

Light Commission March 7, 2023 meeting minutes

To: Light Commission: Commissioners
Light Department: J. Kowalik, General Manager, M. Barrett, Business Manager
From: Jean-Jacques Yarmoff, Secretary
Date: March 16, 2023
Re: Commission Meeting March 7, 2022

A quorum being present, Light Commission Chair Mike Hull opened the meeting at 4:03 pm, the meeting being held both in person and with remote access available to the public. A recording of the meeting is made available to the public at the following [link](#).

Participated in meeting:

Commissioners: Hull, Frechette, Smith, Wolf and Yarmoff participated in person
Light Department: General Manager, J. Kowalik and Manager of Tech. Operations, C. Coleman
Invited: Barbara Warren, Executive Director, Salem Sound CoastWatch
Ryan McCoy, Senior Project Manager, Collins Engineering
Ed Sprenkle, Project Manager, GRL Architects
Matt Ide, Exec. Director, Energy and Financial Markets, MMWEC
Justin Connell, Director of Energy Markets, MMWEC

Approval of January 31, 2023 minutes.

Vote #2023-10 Commissioner Wolf moved to approve the minutes of the January 31, commission meeting, as amended. Seconded by Commissioner Frechette. **Unanimous.**

Seawall project: 80 Commercial Street.

Ryan McCoy from Collins Engineering is working with the Town of Marblehead and Salem Sound CoastWatch on the Municipal Shipyard Resiliency Improvements Project. The scope of the project, started in 2019, is shown on the slides page 5: to assess the current conditions, and plan for sea level rise and analyze the risk of storm surge and wave flooding. Flood barriers have already been installed to protect the Light Department building on the short term, while long term strategies to protect the shoreline are on-going. The current grant allows for work through June 2024, which should bring the project to a permitted, construction-ready phase. In the short term, environmental permit applications are being prepared, draft will be submitted by end of May. The work will consist of raising the seawall from 8.5' to 11' and installing wave attenuating floats. This project will allow continued use of the various parcels and ensure continuous and safe access to the waterfront. While alternative options were explored, the recommended solution is to raise the sea wall with a similar stone wall, in phases, first to 11' as shown on slide 1, p 8. The concrete stabilization on the inside of the wall will allow further raising at a later date to 13' as may be needed. The estimated costs over time show the impact of doing nothing (red curve) or the recommended option (brown) compared to flood barriers and steel sheet pile wall.

Total project construction costs, once that phase is decided, will be around \$4.355M. State and Federal funds exists, but the appropriate mix of sources of funding have not yet been determined.

Perimeter fence around 80 Commercial Street

Ed Sprenkle, Project Manager at GRL Architects presented the proposed perimeter fences intended to secure the site. Screen shots of the presentation are shown from page 9. The proposal includes two cantilevered gates systems (given the topography of the site) and a separation of the parking lot with manual barriers, which will give complete perimeter security. The proposed perimeter will be a polymer chain-link 6' fence to resist rusting. Gates are operated by MMLD drivers' phones, but a buried sensor would allow for any vehicle to come out, whatever the time might be. There will not be pedestrian access afterhours, however. Access to emergency vehicles will be provided. Total project cost is anticipated to be about \$220K. Bids will be published soon, construction is expected to start mid-July. One of the gates is going to block the access to the public chargers, with no plan to provide access afterhours. While the board has not discussed these details, it would be good to keep access to the public EV chargers, which could be relocated on a nearby street in a completely public space.

Behind-the-Meter Utility-scale Battery storage

Documentation on this project has been provided to the board last week: the project is a 5MW / 20 MWh lithium iron phosphate battery, organized as a PPA shared savings agreement with no significant capital investment by MMLD. The final site remains to be chosen, with either Village 13 or the Tioga Way sites being possible, both controlled by MMLD. The project has a **positive NPV of \$9.8M** (calculated for the Village 13 site). This benefit to MMLD comes from avoided capacity and transmission charges. In 2023, MMLD's capacity charge is projected to be \$3.3M, while the transmission charge will be: \$3.1M. In the future, with this project, one can anticipate a reduction of about 11% of these charges every year. Slides presented are shown from page 11. In today's meeting, the General Manager is asking board authorization to participate in the project. This means two actions: 1) agreeing that MMWEC will work on behalf of MMLD, and 2) authorizing the General Manager to execute the necessary agreements to participate in the project. The agreements with Delorean will be reviewed at a separate meeting.

Vote #2023-11 Commissioner Yarmoff moved for the Commission - to agree to have MMWEC represent MMLD in this project and - to give the General Manager the authority to enter into the necessary agreements to participate in the project. Seconded by Commissioner Wolf.
Unanimous.

While a broad agreement has been struck by MMWEC with Delorean, some details will be specific to each MLP and need to be decided by each system: as an example: how to handle decommissioning of the battery? Can a system of different capacity be installed? Answ: possibly, but in this project, Delorean owns the battery. A different sized battery would reopen the shared savings calculation, as the need for deployed capital would be different. One also needs to take into account regulations that may prevent "reconstitution", *i.e.* would prevent the financial benefits that were just described on the avoided capacity and transmission charges. This maximum may be 5 MW, but should be checked.

