaug Hydro			\$ -		7,883.71	\$ 80.00	\$ 630,696.52	\$ -	\$ 630,696.52		80.00
RoxWind			\$ -		25,616.96	\$ 87.00	\$ 2,228,675.64	\$ -	\$ 2,228,675.64		87.00
Gravel Pit Solar III			\$ -		-	\$ -	\$ -	\$ -	\$ -		0.00
Cabot/Tuners			\$ -		42,056.97	\$ 45.07	\$ 1,895,384.28	\$ -	\$ 1,895,384.28		45.07
Dahowa			\$ -		35,794.98	\$ 60.00	\$ 2,147,698.92	\$ -	\$ 2,147,698.92		60.00
NextEra (LFG)			\$ -		8,760.00	\$ 74.45	\$ 652,182.00	\$ -	\$ 652,182.00		74.45
NextEra (Seabrook)			\$ -		106,321.88	\$ 47.47	\$ 5,047,223.10	\$ -	\$ 5,047,223.10		47.47
DG NH Seabrook #3			\$ -		-	\$ -	\$ -	\$ -	\$ -		0.00
DG NH Seabrook #4			\$ -		-	\$ -	\$ -	\$ -	\$ -		0.00
Battery Storage			\$ 274,464.00		-	\$ -	\$ -	\$ -	\$ 274,464.00		0.00
Coop / Resale			\$ 25,200.00		-	\$ -	\$ -	\$ -	\$ 25,200.00		0.00
DG Unit			\$ 60,000.00		-	\$ -	\$ -	\$ -	\$ 60,000.00		0.00
Watson	11,400		\$ 1,368,566.12		-	\$ -	\$ -	\$ -	\$ 1,368,566.12		0.00
StonyBrook Inter	56,374		\$ 2,161,521.71		13,030.90	\$ 43.00	\$ 560,378.28	\$ 115,134.64	\$ 2,837,034.63		217.72
=====			=====		=====		=====	=====	=====		=====
SUBTOTAL - INTERMEDIATE	67,774		\$ 8,504,491.21		463,910.79		\$ 26,002,150.36	\$ 115,134.64	\$ 34,621,776.22		74.63
StonyBrook Peaking	33,705		\$ 713,143.75		343.72	\$ 241.14	\$ 82,886.51	\$ 66,727.79	\$ 862,758.05		2,510.05
=====			=====		=====		=====	=====	=====		=====
SUBTOTAL - PEAKING	33,705		\$ 713,143.75		343.72		\$ 82,886.51	\$ 66,727.79	\$ 862,758.05		2,510.05
ISO Energy Net Interchange			\$ -		94,742.86	\$ 133.35	\$ 12,634,213.69	\$ -	\$ 12,634,213.69		133.35
Addition ISO purchases from higher load					-	\$ 133.35	\$ -				
Eversource Transmission			\$ -		-	\$ -	\$ -	\$ 3,939.12	\$ 3,939.12		0.01
ENE All Req/Short Supply			\$ 371,422.68		-	\$ -	\$ -	\$ -	\$ 371,422.68		0.54
ISO Ancillary/Schedule Charges			\$ 3,035,474.21		-	\$ -	\$ -	\$ -	\$ 3,035,474.21		4.42
ISO Annual Fee			\$ -		-	\$ -	\$ -	\$ -	\$ -		0.00
PRD Transmission			\$ -		-	\$ -	\$ -	\$ 1,222,278.89	\$ 1,222,278.89		1.78
ISO RNS Charges			\$ -		-	\$ -	\$ -	\$ 17,305,516.74	\$ 17,305,516.74		25.22
HQ Phase I-VEC			\$ -		-	\$ -	\$ -	\$ 13,163.66	\$ 13,163.66		0.02
HQ Phase I-NEE			\$ -		-	\$ -	\$ -	\$ 36,858.25	\$ 36,858.25		0.05
HQ Phase II			\$ -		-	\$ -	\$ -	\$ 263,273.22	\$ 263,273.22		0.38
HQ Use Right Sale			\$ (191,935.57)		-	\$ -	\$ -	\$ (369,456.00)	\$ (561,391.57)		-0.82
=====			=====		=====		=====	=====	=====		=====
SUBTOTAL - OTHER CHARGES	0		\$ 3,214,961.31		-		\$ -	\$ 18,475,573.87	\$ 21,690,535.19		31.61
CERTIFICATES							\$ (4,085,109.40)				
=====			=====		=====		=====	=====	=====		=====
TOTAL	101,479		\$ 15,289,598.70		686,137.09	\$ 57.40	\$ 39,382,896.76	\$ 19,226,389.09	\$ 73,898,884.56		107.70
TOTAL WITH CERTIFICATE SALES			\$ 15,289,598.70				\$ 35,297,787.36	\$ 19,226,389.09	\$ 69,813,775.16		

\$ -

Description of RMLD's Power Supply Resources for 2023

New York Power Authority (NYPA)

RMLD receives inexpensive hydroelectric power from NYPA at its generating stations in Niagara 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.

