

Reading Municipal Light Board of Commissioners

Regular Session

230 Ash Street

Reading, MA 01867

May 26, 2016

Start Time of Regular Session: 6:35 p.m.

End Time of Regular Session: 8:36 p.m.

Commissioners:

Thomas O'Rourke, Chairman

David Talbot, Vice Chairman

John Stempeck, Commissioner - Absent

Philip B. Pacino, Vice Chairman

Dave Hennessy, Commissioner, Secretary Pro Tem

Staff:

Coleen O'Brien, General Manager

Hamid Jaffari, Director of E&O

Wendy Markiewicz, Assistant Director of Business Finance

Jane Parenteau, Director of Integrated Resources

Bob Fournier, Accounting/Business Manager

Priscilla Gottwald, Community Relations Manager

Patricia Mellino, Operational Assistant

Peter Price, Chief Engineer

Citizens' Advisory Board:

David Nelson, Vice Chair

Public:

Martha Moore, Reading Memorial High School

Terence Sheehan, Wilmington Middle School

Lorie Kelly, Lynnfield, Summer Street School

Christine Molle, North Reading, E. Ethel Little School - Absent

Call Meeting to Order

Chairman O'Rourke called the meeting to order and stated that the meeting was not live but being videotaped for distribution to Reading, North Reading, Lynnfield, and Wilmington.

Opening Remarks

Chairman O'Rourke read the RMLD Board of Commissioners Code of Conduct.

Introductions

Chairman O'Rourke welcomed David Nelson Citizens' Advisory Board (CAB) member.

Commissioner Hennessy will be the Secretary this evening.

Presentation - Winning Schools for RMLD's - LED's Save Energy Campaign

Chairman O'Rourke welcomed the winners of RMLD's LED's Save Energy Campaign. The campaign ran from January 15 through April 15. Its purpose was to educate customers about energy awareness and to encourage students and their families to help change the world, one energy savings step at a time, while supporting their schools in a friendly competition. Through this collaboration with twenty four public schools in our service territory RMLD invited the school parents to participate by purchasing energy efficient LED bulbs and power strips from RMLD's online store at a discount. At checkout parents checked off their child's school and the school in each town that received the most credits are the winners of a \$2,000 rebate towards ENERGY STAR equipment or appliances.

Congratulations to: Reading Memorial High School, represented by Martha Moore who teaches biology and is the Environmental Club Advisor, Wilmington Middle School, Assistant Principal Terence Sheehan, Lynnfield Summer Street School, Assistant Principal Lorie Kelly and North Reading E. Ethel Little School, unfortunately Principal, Christine Molle and her staff are attending an art night at the school this evening. Photos were taken earlier this afternoon.

Ms. Gottwald pointed out that the RMLD had the cooperation of all the Superintendents in all the towns RMLD serves. Chairman O'Rourke complimented Ms. Gottwald for her good work on this effort.

Chairman O'Rourke said that in RMLD's continuing effort to educate the public about energy efficiency, we hope you will join our efforts to help reduce RMLD's summer electrical peak and the cost of electricity to RMLD's customers. The summer demand peak season is June 1 through August 31. Approximately 25% of the electric bill is determined by how well RMLD conserves during that one true peak hour. That one hour, referred to as peak demand, occurs on a hot weekday afternoon in June through August, usually between the hours of 2 pm and 5 pm.

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Presentation - Winning Schools for RMLD's - LED's Save Energy Campaign

Chairman O'Rourke stated that the defining hour represents the highest point of customer consumption of electricity for all of New England. The prediction of the peak is done by the Independent System Operator – New England (ISO-NE). Prediction of the peak may be called multiple times as the summer progresses to ensure that the actual peak is captured. For example, if a heat wave in early July brings the annual peak thus far, ISO-NE will call for the peak. Subsequently, later in July, if a more intense heat wave occurs, another peak is called.

RMLD asks you to voluntarily reduce electric use when peak electric demand is predicted. We are asking our customers through emails, texts, and social media (Twitter:@Reading Light) to join our initiative in helping reduce the summer peak. If you opt in to receive our notifications, we will be sending email blasts along with tweets, and possibly using town notification systems, when it appears a possible peak hour may occur.

You can help by postponing the use of appliances like washers and dryers until later in the day, shutting of pool pumps for a few hours, raising the setting on your air conditioning thermostat a few degrees or cooking dinner on the grill. As well, forwarding our notification will also help to get the word out. SHAVE THE PEAK.

Chairman O'Rourke congratulated Ms. Gottwald because she is the person behind the scenes that organizes the logistics for this and many other events. Chairman O'Rourke congratulated the school winners for putting the effort in and spreading the word to a younger generation, they are our best and brightest hope to change the world and they understand the environment.

Mr. Talbot asked if there is a formal system where schools are notified of peak days. Ms. O'Brien said that the RMLD is working with the Superintendents' office to send out a notifications of the peak and will send the chain out. Mr. Talbot asked for all four towns. Ms. O'Brien responded that is correct. Ms. Gottwald stated that for the LED's Save Energy Campaign, the Superintendents approved this program and sent it to all the students' parents in the school. Mr. Talbot stated that it was a great job.

Report of the Committee – Audit Committee – Vice Chair Pacino

Mr. Pacino reported that the Town of Reading Audit Committee met on May 5, 2016. Melanson Heath presented the audit for the Town of Reading which includes the Light Department and Water Department. The Audit Committee accepted the Audit Report. There was one Management Letter comment on the use of the Reserve Funds by the School Department. There is more in the Reserve Funds than there should be. The Town Accountant said that she is working with the School Department in terms of taking care of that. Mr. Pacino pointed out that the auditors cautioned the Audit Committee that next year there will be a new GASB liability to be recognized, Post Employment Benefits is a large liability that will need to be recognized on the Balance Sheet.

Report of the General Manager

RMLD Open House, Thursday, October 6, 2016 – Ms. O'Brien

Ms. O'Brien reported that the upcoming RMLD Open House will occur during National Public Power Week, on October 6. The benefits of publicly owned utilities are recognized. RMLD is not sure what the format is, but have been demonstrating the safety of the employees and linemen. Last year we demonstrated the safety of the home. We are hoping to have fun things for children.

Ms. O'Brien said that they are thinking of different activities aimed at SHAVE THE PEAK. There is going to be a program for the third grades. The RMLD is currently checking with the schools to see if there is anything that can be done in the high schools. The T-Shirt program will be changed to an arts projects at the high school program. RMLD has artwork that is faded and the frames can be used. Drawings can showcase shave the peak, energy conservation and those types of themes. They will be voted on. It will be a reduction in cost from the T-Shirts. Also, looking for ideas for the Open House. Maybe decals on cars for Shave the Peak. The Board expressed interest in the continuation of the historical calendar.

Review of RMLD's Fiscal Year 2017 Capital Budget – Mr. Jaffari

Note: RMLD Board will take a vote on both the Fiscal Year 2017 Operating and Capital Budgets

Mr. Jaffari reported on the Fiscal Year 2017 Capital Budget. Mr. Jaffari said that he will provide an update of the distributed generation projects, then Ms. Parenteau will address RMLD rates as well as Terms and Conditions.

Chairman O'Rourke said that at the last RMLD Board meeting the Board RMLD's Fiscal Year 2017 Operating Budget was presented and conditionally approved. At the end of the discussion RMLD's Fiscal Year 2017 Capital and Operating Budgets will be approved.

Mr. Jaffari then addressed the Fiscal Year 2016 Capital Authorization Major Spending. Mr. Jaffari pointed out that the projects listed in green are a result of the Reliability Study performed by Booth & Associates in 2015. The red items are non completed projects such as Distributed Generation, GIS, and Power Quality Meters due to a myriad of reasons. The black items are projects that have been completed.

RMLD's Fiscal Year 2017 Capital Budget

Mr. Jaffari explained that the Distributed Generation bid went out, but was pulled back due to vendors taking so many exceptions. The bid technical specifications were reviewed to address some of the concerns and advertised yesterday for rebid. There were also some permitting requirements that were required. With the GIS there were a number of problems with RMLD's multiple databases that needed to be fixed and GIS data collection template needed to be reformatted accordingly. This bid was awarded last year to Davey's who ran into data collection problems delaying this project. Mr. Jaffari stated that the solution was to revamp the entire data collection process, but moving forward with the revised data collection format. The Power Quality Meters were not purchased due to the fact a new AMI mesh network was created and new meters are capable of recording power quality parameters where mesh exists. Instead of spending money on the equipment the network is capable of accomplishing most of this. There may be the need to purchase additional equipment for areas RMLD does not have access to until the mesh network is built. This will enable the RMLD to have the data that can be used for demand response programs.

Mr. Jaffari stated that \$10,596,000 was requested last year's (fiscal year 2016) Capital Budget and are estimating to spend \$7,227,000.

The project rollovers to fiscal year 2017 include: Distributed Generation, GIS and Power Quality Meters, which represents \$2,455,000. The projects on hold include: Master Facilities, 5W9 Circuit and Relay Replacement which represents \$323,000. The RMLD has been searching for the new Substation 5 in Wilmington and did not expend funds on the circuit until the RMLD has a definitive location for the substation. Chairman O'Rourke asked about the substation. Mr. Jaffari explained that the RMLD will purchase the land this year, fiscal year 2017, starting construction in fiscal year 2018 with completion fiscal year 2019. The Reliability Study (performed by Booth & Associates) suggested that the RMLD in fiscal year 2017 start the new substation because the current substation is getting old.

Mr. Hennessy asked do the rollovers indicate that the project was not completed. Mr. Jaffari responded that the funds are rolled over from fiscal year 2016 to fiscal year 2017 for various reasons such as Distributed Generation, which required more time for permitting and bidding process.

Mr. Jaffari added some of the budgeted items that lowered the spending in FY2017 were bids that came in lower than expected saving \$155,000. Additionally, using internal resources and lower construction costs resulted additional \$436,000 savings.

Mr. Jaffari stated that for fiscal year 2016 the budget was \$10,596,000 with estimated spending of \$7,227,000 resulting in a variance of \$3,369,000, with 62% of this amount belonging to the Distributed Generation project. RMLD went over the budgeted amount for some projects while it saved on others. The breakdown of these projects is as follows: Routine Construction was over due to the new transformer maintenance program, transformers that needed to be replaced due to leaking and failure. The spending for substation 4's Breakers Replacement was under the budgeted amount in FY2015 and FY2016. This bid amount for this project came in under budget by half and was completed in one year timeframe versus a two year timeframe which proved to be more cost effective. Lowell Street project went over the budgeted amount due to challenges with construction because of the ledge problem when setting the poles. Old Lynnfield Center also went over the budgeted amount because there were construction challenges with the drainage and services deeper than expected, causing rerouting of the lines.

Mr. Jaffari then addressed the fiscal year 2017 major spending projects. Mr. Jaffari stated those in green color represent the Reliability Study recommendations. These include: Distributed Generation \$2,720,000 seeking a 2-2.5 megawatt generator, New Wilmington Substation, \$250,000 land needs to be purchased and the RMLD currently has an offer in on a piece of land with the possibility of two land locations, (Relay Replacements, LED Streetlights, HVAC System Upgrade, Grid Modernization these amounts reflect what RMLD has estimated), GIS \$360,000, Step-Down Upgrades reflect the conversion from 4.16KV to 13.8KV which helps minimize losses, which is a cost savings to the RMLD. URD Upgrade involves the upgrade of underground in all four communities. Routine Construction to be more proactive with maintenance such as tree trimming, transformer upgrades and cut out replacement. Padmount Switchgear replacements project: this project represents a proactive maintenance program, the RMLD has switchgears that are thirty to thirty five years old that are at the end of their useful life. The newer units provide demand response information which currently does not exist. Transformers and Capacitors in the industrial areas needed upgrading as part of the proactive maintenance program. These transformers are 1000KVA or 2000KVA costing \$30,000 to \$50,000. Rolling Stock project includes a material handler that costs \$250,000 that needs to be purchased, a new SUV and a trailers for reels of wire. AMI Mesh Network project: this project costs \$220,000 which includes the pilot that has been completed, the 500 club meters are 95% completed. These are meters that they were once read manually. The new meters are fixed network mesh technology, which by far are more advanced and capable of existing Itron meters. These meters will also provide for reading the end of the line voltage. This project has been successfully implemented and will be fully completed with the installation of a few remaining meters by the first week of June. The Mesh Network will be expanded to retrofit the Itron meters by changing the ERT module with the Eaton Cooper module, which allows for more data to come back to the RMLD's SCADA from the distribution feeders to implement demand response. In fiscal year 2017, the RMLD will retrofit 240 meters and this will be ongoing until all meters have been retrofitted with the new Eaton's mesh network technology. Substation 3 Relay Upgrades & SCADA Integration project: the existing relays are the original relays to when the substation was built, they need to be updated in order to achieve automation. MIS project: \$252,000 involves software and hardware.

RMLD's Fiscal Year 2017 Capital Budget

Mr. Jaffari stated that the IRD, \$10,000 represent data loggers required for demand response. Others projects (Facility Site Plan, 4W9 circuit upgrade, PM Switch Upgrade, Fiber Optics) worth \$1,172,000. The total budget amount for the Fiscal Year 2017 Capital Budget is \$9,406,217.

Ms. O'Brien stated that the Capital Budget on page 22, the Capital Layout there was a new column that was added "projected project variance." The column was added because projects that are done on the capital side that get extended or rolled over it speaks to the question what was approved versus what was spent.

In terms of the new column added to the Capital Budget, Ms. O'Brien noted that of all the budgets the two projects that RMLD went over budget were Cooks Farm for \$140,000 and Pole Line Upgrade for Lowell Street, Wilmington. Ms. O'Brien stated that Mr. Jaffari has previously explained why we went over budget on those projects.

Mr. Jaffari then addressed the Distributive Generation Pilot Project status. Mr. Jaffari reported that the RMLD was hoping to have already started this project, but the prior site under consideration did not work out. Currently, the engineering specifications have been revamped, with a consultant's review to ensure that there is nothing missing. A noise study was performed with the generator that will be included in the bid. The noise level tolerance will be 60DB at fifty feet. There is no noise from the generator at the street. Mr. Jaffari said that he and Ms. Parenteau had a site visit at Middleborough Gas & Electric and they could not hear the engine when running, only the traffic from the street. RMLD has performed soil testing with no environmental issues. The site preparation plan has been completed and building permit approved by the Town of North Reading. Mr. Jaffari pointed out that the RMLD will be having a meeting with the public in North Reading to notify them of what the project will entail. Mr. Jaffari noted that the bid for the project went out yesterday with the pre bid conference with the recommendation for the next Board meeting. The construction is anticipated to be completed by June 15, 2017.

Monies spent on the Distributive Generation Pilot Project are as follows: Fiscal Year 2016, \$14,100 engineering review and permit fees. Fiscal Year 2017, the cost for 2MW is approximately \$2 million, and for a 2.5MW unit the cost will be an additional \$300,000, Site preparation cost is estimated at \$285,900 for installing the pad, conduits, manholes and cables to the breaker. Gas needs to be brought inside the substation. National Grid originally estimated the cost to be \$325,000 then they lowered the numbers to \$123,000 upon further review and analysis. Miscellaneous costs, there are always unforeseen expenses, \$97,000. The total estimated cost for the DG project is \$2,720,000. This will help shave the peak through the SCADA. Mr. Jaffari noted as Ms. Parenteau has pointed out, capacity and transmission costs will be increasing significantly in 2017. To offset some of this cost we need to construct this project coupled as well as implementing our demand response.

Mr. Hennessy asked how many hours the unit will run each summer. Mr. Jaffari responded that with the permitting the RMLD asked for a minimum of 600 hours, 50 hours per month. Mr. Jaffari said that for the summer he is estimating no more than 100-150 hours. There is the monthly as well as the seasonal peak. You want to have the flexibility to use that. In the winter it is highly unlikely that it will be used, gas prices tend to be higher.

Ms. O'Brien asked Mr. Jaffari to explain the payback period. Mr. Jaffari responded that the payback period will be four to five years based on fiscal year 2017 transmission and capacity costs. The RMLD will receive a non financial credit from the ISO.

Ms. O'Brien clarified with Ms. Parenteau for shave the peak for next year the cost of one megawatt. Ms. Parenteau explained that the unit is a two megawatt unit. If you look at the peak period plus the transmission peak this would result in transmission and capacity savings. The average savings is over \$500,000 annually.

Mr. Talbot asked what the lifetime of the engines is. Mr. Jaffari responded that depending on the usage, it is anywhere from 15-30 years. The units will need to be maintained annually. Mr. Talbot clarified when you say four to five years does that include the operating expenses. Mr. Jaffari added the capital expense. Mr. Talbot asked what the operating expense is. Mr. Jaffari explained that in the bid they asked for warranties. There will be some warranties that cover both labor and parts. The annual maintenance cost is minimal. It would be between \$5,000 to \$10,000 maintenance for five years. Mr. Talbot asked what is the maximize time for the gas to be on. Ms. Parenteau replied probably no more than 200 hours, although the permitting was a higher amount. Mr. Talbot asked how much does it cost gas versus the gas costs at current prices to operate it because this is not factored in. Ms. Parenteau responded that is correct. The gas prices will be the market prices, the current price of gas is \$2 to \$3 per MMBTU. The heat rate because this is a peaking plant and will not run frequently, the heat rate needs to be looked at, but the outage costs to run is \$100 per megawatt hour and will be run for two to three hours to capture that peak period. Mr. Talbot asked if you run the unit 200 hours annually, what the gas cost is. Ms. Parenteau said that she did a breakdown and will provide it to him. Mr. Talbot commented that the four and a half year payback is great, but it does not include operating expenses, maintenance and the cost of the gas. Mr. Jaffari added that the maintenance will not be more than \$50,000 total. Mr. Hennessy added there is no maintenance. Ms. Parenteau said that there is limited maintenance, it is based on the number of hours the unit runs. Ms. Parenteau pointed out that one of RMLD's municipalities has a maintenance agreement to have someone look at the unit annually with a cost of \$10,000.

RMLD's Fiscal Year 2017 Capital Budget

Mr. Talbot pointed out that the operating costs and gas costs are so trivial it does not factor into this does not mean it is seven year payback, correct. Mr. Jaffari responded that the energy cost does not matter if you pay it ISO New England or pay energy cost to run the engine, it is the same. Ms. Parenteau said that it is market rates. The RMLD will compare the cost to run it versus the cost to buy it on the Spot Market. Mr. Talbot asked why not purchase the 2.5 megawatt unit. Mr. Jaffari said that he is receiving mixed signals from the vendors on the cost for 2 versus 2.5 megawatt unit. Mr. Jaffari said that the 2.5 megawatt unit is an extra \$300,000. Ms. Parenteau said that not all vendors produce 2.5 megawatt generators. Mr. Talbot asked is there a vendor that makes a 4 megawatt since site permitting, all infrastructure, the pipe and wires are being done. Ms. Parenteau explained that 2 is the optimum number given permitting restrictions, what we have to entail, if we go larger the requirements change. Ms. O'Brien said that this is a pilot and the RMLD may be possibly be looking at one per town in the subsequent years if this works out well.

Mr. Jaffari said that RMLD would like to install two of these units at the same substation, on each side of the bus for a total of four or five megawatts for that substation. A 2.5 megawatt unit can be installed per feeder without permitting with maximum 2.5 megawatt per bus. Mr. Jaffari pointed out that the pilot is being performed to see the savings and perform analysis as a benchmark.

Chairman O'Rourke stated that he wanted to acknowledge Peter Lydecker from the Town of Reading Finance Committee. Chairman O'Rourke stated that Commissioner Stempeck will not be in attendance at the meeting this evening.

Chairman O'Rourke polled the Board to see if there were any further questions, there were none. Mr. Talbot asked if he could present another question, the North Reading CAB liaison was at the last Board meeting, there were meetings in towns, is North Reading all set with this project, the planning department and neighbors. Mr. Jaffari replied that the RMLD applied for the building permit which has been approved. Mr. Talbot asked if that means the neighbors were notified. Mr. Jaffari replied that there will be a public meeting with the neighbors. Notifications to abutters will be sent. The location for this meeting has to be determined, it will be either in North Reading or at the RMLD. This meeting will be informational to deal with all the aspects of the project with the abutters such as the benefits or any noise concerns. Mr. Talbot asked what the distance from the nearest residence is. Mr. Jaffari replied that it is several hundred feet. Mr. Jaffari pointed out that the noise study the RMLD performed it is 60 DdB at fifty feet. Mr. Talbot asked if there were any odors from emissions. Mr. Jaffari replied that this unit has a SCR with a filter that reduces the NO_x emission. Mr. Jaffari reported that at the site visit with Middleborough Gas and Electric they did not smell any gas or emissions when the unit was running. Mr. Talbot added that the odor comes with the start up because he has a methane gas which is normal, will this happen. Mr. Jaffari responded that this would be no different than the odor from a lawn mower. Mr. Jaffari said that this is not close to the residences, it is a valid question, but does not see this as an issue.

Mr. Pacino made a motion seconded by Mr. Hennessy to approve the Fiscal Year 2017 Capital Budget dated March 31, 2016, in the amount of \$9,406,217 on the recommendation of the General Manager.

Motion carried: 4:0:0.

RMLD's Fiscal Year 2017 Operating Budget

Note: This was presented at the RMLD Board meeting on May 12, 2016, no vote was taken.

Mr. Pacino made a motion seconded by Mr. Hennessy to approve the Fiscal Year 2017 Operating Budget dated March 31, 2016, with a Net Income of \$3,935,097 on the recommendation of the General Manager.

Motion carried: 3:0:1. Mr. Pacino abstained as he was not in attendance at the meeting.

Power Supply Report – Ms. Parenteau (Attachment 2) Proposed Rate Adjustment

Ms. Parenteau reported that at the Operating Budget meeting it was discussed that in order for the RMLD to maintain its fiduciary responsibility there was going to be an overall necessary rate increase in the range of five to seven percent. Ms. Parenteau noted that as mentioned, she, Ms. O'Brien and Mr. Jaffari had spoken to all four towns Board of Selectmen in anticipation of this rate increase. The preliminary numbers had indicated a seven to nine percent increase. As the RMLD performed the budget process, firmer numbers came in for capacity and transmission as operating expenses, the overall rate structure is five to seven percent, which depends on customer class and usage. A residential customer that uses 500 kilowatts it would be a \$4.81 increase with the average increase of 6.6%. A medium size school will see an increase of 5.05%. It depends on how you use the electricity, the demand component for the commercials versus the energy and the overall structure. The Rate sheets included in the Board packet will be filed with the Department of Public Utilities, filed June 1 to be effective July 1 pending approval by the Board. Ms. Parenteau added that Chris Pollart, was present at the last Board meeting providing an update on the Terms and Conditions, which is part of the Rate structure.