Delorean assume all the liabilities based on this asset they would own. The agreement covers the minimal insurance that Delorean needs to carry for this project.

The project complies with the position of MMLD as an exclusive supplier of electricity in Marblehead (part of MGL Chap. 164), as MMLD would be in essence creating a new rate for this project, whereby Delorean is purchasing power from MMLD to charge the battery and would discharge at another. This is completely consistent with the provisions of Chapter 164.

The capacity savings can be precisely calculated for the next three years, as the cleared forward auctions have already set the charges for the next three years, which vary between \$2.61 and \$2.59 per kWh.month; projections beyond that time window come from S&P Global. The capacity charge of \$3.80 shown on the slide for illustration purposes is for the period that ends May '23. The proforma for our agreement includes capacity charges stated above.

Next steps: finalizing the location and planning the engineering work to prepare the site. If the Tioga Way location were chosen, the financial evaluation for that site needs to be updated.

General Manager Updates

Village 13 update. The contract with Virginia Transformer has been finalized. This is an important step for the rebuild of the substation.

NexGrid server: All the hardware has been installed, data has been migrated, archive data loaded. We have confirmed that the data transferred from the new hardware and software can be accurately transferred to the billing system.

Next steps: After resolving some communications issues with the last software version, generation of historical monthly data for demand analysis. By aggregating the meter data, we can also now sum up the total energy flowing through a part of the system, specific transformers, circuits or substations (not measured at these points, but calculated from meter data). We should be able to do this with the new version of NexGrid software. A web interface / mobile app is available for the public.

Distribution Transformer supply. Four types of transformers account for over 80% of the transformers in the field. The inventory is presented on slide #3 on page 14. The replacement rate of these transformers will give us useful data, important in view of the supply constraints we currently experience, which are a new situation. We used to be able to call the supplier and have delivery of new transformers in the next several weeks: the quotes for delivery are now many months, sometimes years.

GIS update. MMLD is currently evaluating the company Patrick Engineering, for them to use our old MMLD distribution system data, and update our systems for systematic use in the future. This will allow us to plan circuit upgrades for increased residential load and to prioritize needed capital improvements such as transformer fusing to protect transformers. The more visibility we have on the system at a very granular level the better we can plan. The next step is to put in place a project description for the company. Eventually, this data can be the foundation of digital twins, allowing to simulate our network and predict current quality. While we are far from this stage, we are taking a first step.

Hiring updates. Distribution Manager: 2 internal candidates, 9 external candidates. External candidates are being interviewed. **Business Assistant:** reviewing scope of job responsibilities. **Sustainability Manager:** Position has been posted 3/3, 6 candidates have applied. Additional web sites for posting will be proposed to the General Manager.

Brown School Solar PV project: Scheduling vendor visit for detailed measurements to prepare estimate. Also early meeting with Clean Watts, mobile focused, to discuss how their mobile app might help residents with a community solar project.

Second feeder lines: No update.

Solar PV and Battery: If a battery is dispatched by MMLD is different than if MMLD has no say in dispatch. MMLD does not care how the energy in the battery is provided, whether it is from solar or from the grid. So this is what the rates should reflect.

EV Chargers: Comments to frame the discussion at a later date: some points that should be considered in setting a public charger rate include: managing peak demand, by having differentiated energy prices during the day, not only volumetric pricing, and possibly dialing back charging rate during peak events. We need to maximize usage, and charging a parking fee from the time the charger is idle (with a possible grace period of 30 mn) will encourage people to make the charger available to other residents in need of public charging. Some examples of Muni charging rates were shown, all below the UFS proposed rates.

Land acknowledgement. As per Article 32 of 2022 Annual Town Meeting, Commissioner Adam read the following text: “We acknowledge that the land on which we reside, now known as the Town of Marblehead, is the ancestral homeland of the Naumkeag Band of the Massachusetts and Pawtucket tribes. Since time immemorial, they maintained this land and surrounding water with the utmost respect. We honor the Naumkeag people, past and present, as the original stewards of this land and pledge to include their history in the history of our Town.”

Executive session Chair Mike Hull proposed a motion to go into Executive Session in order to:

- discuss trade secrets or proprietary information regarding activities by a governmental body as energy supplier, municipal aggregator or energy cooperative, if an Open Session will adversely affect conducting business relative to other entities making, selling or distributing energy; and
- conduct strategy sessions in preparation for negotiations with non-union personnel General Manager Joe Kowalik, seconded by Commissioner Wolf.

Vote #2023-12 Motion proposed by Chair Hull, seconded by Commissioner Wolf. Frechette: yes; Hull: yes; Smith: yes; Yarmoff: yes.

