



CONCORD MUNICIPAL
LIGHT PLANT

ELECTRIC | BROADBAND | ENERGY MANAGEMENT

Strategic Plan 2018 - 2025

Update/Discussion
on March 9, 2022

CMLP's Strategic Initiatives

	Initiative	Calendar Year Projection	Dependencies
1	NISC	2017 - 2018	none
2	Advanced Metering System	2018 - 2019	1
3	Non-Emitting PPAs and RECs	2017 - 2025	none
4	Rate Design	2020	1,2
5	Fuel Switching	2019	none
6	Electric Vehicles	2018	none
7	Utility Scale Storage	2019	2
8	Smart Thermostats	2020	2
9	Energy Efficiency Programs	2020	none
10	Distributed Solar	2017 - 2025	none

National Information Systems Cooperative (NISC)

- Billing and Accounting brought online in 2019
- Streamlined a number of processes and cut down on redundancy.
- Moved some mostly paper-based processes to the digital world.
- Customers have access to more data and can report outages through the Customer Portal.
- Customers have more payment channel options than before conversion.
- Information is available to all users in real time from almost anywhere.
- More system capability awaiting advanced meters

Advanced Metering System (AMS)



Foundational technology to improve reliability, increase operational efficiency, reduce GHG emission, improve customer service, enable load control, and offer TOU rates.



Measured, open and inclusive process with stakeholder engagement, customer surveys, and thorough RFP process.



Extensive material available on a new webpage.



Review of 2,467 pages from 6 vendor proposals in process.



Select a vendor in 2022; order materials

Non-Emitting PPAs and RECs

Description	Purchase RECs and Non-Emitting Power		
Purpose	Provide customers with a non-emitting power supply		
Input Assumptions	By 2021, increase REC purchases to offset all GHG- emitting power sold By 2025, increase non-emitting power purchased through PPAs (RECs retired) to 25% of portfolio		
Status		2021F	2022F
	REC purchases as a % of power sold:	84%	98%
	PPAs with RECs retired	33%	47%
Notes	Higher REC prices delayed achievement of 100%; however, PPA purchases with RECs are much ahead of schedule		

New Non-Emitting Resources

Project	Location	Year Purchased	% of needs
Canton Mountain Wind	Canton, ME	2017	2%
Seabrook Nuclear	Seabrook, NH	2017	20%
Granite Wind	Coos County, NH	2018	1.5%
Existing Hydro	Housatonic River, CT	2019	3.4%
Chariot Solar	Hinsdale, NH	2019	2.7%
Cabot/Turners Falls	Connecticut River, MA	2020	12.5% ¹
Seabrook Nuclear	Seabrook, NH	2020	15% ²
Rox Wind	Roxbury, ME	2020	3.6% ³
Gravel Pitt Solar	CT, MA or NH	2020	1.9% ⁴
Broadleaf Solar	CT, MA or NH TBD	2021	4.3% ⁵
Milan Rd	Northern NH	2022E	3%+ ⁶
Total			69.9%