Mr. Talbot said that it is all the existing rates with the applicable rate increase. Ms. Parenteau replied that is correct. Ms. Parenteau explained that the Cost of Service Study is performed every three years. The RMLD looks at the rate class to see the impact of that. Probably next year, the RMLD will perform a full Cost of Service Study. Mr. Talbot clarified, can rate increases be used to incentivize demand reduction can that be done in future rates. Ms. Parenteau stated that this could be looked at for the next Cost of Service Study. Mr. Talbot said that the main agenda the rate increase is not shown.

Power Supply Report – Ms. Parenteau (Attachment 2)
Proposed Rate Adjustment

Ms. Parenteau responded the Board is voting on the Rates not on the rate increase. Ms. O'Brien said that this portion is sent out with the agenda, it would be impossible to put everything on the front page. Ms. O'Brien said that there will be a press release to follow. Mr. Talbot said that the rate increase should be on the agenda. Ms. Parenteau said that she hears Mr. Talbot's point, but it is difficult to say that it varies by how much power one uses. Ms. O'Brien stated that when one goes to the supporting documentation the amount of rate increase is found. Ms. O'Brien said that she will have Ms. Foti look into links. Mr. Talbot said that for next year. Ms. Parenteau said that the range can be five to seven percent. Mr. Talbot added that this is a large increase. Ms. Parenteau pointed out that the increase is driven by capacity and transmission. Chairman O'Rourke said that it is a good point. Mr. Talbot said that there can be discussion for the suggested demand reduction rates for next year prior to the rate being created.

RATE	TARIFF #
Residential Schedule A	MDPU #259
Residential Schedule RW	MDPU #260
Residential Time-of-Use Schedule A2	MDPU #261
Commercial Schedule C	MDPU #262
Industrial Time-of-Use Schedule I	MDPU #263
School Schedule SCH	MDPU #264
Private Lighting Schedule D	MDPU #265
Municipal LED Street Lighting	MDPU #266
Cooperative Resale Schedule G	MDPU #267
General Terms and Conditions (For All Classes of Service)	MDPU #268

Mr. Pacino made a motion seconded by Mr. Hennessy to approve the rates MDPU numbers #259, 260, 261, 262, 263, 264, 265, 266, 267 and 268 effective July 1, 2016 on the recommendation of the General Manager.

Motion carried: 4:0:0.

Presentation – Ms. Parenteau

RMLD's Demand Response Programs

Ms. Parenteau reported that she will be presenting all the programs RMLD does in terms of shaving the peak. Ms. Parenteau stated that a couple of meetings ago, it was discussed how important it is to get the message out to our customers and inform them of the advantages of curtailing the load during hot summer months and how that can translate into electricity savings to them over the course of the year.

Ms. Parenteau said that the programs that she will provide an overview of RMLD's residential and commercial programs, the related costs to such programs, the potential demand, customer, and savings, barriers to achieving maximum reduction as well as communication methods.

Ms. Parenteau stated that the solar program is allowed for all of RMLD's customer classes. Currently, there is a little less than four megawatts of solar currently installed within RMLD's service territory. Two of those megawatts are within RMLD's power supply portfolio which are located in Wilmington that contributes to RMLD's peak reduction. The barrier to solar is that it peaks between 10:00 am and 2:00 pm. However, RMLD's summer peak occurs 2:00 pm to 5:00 pm represents a bit of a disconnect; it does not achieve the maximum solar generation. Ms. Parenteau said that the RMLD looked at that and assumed a thirty percent capacity factor which means of that four megawatts the RMLD would be receiving 1.1 megawatts which is significant. Ms. Parenteau pointed out that the RMLD is looking at employing community solar. The RMLD is looking at a potential one megawatt project that will not be on this summer potentially next summer, but will contribute to the peak shaving. Ms. Parenteau said that the cost RMLD does incur when customers install solar is that RMLD loses base revenue and the purchase power component of that. The purchase power is a pass through, it is power RMLD does not buy off the market however, the base component is no longer part of RMLD's operating revenue. The lost base revenue is \$93,523 due to solar installations by residential and commercial customers. Ms. Parenteau added that the RMLD has also paid out \$150,000 in rebates to residential and commercial customers which represent costs attributable to the program. From a customer savings point of view, based on a capacity factor of twelve to thirteen percent because in New England the sun does not shine as long. A five kilowatt system can assume to achieve between twelve to thirteen percent. The customer will be avoiding paying the RMLD for those hours when the sun is generating. Ms. Parenteau explained that the way the net metering works if customers are generating more than they are consuming, putting power back on the distribution system, the RMLD measures those on a monthly basis. The customer will receive a credit for those kilowatt hours they generate at the average fuel cost, which represent customer savings. For RMLD savings, the cost of capacity is approximately \$7 per kilowatt month which represents approximately \$97,550 of decreases capacity cost and for the four summer months (June to September) represents \$37,172 for a total of approximately \$135,000 of shave the peak savings from the solar program.

Presentation – Ms. Parenteau
RMLD's Demand Response Programs

Mr. Hennessy asked how this technically works. If a customer has solar is there a switch. Ms. Parenteau replied that the way it is wired into the home it feeds into the house. It is consumed in the person's home. If they are working and do not have the air conditioning on and it is a really sunny day, there is not sufficient load in the home, it transforms out of the meter and there are two channels. Channel A is everything that the customer purchases from us and Channel B measures any excess generation coming out. On a monthly basis the meter actually measures the kilowatt hours purchased and kilowatt hours sold back to the RMLD. Mr. Hennessy clarified that the meter senses how much power the customer needs that they are not generating for that home.

Ms. Parenteau pointed out that the next shave the peak program is a result of Mr. Talbot's recommendation. Publicizing to our customers the value of shaving the peak.

Ms. Parenteau said that the RMLD is setting up a communications plan in terms of alerting RMLD's customers, using RMLD's website, customer e-mails, tweets, looking at Facebook, text messaging and press releases to educate the customers.

As far as residential customers, we looked at a couple of municipalities that are doing this. It has been determined that the average residential customer coincident with the peak demand uses 1.6 kilowatts. Based on that, if the residential customers are alerted and able to do something, a fifteen percent reduction can be achieved when they receive an e-mail or message. That translates into approximately a .24 kW per residential home on average. In order to get one hundred kilowatt reduction at least four hundred customers need to participate. The RMLD has approximately 26,000 residential customers, we could extrapolate that to see what the numbers achieve. Ms. Parenteau said that she wanted to quantify this for the Board. If the RMLD could achieve one hundred kilowatt hours of reduction that would equate to a little over \$8,000 capacity savings and about \$3,000 transmission for the summer period (June through September) that would be around \$11,600 per 100 kW of reduction. Mr. Talbot added that if this was ten times that then out of the 26,000 if 4,000 did something what would be the savings be. Ms. Parenteau replied that it would be \$111,000, it would be a megawatt. Mr. Talbot clarified that if a megawatt was worth \$200,000. Ms. Parenteau explained that number would reflect transmission for twelve months of the year. Ms. Parenteau said that capacity is a whole year credit, whereas four months of transmission. Mr. Talbot said that we can do better than 4,000. Ms. Parenteau stated that RMLD has 17,000 e-mails in house and gearing up to educate the customers. Mr. Talbot stated that when one of these peak reduction is sent out he is going to put a note on the Facebook page of the Reading network which has many people. Mr. Talbot said that he will state to look at this peak shaving alert from the RMLD, respond to me if you have done anything and send this out to your friend. This will be his own personal test because it is difficult to measure the effect of the push. He is hoping to get some feedback and report his findings to the Board.

Ms. Parenteau then addressed the programs for large commercials and municipalities. The RMLD has worked with its commercial customers to share some of the savings. The way it works, the RMLD has the Integrated Resource Engineers that go out that perform site visits to the customers' facilities to work with them to achieve load reduction. There is a shared savings program. The RMLD economically incentivizes the customers to reduce their usage.

Ms. Parenteau said that the barrier to all RMLD programs is that it is a voluntary program there is no guarantee of load reduction. Ms. Parenteau pointed out that on the commercial side with the peak demand reduction program even when you provide businesses with economic incentives to reduce load unless it is an automated and easy to implement procedure the reduction will not happen. Ms. Parenteau explained that it is difficult to get facilities staff to adjust items due to the fact that employees complain about temperature increases. Ms. Parenteau stated that the RMLD is working very diligently with these customers to make this as streamlined as possible in order to achieve these results. Last year, the RMLD was able to shed a megawatt, the RMLD is endeavoring to increase that number this year. It does present a challenge because even though you try to economically incentivize programs there is still a reluctance and resistance to making such changes.

Ms. Parenteau said the RMLD has a shave the peak electric hot water heater program. Currently there are 239 units installed. One of the problems the RMLD is encountering is with this system it relays on the internet connection of the homeowner. The RMLD through its software sends a signal to the water heater to shut off. Currently, of the 239 units the RMLD is only able to communicate with 123 units. The RMLD has sent out letters and asked customers to reset their modems which they have. It is has only increased by a couple of units. Ms. Parenteau explained that the RMLD is running into a situation where a protocol has to be developed to go into the customer's home to verify if it is the load control module, the internet or what the connection problem is that is preventing communication to shut off the hot water heaters. The other issue with the water heaters is that they cycle. An average water heater runs for three hours daily. The RMLD is shutting off the water heaters for a two-hour period of time. Some of them would have not turned on whereas some of them would be turned on. Ms. Parenteau pointed out that with the 123 the percentages that are going on at 2:30 pm before the RMLD implements this fifteen to twenty-five percent. The RMLD is gathering data realizing that there are communications problems and trying to trouble shoot that before the RMLD makes a determination to sign up five hundred more customers. The program needs to work for the customer as well as RMLD. Mr. Talbot asked if customers could be put a timer that has the off between 3:00 pm to 5:00 pm, it is not just when RMLD sends the signal, is there a gadget the customer could put on and be rebated. Ms. Parenteau responded that she is not familiar with that technology.

Presentation – Ms. Parenteau

RMLD's Demand Response Programs

Ms. Parenteau said that if the customer did that it would have to be in the customer's home and RMLD will not have access to that. If it gets disconnected the RMLD has to be able to monitor that equipment to determine whether it is on or off, it would be challenging administratively. Ms. O'Brien clarified with Mr. Talbot that the RMLD should eliminate this program and sell timers that shut off between 3 pm to 5 pm. Mr. Talbot responded that he is not saying that. Mr. Talbot said that RMLD has identified that half of what it thinks is being controlled is not communicating, therefore the RMLD cannot shut off these units to realize the benefit. What he is asking in the meantime can the 123 customers be asked if the RMLD sets this in order that the unit is off between 3 pm to 5 pm. It is the same for the time for a light when you are vacation 9 pm to midnight. Ms. Parenteau commented that she is uncertain if an electrician should be installing it she does not know the installation. Mr. Talbot said that it argues why the RMLD needs better control, communication and fiber. Also, the RMLD does not have its own communications infrastructure.

Ms. Parenteau added that another shave the peak program is the electric vehicle charging stations. Ms. Parenteau pointed out that the RMLD currently owns an electric vehicle charging stations at one of its commercial sites. With the electric charging stations you have the capability of reducing the maximum amount of output or shut it off during peak periods. RMLD is looking to install electric charging stations in each of the four towns in the next four years as pilots. If the RMLD owns the charging stations it has the capability. It is small and you have to assume that not all cars will be charging. With the six charging stations that the RMLD currently has there to achieve an eighteen kilowatt reduction which equates to \$2,000. Mr. Pacino asked where the charging station is located. Ms. Parenteau replied that it is at Analog Devices for their employees, they wanted to offer this to their employees, but not own it.

Ms. Parenteau said that the next shave the peak reduction is distributed generation. The generation will assist in peak reduction. This is something that the RMLD can control, but is not on for this summer. In the future this will be part of RMLD's shave the peak campaign.

Ms. Parenteau stated that as mentioned before many of the programs in the Integrated Resources Division is tied to peak demand. When working with commercial customers and they are looking at upgrading HVAC, lighting changes such as converting T8s to LEDs, which draw less demand. It takes RMLD's base demand and reduces it. Rebates for customers are not tied out to how many kilowatt hours' sales, but tied directly to the peak demand. The potential for fiscal year 2017 is 400 kW which is tied to both the lighting program and energy initiative. Ms. Parenteau explained that the lighting rebate is capped at \$20,000 per customer capped at with no more than fifty percent of the cost of the project. The energy initiative program is capped at \$50,000. There are significant dollars available to RMLD's commercial and municipal customers.

Ms. Parenteau reported that the RMLD started out with a new vendor for residential home energy audit. Part of that energy audit the RMLD has instant savings where the customers receive twelve LED light bulbs and are encouraged to install them. There is a power strip and some night lights that provide instant savings to the customer when they convert from the incandescent or CFL lighting to LED's. Ms. Parenteau stated that the RMLD performs approximately 350 residential energy audits annually, based on that the RMLD has reduced approximately 122 kilowatt hours of peak savings.

Ms. Parenteau continued stating that Shave the Peak also applies to Energy Star appliances because they use less electricity during the peak demand. This program is going to be revisited to ensure that the RMLD is incentivizing our customers to purchase the most efficient appliances. The reduction of demand savings for this program is 291kW.

Ms. Parenteau pointed out relative to the shave the peak municipal grant program, on April 30 the RMLD filed a final report with DOER on the municipal light grant received. The RMLD received \$250,000 grant money. The grant money was split up three ways: \$125,000 for the LED street lighting program, \$50,000 LED residential rates and \$75,000 towards the commercial lighting rebates with the incentive doubling for both interior and exterior LED lighting. The municipal street light does not contribute to the summer peak, it happens between 2:00 pm to 5:00 pm and lighting does not come until after 8:00 pm during the summer. It does help during the winter period with transmission, the commercial and residential lighting are included as well. Mr. Talbot asked you pay the towns not to turn on the streetlights between 3:00 to 4:00 pm in July that would be good.

Ms. Parenteau said that she is unsure how aggressive the Board wants to be. They look at all these programs, currently the RMLD does not have distributed generation to help with the peak. Depending on how many customers RMLD can reach out to in June in conjunction with gearing up a communication plan. The goal is to have the residential and commercial customers get involved with shaving the peak because there are significant savings opportunities. Mr. Talbot thanked Ms. Parenteau, the presentation was outstanding and very impressive. Mr. Talbot said that we now need to get customers on board for peak reduction. Chairman O'Rourke asked Ms. Parenteau to keep a score card to see how RMLD is doing with the peak reduction. Ms. Parenteau said that she will keep the Board informed. Chairman O'Rourke thanked the staff for their efforts. Mr. Talbot asked Mr. Lydecker to get the word out on shaving the peak.

General Discussion

There was none.

Regular Session Meeting Minutes
May 26, 2016

RMLD Board Meetings

Thursday, June 9, 2016

Thursday, July 14, 2016

RMLD Board Policy Committee Meeting

Mr. Pacino reported that Ms. Foti is trying to set up a Policy Committee meeting.

RMLD Fiber Optic Committee Meeting

To be determined.

CAB Meetings

Wednesday, June 1 2016, Regular Meeting

Chairman O'Rourke asked that as an action item Jeanne Foti is to e-mail the Board members asking for availability to attend this meeting.

Chairman O'Rourke thanked for the good work Ms. Mellino does when covering for Ms. Foti. Ms. Mellino thanked the Board members.

Executive Session

At 8:12 p.m. Mr. Pacino made a motion seconded by Mr. Hennessy that the Board go into Executive Session to discuss strategy with respect to collective bargaining and return to Regular Session for the sole purpose of adjournment.

Chairman O'Rourke called for a poll of the vote:

Mr. Pacino, Aye; Mr. Talbot, Aye; Chairman O'Rourke, Aye; and Mr. Hennessy; Aye.

Motion carried 4:0:0.

Adjournment

At 8:36 p.m. Mr. Talbot made a motion seconded by Mr. Hennessy that the RMLD Board of Commissioners move to adjourn the Regular Session.

Motion carried 4:0:0.

A true copy of the RMLD Board of Commissioners minutes
as approved by a majority of the Commission.

Dave Hennessy, Secretary Pro Tem
RMLD Board of Commissioners

FY 2017 Capital Budget CAB & RMLD Board Presentation

Coleen O'Brien, General Manager
Hamid Jaffari, Director of E&O
Jane Parenteau, Director of IRD
Bob Fournier, Business Manager



FY2017 Budget

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Agenda



- FY 2017 Capital Budget
- Distributed Generation Project Updates
- RMLD Rates
- RMLD Terms & Conditions
- Questions & Answers

FY 2016 Capital Authorization Major Spending



<u>Projects</u>	<u>Amount</u>
✓ Sub 4 Switchgear's Breaker Replacement	\$508K
➤ Distributed Generation	\$2,164K
✓ Substation Equipment Upgrade	\$254K
✓ LED Street Lights	\$1,200K
✓ HVAC System Upgrade	\$600K
➤ GIS	\$420K
✓ Step-Down Upgrades	\$250K
✓ URD Upgrade (Cooks farm)	\$340K
✓ Routine Constructions	\$1,000K
✓ Transformers/Capacitors	\$668K
✓ Rolling Stock (Trucks, Fork Lift, Spreader)	\$448K
✓ AMI/Metering (500 Club)	\$219K
✓ MIS	\$451K
➤ Power Quality Meters (EVSE, Data Loggers, Efficiency Meter)	\$60K
✓ Other (Facility Site Plan, Lowell St Project, West St, Fiber Optics)	\$2,014K
Total	\$10,596K
■ Booth & Associates Study Recommendations	
■ Not Completed	



FY16 Budget vs. Actual



➤ Budget vs. Actual Comparison:

Budgeted: **\$10,596,000**

Estimated to Spend: **\$7,227,000**

Breakdown of Difference:

➤ **Roll Over Amount to FY2017:**

- *Distributed Gen* \$2,100,000
- *GIS* \$330,000
- *Power Quality Meters* \$25,000

Subtotal = **\$2,455,000**

➤ **Projects On Hold:**

- *Master Facilities* \$150,000
- *5W9 Circuit* \$100,000
- *Relay Replacement* \$73,000

Subtotal = **\$323,000**

➤ **Lower Bids** (Gaw Gen, Cogsdale, etc) **\$155,000**

➤ **Others** **\$436,000**

FY 2016

FY2016 Budget

\$10,596,000

Estimated Spending

\$7,227,000

Variance

\$3,369,000

<u>Project</u>	<u>FY16 Budgeted</u>	<u>Spent</u>	<u>Variance</u>
Distributed Gen	\$2,164,000	\$64,000	\$2,100,000
Master Facilities	\$150,000	0	\$150,000
LED Street Lights	\$1,200,000	\$804,000	\$396,000
GIS	\$420,000	\$90,000	\$330,000
URD Upgrades	\$340,000	\$50,000	\$290,000
13.8kV Upgrade	\$352,000	\$50,000	\$302,000
Routine Const	\$1,000,000	\$1,568,000	(\$568,000)
5W9 Circuit Upgrade	\$100,000	0	\$100,000
BKR Replacement	\$508,000	\$601,000	(\$93,000)
Lowell St	\$113,000	\$147,000	(\$34,000)
Old Lynnfield Ctr	\$42,000	\$300,000	(\$258,000)
Comm Equipment	\$98,000	\$17,000	\$81,000
Relay Replacement	\$73,000	0	\$73,000
Cogsdale	\$127,000	\$29,000	\$98,000
Gaw Sub GEN	\$107,000	\$50,000	\$57,000
Others			<u>\$345,000</u>
			\$3,369,000

FY2017 Budget

FY 2017 Capital Authorization Major Spending

<u>Projects</u>	<u>Amount</u>
➤ Distributed Generation	\$2,720K
➤ New Wilmington Substation	\$250K
➤ Relay replacement @ substation 4	\$49K
➤ LED Street Lights	\$804K
➤ HVAC System Upgrade	\$500K
➤ Grid Modernization	\$284K
➤ GIS	\$360K
➤ Step-Down Upgrades	\$106K
➤ URD Upgrade	\$150K
➤ Routine Constructions	\$1,013K
➤ PM Switchgear Replacement @ various parks	\$195K
➤ Transformers/Capacitors	\$668K



■ Booth & Associates Study Recommendations

FY 2017 Capital Authorization...Continued

<u>Projects</u>	<u>Amount</u>
➤ Rolling Stock	\$310K
➤ AMI/Mesh Expansion	\$220K
➤ Sub 3: Relay Upgrades & SCADA Integration	\$252K
➤ MIS (Software licensing/Hardware)	\$343K
➤ IRD (EVSE)	\$10K
➤ Others (Facility Site Plan, 4w9 circuit upgrade, PM Switch Upgrade, Fiber Optics)	\$1,172K
Total	\$9,406K



■ Booth & Associates Study Recommendations

DG Pilot Project Status: N. Reading

➤ Engineering Specification

- ✓ Technical Specification reviewed by Booth & Associates & Finalized

➤ Studies

- ✓ Noise Study completed
- ✓ Environmental (Soil Testing) completed

➤ Permitting

- ✓ Site Plan Preparation
- Town of N. Reading Building Dept. Review & Approval
- N. Reading Public Meeting

➤ Bidding Process

- Bid to go out in May/June 2016
- Construction to be completed by June 15, 2017

➤ Cost

- | | |
|---------------------------|------------------------|
| ➤ Spent-to-date (FY16) | \$14.1K |
| ➤ Engine 2MW (FY17) | \$2.2M 2.5MW (+\$300K) |
| ➤ Site preparation (FY17) | \$285.9K |
| ➤ Gas (FY17) | \$123K |
| ➤ Misc. | \$97K |

Estimated Total Cost = \$2,720K

FY16 did not include gas and bid engine came in higher on preliminary bid



Rates

FY 2017 - Proposed Base Rate Increase Comparative Rates Present/Proposed

Residential	500 kWh	750 kWh	1000 kWh
Present	\$72.49	\$106.99	\$141.48
Proposed	\$77.30	\$114.02	\$150.75
Difference	\$4.81	\$7.03	\$9.27
% Change	6.64%	6.57%	6.55%
Cost per kWh Present	\$0.14498	\$0.14265	\$0.14148
Cost per kWh Proposed	\$0.15460	\$0.15203	\$0.15075

Residential Hot Water	1000 kWh	1500 kWh	2000 kWh
Present	\$130.86	\$194.55	\$258.22
Proposed	\$139.06	\$206.67	\$274.27
Difference	\$8.20	\$12.12	\$16.05
% Change	6.27%	6.23%	6.22%
Cost per kWh Present	\$0.13086	\$0.12970	\$0.12911
Cost per kWh Proposed	\$0.13906	\$0.13778	\$0.13714

Residential Time of Use	1000 kWh	1500 kWh	2000 kWh
Present	\$128.10	\$189.41	\$250.69
Proposed	\$136.03	\$201.02	\$265.99
Difference	\$7.93	\$11.61	\$15.30
% Change	6.19%	6.13%	6.10%
Cost per kWh Present	\$0.12810	\$0.12627	\$0.12535
Cost per kWh Proposed	\$0.13603	\$0.13401	\$0.13300