The Light Commission entered into Executive Session at 5:26 pm. The Executive Session concluded at 6:00 pm after a roll call of commissioners voted to return to open session at which point a motion to adjourn was proposed, seconded and unanimously adopted.

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Documents shown during the March 7 Light Commission meeting



80 Commercial St/Hammond Park Seawall

- Barbara Warren – Executive Director, Salem Seacoast Soundwatch; Project Lead
- Becky Curran, Marblehead Town Planner
- Ryan McCoy, P.E., Senior Project Manager, Collins Engineering



MUNICIPAL SHIPYARD RESILIENCY IMPROVEMENTS PROJECT

COLLINS ENGINEERS | WOODS HOLE GROUP | Salem Sound COASTWATCH | Massachusetts Office of Coastal Zone Management

Harbors and Waters Board Meeting
January 9, 2023

PROJECT STUDY AREA

Town Properties:

1. Parker's Boat Yard
2. Marblehead Municipal Light Department
3. Hammond Park
4. Commercial Street Pier/O'Brien Landing
5. Marblehead Yacht Club
6. Cliff Street Boat Yard



MARBLEHEAD HARBOR

BUILDING ON PRIOR CZM GRANT-SUPPORTED WORK

2019 - 2021

- » Condition assessment found seawalls to be mostly poor/fair
- » Potential future resiliency options identified – for project sites generally to replace structures and raise incrementally

2021 - 2022

- » Sea level rise, storm surge, and wave flood risk analysis
- » Near-term: MMLD procured and installed flood barriers for basement
- » Long-term: conceptual strategies for improving coastal resiliency, industrial uses, public access
 - Carried out public and stakeholder engagement
 - Performed survey, wetlands delineation, geotechnical borings
 - Considered alternative strategies
 - Developed conceptual plan (2050)
 - Completed 25% design drawings, cost estimates, and pre-permitting analysis for seawall resiliency alternatives

2023-2024 PROJECT OVERVIEW

\$692K Budget

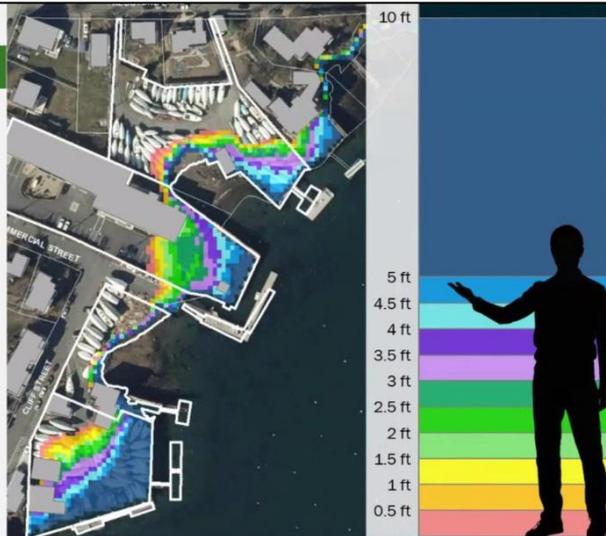
- » \$523k grant, the remainder cash and in-kind

FY23 Scope (through June 30, 2023)

- » Continue public and stakeholder engagement
- » Advance design of improvements to 75%
- » Implement public access improvements from Commercial St to Hammond Park
- » Submit first environmental permit application (MEPA)

FY24 Scope (July 1, 2023–June 30, 2024)

- » Continue public and stakeholder engagement
- » Complete environmental permitting (MEPA, ConCom, Army Corps, Chapter 91, CZM)
- » Implement additional public access improvements from Commercial St to Cliff St and improve signage



DESIGN OBJECTIVES AND ANTICIPATED BENEFITS

Mitigate long-term risks from sea level rise, storm surge, and waves

- » Includes raising seawalls to State recommended levels, installing wave attenuating floats, and relocating and raising buildings and equipment to mitigate residual wave overtopping risks.

Provide for continued, improved, and resilient water-dependent industrial uses and electrical facilities

- » Includes floodproofed renewable energy equipment, raised boatyards, new lifting equipment, new maintenance and storage buildings, a new conveyor system, expanded dockage, and improved commercial vehicle access.

Enhance waterfront public access and recreation

- » Includes a continuous, safe, and accessible waterfront pathway connecting Parker's Boatyard to Cliff Street Boatyard, a raised waterfront park, enhanced amenities, space and a lift for community boating uses, and expanded dockage.