^[1] 2.5% in 2021 growing to 12.5% in 2023

^[2] Beginning in 2025

^[3] Beginning in 2023

^[4] Beginning in 2024

^[5] Beginning in 2026

^[6] Beginning in 2025

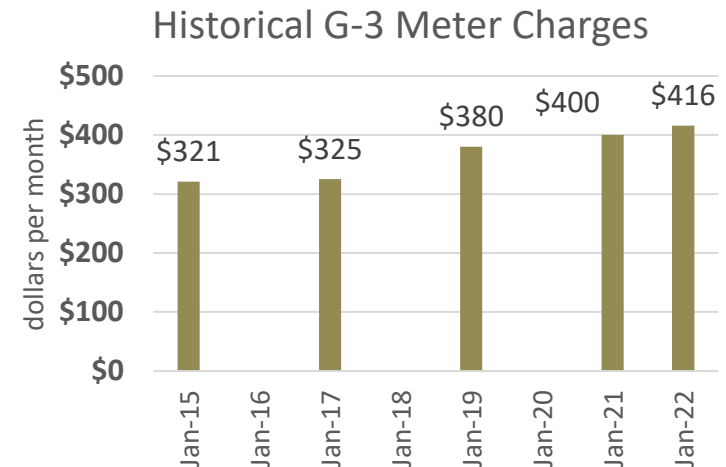
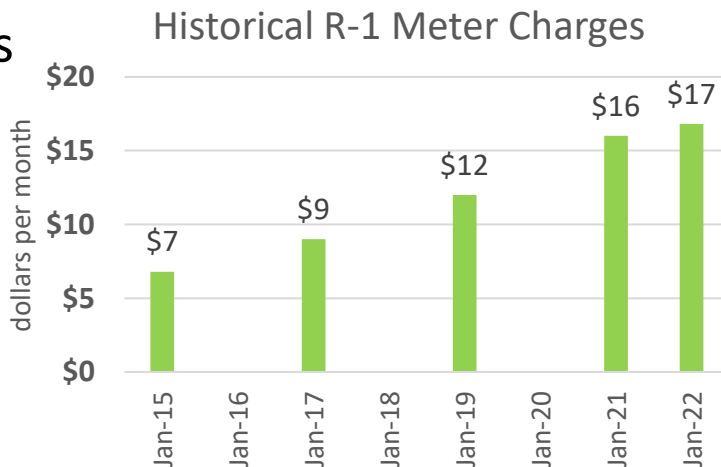
Rate Design—Residential TOU Rates

Description	Two –Period Time of Use Rate with Opt-Out Option
Purpose	Send a price signal to customers to shift their consumption to off-peak periods
Input Assumptions	On-Peak to Off-Peak Rate Ratio is 2.5:1 On-Peak is 2pm to 7pm on Weekdays
Status	<ul style="list-style-type: none">• Proposed a residential TOU rate in December 2020 with a 2.5:1 Peak to Off-peak ratio and a 4 hour peak.• AMS to enable default opt-out TOU rate for all residential• Customer pilot planned for 2022

Rate Design – Higher Fixed Charges

Description	Moves More of the Cost of Grid Connection into Higher Monthly Fixed Charge
Purpose	Sends clearer price signal to customers and grid services providers about value of the connection they are using
Input Assumptions	Residential and G1 Charges Rise to \$30/Mo. by 2021 G2 & G3 Charges Rise to \$100/\$600 by 2021

Status



Fuel Switch

Description	Rebates, Promotion and Technical Assistance to Foster Adoption of Air Source Heat Pumps (ASHPs) and Heat Pump Water Heaters by Residential and G1 Customers
Purpose	Beneficial Electrification
Input Assumptions	770 new ASHPs installed by 2025 2,362 kWh used annually per ASHP \$1,500 customer acquisition cost for CMLP per ASHP
Status	223 ASHPs & GSHPs installed from 2018 – 2021, exceeding Strategic Plan target of 203 for that period. Rebates for 28 HPWHs were paid during the same period.

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Heating/Cooling Coaches help you:

- figure out if heat pumps are a good fit for your needs
- compare quotes
- get a home energy assessment
- Learn about rebates
- become better informed so you can confidently make your own decisions



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I think the coaching is a great resource -- this technology is still unfamiliar to many people, so it's important to have access to knowledgeable people who are advising without trying to sell something. - Mav P.

My coach was so enthusiastic not just about heat pumps, but my individual situation. It was a joy to learn from him. - Ezra M.

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Abode Energy Management:

- provides back up expertise
- maintains an Air-Source Heat Pump Participating Contractor List
- does pre-installation sizing and design reviews
- does post-installation quality assurance checks



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Enhanced Heat Pump Rebates for 2022