Residential Low Income	500 kWh	750 kWh	1000 kWh
Present	\$66.93	\$100.39	\$133.85
Proposed	\$71.18	\$106.76	\$142.35
Difference	\$4.25	\$6.37	\$8.50
% Change	6.35%	6.35%	6.35%
Cost per kWh Present	\$0.13386	\$0.13385	\$0.13385
Cost per kWh Proposed	\$0.14236	\$0.14235	\$0.14235

Residential Hot Water Low Income	1000 kWh	1500 kWh	2000 kWh
Present	\$127.36	\$191.05	\$254.73
Proposed	\$135.22	\$202.83	\$270.42
Difference	\$7.86	\$11.78	\$15.69
% Change	6.17%	6.17%	6.16%
Cost per kWh Present	\$0.12736	\$0.12737	\$0.12737
Cost per kWh Proposed	\$0.13522	\$0.13522	\$0.13521

Residential Time of Use Low Income	1000 kWh	1500 kWh	2000 kWh
Present	\$122.58	\$183.88	\$245.17
Proposed	\$129.96	\$194.94	\$259.91
Difference	\$7.38	\$11.06	\$14.74
% Change	6.02%	6.01%	6.01%
Cost per kWh Present	\$0.12258	\$0.12259	\$0.12259
Cost per kWh Proposed	\$0.12996	\$0.12996	\$0.12996

Commercial	Small	Medium	Large
Present	\$2,057.52	\$10,745.32	\$47,713.75
Proposed	\$2,175.00	\$11,374.96	\$50,385.63
Difference	\$117.48	\$629.64	\$2,671.88
% Change	5.71%	5.86%	5.60%
Cost per kWh Present	\$0.133608	\$0.14102	\$0.13269
Cost per kWh Proposed	\$0.14385	\$0.14928	\$0.14012

Industrial Time of Use	Small	Medium	Large
Present	\$28,812.65	\$57,583.75	\$778,541.95
Proposed	\$30,468.68	\$60,735.90	\$819,355.33
Difference	\$1,656.03	\$3,152.15	\$40,813.38
% Change	5.75%	5.47%	5.24%
Cost per kWh Present	\$0.10834	\$0.11761	\$0.10508
Cost per kWh Proposed	\$0.11406	\$0.12405	\$0.11059

School Rate	Small	Medium	Large
Present	\$3,938.81	\$11,630.77	\$24,843.82
Proposed	\$4,137.59	\$12,178.14	\$26,009.41
Difference	\$198.78	\$547.37	\$1,165.59
% Change	5.05%	4.71%	4.69%
Cost per kWh Present	\$0.12822	\$0.12055	\$0.12025
Cost per kWh Proposed	\$0.13469	\$0.12623	\$0.12589

Street Lights	Reading	Lynnfield	North Reading	Wilmington
Present	\$9,084.85	\$3,453.63	\$4,639.77	\$9,284.82
Proposed	\$9,691.16	\$3,684.94	\$4,948.51	\$9,902.78
Difference	\$606.31	\$231.31	\$308.74	\$617.96
% Change	6.67%	6.70%	6.65%	6.66%
Cost per kWh Present	\$0.12699	\$0.12772	\$0.12583	\$0.12594
Cost per kWh Proposed	\$0.13547	\$0.13627	\$0.13420	\$0.13433

Co-Op Resale	500 kWh
Present	\$71.49
Proposed	\$75.89
Difference	\$4.40
% Change	6.15%
Cost per kWh Present	\$0.14298
Cost per kWh Proposed	\$0.15178

Note: Proposed Rate Structure to Take Effect July 1, 2016. All Rate Classes include the Fifteen Percent Prompt Payment Discount except Street Lights

Terms & Conditions

- Applicability – All Rate Classes
- Initiating Electric Service
- Installation of New Service and Service Connections
- Additional Service Requirements and Limitations
- Installation, Access, & Protection of RMLD's Equipment and Meters
- Additional Customer Responsibilities
- Rates, Charges and Billing
- Suspension or Termination of Service
- Limitations on Liability and Damages and Exclusions

Terms & Conditions

- RMLD's Electric Service Policy & Requirements Handbook – July 1, 2016
 - Benefit to customers, architects, engineers, municipal inspectors, employees and contractors
 - Provides a convenient reference as an informational guide
 - Improve communication and coordination
 - Handbook reflects RMLD's standard practices and procedures and does not necessarily address every requirement, limitation or particular situation.
 - Will be located on RMLD website (www.RMLD.com)



QUESTIONS
And
Answers

thank
you!

**READING MUNICIPAL LIGHT
DEPARTMENT**

***FY 2017
CAPITAL BUDGET***

MARCH 31, 2016

Coleen O'Brien
General Manager

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⌘ RMLD Lighting (LED) Upgrade Program	18	TBD
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New Projects for FY17:

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⌘ Station 4: 4W9 Getaway Replacement	55	TBD
⌘ Station 4: Relay/SCADA Integration for Bus A&B	57	TBD
⌘ Station 3: Relay Upgrades and SCADA Integration	59	TBD
⌘ Analog Devices Cap Bank Upgrade	61	TBD
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⌘ UG Facilities Upgrades (URDs, Manholes, etc.) – All Towns	77	106
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⌘ New Service Installations	81	various
⌘ Routine Construction	83	various
⌘ AMI Mesh Network	85	TBD

**Reading Municipal Light Department
SYSTEM PROFILE**

(based on FY15)

SERVICE TERRITORY	51 square miles serving Reading, North Reading, Wilmington and part of Lynnfield
TOTAL OPERATING REVENUES	\$85,005,786
POWER PURCHASED	706,159,454 kWh
NUMBER OF CUSTOMERS/ METERS SERVED	29,482
ANNUAL PEAK DEMAND	156,283 kW on July 20, 2015
ANNUAL SALES	689,722,742 kWh
PLANT VALUE	\$132,759,000 (Gross) \$69,916,000 (Net)
SUPPLY VOLTAGE	115 kV
SUPPLY CAPACITY	<p>Station 4: (3) 60 MVA Transformers (2) 35 MVA Transformers – feeds Station 5 250 MVA Connected, 190 MVA Firm</p> <p>Station 3: (2) 60 MVA Transformers 120 MVA Connected, 60 MVA Firm</p>
DISTRIBUTION SYSTEM VOLTAGE	13,800 volt wye 4,160 volt wye
OVERHEAD PRIMARY LINES	All 335 miles
UNDERGROUND PRIMARY LINES	All 135 miles
DISTRIBUTION TRANSFORMERS	3,992 transformers – 276.2 MVA Capacity
STATION TRANSFORMER CAPACITY	370 MVA Capacity
UTILITY POLES	<p>17,237 poles <i>Ownership:</i> 50% Verizon, 50% RMLD</p> <p><i>Custodial By Town:</i> North Reading – RMLD Lynnfield – Verizon Reading</p> <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 <p>Wilmington</p> <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	
	<p>Great Plains/Cogsdale Windows Server 2012, 2008, Microsoft SQL Office 365 E3 ESRI GIS VMware Windows 7, 8, 8.1, 10 Sharepoint WindMil (in process) LightTable (in process)</p>

FACILITIES MANAGEMENT

READING MUNICIPAL LIGHT DEPARTMENT
Capital Improvements FY17-21
 \$ Shown in thousands

TOWN	PG #	PROJECT #	PROJECT NAME	Study Rec #	TOTAL ESTIMATED PROJECT COST	PROJECTED PROJECT VARIANCE	FY16 BUDGET	FY16 EST.	FY17 Plan Est.	FY18	FY19	FY20	FY21	BRIEF DESCRIPTION
F	A	10	121	HVAC System Upgrade - 230 Ash Street		1,273	600	600	500	113				Replace boilers, chillers, air handling units, and building automation systems addressing air filtration and efficiency.
F	A	12	129	Master Facilities Site Plan		50	150	0	50					Town economic development plan impact. Master-hold. Evaluate maintenance only.
F	A	n/a	124	Rehabilitation of Station 1 - 226 Ash Street										Town economic development plan impact. Master-hold. Evaluate maintenance only.
F	A	n/a	123	Oil Containment Facility Construction		57	59	57						Comprehensive study completed. Recommendations implemented. Updated SPCC.
F	A	n/a	095	230 Ash Street Building Repairs		80	80	80						Brick veneer over loading dock, insulation in lobby, deck structure.
F	R	n/a	096	Station 4 (Gaw) Back-up Generator		50	107	50						Purchased and installed an emergency generator for Gaw Station 4.
F	A	n/a	097	HVAC Roof Units for Garage		50	50	50						Roof top unit and duct work.
F	R	14	TBD	Carpet Upgrade -230 Ash Street		72			72					Upgrade worn carpet at 230 Ash Street building. Existing carpet was installed in 2000-2001.
F	R	16	TBD	Control Center Modifications		100			100					Modify the physical arrangement of the existing Control Center in order to meet grid mod-op.
F	R	18	TBD	RMLD Lighting (LED) Upgrade Program		50			25	25				Upgrade Ash Street and other RMLD facilities including substations with new LED fixtures. Evaluate transformer.
F	A	20	119	Security Upgrades All Sites			50	50	5	5	5	5	5	5 Access control, alarm monitoring, video and perimeter monitoring along the fence lines, cyber security.
F	A	22	118	Rolling Stock Replacement (vehicles, trailers fork trucks)			448	448	310	325	300	300	350	Scheduled vehicle replacement based on Fleet Assessment. Monitor site/economic development impact to Fleet Assessment - hold.
IR	A	n/a	098	IRD - Hardware			10	0						Added to project 136 Voltage Data Recorders
IR	A	25	099	Electric Vehicle Supply Equipment (EVSE)		40	50	0	10	10	10	10		One electric charging station per town in the service area. Research grant options.
M	A	n/a	120	Great Plains/Cogsdale Update		86	127	29						Data conversion and upgrade to including software, hardware, training, consulting, and project management.
M	A	28	127	Hardware Upgrades			152	87	112	100	100	100	100	General hardware purchases, wireless internal network configuration.
M	A	30	128	Software and Licensing			172	116	231	50	50	50	50	Custom programing/development (OM/UAN/GIS/GPS), SpryPoint SSRS software.
SN	R	33	108	Relay Replacement -Station 4 (Gaw)		73	73	0	49					Replace existing electromechanical protective relay systems on the 15kV feeder breakers. The new relays will be capable of providing more information back to SCADA and store vast amounts of data for down loading and evaluation.
SN	NR	35	130	Remote Terminal Unit (RTU) Replacement - Station 3		94	94	55	39					Upgrade to add functionality of the existing SEL relays. RTU will be IP addressable and will include Ethernet connection for RMLD and NSTAR connection.
S	A	37	125	GIS		450	420	90	360					Current GIS model requires data integrity and quality inspection. Comprehensive data collection.
S	A	39	131	LED Street Light Implementation - All Towns		2,412	1,200	804	804	804				Full implementation. On target. Price of lights reduced.
SN	A	41	134	Substation Test Equipment		110	100	80	30					Purchase of test equipment for substation and metering.
SN	R	43	113	Station 4: Battery Bank Upgrade		57	57	40	17					Replace battery bank.
S	A	45	100	Distributed Gas Generation - Pilot FY16-17		2,920	2,164	200	2,720	500	2,500	500	2,500	Pilot DG gas peaking unit FY16/17. Alternate years solar/battery storage and gas.
S	A	47	115	Fault Indicators		50	50	25	25					Fault indicators to aid in fault locating.
S	A	49	136	Voltage Data Recorders		60	50	35	25					Voltage data and load logger required for voltage assessment and verification of energy efficiency commercial rebates. Project 098 IRD Hardware added to this item.
S	A	51	103	Grid Modernization and Optimization		993	70	141	284	478				Implement technology road map for grid efficiency, reduction of losses, etc.
S	A	n/a	TBD	Grid Modernization and Optimization Expansion							356	392	422	Installation of reclosers on feeders for fault isolation and installing capacitor controls for various cap banks on the system.

READING MUNICIPAL LIGHT DEPARTMENT

Capital Improvements FY17-21

ANTICIPATED COMPLETION FY16

\$ Shown in thousands

TOWN	PG #	PROJECT #	PROJECT NAME	Study Rec #	TOTAL ESTIMATED PROJECT COST	PROJECTED PROJECT VARIANCE	FY16 BUDGET	FY16 EST.	FY17 Plan Est.	FY18	FY19	FY20	FY21	BRIEF DESCRIPTION
S	L	n/a	104	Upgrading of Old Lynnfield Center URDS (Cook's Farm)		550	140	42	300					Upgrade for reliability and to meet construction standards.
S	R	n/a	212	Force Account West Street, Reading		223		150	145					Reconstruction of West Street, R. (State project).
S	W	n/a	102	Pole Line Upgrade - Lowell Street, Wilmington		352	69	113	147					Upgrade (30) poles to proper strength, create proper clearance between utilities and transfer. Set two (2) new poles. Benefit to long-term reliability. Expanded scope to include West Street and Woburn Street.
SN	R	n/a	109	Station 4 (Gaw) 35kv Potential Transformer Replacement		41		41	41					Replace six 30+ -years-old transformers.
SN	R	n/a	112	Station 4: Switchgear/Breaker Replacement		601		508	601					Replace existing switchgears/breakers.
S	A	n/a	114	Fiber Optic Test Equipment		15		15	10					Fiber optic testing equipment to locate and diagnose problems on network.
S	A	n/a	122	Engineering Analysis Software & Data Conversion		73		73	73					Millsoft Engineering.
S	R	n/a	105	4W5-4W6 Tie		105			105					Install 1,500' of circuit 556 spacer in order to shift distribution load feeding Addison Wesley and South Main St and complete extension to Summer Avenue.
S	W	53	TBD	New Wilmington Substation	B25	5,250			250	3,000	1,600	200	200	Planning and securing land and licensing will begin in FY17.
S	R	55	TBD	4W9 Getaway Replacement - Station 4		235			235					Upgrade 2,850 circuit feet of UG cable on Causeway Road and Lowell Street, R, with 750 mcm cu for increased reliability and capacity.
SN	R	57	TBD	Station 4: Relay/SCADA Integration for Bus A&B		0			70					Replace electromechanical relays with solid state relays to bring more data into SCADA.
SN	NR	59	TBD	Station 3: Relay Upgrades and SCADA Integration		252			252					Upgrade SEL 351 relays to SEL 351-7 to enhance data delivery to SCADA.
SN	A	61	TBD	Analog Devices Cap Bank Upgrade	B34	54			54					Replace 360 Kvar Cap bank and upgrade bushing inserts from 200 Amp to 600 Amp
SN	A	63	TBD	Station 5: LTC Control Replacement		42			42					Upgrade LTC control with newer or solid state controls.
SN	A	65	TBD	Substation Grounding Equipment Upgrade (all stations)		21			21					Upgrade personal protective grounding equipment.
SP	W	67	TBD	Pad-mount Switchgear Upgrade at Industrial Parks		1,216			195	195	195	195	195	Replace all 15kV pad mount switchgears at River Park and Analog Devices, etc. at total of 3-4/year.
SN	A	69	111	Substation Equipment Upgrade				254	192	75	50	50	50	Upgrade various equipment at substations to include TLC controls, remote racking devices,
S	A	71	116	Transformers and Capacitors				668	660	668	300	300	300	Purchase of units for stock and proposed projects.
S	A	73	126	Communication Equipment (Fiber Optic)				98	17	69	50	50	50	Materials to accommodate expanded use of fiber optic network for Distribution Automation and Eaton AMI system.
SN	A	75	117	Meters	B5			219	140	80	50	50	50	Purchase meters for stock. Materials for meter upgrades to AMI mesh.
S	A	77	106	UG Facilities Upgrades (URDs, Manholes, etc.) - All Towns				340	5	150	150	150	150	Replace primary and neutral cables and pad mount transformers as needed in various aging URDs. Improved reliability.
S	A	79	107	13.8kV Upgrade (Step-down Area, etc.) - All Towns	B28			352	50	106	130	100	130	Convert areas to 13.8kV, remove antiquated equipment and step-downs to lower losses and improve system efficiency.
S	A		various	New Service Installations (Commercial/Industrial)				34	0					Rolled into new service below.
S	A	81	various	New Service Installations				164	135	140	160	160	160	Install new and upgraded residential and commercial services as requested.
S	A	83	various	Routine Construction				1,000	1,568	1,013	1,000	1,000	1,000	Non-project capital including labor, pole sets, transfers, UG, police details, and OT.
SN	A	85	TBD	AMI Mesh Network Expansion					220	50	80	80	80	Retrofit 500 meters for the AMI mesh network.
S	W		110	Pole Line Upgrade - Woburn Street, Wilmington		100		91	0		50	50		Upgrade sixteen (16) main line poles and four (4) stub poles to proper strength, create proper clearance between utilities and transfer. Benefit to long-term reliability.
S	W		TBD	Station 5- Getaway Replacements, 5W4, 5W5, 5W8							50	50		Upgrade feeders from substation to risers to increase feeders' Ampacity.
S	W		101	SW9 Reconductoring - Ballardvale Area, Wilmington		630		100	0		150	200		Upgrade to 795 spacer for capacity feeding Ballardvale area (Target).
S	R		TBD	Upgrade 4W24 to 795	B26						225	225		Upgrade main feeder of Circuit 4W24 to 795 to address voltage and conductor capacity issues (1.5 miles)
S	R		TBD	Upgrade 4W23 to 795	B37							60	165	Upgrade main feeder to Circuit 4W23 to 795 to address voltage and conductor capacity issues (1.1 miles)

READING MUNICIPAL LIGHT DEPARTMENT
Capital Improvements FY17-21
 \$ Shown in thousands

TOWN	PG #	PROJECT #	PROJECT NAME	Study Rec #	TOTAL ESTIMATED PROJECT COST	PROJECTED PROJECT VARIANCE	FY16 BUDGET	FY16 EST.	FY17 Plan Est.	FY18	FY19	FY20	FY21	BRIEF DESCRIPTION
S	R	TBD	4W4 Getaway Replacement - Station 4							341				Upgrade 3,700 circuit feet of UG cable on West Street, R and West St, W to 750 mcm cu for increased reliability and capacity.
S	W	TBD	5W5 Reconductoring - Wildwood to Upton Drive	B24						214	214	214		Upgrade 25,000 circuit feet of 336 spacer cable on Wildwood, Woburn, and Andover Streets to 795 spacer cable.
S	R	TBD	4W5 Getaway Replacement - Station 4								234			Upgrade 1,700 circuit feet of UG cable on West Street, R to 750 mcm cu for increased reliability and capacity.
S	R	TBD	4W6 Getaway Replacement - Station 4								243	243		Upgrade 1,850 circuit feet of UG cable on West Street, R to 750 mcm cu for increased reliability and capacity.
TOTAL						208	10,596	7,227	9,406	8,659	8,272	4,239	5,927	

TABLE 1: PLANT VALUES & DEPRECIATION EXPENSE

Plant in Service (Beginning)	134,038	132,759	138,986	147,392	155,051	162,322	165,561
Additions	10,596	7,227	9,406	8,659	8,272	4,239	5,927
Adjustments (Property Retirement)	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000	-1,000
Plant in Service (Ending)	143,634	138,986	147,392	155,051	162,322	165,561	170,488
Less Land and Land Rights	-1,266	-1,266	-1,266	-1,266	-1,266	-1,266	-1,266
Depreciable Plant in Service	142,368	137,720	146,126	153,785	161,056	164,295	169,222
Accumulated Reserve For Depreciation	-68,694	-66,788	-70,919	-75,303	-79,917	-84,748	-89,677
Net Plant in Service	74,940	72,198	76,473	79,748	82,406	80,813	80,810
Maximum allowed Return on Net Plant (%)	8%	8%	8%	8%	8%	8%	8%
Maximum allowed Return on Net Plant (\$)	5,995	5,776	6,118	6,380	6,592	6,465	6,465

TABLE 2: DEPRECIATION FUND BALANCES

Beginning Balance	5,015	6,834	4,820	593	324	169	1,764
Interest Earned*	50	68	48	6	3	2	18
Depreciation Rate (3-5%)	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Depreciation Expense	3,983	3,945	4,132	4,384	4,614	4,832	4,929
Bond Proceeds and Other Fund Sources	257	200	0	3,000	2,500	0	0
Prior Year Adjustment	4,364	1,000	1,000	1,000	1,000	1,000	1,000
Ending Balance	13,669	12,047	10,000	8,983	8,441	6,003	7,711
Capital Improvements	-10,596	-7,227	-9,406	-8,659	-8,272	-4,239	-5,927
Principal Payment							
Ending Balance	3,073	4,820	593	324	169	1,764	1,784

TABLE 3: BOND PROCEEDS & OTHER FUND SOURCES

* Interest Rate on Fund Balances:	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
Mass DOT (Highway): West Street	150	200					
DOER - ENE Grant (LED Credit)	107						
Bond Proceeds for LED Street Lights							
Bond Proceeds for Distributed Generation					2,500		
Bond Proceeds for New Substation - Wilmington	0			3,000			
	257	200	0	3,000	2,500	0	0

CAPITAL PROJECT SUMMARY

Project Name: HVAC System Upgrade – 230 Ash Street **Project #:** 121

Project Schedule: FY15-18 **Project Manager:** Paul McGonagle,
Facilities Manager

Reason for Expenditure:

Upgrade the HVAC system at 230 Ash Street.

Brief Description/Scope:

FY15: Professional Services including study/report phase, construction documents and bid/construction.

FY16: Replace the HW boiler plant with condensing boilers. Replace DDC Control System. Replace VAV terminal box controllers. Replace AHU-3 as an indoor unit with split system DX condensing unit on the roof.

FY17: Replace AHU-1 and AHU-2 as an indoor unit with split system DX condensing units on the roof.

FY18: Enhance fin-tube radiation for higher output and to compensate for lower HW temperatures. Enhance heating of the front lobby. Reconfigure ductwork serving the receiving area roll-up dock.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

None.

Status Update:

The HVAC work for FY15 and FY16 is complete. The remaining scopes of work are still on schedule to be designed and constructed. The projected costs are still valid.

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: HVAC System Upgrade - 230 Ash Street

SCHEDULE: FY15-18

PROJECT #: 121

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC.	TOTAL
Multi-year upgrade to HVAC system.						\$1,273,000	\$1,273,000
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						

TOTAL **\$1,273,000**

TOTAL ESTIMATED PROJECT COST: \$1,273,000

FY15	5% Actual	\$60,252
FY16	47% Estimate	\$600,000
FY17	39% Estimate	\$500,000
FY18	9% Estimate	\$112,748

CAPITAL PROJECT SUMMARY

Project Name: Master Facilities Site Plan - Hold **Project #:** 129

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

Reason for Expenditure:

The Master Facilities Site Plan will begin in FY17, finalizing options and creating bid documents to begin addressing building use and storage allocation requirements. The final plan will also include any demand reduction (solar, etc.) recommendations as part of the Facilities Master Plan.

Brief Description/Scope:

Complete assessment of the office space, Station 1, garage, and leased warehouse space. Finalize recommendations and create a long-term strategic plan based on current and future needs working collaboratively with other Town agencies.

Barriers:

See Status Update.

Change in Scope of Work From Prior Fiscal Year:

None.