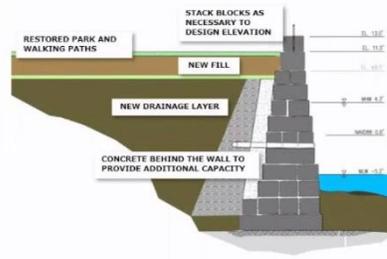


ALTERNATIVES ANALYSIS

- Cost
 - » Capital vs. Maintenance
- Aesthetics
- Maintenance
- Usability
 - » Loading, berthing, accessibility
- Environmental Impacts
 - » Permit application must describe and analyze all feasible alternatives, in light of the project objectives, comparing short- and long-term environmental impacts
 - » Must show that the proposed project avoids, minimizes, and/or mitigates impacts to extent feasible/practicable



RECOMMENDED SOLUTION



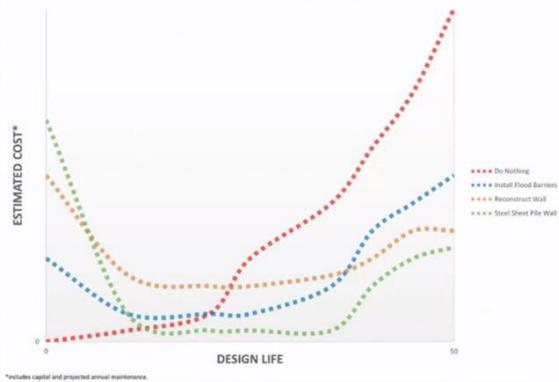
- » Excavate to remediate sinkhole issue
- » Install concrete for additional capacity
- » Raise wall incrementally
- » Top of wall: **Elevation 11' / 13'**

COST BREAKDOWN

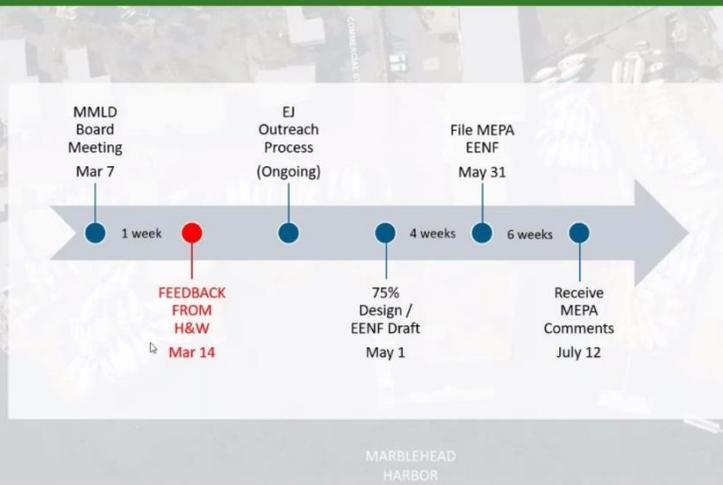
HAMMOND PARK	
Reconstruct and Raise Wall	\$2,970,000
Boardwalk	\$540,000
Wave Attenuators	\$845,000
TOTAL:	\$4,355,000*

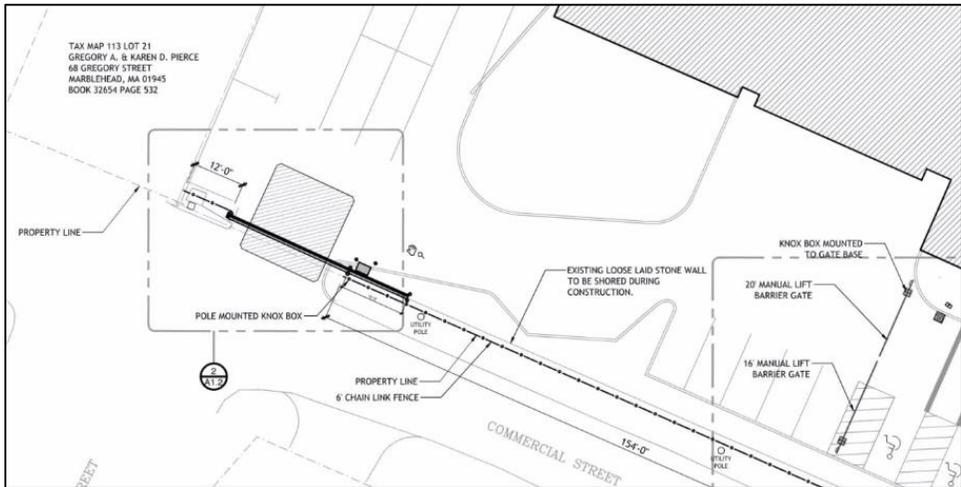
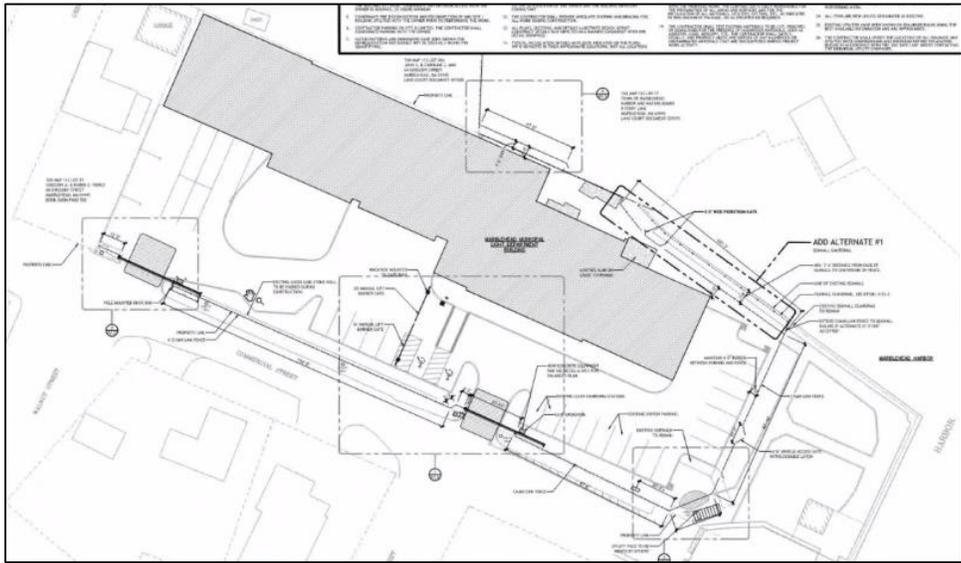
*includes contractor mobilization and a 15% contingency