*Natural Gas
Heating*



*Oil, Electric and
Propane Heating*



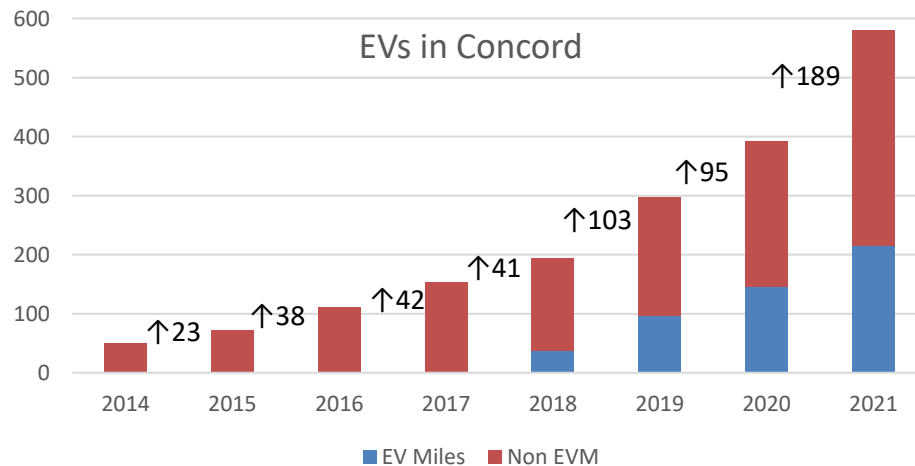
Air Source Heat Pump Rebates

Equipment Type	Rebate Type	Efficiency Requirements	Rebate Amount
Air Source Heat Pumps	Whole-Home	Refer to the MassSave.com/HPQPL	\$10,000 per home
	Partial-Home		\$1,250 per ton ¹ , up to \$10,000

Electric Vehicles

Description	Increases number of electric vehicles owned by residential customers, above and beyond BAU projection
Purpose	Beneficial Electrification
Input Assumptions	40 CMLP-driven purchases per year = 320 additional EVs by 2025

Status



Programs to support EV adoption: Time of Use rates; public charging stations, EV Miles, EV Level 2, Drive EV, EV Ready Pilot and Shared Charger programs; Business Electric Vehicle Rate Plan. Support Service

Utility Scale Storage

Description	Installation of one utility-scale battery storage system
Purpose	Shave Monthly Peak Demand Charges
Input Assumptions	5 MW Discharges 15 MWh over 3 hours \$4.5 million cost in 2017; Costs decreasing 7% per year
Update	5 MW/15MWh 2021 battery cost ~ \$5.5 base; \$6.7 all-in <u>POTENTIAL PROJECT LOCATIONS:</u> <ol style="list-style-type: none">1. 300 Baker Ave2. WR Grace3. Middle School
Notes	The purpose of utility scale storage is to address solar saturation. Demand charge savings can be used to reduce the cost of implementing storage.

Smart Thermostats

Description	Promotes residential customer adoption of smart thermostats that allow control by CMLP						
Purpose	Shave Monthly Peak Demand Charges						
Input Assumptions	\$85 up-front incentive Ongoing management costs 290 sign ups in year 1 and 90 more per year thereafter						
Impacts on Goals	<table border="1"> <thead> <tr> <th>REV</th> <th>NET INC</th> <th>GHG</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	REV	NET INC	GHG			
REV	NET INC	GHG					
Outstanding Issues	No widely adopted standards for communication/control technologies						
Case Studies	Austin Energy; Green Mountain Power						

Energy Efficiency Programs

Description	Efficient products and upgrades in the residential, commercial, and low-income customer sectors; lighting, HVAC, refrigeration, compressed air, process heat, and motors end-uses; and new construction, retrofit, and replacement markets.
Purpose	Help customers reduce their electricity bills
Input Assumptions	Savings of 1.5% of sales by 2025
Status	Rebates and services have resulted in 1,600 MWh annual savings and 306 kW demand reduction from 42 commercial high efficiency lighting projects; 465 home energy assessments, 72 home weatherization projects and 12,300 LED bulbs installed.

2022 Energy Efficiency Initiatives

CMLP will pay 100% of commercial energy audit costs for small businesses, up from 50%.

Residential Weatherization Project Initiatives

- Participating Weatherization Contractor List
- QA reviews for weatherization projects.
- Higher rebates for lower-income households

Intensive home decarbonization assessments

Enhanced ASHP and GSHP rebates for non-gas homes and businesses


Solar Capacity Added

2016-2022		
Megawatts	Additions	Cumulative
Residential & Commercial	2.0	4.3
In-Town Purchases	5.8	7.6
Grid Scale Power Purchase	8.2	8.2
Total	16.0	20.1