Status Update:

This project is on hold and is impacted by the Reading Economic Development Plan.

CAPITAL PROJECT SUMMARY

Project Name: Carpet Upgrade – 230 Ash Street **Project #:** TBD

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

Reason for Expenditure:

Upgrade carpet in the office/operations building. Existing carpet was installed in 2000-2001 and needs to be replaced. The carpet is worn and has demonstrated to be hazardous in many areas. The average lifespan of carpeting is 6-9 years.

Brief Description/Scope:

Determine carpet/pad choice. The total carpeted area is 8,000 square feet. Develop a schedule to replace the carpet.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Carpet Upgrade - 230 Ash Street

SCHEDULE: FY17

PROJECT #: TBD

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
Replace carpet. 4 weeks Facilities Staff				\$11,653.25		\$60,000	\$71,653
	Unit Cost			\$2,913			
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						
	Unit Cost						
TOTAL					\$60,000		

TOTAL ESTIMATED PROJECT COST: \$71,653

CAPITAL PROJECT SUMMARY

Project Name: Control Center Modifications **Project #:** TBD

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

Reason for Expenditure:

Modify the physical arrangement of the existing Control Center in order to improve operating conditions during emergencies and outages. This modification will include increasing the room size and installing state-of-the-art technology.

Brief Description/Scope:

An architect will engineer and design the space and develop specifications and construction drawings. A general contractor will perform the necessary construction. MIS will develop a specification for the new technology and equipment. All building elements such as HVAC, fire protection, electrical, walls and floors, and furniture, fixtures, and equipment will be impacted.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Control Center Modifications

SCHEDULE: FY17

PROJECT #: TBD

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
Contractor: Firm to design modifications for the Control Center.						\$10,000	\$10,000
Unit Cost						\$10,000	
General Contractor: Construction of walls, flooring, ceiling, fire alarm and sprinklers and HVAC						\$70,000	\$70,000
Unit Cost						\$70,000	
Furniture						\$10,000	\$10,000
Unit Cost							
Technical equipment including monitors and CPU's						\$10,000	\$10,000
Unit Cost							
Unit Cost							
Unit Cost							
TOTAL						\$100,000	

TOTAL ESTIMATED PROJECT COST: \$100,000

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:

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

Brief Description/Scope:

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

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

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: RMLD Lighting (LED) Upgrade Program

SCHEDULE: FY17-18

PROJECT #: TBD

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
Purchase and Replace: Facility lighting at the Ash Street office building, garage, high bay, and substations						\$50,000	\$50,000
		Unit Cost					
		Unit Cost					
		Unit Cost					
		Unit Cost					
		Unit Cost					
		Unit Cost					

TOTAL \$50,000

TOTAL ESTIMATED PROJECT COST: \$50,000

FY17 Estimate	\$25,000
FY18 Estimate	\$25,000

CAPITAL PROJECT SUMMARY

Project Name: Security Upgrades – All Sites

Project #: 119

Project Schedule: Annual

Project Manager: Paul McGonagle,
Facilities Manager

Reason for Expenditure:

On-going security enhancements at our substations and other owned and leased facilities are made as required.

Brief Description/Scope:

Scope of work includes upgrades and modification of our cameras, access control points, entry point alarms, and perimeter fencing as required.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

None.

Status Update:

CAPITAL PROJECT SUMMARY

Project Name: Rolling Stock Replacement
(vehicles, trailers and fork trucks)

Project #: 118

Project Schedule: Annual

Project Manager: Paul McGonagle,
Facilities Manager

Reason for Expenditure:

Replace vehicles based on an 8-10 year cycle to reduce maintenance costs and improve reliability. Vehicles removed from the fleet will be disposed of under RMLD Policy No. 2 "Surplus Material."

Brief Description/Scope:

Purchase the following vehicles:

- (1) SUV including trade-in of a 2005 Toyota Prius
- (1) material handler including trade-in of a 2006 material handler
- (1) multi-purpose utility trailer including trade-in of two 1957 reel cable/utility trailers

Barriers:

None anticipated at this time.

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

n/a

Status Update:

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Rolling Stock Replacement

SCHEDULE: FY17

PROJECT #: 118

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
Purchase one (1) new light duty SUV.						\$35,000	\$35,000
	Unit Cost \$35,000 per vehicle						
Purchase one (1) new trailer.						\$25,000	\$25,000
	Unit Cost \$25,000 per vehicle						
Purchase one (1) new material handler.						\$250,000	\$250,000
	Unit Cost \$250,000 per vehicle						
	Unit Cost						
	Unit Cost						
	Unit Cost						

TOTAL \$310,000

TOTAL ESTIMATED PROJECT COST: \$310,000

INTEGRATED RESOURCES

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:

RMLD anticipates installing four EVSEs over the next four years (one in each of the four towns in the service territory). This will increase RMLD's kWh sales.

Brief Description/Scope:

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

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

n/a

FISCAL 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Electric Vehicle Supply Equipment (EVSE) SCHEDULE: FY16-20

PROJECT #: 099

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Purchase four EVSE for installation in RMLD service territory.						\$40,000	\$40,000
Unit Cost						\$10,000 each	
							\$0
Unit Cost							
							\$0
Unit Cost							
							\$0
Unit Cost							
							\$0
Unit Cost							

TOTAL 0.0 0 \$0 \$0 \$0 \$40,000

TOTAL ESTIMATED PROJECT COST: \$40,000

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

INFORMATION TECHNOLOGY

CAPITAL PROJECT SUMMARY

Project Name: Hardware Upgrades

Project #: 127

Project Schedule: Annual

Project Manager: Mark Uvanni, IT Manager

Reason for Expenditure:

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

Brief Description/Scope:

General hardware purchases plus we will commence with the internal network build-out. Also added hardware for GIS (mapping) external site to sit in a DMZ for field access and updates by employees.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Hardware Upgrades

SCHEDULE: FY17

PROJECT #: 127

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
a) General hardware purchases.				\$7,065		\$40,000	\$47,065
2.30 weeks Network/System Administration		Unit Cost		\$3,072		per week	
b) Commence build-out of wireless network.						\$40,000	\$40,000
		Unit Cost					
c) GIS						\$25,000	\$25,000
		Unit Cost					
		Unit Cost					
		Unit Cost					
		Unit Cost					
		Unit Cost					
		Unit Cost					
TOTAL				\$7,065		\$105,000	
TOTAL ESTIMATED PROJECT COST:							\$112,065

CAPITAL PROJECT SUMMARY

Project Name: Software and Licensing

Project #: 128

Project Schedule: Annual

Project Manager: Mark Uvanni, IT Manager

Reason for Expenditure:

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

Brief Description/Scope:

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

- Custom programming/development for OM/UAN/GIS/GPS
- SpryPoint SSRS Software
- Itron MVRS Upgrade to 5.2
- Integrated Work Order Management System

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Software and Licensing

SCHEDULE: FY17

PROJECT #: 128

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
a) General software purchases. 2.00 week(s) Network/System Administration				\$6,143		\$30,000	\$36,143
		Unit Cost		\$3,072		per week	
b) SpryPoint SSRS Software 1.75 week(s) Network/System Administration				\$5,375		\$25,000	\$30,375
		Unit Cost		\$3,072			
c) Custom programming/development OM/UAN/GIS/CPS						\$34,000	\$34,000
		Unit Cost				per week	
d) Itron Upgrade						\$80,000	\$80,000
		Unit Cost					
e) Integrated Work Management System						\$50,000	\$50,000
		Unit Cost					
		Unit Cost					
		Unit Cost					
TOTAL				\$11,519		\$219,000	
TOTAL ESTIMATED PROJECT COST:							\$230,519

SYSTEM

CAPITAL PROJECT SUMMARY

Project Name: Relay Replacement - Station 4 (Gaw)

Project #: 108

Project Schedule: FY15-17

Project Manager:

Nick D'Alleva

Technical Services Manager

Reason for Expenditure:

Replace the existing electro-mechanical protective relay systems on the 15kV feeder breakers at the Gaw Substation. These relays will be able to provide more information back to the SCADA; they also store vast amounts of data for downloading and evaluating.

Brief Description/Scope:

Replace relays and rewire feeder cubicle for installation of this equipment previously purchased. Test and commission new relays.

Barriers:

Materials were delayed.

Change in Scope of Work From Prior Fiscal Year:

None

Status Update:

All materials are anticipated to be received in early June 2016. Construction will commence in mid-June.

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Station 4: Relay Replacement

SCHEDULE: FY15-17

PROJECT #: 108

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Miscellaneous materials including wire, test blocks, terminals, panels, etc.						\$2,000	\$2,000
Unit Cost		See box at left.					
Labor: Senior Techs (2-man crew)				\$63,601	\$504		\$64,105
12 week(s)	Unit Cost			\$5,300	\$42	per week	
Labor: Technical Services Manager				\$34,966	\$189		\$35,155
9 week(s)	Unit Cost			\$3,885	\$21	per week	
Engineering Consultant: design and inter-connection and as built plans.						\$15,000	\$15,000
Unit Cost		See box at left.					
Electrical Contractor: testing and commissioning.						\$6,000	\$6,000
Unit Cost		See box at left.					
	Unit Cost						
Police Details (if applicable)							
Unit Cost							

TOTAL \$98,567 \$693 \$23,000

TOTAL ESTIMATED PROJECT COST: \$122,260

FY15	0%	Actual	
FY16	60%	Estimate	\$73,356.07
FY17	40%	Estimate	\$48,904.04

CAPITAL PROJECT SUMMARY

Project Name: Remote Terminal Unit (RTU) Replacement – Station 3 **Project #:** 130

Project Schedule: FY16-17 **Project Manager:** Nick D'Alleva, Technical Services Manager

Reason for Expenditure:

The existing RTU was installed in 2000 and uses a legacy TeleGyr 8979 protocol. This was done so that it would work with the old TeleGyr SCADA system. The existing RTU is not IP addressable, nor does it have an ethernet connection. The RTU needs to be upgraded to add the functionality of the existing SEL relays at Station 3. A new RTU will give the Department the ability to communicate with the SEL relays, similar to what is being done at Station 4.

Brief Description/Scope:

Bid and purchase a pre-wired RTU enclosure, with required technical support, that will replace the existing RTU enclosure at Station 3. Contract with SEL for technical assistance and any required hardware for the interconnection. Station Supervisor and Senior Technicians will re-wire and terminate control wiring within the new RTU cabinet. Engineering will program and configure SCADA for new comm-line and RTU.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: RTU Replacement - Station 3

SCHEDULE: FY16-17

PROJECT #: 130

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Purchase RTU, pre-wired enclosure and miscellaneous equipment.						\$55,000	\$55,000
Labor: Senior Techs (2-man crew) 3 week(s)				\$15,900	\$126		\$16,026
	Unit Cost			\$5,300	\$42	per week	
Labor: Technical Services Manager 3 week(s)				\$11,655	\$63		\$11,718
	Unit Cost			\$3,885	\$21	per week	
Labor: Engineering 3 week(s)				\$11,523	\$63		\$11,586
	Unit Cost			\$3,841	\$21	per week	

TOTAL

\$39,078 \$252 \$55,000

TOTAL ESTIMATED PROJECT COST: \$94,330

FY16	58% Estimate	\$	55,000
FY17	42% Estimate	\$	39,330

CAPITAL PROJECT SUMMARY

Project Name: GIS Upgrade

Project #: 125

Project Schedule: FY15-17

Project Manager: Hamid Jaffari, Director of
Engineering and Operations

Reason for Expenditure:

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

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

Brief Description/Scope:

Comprehensive, contracted third-party data collection to produce GIS base model for overhead assets.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

None.

Status Update:

It is anticipated that 20% of this project will be completed by the end of FY16.

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:

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

Brief Description/Scope:

Purchase and install LED street lights for system-wide installation.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

None.

Status Update:

We are on target to have approximately 2,450 street lights replaced for FY16.

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: LED Street Light Implementation

SCHEDULE: FY16-18

PROJECT #: 131

ITEM	CREW WEEKS 2-Man	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
Conversion Program Purchase and install 8000 LED light fixtures	51	\$307,465	\$46,920			\$1,423,400	\$1,777,785
Unit Cost		\$6,029	\$920			\$178 see box at left	
Purchase and install 800 LED flood lights.	6	\$36,172	\$5,520			\$526,020	\$567,712
Unit Cost		\$6,029	\$920			\$658 see box at left	
Unit Cost							
Unit Cost							
Unit Cost							
Police Details: 30 week(s)				\$66,713			\$66,713
Unit Cost				\$2,224			

Total RMLD Crew Weeks: 57

TOTAL	\$343,637	\$52,440	\$66,713	\$1,949,420
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TOTAL ESTIMATED PROJECT COST: \$2,412,211

FY16	33% Estimate	\$804,070
FY17	33% Estimate	\$804,070
FY18	33% Estimate	\$804,070

CAPITAL PROJECT SUMMARY

Project Name: Substation Test Equipment

Project #: 134

Project Schedule: FY17

Project Manager: Nick D'Alleva
Technical Services Manager

Reason for Expenditure:

This project is necessary to purchase several pieces of test equipment to be used by the Technical Services department.

Brief Description/Scope:

The RMLD is formulating a distribution and substation, preventative, maintenance program. In order to perform many of the electrical tests, additional test equipment will be needed.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

n/a

FISCAL 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Substation Test Equipment SCHEDULE: FY17

PROJECT #: 134

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Purchase of various test equipment.						\$30,000	\$30,000

TOTAL 0.0 0 \$0 \$0 \$0 \$30,000

TOTAL ESTIMATED PROJECT COST: \$30,000

CAPITAL PROJECT SUMMARY

Project Name: Station 4: Battery Bank Upgrade

Project #: 113

Project Schedule: FY16-17

Project Manager: Nick D'Alleva

Manager of Technical Services

Reason for Expenditure:

Battery bank two at Station 4 was identified as needing replacement during evaluation by our (substation) testing consultant, United Power Group. This battery bank is in excess of 20 years old.

Brief Description/Scope:

Replace the existing battery bank and install a battery monitoring system, which will bring important information back to our SCADA system in the RMLD Control Center.

Barriers:

None.

Change in Scope of Work From Prior Fiscal Year:

None.

Status Update From Prior Fiscal Year:

The battery bank will be purchased in June 2016 and installed early FY17.

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Station 4: Battery Bank Upgrade

SCHEDULE: FY16-17

PROJECT #: 113

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC.	TOTAL
Materials						\$42,200	\$42,200
Unit Cost							
Labor: Senior Techs (2-man crew)				\$10,600	\$84		\$10,684
2 week(s)				\$5,300	\$42	per week	
Unit Cost							
Labor: Technical Services Manager				\$3,885	\$21		\$3,906
1 week(s)				\$3,885	\$21	per week	
Unit Cost							
Unit Cost							
Unit Cost							
Unit Cost							

TOTAL \$14,485 \$105 \$42,200

TOTAL ESTIMATED PROJECT COST: \$56,790

	FY16	70% Estimate	\$39,753
	FY17	30% Estimate	\$17,037

CAPITAL PROJECT SUMMARY

Project Name: Distributed Gas Generation Pilot **Project #:** 100

Project Schedule: FY16-17 **Project Manager:** Hamid Jaffari, Director of Engineering & Operations
Peter Price, Chief Engineer

Reason for Expenditure:

Take advantage of ISO's market opportunity to reduce the cost of power purchase for RMLD customers.

Brief Description/Scope:

RMLD is exploring an opportunity to install a 2 to 2.5 MW gas fuel generator as a pilot program to take advantage of New England ISO's capacity and transmission credits that lower power purchase costs for our customers. Generating power on-site eliminates the cost, complexity, interdependencies, and inefficiencies associated with transmission and distribution. These credits are expected to increase substantially starting in 2017, which makes the return of investment (ROI) four to five years.

Barriers:

Securing a site and permitting.

Change in Scope of Work from Prior Fiscal Year:

n/a

Status Update:

We have completed the environmental and geotechnical testing and noise study. Next, we will meet with Town of N. Reading Building Inspector for permitting process.

FISCAL 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: 2 to 2.5 MW Distributed Generator

SCHEDULE: FY16-17

PROJECT #: 100

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
2 to 2.5 MW Generator						\$2,435,000	\$2,435,000
	Unit Cost					\$2,435,000	
Engineering and Design						\$20,000	\$20,000
Permitting and Legal Services						\$15,000	\$15,000
Installation and Implementation.							
RMLD Labor							
Line Crews	8	\$48,230	\$7,360				\$55,590
	Unit Cost	\$6,029	\$920			per week	
2 weeks Sr. Techs (2-man crew)				\$10,600	\$84		\$10,684
	Unit Cost			\$5,300	\$42	per week	
2 weeks Tech Svs Manager				\$7,770.22	\$42		\$7,812
	Unit Cost			\$3,885	\$21	per week	
4 weeks Engineering				\$15,364	\$84		\$15,448
	Unit Cost			\$3,841	\$21	per week	
Materials						\$105,375	\$105,375
Contractors						\$100,500	\$100,500
	Unit Cost	\$6,029	\$920				
NGrid Gas Pipeline Connection						\$125,000	\$125,000
	Unit Cost						
Miscellaneous Costs						\$10,000	\$10,000
	Unit Cost						
Testing and Commissioning						\$20,000	\$20,000
	Unit Cost	\$6,029	\$920				
TOTAL		48,230	\$7,360	\$33,734	\$210	\$2,830,875	

TOTAL ESTIMATED PROJECT COST: \$2,920,409

FY16	7%	Estimate	\$200,000
FY17	93%	Estimate	\$2,720,409

CAPITAL PROJECT SUMMARY

Project Name: Fault Indicators

Project #: 115

Project Schedule: FY16-17

Project Manager: Peter Price, Chief Engineer

Reason for Expenditure:

The RMLD has installed approximately 99 fault locators along the distribution circuits over the last 4 years to aid in fault locating.

Brief Description/Scope:

This project is for the purchase of additional fault locators.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

We have purchased 60 fault locators for overhead, which are scheduled for delivery in April 2016. We have budgeted for additional purchases in FY17.

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Fault Indicators

SCHEDULE: FY16-17

PROJECT #: 115

ITEM	CREW WEEKS	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Purchase Fault Indicators						\$50,000	\$50,000
Police Details (if applicable) week(s)							

TOTAL \$50,000

TOTAL ESTIMATED PROJECT COST: \$50,000

FY16	50%	Estimate	\$	25,000
FY17	50%	Estimate	\$	25,000

CAPITAL PROJECT SUMMARY

Project Name: Voltage Data Recorders

Project #: 136

Project Schedule: FY16-17 **Project Manager:** Peter Price, Chief Engineer

Reason for Expenditure:

The Engineering department requires feeder data loggers for feeder load balancing, and voltage recorders for residential and commercial voltage complaint investigation and survey.

Brief Description/Scope:

Purchase a set of feeder data loggers, two single-phase voltage recorders, and one three-phase voltage recorder.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

Researching products and plan on ordering some in FY16. Additional units will be ordered in FY17.

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:

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

Brief Description/Scope:

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

Barriers:

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

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

Upgraded SCADA licensing, installed N-Dimensions cyber security, cap bank automation upgrade and fiber nodes.

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Grid Modernization and Optimization

SCHEDULE: FY15-18

PROJECT #: 103

ITEM	CREW WEEKS	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Purchase	2-Man						\$522,000
12 SCADA-mate switches						\$420,000	
2 Intellirupters						\$90,000	
10 RuggedCom Ethernet Switches (Cap Banks, etc)						\$12,000	
Intelliteam Software							\$40,000
14 Licenses						\$28,000	
Designer Software						\$12,000	
Servers/Hardware/Integration							\$199,949
SCADA Upgrade						\$19,500	
SCADA Licenses						\$65,000	
OMS						\$90,000	
Cyber Security						\$25,449	
Fiber Installation-Construction						\$46,200	\$46,200
Miscellaneous						\$10,000	\$10,000
AGIs, Sensors, RTUs, etc.							
Consulting Services						\$26,520	\$26,520
Line Crews	16.0	\$96,460	\$14,720				\$111,180
		\$6,029	\$920			per week	
Technical Services Labor				\$21,200	\$168		\$21,368
4 weeks (2 man crew)							
	Unit Cost			\$5,300	\$42	per week	
Engineering Labor:				\$15,364	\$84		\$15,448
4 week(s)							
	Unit Cost			\$3,841	\$21	per week	
TOTAL		\$96,460	\$14,720	\$36,564	\$252	\$844,669	

TOTAL ESTIMATED PROJECT COST: \$992,665

FY15	Actual	\$90,519
FY16	Estimate	\$140,500
FY17	Estimate	\$284,000
FY18	Estimate	\$477,646

CAPITAL PROJECT SUMMARY

Project Name: New Wilmington Substation

Project #: TBD

Project Schedule: FY17-21

Project Manager: Hamid Jaffari, Director of
Engineering & Operations

Reason for Expenditure:

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

Brief Description/Scope:

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

Barriers:

Availability of land.

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

n/a

Status Update From Prior Fiscal Year:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: New Wilmington Substation

SCHEDULE: FY17-21

PROJECT #: TBD

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Purchase Land.						\$250,000	\$250,000
	Unit Cost						
Permitting and Legal Services						\$20,000	\$20,000
	Unit Cost						
Engineering and design.						\$150,000	\$150,000
	Unit Cost						
Site Preparation						\$225,000	\$225,000
	Unit Cost						
Materials: Transformers and switchgears						\$3,600,000	\$3,600,000
	Unit Cost						
Materials: Cables, manholes, gantry, etc.						\$400,000	\$400,000
	Unit Cost						
Miscellaneous Costs						\$100,000	\$100,000
	Unit Cost						
Testing and Commissioning.						\$150,000	\$150,000
	Unit Cost						
115 kV Tap Construction						\$355,000	\$355,000
	Unit Cost						
TOTAL						\$5,250,000	

TOTAL ESTIMATED PROJECT COST: \$5,250,000

FY17	Estimate	\$250,000
FY18	Estimate	\$3,000,000
FY19	Estimate	\$1,600,000
FY20	Estimate	\$200,000
FY21	Estimate	\$200,000

CAPITAL PROJECT SUMMARY

Project Name: Station 4: 4W9 Getaway Replacement **Project #:** TBD

Project Schedule: FY17 **Project Manager:** Peter Price, Chief Engineer

Reason for Expenditure:

The underground cable for circuit 4W9 consists of 500W and 1000 AL cables. These cables are over 30 years old.

Brief Description/Scope:

Replace underground feeder cables on circuit 4W9 from the substation breaker to the riser pole. Splice cables in manholes and terminate cables at the riser and switchgear.

Barriers:

Work to be done in the fall or spring.