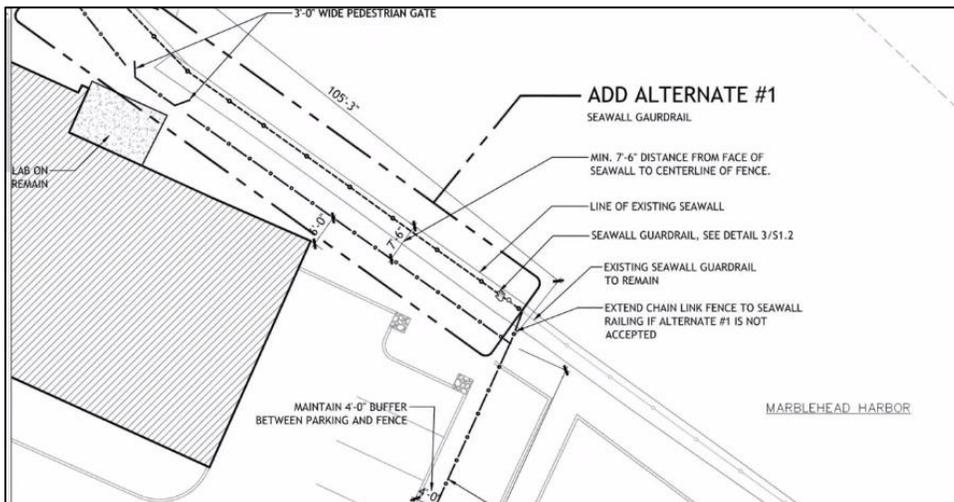
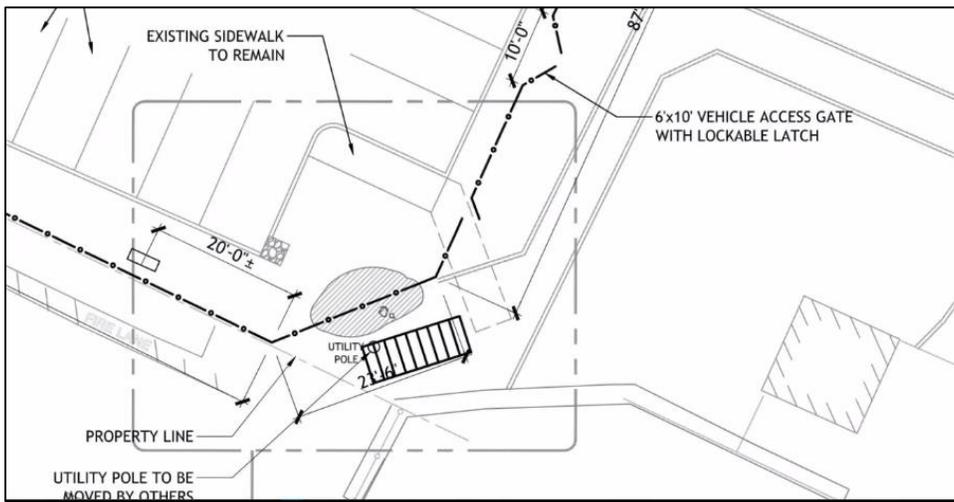
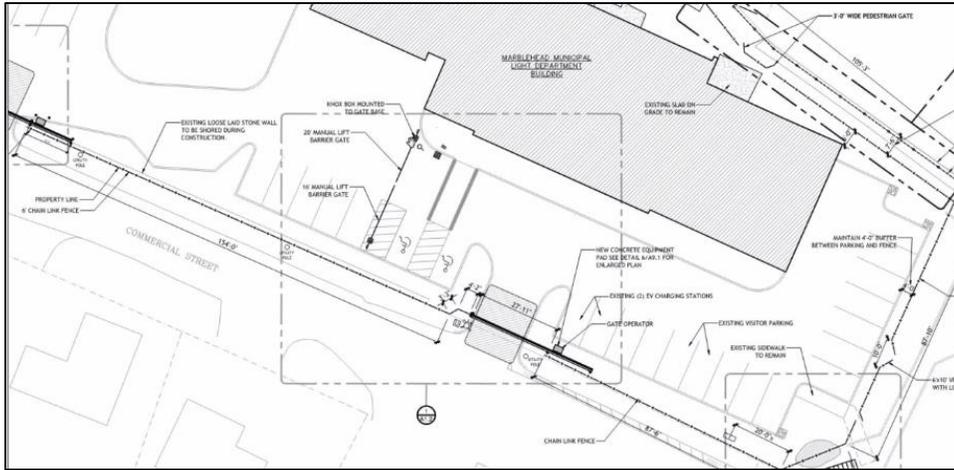
RELATIVE PROJECT COSTS OVER DESIGN LIFE