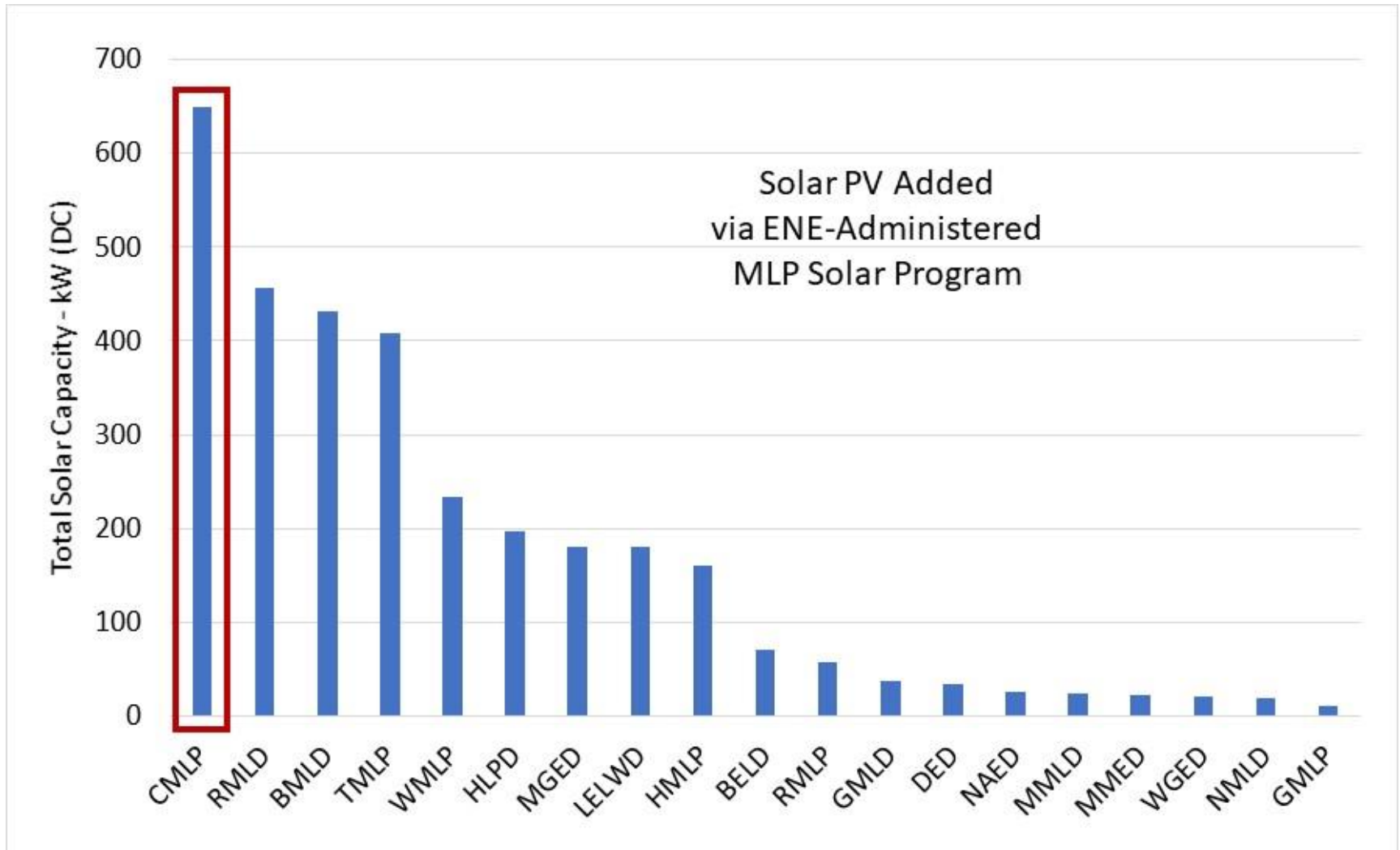
Residential Rooftop vs. Grid-Scale PPA Solar Costs	
	\$/kWh
Residential ¹	\$0.0955
Grid-Scale ²	\$0.0556

¹ Includes value of reduced transmission and capacity costs. 20-yr NPV
² Includes transmission losses

Plus an additional 5.6 MW being negotiated in 2022



MLP Solar Addition Comparison



Cumulative Distributed Solar PV

in Concord
kW (DC)