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

n/a

Status Update From Prior Fiscal Year:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Station 4: 4W9 Getaway Replacement

SCHEDULE: FY17

PROJECT #: TBD

ITEM	CREW WEEKS 2-man	CREW LABOR COST	CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
Reconductor 4W9 U/G Cable 8,500 feet of 750 MCM CU	6.0	\$36,172	\$5,520			\$170,000	\$211,692
	Unit Cost		\$6,029	\$920		per week	
	Unit Cost						
18 splices @\$225 6 terminations @ \$225 fire proof tape - \$450						\$5,850	\$5,850
	Unit Cost					see box at left	
	Unit Cost						
Engineering Labor				\$3,841	\$21		\$3,862
1 Week	Unit Cost			\$3,841	\$21	per week	
	Unit Cost						
Police Details (if applicable)				\$13,343			\$13,343
6 weeks	Unit Cost			\$2,224		per week	

Total RMLD Crew Weeks 6.0

TOTAL	6.0	\$36,172	\$5,520	\$17,184	\$21	\$175,850
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TOTAL PROJECT COST: \$234,747

CAPITAL PROJECT SUMMARY

Project Name: Station 4: Relay/SCADA Integration
for Bus A&B

Project #: TBD

Project Schedule: FY17

Project Manager: Nick D'Alleva
Technical Services Manager

Reason for Expenditure:

The old electro-mechanical relays will be changed out at Station 4 in early FY17. In order to communicate with these relays, we will need to design, construct, program, and map data points to the RMLD SCADA system.

Brief Description/Scope:

Install communication equipment, data concentrators, and fiber wiring from the relays to the remote terminal unit at Station 4.

Barriers:

None anticipated at this time.

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

n/a

Status Update From Prior Fiscal Year:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Station 4: Relay/SCADA Integration for Bus A&B SCHEDULE: FY17
 PROJECT #: TBD

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Contractor						\$25,000	\$25,000
Materials						\$30,000	\$30,000
Labor: Senior Techs (2-man crew) 2.5 week(s)				\$13,250	\$105.00		\$13,355
Unit Cost				\$5,300	\$42.00	per week	
Labor: Technical Services Manager 0.5 week(s)				\$1,943	\$10.50		\$1,953
Unit Cost				\$3,885	\$21.00	per week	
Labor: Engineering week(s)							
Unit Cost						per week	
TOTAL				<u>\$15,193</u>	<u>\$116</u>	<u>\$55,000</u>	

TOTAL ESTIMATED PROJECT COST: \$70,308

CAPITAL PROJECT SUMMARY

Project Name: Station 3: Relay Upgrades and SCADA Integration

Project #: TBD

Project Schedule: FY17

Project Manager: Nick D'Alleva
Technical Services Manager

Reason for Expenditure:

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

Brief Description/Scope:

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

Barriers:

None anticipated at this time.

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

n/a

Status Update From Prior Fiscal Year:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

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

PROJECT #: TBD

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Contractor: Design and map new relays to SCADA System.						\$110,000	\$110,000
Materials: (12) SEL 351 feeder relays; (2) SEL 500 Bus Relays; SEL communication relays.						\$100,000	\$100,000
Labor: Senior Techs (2-man crew) 5 week(s)				\$26,500	\$210.00		\$26,710
Unit Cost				\$5,300	\$42.00	per week	
Labor: Technical Services Manager 1.5 week(s)				\$5,828	\$31.50		\$5,859
Unit Cost				\$3,885	\$21.00	per week	
Labor: Engineering 2.5 week(s)				\$9,602	\$52.50		\$9,655
Unit Cost				\$3,841	\$21.00	per week	

TOTAL \$41,931 \$294 \$210,000

TOTAL ESTIMATED PROJECT COST: \$252,225

CAPITAL PROJECT SUMMARY

Project Name: Analog Devices Cap Bank Upgrade

Project #: TBD

Project Schedule: FY17

Project Manager: Nick D'Alleva
Technical Services Manager

Reason for Expenditure:

During infrared scans at the capacitor bank at Analog Devices, the RMLD has discovered evidence of overheating at several 200 Amp elbows. We will be replacing the existing 200 Amp enclosure with a 600 Amp enclosure to mitigate this issue.

Brief Description/Scope:

Purchase and install a 600 Amp capacitor bank enclosure to replace the existing 200 Amp enclosure.

Barriers:

None anticipated at this time.

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

n/a

Status Update From Prior Fiscal Year:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Analog Devices Cap Bank Upgrade

SCHEDULE: FY17

PROJECT #: TBD

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Materials: (1) 600-Amp cap bank, enclosure and miscellaneous equipment.						\$30,000	\$30,000
Labor: Line Department	1.0	\$6,028.72	\$920.00				\$6,949
		\$6,028.72	\$920.00			per week	
Labor: Senior Techs (2-man crew) 2.5 week(s)				\$13,250	\$105.00		\$13,355
	Unit Cost			\$5,300	\$42.00	per week	
Labor: Technical Services Manager 0.5 week(s)				\$1,943	\$10.50		\$1,953
	Unit Cost			\$3,885	\$21.00	per week	
Labor: Engineering 0.5 week(s)				\$1,920	\$10.50		\$1,931
	Unit Cost			\$3,841	\$21.00	per week	
TOTAL CREW WEEKS	1.0						
TOTAL	1.0	\$6,029	\$920	\$17,113	\$126	\$30,000	

TOTAL ESTIMATED PROJECT COST: \$54,188

CAPITAL PROJECT SUMMARY

Project Name: Station 5: LTC Control Replacement **Project #:** TBD

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

Reason for Expenditure:

The existing LTC transformer controls at Station 5 are in need of replacement. They are old and difficult to adjust. The replacement controls are digital and more accurate.

Brief Description/Scope:

Replace the existing LTC controls with new Beckwith controls.

Barriers:

None anticipated at this time.

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

n/a

Status Update From Prior Fiscal Year:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Station 5: LTC Control Replacement

SCHEDULE: FY17

PROJECT #: TBD

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Contractor: Assist with and program new Beckwith controls.						\$10,000	\$10,000
Materials: (2) Beckwith controls						\$15,000	\$15,000
\$7,500							
Labor: Senior Techs (2-man crew) 2 week(s)				\$10,600	\$84.00		\$10,684
Unit Cost per week							
				\$5,300	\$42.00		
Labor: Technical Services Manager 1.5 week(s)				\$5,828	\$31.50		\$5,859
Unit Cost per week							
				\$3,885	\$21.00		
Labor: Engineering week(s)							
Unit Cost per week							
TOTAL				\$16,428	\$116	\$25,000	

TOTAL ESTIMATED PROJECT COST: \$41,543

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:

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

Brief Description/Scope:

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

Barriers:

None anticipated at this time.

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

n/a

Status Update From Prior Fiscal Year:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

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

SCHEDULE: FY17-22

PROJECT #: TBD

ITEM	CREW WEEKS 2-Man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Install: 25 Pad-mount Switches.	7.5	\$45,215	\$6,900				\$52,115
Unit Cost		\$6,029	\$920			per week	
Purchase: 25 Pad-mount Switches.						\$1,125,000	\$1,125,000
Unit Cost						\$45,000 per switch	
Unit Cost							
Unit Cost							
Labor: Engineering 10 week(s)				\$38,410	\$210		\$38,620
Unit Cost				\$3,841	\$21	per week	
Police Details (if applicable) week(s)							
Unit Cost						per week	
Total RMLD Crew Weeks:	7.5						
TOTAL	7.5	\$45,215	\$6,900	\$38,410	\$210	\$1,125,000	

TOTAL ESTIMATED PROJECT COST: \$1,215,735

FY17 Estimate	\$194,518
FY18 Estimate	\$194,518
FY19 Estimate	\$194,518
FY20 Estimate	\$194,518
FY21 Estimate	\$194,518
FY22 Estimate	\$243,147

CAPITAL PROJECT SUMMARY

Project Name: Substation Equipment Upgrade

Project #: 111

Project Schedule: Annual

Project Manager: Nick D'Alleva
Technical Services Manager

Reason for Expenditure:

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

Brief Description/Scope:

Major items include the replacement of the transformer LTC controls at Station #3, the purchase of remote racking devices for Substation 5, redesign of the transfer scheme at Station #3 and various minor items at Stations #3, #4 and #5.

Barriers:

Availability of replacement parts.

Change in Scope From Prior Fiscal Year:

None.

Status Update:

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Substation Equipment Upgrade

SCHEDULE: FY17

PROJECT #: 111

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC.	TOTAL
Materials						\$50,000	\$50,000
Unit Cost							
Labor: Senior Techs (2-man crew) 2 week(s)				\$10,600	\$84		\$10,684
Unit Cost							
Labor: Technical Services Manager 1 week(s)				\$3,885	\$21		\$3,906
Unit Cost							
Engineering Consulting Services						\$10,000	\$10,000
Unit Cost							
Unit Cost							
Unit Cost							
TOTAL				\$14,485	\$105	\$60,000	

TOTAL ESTIMATED PROJECT COST: \$74,590

CAPITAL PROJECT SUMMARY

Project Name: Transformers & Capacitors

Project #: 116

Project Schedule: Annual

Project Manager: Peter Price, Chief Engineer

Reason for Expenditure:

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

Brief Description/Scope:

- | | |
|---|--------------------|
| a) Three-phase padmount transformers (commercial services) | Quantity: 15 units |
| b) Single-phase padmount transformers for proposed subdivisions and stock. | Quantity: 40 units |
| c) Three-phase polemount transformers for proposed commercial projects and stock | Quantity: 31 units |
| d) Single-phase polemount transformers for proposed residential services and stock. | Quantity: 86 units |
| e) Submersible transformers for stock. | Quantity: 4 units |
| f) 1200 kVar capacitor banks. | Quantity: 4 units |

Barriers:

None anticipated at this time

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

n/a

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:

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

Brief Description/Scope:

Purchase materials and procure fiber optic cable splicers as needed.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

We have purchased four Ethernet switches for the field and one Ethernet switch for the office.

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Communication Equipment (Fiber Optic)

SCHEDULE: FY17

PROJECT #: 126

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
Fiber node materials to include the enclosure, patch panel, power supply and Ethernet switch. 6.0 units						\$30,000	\$30,000
Unit Cost						\$5,000	
Contract labor and materials for splicing fiber. 6.0 units						\$18,750	\$18,750
Unit Cost						\$3,125	
Fiber optic cable and hardware.						\$11,250	\$11,250
Unit Cost							
Labor - Line Crews	1	\$6,029	\$920				\$6,949
Unit Cost		\$6,029	\$920			per week	
Unit Cost							
Police Details (if applicable) 1 week(s)						\$2,224	\$2,224
Unit Cost		\$2,224				per week	

TOTAL	\$8,253	\$920	\$60,000
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TOTAL ESTIMATED PROJECT COST:	\$69,173
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CAPITAL PROJECT SUMMARY

Project Name: Meters

Project #: 117

Project Schedule: Annual

Project Manager: Nick D'Alleva
Technical Services Manager

Reason for Expenditure:

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

Brief Description/Scope:

Two hundred residential and commercial meters as well as miscellaneous hardware will be purchases for stock.

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Meters

SCHEDULE: FY17

PROJECT #: 117

ITEM	CREW WEEKS	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
<i>For Stock:</i> Residential and Commercial Meters 200 units						\$60,000	\$60,000
Unit Cost						\$300 each	
Locking sealing rings, seals and meter switches						\$20,000	\$20,000
Unit Cost						\$100 per meter	
Unit Cost							
Unit Cost							
Unit Cost							
Unit Cost							
Unit Cost							

TOTAL \$80,000

TOTAL ESTIMATED PROJECT COST: \$80,000

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:

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

Brief Description/Scope:

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

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

Completed work on Rourke Lane in Lynnfield. We are now replacing transformers in various subdivisions.

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

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

SCHEDULE: FY17

PROJECT #: 106

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC.	TOTAL			
Install approximately 178 pad mount transformers. (Transformers are included in annual transformer purchase)	5.0	\$30,144	\$4,600				\$34,744			
Unit Cost		\$6,029	\$920			per week				
Install approximately 4,500 feet of 1/0 Al UG cable and 4,500 feet of #2 CU neutral.	11.0	\$66,316	\$10,120			\$14,000	\$90,436			
Unit Cost		\$6,029	\$920			per week				
Materials: splices, elbows, terminations, connectors, box pads, tape, etc.						\$13,200	\$13,200			
Unit Cost										
Engineering Labor: 3 week(s)				\$ 11,523	\$63		\$11,586			
Unit Cost				\$3,841	\$21	per week				
Police Details (if applicable) week(s)										
Unit Cost						per week				
Total RMLD Crew Weeks		16.0								
TOTAL	\$96,460		\$14,720		\$11,523		\$63		\$27,200	
TOTAL ESTIMATED PROJECT COST:							\$149,965			

CAPITAL PROJECT SUMMARY

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

Project #: 107

Project Schedule: Annual

Project Manager: Peter Price, Chief Engineer

Reason for Expenditure:

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

Brief Description/Scope:

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

Pole replacements will be charged to the pole replacement/inspection project.
Transformers will be upgraded as part of the transformer upgrade project.

Barriers:

Some areas are Verizon set areas.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

We have completed conversions of Burroughs Road (North Reading); Cortland Road, Tophet Road, Cooks Farm Lane and Rourke Lane (Lynnfield); Oak Ridge Road (Reading) and Clifton Street (Wilmington)

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

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

SCHEDULE: FY17

PROJECT #: 107

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC.	TOTAL
Install 3,400' of 1/0 primary.	4.6	\$27,435	\$4,187			\$2,628	\$34,250
Unit Cost		\$6,029	\$920			see box at left	
Install 2844' of 4/0 - 3/C sec cable	4.6	\$27,435	\$4,187			\$5,347	\$36,969
Unit Cost		\$6,029	\$920			see box at left	
Replace 11 transformers. (Transformers are included with annual transformer purchase.)	2.3	\$13,718	\$2,093				\$15,811
Unit Cost		\$6,029	\$920			per week	
Miscellaneous Hardware \$200 per pole for approximately 40 poles.						\$8,000	\$8,000
Unit Cost						\$200 per pole	
Unit Cost							
Engineering Labor: 1 week(s)				4,370	\$23.89		\$4,394
Unit Cost				3,841	\$21	per week	
Police Details (if applicable) 3 week(s)				\$6,325			\$6,325
Unit Cost				\$2,224		per week	

Total RMLD Crew Weeks 11.4

TOTAL	\$68,588	\$10,467	\$10,695	\$24	\$15,975
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TOTAL ESTIMATED PROJECT COST: \$105,748

CAPITAL PROJECT SUMMARY

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

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

Reason for Expenditure:

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

Brief Description/Scope:

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

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year

n/a

Status Update:

n/a

FISCAL 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Service Installations (Residential and Commercial)

SCHEDULE: FY17

PROJECT #: various

ITEM	CREW WEEKS 2-Man	RMLD CREW LABOR COST	RMLD CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
Install new and upgraded service connections at approximately 300 units (approx 75-100 feet per installation).	13	\$76,843	\$11,726			\$51,000	\$139,570
		Unit Cost	\$6,029	\$920		per week	
							Unit Cost
							Unit Cost
							Unit Cost
							Unit Cost

Total RMLD Crew Weeks 13
 Total U/G Crew Weeks

	TOTAL	13	76,843	\$11,726	\$51,000
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TOTAL ESTIMATED PROJECT COST \$139,570

CAPITAL PROJECT SUMMARY

Project Name: Routine Construction

Project #: various

Project Schedule: Annual

Project Manager: n/a

Reason for Expenditure:

Routine Construction covers capital projects that develop during the year involving items shown below.

Brief Description/Scope:

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

Barriers:

None anticipated at this time.

Change in Scope of Work From Prior Fiscal Year:

n/a

Status Update:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: Routine Construction

SCHEDULE: FY17

PROJECT #: various

ITEM	CREW WEEKS 2-man	CREW LABOR COST	CREW VEHICLE COST	OTHER LABOR	OTHER VEHICLE	NEW MATERIAL & MISC	TOTAL
a) Capital Construction	20	120,574	\$18,400			\$100,000	\$238,974
	Unit Cost	6,029	\$920			per week	
b) Street Light Installations	4	24,115	\$3,680				\$27,795
	Unit Cost	6,029	\$920			per week	
c) Pole Setting/Transfers	31	186,890	\$28,520			\$100,000	\$315,410
	Unit Cost	\$6,029	\$920			per week	
d) Engineering Labor				\$30,728	\$168		\$30,896
8.0 weeks	Unit Cost			\$3,841	\$21	per week	
e) General Line Foreman Labor				\$105,554	\$546.0		\$106,100
26.0 weeks	Unit Cost			\$4,060	\$21	per week	
f) U/G Construction	1.5	\$9,043	\$1,380			\$100,000	\$110,423
	Unit Cost	\$6,029	\$920			per week	
g) Police Details				\$115,637			\$115,637
52.0 weeks	Unit Cost			\$2,224		per week	
h) Overtime	10	\$58,528	\$9,200				\$67,728
	Unit Cost	\$5,852.76	\$920			per week	

Total RMLD Crew Weeks **56.5**

TOTAL	56.5	\$399,150.38	\$61,180	\$251,918	\$714	\$300,000
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TOTAL ESTIMATED PROJECT COST: \$1,012,962

CAPITAL PROJECT SUMMARY

Project Name: AMI Mesh Network Expansion

Project #: TBD

Project Schedule: Annual

Project Manager: Nick D'Alleva
Technical Services Manager

Reason for Expenditure:

In order to expand RMLD's AMI network, additional relays and meters need to be purchased and installed. These new meters will give the RMLD the ability to monitor voltage, current, demand, power factor and power quality.

Brief Description/Scope:

Purchase materials and retrofit 500 existing RMLD Itron meters to enable them to join the AMI Mesh Network.

Barriers:

None anticipated at this time.

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

n/a

Status Update From Prior Fiscal Year:

n/a

FISCAL YEAR 2017 CAPITAL BUDGET COST SHEET

CAPITAL PROJECT NAME: AMI Mesh Network Expansion

SCHEDULE: FY17

PROJECT #: TBD

ITEM	CREW WEEKS 2-man	RMLD CREW LABOR COSTS	RMLD CREW VEHICLE COSTS	OTHER LABOR	OTHER VEHICLE	MATERIAL & MISC	TOTAL
Purchase and Install: 30 Relays 52 GS meters 80 5S meters 16 16S meters						\$98,000	\$98,000
Labor: Meter Tech (2-man crew) 7.5 week(s)				\$37,147	270		\$37,417
Unit Cost				\$4,953	36	per week	
Labor: Technical Services Manager 3.75 week(s)				\$14,569	79		\$14,648
Unit Cost				\$3,885	21	per week	
Purchase and Install: 500 Retrofit units and materials for existing meters to join the new AMI Mesh network.						\$50,000	\$50,000
						\$100 each	
Labor: Meter Tech (2-man crew) 4 week(s)				\$19,812	144		\$19,956
Unit Cost				\$4,953	36	per week	
RMLD Crew Weeks:							
TOTAL				\$71,529	\$493	\$148,000	

TOTAL ESTIMATED PROJECT COST: \$220,021

**FY 2017 - Proposed Base Rate Increase
Comparative Rates Present/Proposed**

Residential

	500 kWh	750 kWh	1000 kWh
Present	\$72.49	\$106.99	\$141.48
Proposed	\$77.30	\$114.02	\$150.75
Difference	\$4.81	\$7.03	\$9.27
% Change	6.64%	6.57%	6.55%
Cost per kWh Present	\$0.14498	\$0.14265	\$0.14148
Cost per kWh Proposed	\$0.15460	\$0.15203	\$0.15075

Residential Hot Water

	1000 kWh	1500 kWh	2000 kWh
Present	\$130.86	\$194.55	\$258.22
Proposed	\$139.06	\$206.67	\$274.27
Difference	\$8.20	\$12.12	\$16.05
% Change	6.27%	6.23%	6.22%
Cost per kWh Present	\$0.13086	\$0.12970	\$0.12911
Cost per kWh Proposed	\$0.13906	\$0.13778	\$0.13714

Residential Time of Use

	1000 kWh	1500 kWh	2000 kWh
Present	\$128.10	\$189.41	\$250.69
Proposed	\$136.03	\$201.02	\$265.99
Difference	\$7.93	\$11.61	\$15.30
% Change	6.19%	6.13%	6.10%
Cost per kWh Present	\$0.12810	\$0.12627	\$0.12535
Cost per kWh Proposed	\$0.13603	\$0.13401	\$0.13300

Residential Low Income

	500 kWh	750 kWh	1000 kWh
Present	\$66.93	\$100.39	\$133.85
Proposed	\$71.18	\$106.76	\$142.35
Difference	\$4.25	\$6.37	\$8.50
% Change	6.35%	6.35%	6.35%
Cost per kWh Present	\$0.13386	\$0.13385	\$0.13385
Cost per kWh Proposed	\$0.14236	\$0.14235	\$0.14235

Residential Hot Water Low Income

	1000 kWh	1500 kWh	2000 kWh
Present	\$127.36	\$191.05	\$254.73
Proposed	\$135.22	\$202.83	\$270.42
Difference	\$7.86	\$11.78	\$15.69
% Change	6.17%	6.17%	6.16%
Cost per kWh Present	\$0.12736	\$0.12737	\$0.12737
Cost per kWh Proposed	\$0.13522	\$0.13522	\$0.13521

Residential Time of Use Low Income

	1000 kWh	1500 kWh	2000 kWh
Present	\$122.58	\$183.88	\$245.17
Proposed	\$129.96	\$194.94	\$259.91
Difference	\$7.38	\$11.06	\$14.74
% Change	6.02%	6.01%	6.01%
Cost per kWh Present	\$0.12258	\$0.12259	\$0.12259
Cost per kWh Proposed	\$0.12996	\$0.12996	\$0.12996

Commercial

	Small	Medium	Large
Present	\$2,057.52	\$10,745.32	\$47,713.75
Proposed	\$2,175.00	\$11,374.96	\$50,385.63
Difference	\$117.48	\$629.64	\$2,671.88
% Change	5.71%	5.86%	5.60%
Cost per kWh Present	\$0.13608	\$0.14102	\$0.13269
Cost per kWh Proposed	\$0.14385	\$0.14928	\$0.14012

Industrial Time of Use

	Small	Medium	Large
Present	\$28,812.65	\$57,583.75	\$778,541.95
Proposed	\$30,468.68	\$60,735.90	\$819,355.33
Difference	\$1,656.03	\$3,152.15	\$40,813.38
% Change	5.75%	5.47%	5.24%
Cost per kWh Present	\$0.10834	\$0.11761	\$0.10508
Cost per kWh Proposed	\$0.11406	\$0.12405	\$0.11059

School Rate

	Small	Medium	Large
Present	\$3,938.81	\$11,630.77	\$24,843.82
Proposed	\$4,137.59	\$12,178.14	\$26,009.41
Difference	\$198.78	\$547.37	\$1,165.59
% Change	5.05%	4.71%	4.69%
Cost per kWh Present	\$0.12822	\$0.12055	\$0.12025
Cost per kWh Proposed	\$0.13469	\$0.12623	\$0.12589

Street Lights

	Reading	Lynnfield	North Reading	Wilmington
Present	\$9,084.85	\$3,453.63	\$4,639.77	\$9,284.82
Proposed	\$9,691.16	\$3,684.94	\$4,948.51	\$9,902.78
Difference	\$606.31	\$231.31	\$308.74	\$617.96
% Change	6.67%	6.70%	6.65%	6.66%
Cost per kWh Present	\$0.12699	\$0.12772	\$0.12583	\$0.12594
Cost per kWh Proposed	\$0.13547	\$0.13627	\$0.13420	\$0.13433

Co-Op Resale

	500 kWh
Present	\$71.49
Proposed	\$75.89
Difference	\$4.40
% Change	6.15%
Cost per kWh Present	\$0.14298
Cost per kWh Proposed	\$0.15178

Note: Proposed Rate Structure to Take Effect July 1, 2016. All Rate Classes Include the Fifteen Percent Prompt Payment Discount except Street Lights

Attachment 2

Residential Schedule A Rate

Designation:

Residential A Rate

Available in:

Reading, Lynnfield Center, North Reading, and Wilmington

Applicable to:

Individual residential customers for all domestic uses where service is taken through one meter. Incidental commercial use, not exceeding 20% of the total energy used on the same premises is permitted.