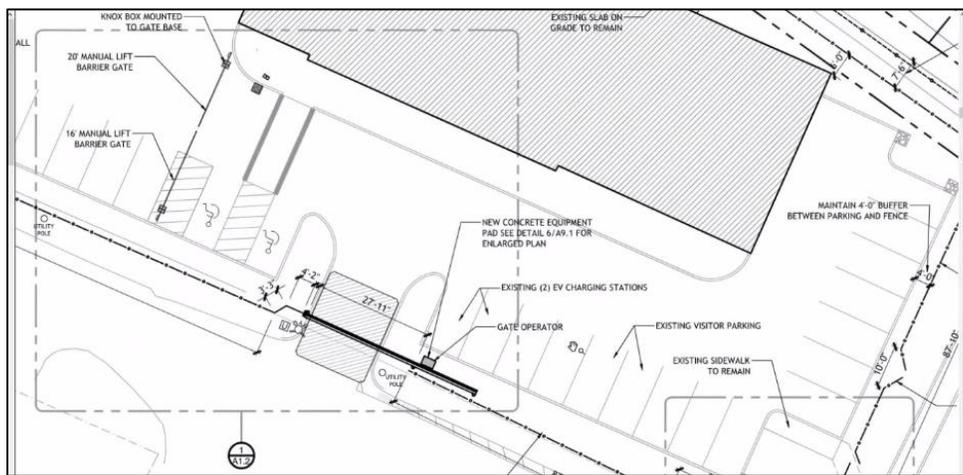
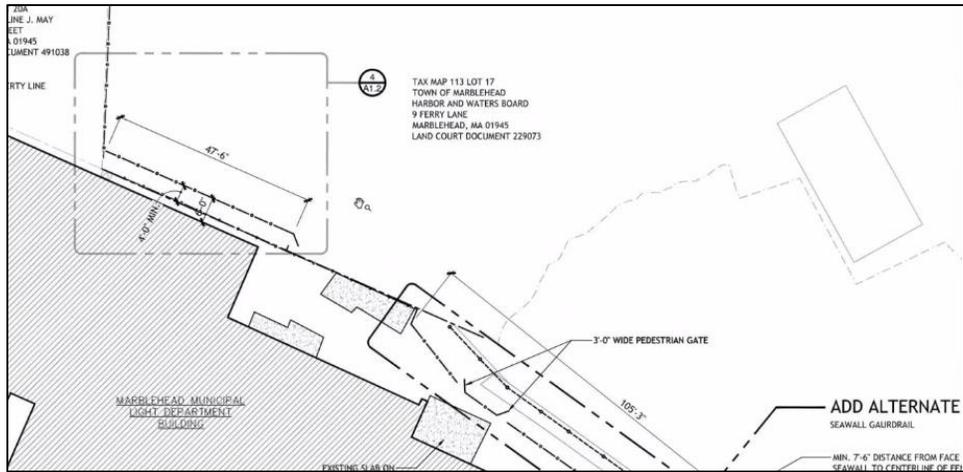


NEXT STEPS AND SCHEDULE









Behind-the-Meter Battery Electric Storage

- Matt Ide, Executive Director, Energy & Financial Markets, MMWEC
- Need an MMLD Board Authorization to Participate vote-
 - Authorize MMWEC as our agent working on our behalf
 - Authorize the GM to execute the necessary agreements to participate in the project.
- MMLD's financial exposure of these two agreements is small; consequential agreements come later.