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 and 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

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 utilities. RMLD has an entitlement of approximately 0.47% of the capacity of the facility from this contract. Currently, RMLD sells its 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 its share of the facility's capacity.

Eagle Creek Energy Holdings - Hydro

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 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 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 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 energy 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 acquisition 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 energy 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.

Hosiery 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 energy 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.

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 energy plus all attributes under this contract. The average annual generation is estimated to be 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 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.

RoxWind - Wind

RMLD has contracted for 50% of the output from four wind turbines in Maine. RMLD's receives 25,600 MWHs per year, starting at the end of 2021, 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.

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 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 forty 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 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.

Kearsarge – 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 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 Massachusetts 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

RMLD has multiple contracts with FirstLight Hydro. All contracted FirstLight hydro plants are non-carbon generating resources and RMLD is entitled to the associated output certificates for its share of the output.

- **Shepaug & Stevenson:** In March 2019, RMLD signed a purchase power agreement with FirstLight Power Resources Management, LLC. for 10.3% and 7.3% of the output of the Shepaug and the Stevenson Hydroelectric Station, respectively, 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. In June 2022, RMLD executed an extension of the Shepaug and Stevenson hydroelectric contract, starting in January 2024 through to 2030. RMLD will receive 13.49% of Shepaug and 9.53% of the Stevenson output. The average combined production is approximately 27,500 MWH per year.
- **Cabot-Turners Falls:** RMLD executed a contract with FirstLight in 2020 for two hydroelectric generating stations along a 2.7 mile stretch of the Connecticut River, Cabot and Turners Falls Generating Stations. Together, they are

anticipated to deliver 22,250 MWHs in 2022, 42,000 MWHs in 2023, and 34,000 MWHs from 2024 through 2030.

- **Falls Village:** RLMD is in active negotiations to receive 100% of the output from Falls Village, a hydroelectric plant in on the Housatonic River that generates 38,000 MWH annually. The contract will begin in 2025, running through 2040.

Gravity Renewables - Hydro

- **Quinebaug:** In February 2020, RMLD signed an agreement with Gravity to receive approximately 10,700 MWH per year from 2021 to 2030. The Quinebaug hydroelectric plant is located in northeastern Connecticut, near the confluence of Five Mile and Quinebaug Rivers. The facility is a non-carbon generating resource and RMLD is entitled to the associated output certificates for its share of the output.
- **WyreWynd Hydro:** RMLD has been receiving power from the WyreWynd (Aspinhook) hydro facility since 2016. The contract expired in June 2022, and RMLD and Gravity extended the contract in the spring of 2022; RMLD will continue to receive approximately 10,000 MWHs per year in 2022 and 2023. This is a non-carbon generating resource and RMLD is exploring acquisition of the associated output certificates for the facility
- **Dahowa:** In July 2021, RMLD entered into an agreement with Gravity to purchase approximately 35,000 MWH per year, from 2022 to 2045, from the Dahowa Plant in Upstate New York. The facility is a non-carbon generating resource and RMLD is entitled to the associated output certificates for its share of the output.

NextEra Transaction Facilitation Agreement (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.

NextEra LFG & Seabrook

In June 2020, NextEra entered into an agreement with RMLD to provide firm around-the-clock power from 2022 through 2030. RMLD will receive 100% of the output of a landfill gas power generating station in Woburn, MA, while the remainder of the energy will come from Seabrook Nuclear Generating Station. Together, these facilities will provide approximately 43,800 MWH per year of firm, around-the-clock power. These two facilities are non-carbon generating resources and RMLD is entitled to the associated output certificates.

NextEra Swap & Swap Shape Option

In July 2021, NextEra entered into an agreement with RMLD to provide approximately 93,000 MWH per year of power from the Seabrook Nuclear Generating Station, starting April 2023. This is a non-carbon generating resource and RMLD is entitled to the associated output certificates for its share of the facility.

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