Character of service:

A.C. 60 cycles: single phase.

Customer Charge:

\$4.51 per month

Distribution Energy Charge:

\$.05905 per Kilowatt-hour for all Kilowatt-hours usage

Budget Billing:

The customers under this rate will have available to them a budget billing program under which the customer is required to pay a levelized amount to the Department each billing period during the calendar year. The specifics of this program are outlined in the Department's General Terms and Conditions.

Low Income Discount

The Customer Charge under this rate will be waived upon verification of a low-income customer's receipt of any means-tested public benefit, or verification of eligibility for the low-income home energy assistance program, or its successor program, for which eligibility does not exceed 200 percent of the federal poverty level based on a household's gross income. In a program year in which maximum eligibility for LIHEAP exceeds 200 percent of the federal poverty level, a household that is income eligible under LIHEAP shall be eligible for the low-income electric discount. It is the responsibility of the customer to annually certify, by forms provided by the utility, the continued compliance with the foregoing qualifications.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

Residential Schedule A Rate (cont'd)

Farm Discount:

Customers who meet the eligibility requirements set forth by the Massachusetts Department of Food and Agriculture for being engaged in the business of agriculture or farming, and upon certification to the RMLD by the Massachusetts Department of Food and Agriculture, will be eligible for an additional 10% discount, prior to the RMLD prompt payment discount, on rates and charges applicable on their monthly billing statement.

Energy Conservation Charge:

The bill for service hereunder may be increased or decreased as provided by the Energy Conservation Charge.

Fuel Adjustment:

The bill for service hereunder may be increased or decreased as provided by the Standard Fuel Adjustment Clause.

Purchase Power Capacity and Transmission Charge:

The bill for service hereunder may be increased or decreased as provided by the Purchase Power Capacity and Transmission Charge.

Meter Reading and Billing:

Bills under this schedule will be rendered monthly. A prompt payment discount of 15% will be allowed on the Customer Charge and Distribution Energy Charge, only if the entire bill is paid-in-full by the discount due date.

General Terms and Conditions:

Service hereunder is subject to the General Terms and Conditions which are incorporated herein and are a part of this rate schedule.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

**Residential Schedule RW
Controlled Water Heater Rate**

Designation:

Residential RW Rate

Available in:

Reading, Lynnfield Center, North Reading, and Wilmington

Applicable to:

Individual residential customers for all domestic uses where service is taken through one meter. Incidental commercial use, not exceeding 20% of the total energy used on the same premises is permitted.

Character of service:

A.C. 60 cycles: single phase.

Terms of Use:

When a customer regularly uses an electric water heater of a type approved by the Department, service to the water heater will be controlled by a Department owned timing device. Customer also needs a customer owned internet connection. Internal wiring will be the responsibility of the customer. Water heater with two elements shall be interlocked to prevent simultaneous operation.

Customer Charge:

\$4.52 per month.

Distribution Energy Charge:

\$.04529 per Kilowatt-hour for all Kilowatt-hours usage

Budget Billing:

The customers under this rate will have available to them a budget billing program under which the customer is required to pay a levelized amount to the Department each billing period during the calendar year. The specifics of this program are outlined in the Department's General Terms and Conditions.

Low Income Discount

The Customer Charge under this rate will be waived upon verification of a low-income customer's receipt of any means-tested public benefit, or verification of eligibility for the low-income home energy assistance program, or its successor program, for which eligibility does not exceed 200 percent of the federal poverty level based on a household's gross income. In a program year in which maximum eligibility for LIHEAP exceeds 200 percent of the federal poverty level, a household that is income eligible under LIHEAP shall be eligible for the low-income electric discount. It is the responsibility of the customer to annually certify, by forms provided by the utility, the continued compliance with the foregoing qualifications.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

**Residential Schedule RW
Controlled Water Heater Rate (cont'd)**

Farm Discount:

Customers who meet the eligibility requirements set forth by the Massachusetts Department of Food and Agriculture for being engaged in the business of agriculture or farming, and upon certification to the RMLD by the Massachusetts Department of Food and Agriculture, will be eligible for an additional 10% discount, prior to the RMLD prompt payment discount, on rates and charges applicable on their monthly billing statement.

Energy Conservation Charge:

The bill for service hereunder may be increased or decreased as provided by the Energy Conservation Charge.

Fuel Adjustment:

The bill for service hereunder may be increased or decreased as provided by the Standard Fuel Adjustment Clause.

Purchase Power Capacity and Transmission Charge:

The bill for service hereunder may be increased or decreased as provided by the Purchase Power Capacity and Transmission Charge

Meter Reading and Billing:

Bills under this schedule will be rendered monthly. A prompt payment discount of 15% will be allowed on the Customer Charge and Distribution Energy Charge, only if the entire bill is paid-in-full by the discount due date.

General Terms and Conditions:

Service hereunder is subject to the General Terms and Conditions which are incorporated herein and are a part of this rate schedule.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

**Town of Reading, Massachusetts
Municipal Light Department**

**MDPU # 261 supersedes
and cancels MDPU # 252**

Residential Time-of-Use Schedule A2 Rate

Designation:

Residential Time-of-Use A2 Rate

Available in:

Reading, Lynnfield Center, North Reading, and Wilmington

Applicable to:

Individual residential customers for all domestic uses where service is taken through one On-Peak and Off-Peak meter. Incidental commercial use, not exceeding 20% of the total energy used on the same premises is permitted.

Character of service:

A.C. 60 cycles: single phase.

Customer Charge:

\$7.15 per month.

Distribution Energy Charge:

\$.08798 per Kilowatt-hour for all Kilowatt-hours usage during the On-Peak hours.

\$.01815 per Kilowatt-hour for all Kilowatt-hours usage during the Off-peak hours.

Definition of Periods:

The On-Peak period is defined as the hours between 12:00 Noon and 7:00 P.M. Monday through Friday except holidays as listed under the "Granted Holidays" paragraph listed below. The Off-Peak period is defined as the hours between 7:00 P.M. and 12:00 Noon Monday through Friday and all hours Saturday, Sunday and granted holidays as listed below.

Controlled Water Heater Allowance:

When a customer regularly uses an electric water heater of a type approved by the Department, 333 kWh will be credited to usage during the Off-Peak period and will be billed at \$.00300 per kWh. All kWh used Off-Peak above 333 kWh will be charged at the regular Off-Peak rate. If less than 333 kWh are used Off-Peak then only that amount of kWh will be billed at \$.00300 per kWh. Water heater with two elements shall be interlocked to prevent simultaneous operation. Service to the water heater will be controlled by a Department owned time switch in an approved outdoor socket.

Term:

A customer electing to be billed under this rate must remain on this rate for a minimum of one year. At the end of one year on this rate a customer may elect to remain on this rate or be billed under the Residential A Rate.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

Residential Time-of-Use Schedule A2 Rate (cont'd)

Budget Billing:

The customers under this rate will have available to them a budget billing program under which the customer is required to pay a levelized amount to the Department each billing period during the calendar year. The specifics of this program are outlined in the Department's General Terms and Conditions.

Low Income Discount

The Customer Charge under this rate will be waived upon verification of a low-income customer's receipt of any means-tested public benefit, or verification of eligibility for the low-income home energy assistance program, or its successor program, for which eligibility does not exceed 200 percent of the federal poverty level based on a household's gross income. In a program year in which maximum eligibility for LIHEAP exceeds 200 percent of the federal poverty level, a household that is income eligible under LIHEAP shall be eligible for the low-income electric discount. It is the responsibility of the customer to annually certify, by forms provided by the utility, the continued compliance with the foregoing qualifications.

Farm Discount:

Customers who meet the eligibility requirements set forth by the Massachusetts Department of Food and Agriculture for being engaged in the business of agriculture or farming, and upon certification to the RMLD by the Massachusetts Department of Food and Agriculture, will be eligible for an additional ten percent discount, prior to the RMLD prompt payment discount, on rates and charges applicable on their monthly billing statement.

Energy Conservation Charge:

The bill for service hereunder may be increased or decreased as provided by the Energy Conservation Charge.

Fuel Adjustment:

The bill for service hereunder may be increased or decreased as provided by the Standard Fuel Adjustment Clause.

Purchase Power Capacity and Transmission Charge:

The bill for service hereunder may be increased or decreased as provided by the Purchase Power Capacity and Transmission Charge.

Meter Reading and Billing:

Bills under this schedule will be rendered monthly. A prompt payment discount of 15% will be allowed on the Customer Charge, Distribution Demand Charge and Distribution Energy Charge, only if the entire bill is paid-in-full by the discount due date.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

**Town of Reading, Massachusetts
Municipal Light Department**

**MDPU # 261 supersedes
and cancels MDPU # 252**

Residential Time-of-Use Schedule A2 Rate (cont'd)

Granted Holidays

Under the Residential Time-of-Use Schedule A2 Rate the holidays granted for Off-Peak are: New Year's Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Columbus Day, Veteran's Day and Christmas Day.

General Terms and Conditions:

Service hereunder is subject to the General Terms and Conditions which are incorporated herein and are a part of this rate schedule.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

**Town of Reading, Massachusetts
Municipal Light Department**

**MDPU # 262 supersedes
and cancels MDPU # 253**

Commercial Schedule C Rate

Designation:

Commercial C Rate

Available in:

Reading, Lynnfield Center, North Reading, and Wilmington

Applicable to:

Service under this rate is available to industrial or commercial customers who take all their requirements under this rate. All electricity furnished under this rate will be metered through one service unless it is convenient for the Department to do otherwise.

Character of service:

AC 60 cycles: single phase or three phase.

Customer Charge:

\$7.76 per month.

Distribution Demand Charge:

\$8.12 per Kilowatt for all demand usage.

Distribution Energy Charge:

\$.01723 per Kilowatt-hour for all Kilowatt-hours usage.

Budget Billing:

The customers under the C Rate may elect the Budget Billing program under which the customer is required to pay the levelized amount to the Department each billing period during the calendar year. This rate is not available to C Rate Customers electing the Contract Demand Rate, or the Non-Firm Demand Rate. The specifics of this program are outlined in the Department's General Terms and Conditions.

Energy Conservation Charge:

The bill for service hereunder may be increased or decreased as provided by the Energy Conservation Charge.

Fuel Adjustment:

The bill for service hereunder may be increased or decreased as provided by the Standard Fuel Adjustment Clause.

Purchase Power Capacity and Transmission Charge:

The bill for service hereunder may be increased or decreased as provided by the Purchase Power Capacity and Transmission Charge.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

Commercial Schedule C Rate (cont'd)

Measurement of Billing Demand:

The billing demand shall be the highest of the fifteen minute kilowatt demand established during the billing period, but not less than eighty percent of the maximum demand established during the preceding summer season or sixty percent of the maximum demand established during the winter season.

Definitions of Seasons:

The summer season is defined as the months of June through September and the winter season is defined as the months of October through May.

Farm Discount:

Customers who meet the eligibility requirements set forth by the Massachusetts Department of Food and Agriculture for being engaged in the business of agriculture or farming, and upon certification to the RMLD by the Massachusetts Department of Food and Agriculture, will be eligible for an additional ten percent discount, prior to the RMLD prompt payment discount, on rates and charges applicable on their monthly billing statement.

Customer Transformer Ownership:

A customer requiring a minimal transformer capacity of over 2,000 kW will be required to furnish its own transforming and protective equipment, including mat, vault, primary and secondary cables, conduits, etc., which must comply with the specifications of the Department. The following discounts apply when the above is complied with:

\$.12 per kilowatt of demand when the service is taken at 2,400/4,160 volts.

\$.25 per Kilowatt of demand when the service is taken at 13,800 volts.

\$.375 per Kilowatt of demand when the service is taken at 34,500 volts.

Metering:

The Department may, at its option, meter at the customer's utilization voltage or on the high side of the transformers through which the service is furnished.

In the latter case, or if the customer's utilization voltage requires no transformation, a discount of 1.8% will be applied to the bill but in no case will such a discount be allowed if the metering voltage is less than 2,400 volts.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

**Town of Reading, Massachusetts
Municipal Light Department**

**MDPU # 262 supersedes
and cancels MDPU # 253**

Commercial Schedule C Rate (cont'd)

Meter Reading and Billing:

Bills under this schedule will be rendered monthly. A prompt payment discount of 15% will be allowed on the Customer Charge, Distribution Demand Charge and Distribution Energy Charge, only if the entire bill is paid-in-full by the discount due date.

General Terms:

Service hereunder is subject to the General Terms and Conditions which are incorporated herein and are a part of this rate schedule.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

Industrial Time-of-Use Schedule I Rate

Designation:

Industrial Time-of-Use I Rate

Available in:

Reading, Lynnfield Center, North Reading, and Wilmington

Applicable to:

Service under this rate is available to industrial or commercial customers who take all their requirements under this rate. All electricity furnished under this rate will be metered using an electronic meter capable of metering On-Peak and Off-Peak energy as well as kW demand.

Character of service:

A.C. 60 cycles: single phase or three phase.

Customer Charge:

\$35.77 per month.

Distribution Demand Charge:

\$8.94 per Kilowatt for all demand usage.

Definition of Periods:

The On-Peak period is defined as the hours between 12:00 Noon and 7:00 P.M., Monday through Friday except holidays as listed below. The Off-Peak period is defined as the hours between 7:00 P.M. and 12:00 Noon, Monday through Friday and all hours Saturday, Sunday and granted holidays as listed below.

Term:

A customer electing to be billed under this rate must remain on this rate for a minimum of one year. At the end of one year on this rate a customer may elect to remain on this rate or be billed under the Commercial C Rate.

Energy Conservation Charge:

The bill for service hereunder may be increased or decreased as provided by the Energy Conservation Charge.

Fuel Adjustment:

The bill for service hereunder may be increased or decreased as provided by the Standard Fuel Adjustment Clause.

Purchase Power Capacity and Transmission Charge:

The bill for service hereunder may be increased or decreased as provided by the Purchase Power Capacity and Transmission Charge.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

Industrial Time-of-Use Schedule I Rate (cont'd)

Measurement of Billing Demand:

The Billing demand shall be the highest of the fifteen minute On Peak kilowatt demand established during the billing period, but not less than eighty percent of the maximum On Peak demand established during the preceding summer season or sixty percent of the maximum On Peak demand established during the winter season.

The summer season is defined as the months of June through September and the winter season is defined as the months of October through May.

Farm Discount:

Customers who meet the eligibility requirements set forth by the Massachusetts Department of Food and Agriculture for being engaged in the business of agriculture or farming, and upon certification to the RMLD by the Massachusetts Department of Food and Agriculture, will be eligible for an additional ten percent discount, prior to the RMLD prompt payment discount, on rates and charges applicable on their monthly billing statement.

Customer Transformer Ownership:

A customer requiring a minimal transformer capacity of over 2000 kW will be required to furnish its own transforming and protective equipment, including mat, vault, primary and secondary cables, conduits, etc., which must comply with the specifications of the Department. The following discounts apply when the above is complied with:

\$.12 per Kilowatt of demand when the service is taken at 2,400/4,160 volts.

\$.25 per Kilowatt of demand when the service is taken at 13,800 volts.

\$.375 per Kilowatt of demand when the service is taken at 34,500 volts.

Metering:

The Department may, at its option, meter at the customer's utilization voltage or on the high side of the transformer through which the service is furnished. In the latter case, or if the customer's utilization voltage requires no transformation, a discount of 1.8% will be applied to the bill but in no case will such discount be allowed if the metering voltage is less than 2,400 voltage

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

**Town of Reading, Massachusetts
Municipal Light Department**

**MDPU # 263 supersedes
and cancels MDPU # 254**

Industrial Time-of-Use Schedule I Rate (cont'd)

Meter Reading and Billing:

Bills under this schedule will be rendered monthly. A prompt payment discount of 15% will be allowed on the Customer Charge, Distribution Demand Charge and Distribution Energy Charge, only if the entire bill is paid-in-full by the discount due date.

Granted Holidays

Under the Industrial Time-of-Use Schedule I Rate the holidays granted for Off-Peak are; New Year's Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Columbus Day, Veteran's Day and Christmas Day.

General Terms and Conditions:

Service hereunder is subject to the General Terms and Conditions which are incorporated herein and are a part of this rate schedule.

Rate Filed: June 1, 2016
Effective: On Billings on or After July 1, 2016
Filed By: Coleen M. O'Brien, General Manager

School Schedule SCH Rate

Designation:

School SCH Rate

Available in:

Reading, Lynnfield Center, North Reading, and Wilmington

Applicable to:

Applicable to public or private schools offering kindergarten, regular elementary, middle, and high school as approved by the Department, who take all their requirements under this rate. All electricity furnished under this rate will be metered through one service unless it is convenient for the Department to do otherwise.

Character of service:

AC 60 cycles: single phase or three phase.

Customer Charge:

\$7.15 per month.

Distribution Demand Charge:

\$7.48 per Kilowatt for all demand usage.

Distribution Energy Charge:

\$.01180 per Kilowatt-hour for all Kilowatt-hours usage.

Budget Billing:

The customers under the School Rate may elect the Budget Billing program under which the customer is required to pay levelized amount to the Department each billing period during the calendar year.

Energy Conservation Charge:

The bill for service hereunder may be increased or decreased as provided by the Energy Conservation Charge.

Fuel Adjustment:

The bill for service hereunder may be increased or decreased as provided by the Standard Fuel Adjustment Clause.

Purchase Power Capacity and Transmission Charge:

The bill for service hereunder may be increased or decreased as provided by the Purchase Power Capacity and Transmission Charge.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

School Schedule SCH Rate (cont'd)

Measurement of Billing Demand:

The billing demand shall be the highest of the fifteen minute Kilowatt demand established during the billing period, but not less than eighty percent of the maximum demand established during the preceding summer season or sixty percent of the maximum demand established during the winter season.

Definitions of Seasons:

The summer season is defined as the months of June through September and the winter season is defined as the months of October through May.

Customer Transformer Ownership:

A customer requiring a minimal transformer capacity of over 2000 kW will be required to furnish its own transforming and protective equipment, including mat, vault, primary and secondary cables, conduits, etc., which must comply with the specifications of the Department. The following discounts apply when the above is complied with:

\$.12 per kilowatt of demand when the service is taken at 2,400/4,160 volts.

\$.25 per Kilowatt of demand when the service is taken at 13,800 volts.

\$.375 per Kilowatt of demand when the service is taken at 34,500 volts.

Metering:

The Department may, at its option, meter at the customer's utilization voltage or on the high side of the transformers through which the service is furnished.

In the latter case, or if the customer's utilization voltage requires no transformation, a discount of 1.8% will be applied to the bill but in no case will such a discount be allowed if the metering voltage is less than 2,400 volts.

Meter Reading and Billing:

Bills under this schedule will be rendered monthly. A prompt payment discount of 15% will be allowed on the Customer Charge, Distribution Demand Charge and Distribution Energy Charge, only if the entire bill is paid-in-full by the discount due date.

General Terms:

Service hereunder is subject to the General Terms and Conditions which are incorporated herein and are a part of this rate schedule.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

Private Street Lighting Rate Schedule D

Designation:

Street Light D Rate

Available:

Reading, Lynnfield Center, North Reading, and Wilmington

Applicable to:

Street and Area Light service on all public, private, and unaccepted streets and areas where the Department has facilities for supplying electricity and where the installation work involved is limited to the necessary lighting unit and connection on the same pole. This Schedule does not apply to Public Street Lighting Service supplied directly to the Municipalities.

Energy Charge:

The rate per year for the standard 4,000-hour schedule is as follows:

<u>Fixture Type</u>	<u>Annual Rate \$</u>	<u>Annual kWh</u>
100 Watt Mercury	63.79	500
175 Watt Mercury	64.46	860
400 Watt Mercury	117.59	1,900
50 Watt HPS	73.46	240
100 Watt HPS	93.75	500
250 Watt HPS	123.79	1,200
400 Watt HPS	171.95	1,900
25 Watt LED - Standard	61.91	100
42 Watt LED - Non - Standard	69.08	168
101 Watt LED - Non - Standard	111.36	404
93 Watt LED Flood - Standard	159.67	372
134 Watt LED Flood - Non - Standard	195.13	536

Note: Mercury lamps will no longer be supplied for new installations.

Fuel Adjustment:

The bill for service hereunder may be increased or decreased as provided by the Standard fuel Adjustment Clause.

The Fuel Adjustment will appear on the bill as the monthly fuel charge multiplied by one twelfth of the Annual kWh shown above for each Fixture Type.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

**Town of Reading, Massachusetts
Municipal Light Department**

**MDPU # 265 supersedes
and cancels MDPU # 256**

Private Street Lighting Rate Schedule D (cont'd)

Purchase Power Capacity and Transmission Charge:

The bill for service hereunder may be increased or decreased as provided by the Purchase Power Capacity and Transmission Charge.

The Purchase Power Capacity and Transmission Charge will appear on the bill as the monthly charge multiplied by one twelfth of the Annual kWh shown above for each Fixture Type.

Extra Pole Cost

When an extra pole is required, specifically for street lighting, there will be an extra cost based upon pole size, including up to 100 feet of secondary.

30 foot or 35 foot Class 4 pole	\$48.40 per year
40 foot Class 4 pole	\$52.80 per year

Meter Reading and Billing:

Bills under this schedule will be rendered monthly. A prompt payment discount of 15% will be allowed on the current bill, excluding Fuel and Purchased Power Capacity and Transmission Charges, only if the entire bill is paid-in-full by the discount due date.

General Terms and Conditions:

Service hereunder is subject to the General Terms and Conditions which are incorporated herein and are a part of this rate schedule.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

**Town of Reading, Massachusetts
Municipal Light Department**

**MDPU # 266 supersedes
and cancels MDPU #257**

Municipal LED Street Lighting Rate

Designation:

LED Street Light Rate

Available:

Reading, Lynnfield Center, North Reading, and Wilmington

Applicable to:

Public Street Light service using LED fixtures supplied directly to the Municipalities where the Department has private facilities for supplying electricity and where the installation work involved is limited to the necessary lighting unit and connection to the same pole.