The BTM Battery Storage Project

- 5 MW/20 MWH battery system
- LFP (lithium iron phosphate) batteries – safer chemistry
- PPA shared savings agreement, no significant capital investment
- Forecast 20-year NPV of \$9.8 million in cost avoidance savings at Village 13 site.
- Final site of battery is still tbd; both are MMLD-owned sites



Two sites: Village 13 and Tioga Way



Generation/Capacity:

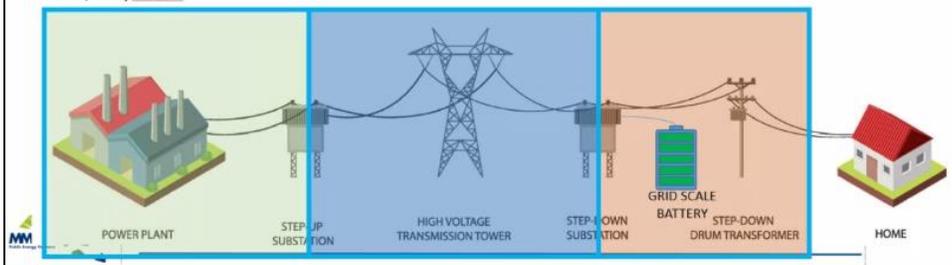
ISO-NE runs a Forward Capacity Auction annually to ensure sufficient generation capacity for the next three year period. This charge is included in MLP's ISO bill each month based on the previous year's peak demand in kW. For 2021 this monthly charge was \$3.80/kWmo.

Transmission:

Transmission owners are allowed to recover investment in transmission assets. On their behalf, ISO-NE charges load serving entities a monthly regional network services (Schedules 1 and 9) charge based on the . For 2021, these monthly rates were \$.14/kW-mo and \$11.75/kW-mo.

Distribution:

MLP must operate and maintain the distribution network and the rates are set up to recover this cost from customers. A generator placed on the distribution system help offset capacity and transmission usage during peak grid events in 2021.



Behind the Meter Battery Projects Interested MLPs:

- Boylston
- Paxton
- West Boylston-voted
- Princeton-voted
- Peabody-voted
- Holden-voted
- Chicopee
- Marblehead
- Hull
- Wakefield-voted
- Ipswich
- Rowley
- Georgetown-voted
- Shrewsbury



7



Village 13 update – March 4, 2023

- **Virginia Transformer contract signed 3/3 - \$2.63 million (2 units)**
- Switchgear vendor MCP –factory cyberattack is being managed
- Salem ROW- 0.6 mile from West Shore Drive to Village 13
 - 4 bids submitted
 - Quoted prices vary based on varying services offered.
 - Question: should the improvements include a .6-mile Underground Conduit bank (6" conduit, qty 3 or 4)
 - Question: Is this resiliency improvement Fed grant eligible?
- Tioga Way site improvements next contract
- *Need to finalize Site for BTM Battery Storage System*



General Manager Topics

- Nexgrid server and software interface upgrades
- Transformer Updates
- Hiring Updates
- Solar on School Updates
- 2nd Feeder from Swampscott



Nexgrid Server and S/W interface upgrade plan

Completed Steps

- New Server Hardware installed – Feb 16 - 18
- Data migrated from old to new servers
- Archive server data loaded
- *Confirm accurate meter read file transfers to the NDS billing system*



Nexgrid Server and S/W interface upgrade plan

Ongoing and Next Steps as of 3/3

- Chasing and resolving extraneous gremlins
- Generate historical monthly residential & small commercial account peak demand & energy data (for UFS demand analysis)
- Verify the accuracy of transformer, circuit & substation-level 15-minute load and peak demand data
- Test customer-facing Intelahome web-app & mobile app (relaunch)

Distribution Transformer Status

MMLD Distribution System Installed Base					Inventory					Sort by Highest % of Installed Base				
Size (KVA)	Quantity	%	Pad mount		OH Trans	Coverage	Trans	Coverage	Pad mount	Coverage	Size (KVA)	Quantity	%	Cum %
			OH Trans	Trans										
9	2	0.2%	2	0	0	0%	0	NA			25	460	38.5%	38.5%
10	7	0.6%	7	0	0	0%	0	NA			50	287	24.0%	63%
15	36	3.0%	34	2	0	0%	0	0%			37.5	179	15.0%	78%
25	460	38.5%	384	76	20	5%	7	9%			75	57	4.8%	82%
30	25	2.1%	23	2	6	26%	0	0%			150	41	3.4%	86%
37.5	179	15.0%	156	23	17	11%	7	30%			15	36	3.0%	89%
45	27	2.3%	25	2	4	16%	1	50%			112	34	2.8%	92%
50	287	24.0%	249	38	23	9%	2	5%			45	27	2.3%	94%
75	57	4.8%	36	21	3	8%	2	10%			30	25	2.1%	96%
100	4	0.3%	3	1	3	100%	0	0%			300	13	1.1%	97%
112.5	34	2.8%	22	12	1	5%	1	8%			225	11	0.9%	98%
150	41	3.4%	32	9	0	0%	2	22%			10	7	0.6%	99%
167	5	0.4%	5	0	2	40%	0	NA			167	5	0.4%	99%
225	11	0.9%	6	5	0	0%	0	0%			100	4	0.3%	99%
300	13	1.1%	0	13	0	NA	2	15%			750	3	0.3%	100%
500	2	0.2%	1	1	0	0%	0	0%			9	2	0.2%	100%
750	3	0.3%	0	3	0	NA	1	33%			500	2	0.2%	100%
1000	1	0.1%	0	1	0	NA	0	0%			1000	1	0.1%	100%
Total	1194	100.0%	985	209	79	8%	25	12%			Total	1194	100.0%	