Energy Charge:

The rate per year for the standard 4,000-hour schedule is as follows:

<u>Fixture Type</u>	<u>Annual Rate \$</u>	<u>Annual kWh</u>
25 Watt LED – Standard	23.99	100
42 Watt LED – Non-Standard	24.67	168
101 Watt LED – Non - Standard	32.37	404
93 Watt LED Flood - Standard	49.12	372
134 Watt LED Flood – Non - Standard	56.42	536

Fuel Adjustment:

The bill for service hereunder may be increased or decreased as provided by the Standard fuel Adjustment Clause. The Fuel Adjustment will appear on the bill as the monthly fuel charge multiplied by one twelfth of the Annual kWh shown above for each Fixture Type.

Purchase Power Adjustment:

The bill for service hereunder may be increased or decreased as provided by the Purchase Power Adjustment. The Purchase power Adjustment will appear on the bill as the monthly charge multiplied by one twelfth of the Annual kWh shown above for each Fixture Type.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

**Town of Reading, Massachusetts
Municipal Light Department**

**MDPU # 266 supersedes
and cancels MDPU #257**

Municipal LED Street Lighting Rate (cont'd)

Extra Pole Cost

When an extra pole is required, specifically for street lighting, there will be an extra cost based upon pole size, including up to 100 feet of secondary.

30 foot or 35 foot Class 4 pole	\$48.40 per year
40 foot Class 4 pole	\$52.80 per year

Meter Reading and Billing:

Bills under this schedule will be rendered monthly. A prompt payment discount of 10% will be allowed on the current bill, excluding fuel adjustment charges, only if the entire bill is paid-in-full by the discount due date.

General Terms and Conditions:

Service hereunder is subject to the General Terms and Conditions which are incorporated herein and are a part of this rate schedule.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

Cooperative Resale Schedule G Rate

Designation:

Cooperative G Rate

Available in:

Available to municipal lighting plants and private companies whose service territory is adjacent to the service territory of the Department and for distribution to such customers that cannot be served from the existing distribution lines, provided that the Department has available facilities for furnishing the service

Character of Service:

A.C. 60 cycles: single phase.

Customer Charge:

\$4.16 per month.

Distribution Energy Charge:

\$.04929 per Kilowatt-hour for all Kilowatt-hours usage.

Fuel Adjustment:

The bill for service hereunder may be increased or decreased as provided by the Standard Fuel Adjustment Clause.

Purchase Power Capacity and Transmission Charge:

The bill for service hereunder may be increased or decreased as provided by the Purchase Power Capacity and Transmission.

Meter Reading and Billing:

Bills under this schedule will be rendered monthly. A prompt payment discount of 15% will be allowed on the Customer Charge and Distribution Energy Charge, only if the entire bill is paid-in-full by the discount due date.

General Terms and Conditions:

Service hereunder is subject to the General Terms and Conditions which are incorporated herein and are a part of this rate schedule.

Rate Filed: June 1, 2016

Effective: On Billings on or After July 1, 2016

Filed By: Coleen M. O'Brien, General Manager

**READING MUNICIPAL LIGHT DEPARTMENT
GENERAL TERMS AND CONDITIONS
FOR ELECTRIC SERVICE**

I. APPLICABILITY

The following Terms and Conditions of the Reading Municipal Light Department (“RMLD”) shall be a part of every Rate Schedule or contract for electric service, except as may be expressly modified by contract or a particular Rate Schedule, or superseded by any applicable order or regulation of the Massachusetts Department of Public Utilities (“DPU”). The provisions of these Terms and Conditions and the Schedule of Rates shall apply to all persons and entities applying for or receiving service from RMLD (“Customer”) and compliance therewith by the Customer is a condition precedent to the initial and/or continuing supply of electricity, as applicable, by RMLD.

These Terms and Conditions, and any amendments hereto, are binding on every Customer regardless of whether such Customer has actual notice of them. No agent or employee of RMLD is authorized to modify, change or waive any of these Terms and Conditions by oral agreement, representation or otherwise. These Terms and Conditions may be revised, amended, supplemented, or otherwise changed from time to time only by a duly authorized vote of the RMLD Board of Commissioners. Such changes, when effective, shall supersede the applicable provisions hereof and shall be binding on all Customers. Service shall be subject to RMLD’s applicable policies, rules, regulations and specifications, to the extent not inconsistent with these Terms and Conditions.

II. INITIATING ELECTRIC SERVICE

- A. EXCLUSIVE SERVICE PROVIDER. RMLD shall be the exclusive electric service provider in its service territory. All Customers within RMLD’s electric service territory shall be prohibited from purchasing energy from any other entity or person. All Customers within RMLD’s electric service territory shall be prohibited from obtaining distribution services from any other service provider, except with RMLD’s express written consent, which may be withheld by RMLD in its sole discretion, or upon order of the DPU.

- B. SERVICE APPLICATION. Any person or entity seeking to initiate temporary or permanent service or to change or to restore service shall complete and sign a written application on such forms provided or specified by RMLD. RMLD may require that applications be submitted in person for identification purposes. The Customer shall be responsible for the payment of all applicable fees at the time of application for service. RMLD may request any other information as it deems

necessary to secure payment for all charges and to provide efficient and reliable service.

- C. SECURITY DEPOSITS. RMLD may require any Customer, upon application for service or at any time, to furnish a security deposit in the form of cash, check, credit or debit card payment, or irrevocable letter of credit equal to an estimated bill for up to three months' service or such other amount as permitted by applicable law or regulation. The estimate maybe based on the highest month(s) of billing within a twelve-month period or based on the information reasonably available for electric usage for the type of business in which the Customer is engaged. RMLD may adjust the amount of the security deposit as necessary consistent with the Customer's usage history and as otherwise may be necessary to ensure that the full deposit is maintained. The security deposit may be maintained for the full term of service. Interest on security deposits held longer than six months shall be paid to the Customer or credited to the Customer's account in accordance with applicable laws or regulations. Outstanding charges may be deducted from the security deposit upon discontinuation or termination of service. RMLD may waive the security deposit, in its sole discretion, when payment of the charges may be secured through other means. Failure to pay the security deposit or any adjusted amount when due may result in denial or suspension of service.
- D. SERVICE CONTINGENT UPON CERTAIN RIGHTS. The supply of service is contingent upon RMLD's ability to secure and retain the necessary location(s), rights-of-way or other property rights for its poles, wires, conduit, cable, and other equipment or apparatus. The Customer, at its sole expense, shall provide or secure any necessary permits, licenses, certificates, easements or rights-of-way on private property as may be required by RMLD to enable RMLD to install and furnish the service for which application is made. RMLD, without liability, may suspend or terminate service if the Customer fails to furnish or maintain any such permits, licenses, certificates, easements or right-of-way grants required by RMLD for such service.
- E. REFUSAL TO SERVE. RMLD reserves the right to refuse to supply service to new Customers or to supply additional load or to upgrade service to any existing Customer if it is unable to obtain the necessary equipment and facilities or capital required for the purpose of furnishing such service, or the difficulty of access thereto is such that it causes an undue hardship on RMLD, financial or otherwise. RMLD also may refuse to supply service to loads of unusual characteristics that could negatively affect the cost, quality or reliability of service supplied to

RMLD's other Customers. As a condition to providing or continuing service, RMLD may require any Customer having such unusual loads to install special regulating and protective equipment, as determined by RMLD, at the Customer's sole expense.

- F. REJECTION FOR UNPAID BALANCE. RMLD reserves the right to reject any applications made by or on behalf of any Customer whose bills for service remain unpaid at the time of the application. In RMLD's discretion, RMLD may require either the execution of a Cromwell Waiver to add the outstanding balance to the new account or the payment of all outstanding bills in advance of supplying service.

III. INSTALLATION OF NEW SERVICE AND SERVICE CONNECTIONS

- A. CUSTOMER'S WIRING. Except for the meter, the Customer is responsible for the installation of all equipment and wiring on the Customer's premises beyond the point of connection, as specified by RMLD. The Customer's wiring and electrical equipment shall comply with applicable bylaws, state and local codes or requirements, the National Electric Safety Code, and RMLD's specifications and policies as may be established or amended from time to time. The Customer shall obtain written approval of the Town Wiring Inspector prior to the connection of new service. RMLD may refuse to provide service until the Customer's wiring has been approved for energization or if RMLD determines that the Customer's installation does not comply with applicable requirements.
- B. EXTENSION OF DISTRIBUTION SERVICE. The extension of new service, whether to undeveloped areas or existing service locations, shall be subject to RMLD's requirements and specifications and at the Customer's expense. RMLD may require the execution of a separate construction agreement to address major or unusual new service installations, as determined by RMLD. When system-wide improvements are required, as determined by RMLD, to provide reliable service to the Customer due to the size of the load or the characteristics of service, the Customer may be required to pay all or a portion of the cost of such system-wide improvements. The Customer also may be required to pay all or a portion of the costs of the relocation of RMLD's existing facilities when required to provide new or upgraded service or when roadways are reconfigured to accommodate new service. Such charges will be based on RMLD's actual costs for labor and materials, including engineering and design.

- C. CUSTOMER-SPECIFIC ENGINEERING REQUIREMENTS AND SPECIFICATIONS. RMLD reserves the right to impose any Customer-specific engineering requirements or specifications, as RMLD, in its discretion, deems necessary for the protection of its distribution system and for the provision of safe and reliable service to the Customer and to RMLD's other Customers. The Customer is responsible for ascertaining whether any special engineering requirements or specifications will apply.
- D. EQUIPMENT. RMLD may require the installation of any equipment that it deems necessary for the reliable and efficient provision of service and the protection of its facilities, including remote disconnect and current limiting devices.
- E. CUSTOMER INSTALLATIONS. When RMLD requires the Customer to install equipment and facilities for the extension, upgrade, repair, relocation or conversion of electric service, including temporary service, a Utility Authorization Number (UAN) shall be obtained from RMLD prior to the commencement of the work. All installations and work shall be performed in a workmanlike manner in accordance with applicable codes and prevailing industry standards, and shall be subject to RMLD's inspection and written approval. All equipment shall be installed at a location designated or authorized by RMLD. Service shall not be connected or reconnected to RMLD's facilities until written approval is obtained from RMLD and applicable local authorities. RMLD may suspend or disconnect service if the Customer's installation subsequently fails to satisfy applicable codes, standards or RMLD's requirements or specifications.
- F. OWNERSHIP OF EQUIPMENT AND FACILITIES. All equipment and facilities up to the point of connection, whether installed by the Customer or RMLD, shall be owned by RMLD. All meters shall be owned by RMLD. Unless otherwise provided herein or pursuant to a written agreement with the Customer, all equipment furnished by RMLD shall remain its property.
- G. REPLACEMENTS, REPAIRS, AND UPGRADES OF CUSTOMER EQUIPMENT AND FACILITIES. The Customer shall be responsible, at its expense, for maintaining its equipment and facilities in good condition, in compliance with applicable codes, and in accordance with RMLD's requirements and specifications. All new equipment and facilities shall conform to RMLD's requirements and specifications. RMLD may suspend or disconnect service if Customer fails to comply with this provision.

- H. TEMPORARY SERVICE. Temporary service will be provided to the Customer in accordance with RMLD's specifications and requirements and at the Customer's expense. The Customer shall pay a flat rate as provided in RMLD's prevailing rate schedules for temporary, single phase 120/240 Volt, 100 AMP, three-wire connections for building construction or reconstruction projects, or when permanent electric service will not result. The Customer shall pay the actual costs, as estimated by RMLD, for all other temporary service. All charges shall be paid in advance. Any temporary relocation of service drop conductors by RMLD to accommodate building reconstruction that will not be immediately connected to a new service entrance shall be subject to charges as a temporary service.

When temporary service is provided for the construction of new buildings and electric service is expected to be furnished to the location on a permanent basis, RMLD may reuse any equipment or material in the temporary service installation for the permanent connection. The temporary service extension charge will not include the costs of any material and associated labor that will be used in the permanent connection.

IV. ADDITIONAL SERVICE REQUIREMENTS AND LIMITATIONS

- A. LOAD CHARACTERISTICS. RMLD will determine the character of service to be made available at each location. As provided in Article II, Section E, RMLD may refuse to supply service or may suspend or discontinue service to loads of unusual characteristics that could adversely affect RMLD's equipment and facilities, the quality of service supplied to other Customers, the public safety, or the safety of RMLD personnel, or require the installation of regulating equipment, as determined by RMLD in its sole discretion. The Customer shall notify RMLD in writing, on a form approved by the RMLD, before any change or addition is made in the load characteristics of the Customer's equipment. A minimum of 90 days' advanced written notice is required for load additions or changes that would result in a 25% increase above original load projections. The Customer shall be liable for any damage caused by any such changes or additions made without RMLD's written approval, including any damage to RMLD's meters, transformers, lines, or other equipment. RMLD reserves the right to install load-limiting devices to enable the disconnection of service if the rated capacity of RMLD's service is exceeded.
- B. TYPE OF SERVICE. The type and/or size of service requested by a Customer may not be available at the location where such service is desired. Non-standard

service only may be made available upon the express written approval of the General Manager of RMLD, as determined in RMLD's sole discretion, and at the sole expense of the Customer.

- C. COMPLIANCE WITH RATE AVAILABILITY. To the extent applicable, the use of service shall not be for any purposes other than those covered by the availability provision of the particular rate under which service is supplied.
- D. SUITABILITY OF EQUIPMENT AND APPARATUS. The Customer's wiring, equipment and apparatus shall be suitable for compatible operation with the service supplied by RMLD and shall, at all times, conform to the requirements of any legally constituted authorities and to those of RMLD, and the Customer shall keep such wiring, apparatus, and equipment in proper repair. The Customer shall not use the supplied service for any purpose or with any apparatus that would cause any disturbances or which may impair or render unsafe the service supplied by RMLD to its other Customers. RMLD shall not be responsible for the maintenance or installation of the equipment and property on the Customer's side of the delivery point, nor shall RMLD have any duty to investigate the same. However, RMLD reserves the right, but not the obligation, to disconnect its service, if to its knowledge and in its judgment, the Customer's installation has become or is dangerous, defective, or in violation of applicable safety codes or RMLD's requirements or specifications. The Customer shall be liable for any damage resulting to RMLD's apparatus or facilities or to its other Customers caused by the Customer's failure to comply with any provision of these Terms & Conditions.
- E. COMPLIANCE WITH LAWS. The Customer shall comply with all applicable by-laws, codes, requirements, certificates, permits and approvals of federal, state or municipal bodies or authorities with respect to the installation and maintenance of its equipment and facilities and shall be required to furnish satisfactory evidence of such compliance upon request. RMLD shall not be required to supply or continue service unless all applicable permits and approvals have been obtained or compliance with applicable codes has been established.
- F. RESALES PROHIBITED. Service supplied by RMLD shall be for the exclusive use of the Customer for the purpose and class of service specified, and such service shall not be resold.

V. INSTALLATION, ACCESS AND PROTECTION OF RMLD'S EQUIPMENT AND METERS

- A. INSTALLATION AND MAINTENANCE OF METER. Unless otherwise specified herein or in an applicable rate schedule, at its expense, RMLD will furnish and install, at locations it designates, one or more meters for the purpose of measuring electricity supplied. All meters shall be installed on meter sockets or troughs provided and wired by the Customer, at its expense. All meters installed by RMLD shall remain the property of RMLD, regardless of whether such meter is repaired or replaced by RMLD at the Customer's expense as provided herein. RMLD shall maintain and test the meters in accordance with applicable laws or regulations.
- B. CHANGES TO METERS DUE TO UNAUTHORIZED USE. Whenever RMLD determines that an unauthorized use of electricity is being made at the service location, RMLD may make any changes to its meters, appliances or other equipment on the Customer's premises or take any other corrective action as may be appropriate under the circumstances to ensure the safety and security of the equipment and its installation. Any such changes shall be made at the Customer's sole expense.
- C. SPACE AND HOUSING. The Customer shall furnish and maintain, at no cost to RMLD, the necessary space, housing, fencing, barriers, and foundations for the protection of equipment to be installed upon the Customer's premises, whether such equipment is furnished by the Customer or RMLD. If the Customer refuses or fails to do so, RMLD, at its option, may charge the Customer the costs for furnishing and maintaining the necessary facilities or devices for the protection of its equipment. Such space, housing, fencing, barriers and foundations shall be in conformity with applicable laws and regulations and subject to RMLD's specifications and approval.
- D. ACCESS TO RMLD'S EQUIPMENT AND METERS. At all times, the meter and all other RMLD equipment installed on the Customer's premises for the purposes of supplying service, shall be readily accessible to RMLD at all reasonable times for reading, inspection, repairs, replacements, and testing. Access to RMLD's meters and equipment shall be free from all obstructions, including shrubbery, fencing, and other obstructions. RMLD may refuse to supply or may suspend service if access cannot be readily or safely obtained, as determined by RMLD in its sole discretion.
- E. GRANT OF RIGHTS. The Customer hereby gives RMLD permission to access the Customer's premises at all reasonable times for the purposes of installing, inspecting, testing, reading, maintaining, repairing, replacing or removing RMLD's meters, equipment or appliances. If access is refused or is otherwise not provided, RMLD may take such corrective action as it deems necessary, including suspending service until access is obtained. The Customer shall be responsible for all costs incurred by RMLD to obtain such access. The Customer shall pay all

such charges in full before service will be restored or any new service will be supplied. RMLD shall not be liable for any damage caused in obtaining lawful access to the premises.

- F. INTERFERENCE AND TAMPERING PROHIBITED. No person, unless expressly authorized by RMLD in writing, shall disconnect, remove, inspect or otherwise alter any meter or other equipment or facilities owned by RMLD. Neither Customer, nor anyone acting on the Customer's behalf, shall break any seals or change any settings to RMLD's meters or equipment. Upon request, RMLD will temporarily relocate meters to accommodate construction projects at the service location. Charges may apply. The Customer shall be responsible for the safekeeping of RMLD's meters and equipment, which includes taking all reasonable precautions to prevent damage or interference therewith. RMLD may impose any additional reasonable conditions as it deems necessary for the protection of its equipment and facilities. The Customer shall be responsible for all costs associated with any damage or interference with RMLD's meters and/or equipment, including the cost of repairs or replacements as determined by RMLD in its sole discretion. RMLD reserves the right to suspend or discontinue service until full restitution is made and to take other reasonable measures to ensure the safety and protection of its property. In addition, any person found tampering with such RMLD equipment or meters may be subject to a fine or imprisonment, or both, as provided by G.L. c. 164, Section 126 or other applicable law.
- G. MULTIPLE DWELLING UNITS AND BUILDINGS. Separate dwelling units, whether within the same building or in separate buildings on the same premises, shall be considered to be separate Customers and shall be metered individually wherever practicable. If a single family residence is subsequently converted to multiple dwelling units, or if for some other reason it is impractical, in the judgment of RMLD, to separately meter individual dwelling units, electric service may be supplied through a single meter under the applicable residential or general service rate. RMLD shall have the option, but shall not be required to install separate service for any garage, barn, or other out-building if such service may be supplied from the main premises. Landlord customers shall comply with the requirements of the State Sanitary Code. As provided in Section IV.F, in no circumstances shall electricity be resold to the occupants.

VI. ADDITIONAL CUSTOMER RESPONSIBILITIES.

- A. PROTECTION OF CUSTOMER EQUIPMENT AND APPLIANCES. The Customer acknowledges that computers, reproduction, X-ray, data processing equipment, electronics, similar and other devices can be extremely sensitive to abnormal voltage or reversal of service. The Customer is solely responsible for the protection of its equipment and appliances and should consult the equipment manufacturer for suitable devices to protect against these conditions. RMLD shall

not be liable for any losses or damage to the Customer's equipment and appliances.

- B. INSTALLATION OF RELAYS. The Customer shall install, at its own expense, a reverse-phase relay of approved type on all alternating-current motors for passenger and freight elevators, hoists and cranes, and a reverse-power or other approved relays for parallel operation. The Customer is responsible for protecting all polyphase equipment from loss of phase conditions (single phasing).
- C. CHANGES IN CUSTOMER'S CONDITIONS OR INSTALLATION. The Customer shall provide advance written notice to RMLD of any proposed change to the purpose or location of the Customer's equipment or service conditions. Such changes shall not be made until approved by RMLD in writing. RMLD may request any information as it deems necessary to evaluate the effect of the proposed change on its system. The Customer shall be liable for any damage to the meters or other apparatus and equipment of RMLD caused by the changed conditions or installation made without RMLD's express prior approval. RMLD may terminate or refuse to provide service to any location if changes in the Customer's equipment, installation or interconnection fail to meet specifications or requirements prescribed RMLD.
- D. RELOCATION OF FACILITIES. If for any reason, it becomes necessary for RMLD to relocate any of its poles, wires or cables by which the Customer is served, the Customer, at its own expense, shall change the location of its point of delivery to a point readily accessible from the new location, and shall make any change in the wiring system in connection therewith. The Customer also may be responsible for the costs of such relocation if the relocation is necessitated by the Customer's service requirements or development plans.
- E. TREE AND DEBRIS REMOVAL. The Customer shall be responsible, at its expense, for removing and disposing of any trees, shrubs, branches, limbs, or debris that interfere with RMLD's equipment or facilities or the provision of electric service to the Customer or RMLD's other customers. RMLD shall have the right, but not the obligation, to clear the Customer's storm-related debris at the Customer's expense, as it deems necessary to access its facilities.

VII. RATES, CHARGES AND BILLING

- A. RATE. RMLD will determine the rate applicable to each Customer based upon such Customer's usage or class of service. Every Customer is entitled to request service under the lowest rate applicable to the service supplied during each calendar year. RMLD shall not be liable for any claim that service provided to the Customer might have been less expensive or more advantageous to the

Customer if supplied under a different rate. Minimum charges may apply to each billing period or portion thereof as provided in the applicable rate schedule.

- B. CHANGES IN RATE. RMLD's rates, rate schedules and tariffs are subject to change pursuant to and in accordance with G. L. c. 164, § 58. Service shall be billed at the new rate as of effective date.
- C. BILLING. Meters typically will be read on a monthly basis. At a minimum, all meters shall be read at least every other month as provided in the DPU billing and termination regulations, except where access to the meter cannot be obtained on the regular reading date. Bills for regular service charges shall be rendered monthly, except when RMLD determines that a different billing period is required or desirable as permitted by applicable law or regulation, such as on a bimonthly basis. Charges for the installation, maintenance, and repairs of equipment and facilities will be billed as applicable. RMLD may require payment in advance for such work.
- D. BUDGET AND PAYMENT PLANS FOR RESIDENTIAL CUSTOMERS. RMLD offers budget and payment plans to qualified residential customers in accordance with 220 CMR 25.02. The establishment and administration of budget and payment plans shall be subject to RMLD's prevailing policies and practices. RMLD may terminate budget and payment plans in accordance with applicable regulations and to the extent permitted, if the Customer discontinues automatic withdrawal payments when required, fails to maintain sufficient funds for full payment when due or otherwise fails to make any payment when due. Customers also may be subject to termination for electric service in accordance with 220 CMR. 25.00.
- E. DUE DATE. All bills shall be due and payable upon receipt. The bill shall be deemed to be received on the date of hand delivery or three days following the date of mailing, as applicable, unless otherwise specified in the applicable rate schedule. If a bill for monthly service is not paid in full within forty-five (45) days of receipt of the original invoice and the amount is not subject to a good faith dispute, the invoice shall be deemed to be past due and service shall be subject to termination in accordance with applicable laws and regulations. The Customer also may be subject to late payment fees. Any applicable discounts will apply only when all charges have been paid in full and only when full payment is received by RMLD by the discount expiration date. All claims for billing adjustments shall be made before the bill becomes past due.
- F. LIABILITY FOR CHARGES. The Customer shall be and shall remain the Customer of record and shall be liable for all charges for service until such time as the Customer requests termination of service and a final meter reading is obtained by RMLD. All requests for termination shall be in writing on such

forms required by RMLD. Continuous service will be provided to rental properties during periods of vacancy upon the filing of an application for continuous service pursuant to which the property owner or management company agrees to pay for the charges until a new Customer-of-record is established.

- G. LIABILITY FOR UNMETERED SERVICE AND UNBILLED CHARGES. When the Customer receives service that has not been metered or has not been charged due to a billing error or otherwise, RMLD may issue a make-up bill for the unbilled charges. The charges will be based on the actual use (if available) or estimated use (if actual meter readings are not available), at the applicable rate(s) for service during the period of unmetered or unbilled use.
- H. ADDITIONAL FEES AND CHARGES. Additional fees and charges may apply based on RMLD's then-current fees and charges.

VIII. SUSPENSION OR TERMINATION OF SERVICE

- A. SUSPENSION OF SERVICE FOR REPAIRS AND EMERGENCIES. RMLD reserves the right to suspend service at any time for the purposes of making repairs, replacements or changes to RMLD's equipment or facilities, whether on or off the Customer's premises. RMLD also may suspend service at any time, in its judgment, to protect the safety of its workers or the public or its property, or otherwise when RMLD deems that an emergency exists. However, nothing in this Section shall be deemed to require RMLD to make any such repairs, replacements or changes, at times other than RMLD's normal business hours. The Customer typically will be notified in advance to the extent practicable except in cases of emergency.
- B. NON-COMPLIANCE. RMLD shall have the right to suspend or discontinue service when the Customer fails to comply with or fails to perform any of the requirements or obligations of these Terms and Conditions or any applicable rate schedule or service agreement with RMLD, including non-payment of charges when due, or if the equipment and apparatus of the Customer interferes with RMLD's system or service to RMLD's other Customers.
- C. REASONS OF SAFETY OR FRAUD. RMLD may suspend or discontinue service without prior notice in the following situations:
1. Where the Customer's wiring or equipment is found to be in a dangerous or unsafe condition or for other reasons affecting the health or safety of the public or RMLD's workers; and/or
 2. If necessary to protect RMLD from fraud or theft.

- D. CAUSES BEYOND RMLD'S CONTROL. RMLD may discontinue or suspend service and remove any RMLD equipment which, in the opinion of RMLD, may have become unsuitable by reason of deterioration, civil commotion, vandalism, state of war, explosions, fire, storm, flood, lightning, or any other causes beyond RMLD's reasonable control.
- E. AS PERMITTED BY DPU REGULATIONS. RMLD may discontinue service in accordance with or as permitted by the DPU's billing and termination regulations, 220 C.M.R. 25.00, *et seq.*
- F. REMOVAL OF APPLIANCES. RMLD may remove its equipment, wiring and appliances upon termination or discontinuance of service. Such appliances, wiring and/or equipment shall not be restored except upon the filing and acceptance of a new application for service and payment of all outstanding charges and the costs of removal and restoration of service.

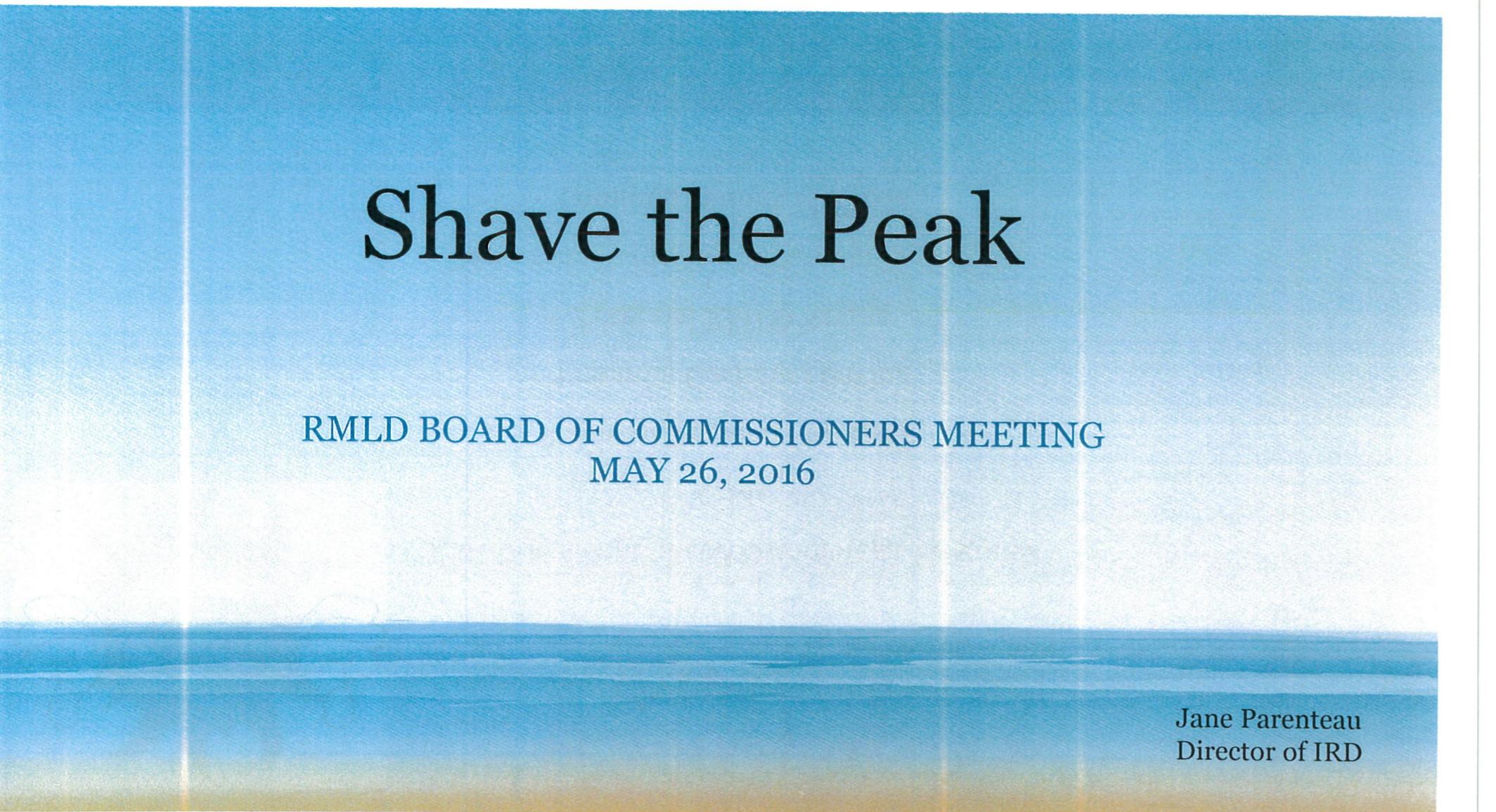
IX. LIMITATIONS ON LIABILITY AND DAMAGES AND EXCLUSIONS

- A. SERVICE QUALITY AND INTERRUPTIONS. While RMLD endeavors to furnish adequate and reliable service, RMLD does not guarantee continuous service or warrant that service will be free from interruptions or defects and disclaims any and all loss or liability resulting from its failure to provide service or its inability to maintain uninterrupted and continuous service to the extent allowed by law. RMLD shall not be responsible for any variation or diminution in service, abnormal voltage, or reversal of its service. To the extent such liability may not be disclaimed by law, RMLD shall not be liable for such condition except to the extent that such condition is caused solely by RMLD's gross negligence or willful misconduct. In no event shall RMLD be liable for any indirect, incidental or consequential losses or damages of any kind resulting therefrom. RMLD shall have no duty to regulate voltage and/or frequency beyond that required by the American National Standard for Electric Power Systems and Equipment, ANSI C84.1, and if the Customer requires regulation of voltage and/or frequency that is more refined, the Customer shall furnish, install, maintain and operate the necessary apparatus at his own expense.

The Customer acknowledges that when a part or parts of the interconnected generation, transmission or distribution systems may be threatened by a condition which may affect the integrity of the supply of electric service, or when a condition of actual or threatened shortage of available energy supplies and resources shall exist, RMLD may, in its sole judgment, curtail, allocate, or interrupt such service to the Customer. If Customers fail to comply with any such allocations or restrictions, RMLD may take such remedial actions as it deems appropriate under the circumstances including but not limited to, suspension of

electric service and/or imposing a surcharge for the Customer's excess use of electricity.

- B. USE OF ELECTRICITY OR PRESENCE OF APPLIANCES. RMLD shall not be liable for injuries or damage to the person or property of the Customer or any other persons resulting from the use of electricity or the presence of RMLD's appliances and equipment on the Customer's premises. Neither by inspection nor non-rejection does RMLD in any way give any warranty, express or implied, as to the adequacy, safety or other characteristics of any equipment, wiring or devices, installed on the Customer's premises. RMLD shall not be liable for injuries or damages resulting in any way from the supplying or use of electricity or from the presence or operation of RMLD's service, conductors, appurtenances or other equipment on the Customer's premises.
- C. OTHER EVENTS. Notwithstanding the foregoing limitations, RMLD disclaims any and all liability for losses or damages due to any other causes beyond its immediate control, whether fire, explosion, flood, weather conditions, accidents, labor difficulties, conditions of fuel supply, the attitude of any public authority, reduction in voltage, rotational utilization of distribution feeders, scheduled black-outs, failure to receive electricity for which in any manner it has contracted, or due to the operation in accordance with good utility practice of an emergency load reduction program by RMLD or one with whom it has contracted for the supply of electricity.



Shave the Peak

RMLD BOARD OF COMMISSIONERS MEETING
MAY 26, 2016

Jane Parenteau
Director of IRD

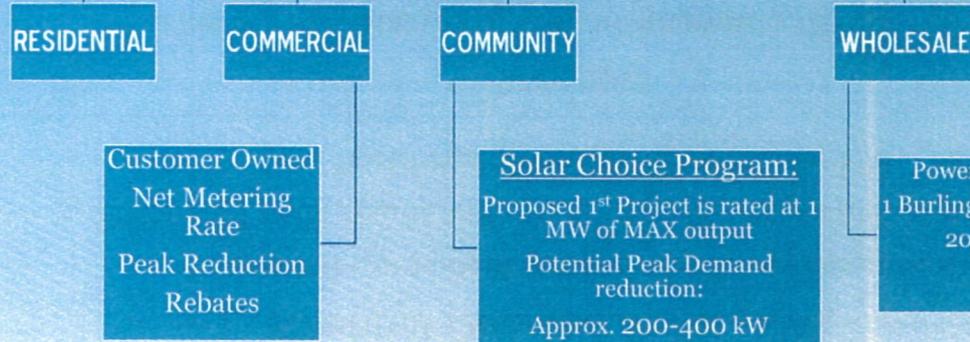


Shave the Peak Overview

- RMLD Residential and Commercial Programs
 - Costs
 - Potential Demand Saving kW
 - Potential Customer Saving
 - Potential RMLD Saving
- Barriers to Achieving Maximum Reduction
 - Communications Methods

Shave the Peak

Solar



RMLD Cost:

- Lost base revenue ~\$93,523
- Program Costs~\$150,000

Potential Demand Saving kW:

- 3,871 kW AC Installed
- 1,161 kW Peak Reduction

Potential RMLD Saving:

- Capacity ~\$97,550
- Summer Trans ~\$37,172
- Total Summer Savings ~\$135,000

Potential Customer Saving: \$280,570

Barriers: Intermittent nature of solar. Peak usage occurs 2-5 pm. Solar systems receive maximum generation 10 am-2 pm. This results in approximately 30% effective output during summer peak

7 DAY FORECAST

HOT

MON	TUE	WED	THU	FRI	SAT	SUN
						
SE 5-15	S 5-15	S 10-20	S 10-20	S 10-20	S 10-20	SW 10-20
103	104	105	106	106	107	106
81	81	82	83	83	83	83

SHAVE THE PEAK

Voluntary Program

Minimal Administrative Costs

Potential RMLD Saving:

- Capacity- Approx. \$8,400 per 100 kW of reduction
- Summer Trans- Approx. \$3,200 per 100 kW of reduction

Potential Demand Saving kW:

- Estimated Coincident Residential Peak Demand: 1.6 kW
- Estimated peak reduction(15%): .24 kW per participating customer
 - If 417 customers participate: 100 kW

• Barriers:

- This is a voluntary program, no guarantee of load reduction.
- Necessary to educate customer on what, how and when to reduce their usage.
 - Peak alert will be called multiple times (June-August)

Shave the Peak Peak Demand Reduction (PDR)

Offers large Commercial and Municipal customers an opportunity to reduce costs by adjusting demand during a relatively few, critical peak hours.

Potential Customer Saving:

Customers can earn up to \$58K per year for each MW of load shedding achieved.

Total Potential Demand Saving	Total Potential Customer Saving
1,100 kW	\$63,800
2,600 kW	\$150,800
3,600 kW	\$208,800

Barriers to achieving MAX reduction:

Commercial meters

Internet connection

Customer willingness to “take action” during called events

Customer credit must be greater than operational cost and perceived “hassle factor”

Customer/Tenant/Coworker discomfort/etc.

Communication:

Lunch & Learn workshop for PDR customers

Customers having direct access to TangentAMP web portal and receive email notifications to monitor load and track load shedding performance

Shave the Peak Electric Hot Water Heater

Installation Cost:

- \$360 per unit (\$220 per device, \$140 for electrician labor)

Annual admin. costs:

- ~ \$5,000 (including 10% of Resource Specialist's time)

Potential Customer Saving:

- Savings are ~7.5% of a customer's bill, which translates to ~\$9-\$10 per month

Potential Demand Saving kW:

239 Installed Units: 869 kW (Maximum potential)

123 Reporting Units: 67-112 kW (Based on 15%-25% cycling)

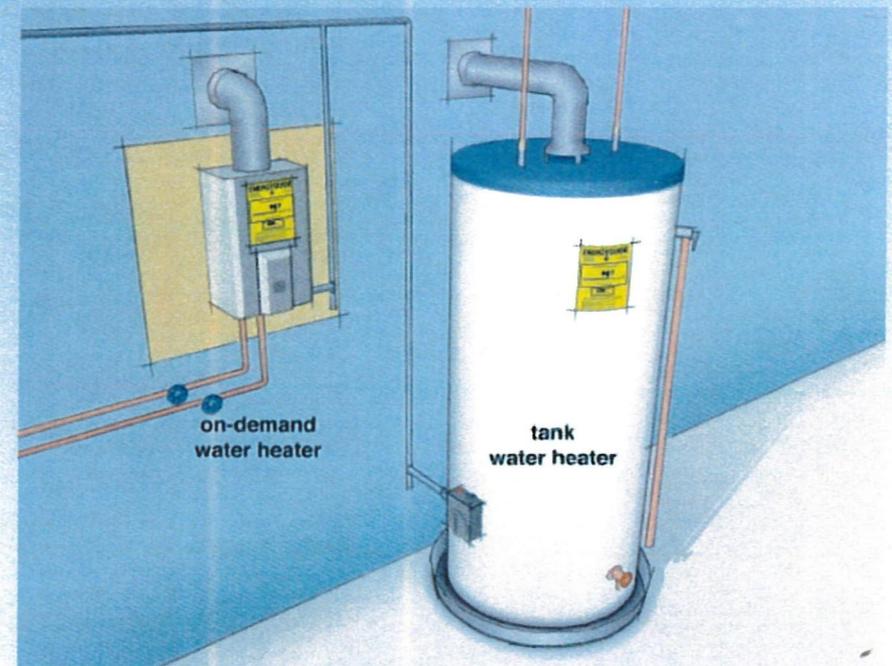
Potential RMLD Saving:

Capacity- ~\$5,600-\$9,400

Summer Tran Savings- ~\$2,100-\$3,600

BARRIERS

Current technology in place is using customers' internet connection. This is causing communication issues between HW heaters and the server, which prevents us from shutting off the WH's at the designated times.



Shave the Peak Electric Vehicle Charging Stations:

RMLD offers rebates to Residential & Commercial customers who install Level 2 (240 Volt) plug-in electric vehicle charging stations at their residence or business.

Cost: Approx. \$10,000

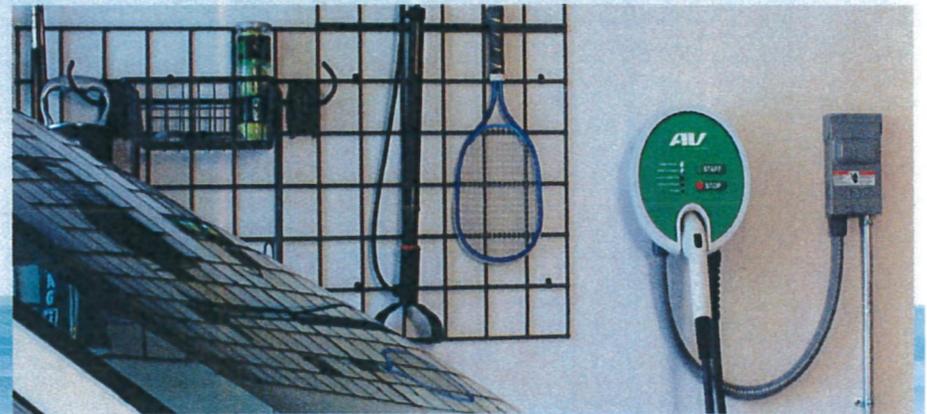
Customers are reimbursed by RMLD for 50% of out of pocket expenses up to \$1,500 per charger.

Residential customers charge vehicles at night (off-peak) under RMLD's Time of Use (TOU) rate which minimizes their electricity costs.

RMLD has the ability to control RMLD charging stations during peak periods

All Barriers: All customers do not charge at the same time, reducing availability to charge may prevent customers who need emergency charging.

Potential Demand Saving: 18.846 kW
Potential RMLD Saving:
Capacity: \$1,583
Summer Trans: \$603



Shave the Peak Distributed Generation

Proposal for Distributive Generation Installation of (2,000 kW)

Potential Demand Saving:
2,000 kW

Cost: \$2.8M



Barriers:

RFP Process

Lead time for equipment

Permitting with the town

Projected on-line for Summer 2017

Potential Customer Saving:

Capacity: \$241.5K

Transmission: \$276.1K

Annual Savings: \$517.6K

Benefits: NO LOSS of Kwhs SALES

Controlled by RMLD



Shave the Peak Commercial Rebates

Lighting

Commercial Lighting Rebate Program- Offers incentives for non-residential customers who want to replace or overhaul aging, inefficient lighting equipment with up to date energy efficiency technologies. One of 2 lighting fixture qualifying criteria states that **replacements must result in reduction of electric load.**

HVAC, Compressors, Pumps, Motors, etc.

Commercial Energy Initiative Program- Offers incentives to non-residential customers who are in need of replacing malfunctioning and inefficient building mechanics that include but are not limited to HVAC, Pumps, Motors, Refrigeration and Controls.

RMLD Cost: \$300,000

Potential Customer Saving: \$207,620

Potential Demand Saving: 400 kW

Potential RMLD Saving:

Capacity: \$33,600

Summer Trans: \$12,800

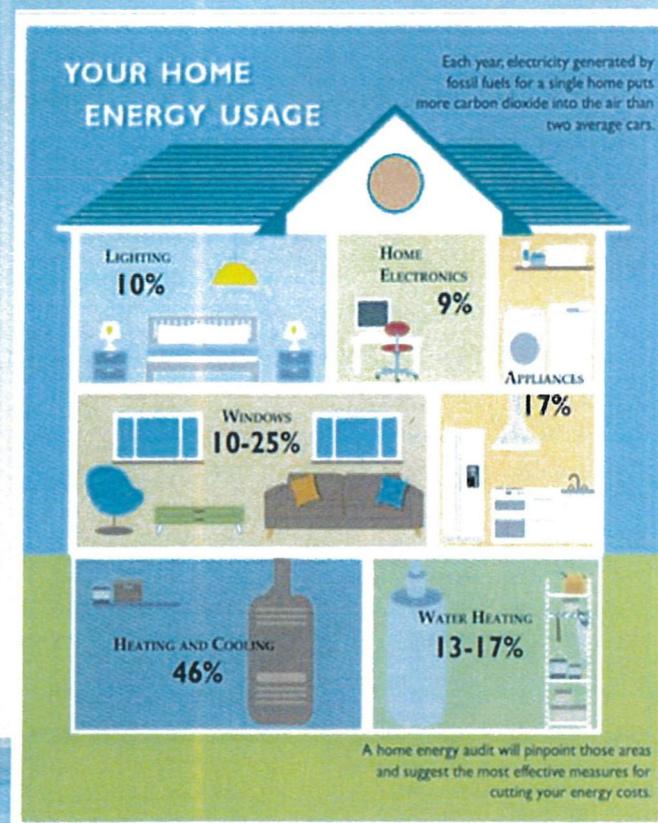


Barriers: Capital costs constraints, lack of awareness about programs & technologies available



Shave the Peak Home Energy Audit

- No cost to customer, education oriented, energy evaluation of the home conducted by Residential Energy Specialists
- Customers homes are assessed for “whole home” health, wellness and energy savings potential
- Assessment includes review of the existing lighting, appliances, heating & cooling systems. The building “envelope” and insulation levels are also inspected to determine the likeliness of conditioned air loss that may lead to excessive air conditioning loads.
- Customers are provided with a varied set of LED lighting to provide instant savings.



Shave the Peak Energy Star Appliances

- RMLD Cost: \$61,244
- Potential Customer Saving: \$15,885
- Potential Demand Saving: 291 kW
- Potential RMLD Saving:
 - Capacity~\$24,400
 - Summer Trans~9,300





Shave the Peak Municipal Grant Program

RMLD received a \$250,000 grant from DOER



- Potential Demand Saving kW:

Municipal Street Light	121 kW
Commercial Lighting	159 kW
Residential lighting	516 kW
TOTAL	895 kW

Potential Customer saving:
\$250,000

Potential RMLD saving:
Capacity ~ \$24,400
Summer Trans ~ \$24,700

Shave the Peak

Based on the RMLD programs that impact peak demand,

FY17 Target: 2-3 MW's

Potential Capacity Savings: \$168K-\$252K

Potential Summer Transmission Savings: \$64K-\$96K

Total Summer Savings: \$232K-\$348K