Distribution System - GIS

- Work with Engineering/GIS firm Patrick Engineering, to make-ready old MMLD distribution system GIS maps for extensive field updating.
- Develop distribution system GIS capability in support of prioritizing capital improvement plans, addressing
 - Aging system components as poles and wires
 - New components to protect transformers against failure e.g. transformer fusing
 - New system upgrades to support increased residential loads
 - Any power quality/reliability concerns from distributed generation



Hiring Updates

- Distribution Manager –
 - 2 internal candidates; 9 external candidates – continuing interviews
 - Two Working Foremen setting priorities and leading crews on interim basis
- Business Assistant
 - Reviewing scope of job responsibilities, no posting yet
- Sustainability Manager
 - Job posted on ZipRecruiter 3/3, 6 candidates



Brown School Solar PV

- Scheduling a vendor visit to the Brown school roof to take detailed measurements to prepare a design and estimate
- Working with an outside vendor to provide a mobile app that will integrate customer electricity kWh and demand kW, with any solar PV from an MMLD community solar project, and home remote controls of electric devices.
- Anticipating a Memo of Understanding from each vendor



Second Feeder Line- Resiliency Initiative

- No Updates on second feeder line from Swampscott



Rate-setting: Policy Considerations

- Data driven rates, based on the actual costs of delivering electric service
- Transparent, use available public/objective data sources
- Leverage the expertise and broad US and international perspective of UFS
- Align rates to support adoption of energy efficiency and clean energy best practices



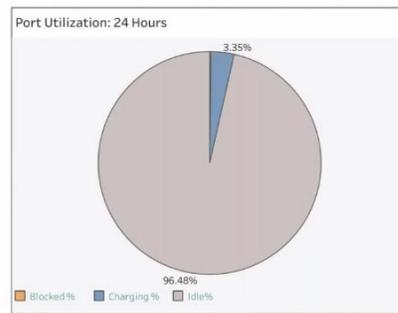
Solar PV and Battery

- Proposed Approach: All battery storage discharge, when dispatched by MMLD or MMWEC, is considered demand response. Credit calculation based on prior year average LMP for each peak hour, plus capacity and transmission avoidance.
- *MMLD is indifferent to the source of energy from a customer's dispatched battery...solar PV-generated or energy provided from the MMLD distribution system.*
- Battery charging during a peak, aka the Storm Mode issue- still an issue, until TOU pricing is implemented.

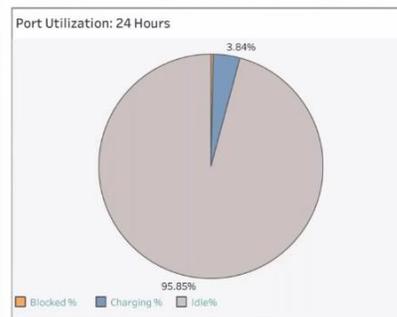


MMLD Public EV Charger Port Utilization

December 2022



Q4 2022



EV Public Charger Pricing GOALS

- Maximize revenues to recover operating and maintenance costs
- Manage peak grid demand
- Maximize utilization/vehicle turnover
- Delay investment in additional charging infrastructure
- Drivers move their vehicle when done charging
- Set pricing competitive with residential and other charging options
- Discourage use by Marblehead drivers with residential access; encourage use by others without access or non-residents



Solar PV and Battery

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Pricing OPTIONS

- Time-based (\$/hr)
- Volumetric pricing (\$/ kWh)
- Peak/off-peak rates
- Dial back or disable stations during peak times or peak events
- Use ChargePoint app for payment



Pricing EXAMPLES

- LEWLD - \$0.12/kWh; \$2 parking fee
- HMLP - \$0.22/KWh
- Wellesley - \$0.25/kWh off peak; \$0.50 peak; \$10/hr idle fee
- Braintree (Toyota Dealer) - \$0.20/kWh off peak; \$0.40 peak; After 2 hours \$2/hr idle fee



MMLD owned Public EV Chargers

ChargePoint Rate for Utility Owned 7.3 kW, level 2 electric vehicle charger

Monthly kWh	LF	\$ per kWh
160	3%	\$ 1.00
533	10%	\$ 0.47
799	15%	\$ 0.40
1,066	20%	\$ 0.36
1,599	30%	\$ 0.32
2,132	40%	\$ 0.30
2,665	50%	\$ 0.29
3,197	60%	\$ 0.28
3,730	70%	\$ 0.28
4,263	80%	\$ 0.27
4,796	90%	\$ 0.27
5,329	100%	\$ 0.27
Target LF->	20%	\$ 0.36

Rate

- Project current 3% Load Factor to a future target LF of 20%
- \$.036 per kWh all hours, on all three sites
- After 4 hours add \$5.00 parking
- *Annual maintenance fees average \$850 per port or \$8500 total;*
- *2022 revenue was \$5000.*

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