CONCORD MUNICIPAL LIGHT PLANT
ELECTRIC | BROADBAND | ENERGY MANAGEMENT

Date: April 18, 2024

To: Municipal Light Board: Brian Foulds (Chair), Alice Kaufman, Warren Leon, John Dalton, and Bianca Taylor

From: Jason Bulger, CTO, Interim CMLP Director

Subject: Agenda for Virtual Light Board Meeting **April 24, 2024, 7:30 A.M.** (Zoom link below)

7:30 AM 1. **Call to Order**

7:30 AM 2. **Meetings and Minutes** 5 Minutes Chair

May 8, 2024, June 12, 2024, July 10, 2024, August 14, 2024, September 11, 2024, October 9, 2024, November 13, 2024, & December 11, 2024.

7:35 AM 6. **Special Town Meeting Updates** 30 Minutes Chair Discussion/Vote

Background: On April 1, 2024, the Select Board opened a warrant for a Special Town Meeting to take place on Wednesday, May 1, 2024, at 7:10pm. The Town Manager has submitted an article that is a request to borrow up to $10.4 million for a utility-scale battery in Concord for CMLP.
Purpose: To provide updates on the process and discuss strategy for the presentation for the Special Town Meeting.

8:05 AM 7. **CMLP Project Updates** 20 Minutes Director Discussion

Background: CMLP has many operational projects underway.
Purpose: To provide updates on these projects to the Board and the public.

8:25 AM. 8. **Executive Session** 40 Minutes Chair Discussion/Vote

Requires a motion, second and vote to close the regular session and move into an executive session. The Board will not reconvene in regular session. The motion made must include the specific exemption to be used.

Power Supply Contract Proposal and Pricing Review
Pursuant to the Commonwealth of Massachusetts Open Meeting Law Purpose for Executive Session #10: to discuss trade secrets or confidential, competitively sensitive, or other proprietary information.
Background: The Light Board does not publicly share contract pricing.
Purpose: To educate the board on contract cost and components.

9:05 AM 9. **Adjourn**

Distribution: Select Board (1 copy)

Kerry Lafleur	Carole Hilton	Joe Repoff	Matt Cummings
Jan Aceti	Laura Scott	Chris Carmody	Eric Simms
Jason Bulger	Mary Hartman	Michael Hale	

Join Zoom Meeting
https://us02web.zoom.us/j/88646493707?pwd=OURBYXpyOE4xcXpST2FJMlM1dUxxUT09

Meeting ID: 886 4649 3707
Passcode: 068350

1175 ELM STREET, PO BOX 1029 | CONCORD, MA 01742-1029 | T: 978.318.3101 | F: 978.318.3105

One tap mobile
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+13092053325,,88646493707#,,,,*068350# US

Find your local number: https://us02web.zoom.us/u/kdx7j1VgaW

Link to view recordings of previous Light Board Meetings:
https://www.youtube.com/@MinutemanMediaNetwork/search?query=Concord%20Light%20Board

Link to view the Director's Updates:
https://concordma.gov/1106/Municipal-Light-Board

Link to view the Broadband Monthly Updates:
https://www.concordma.gov/3148/Monthly-Updates

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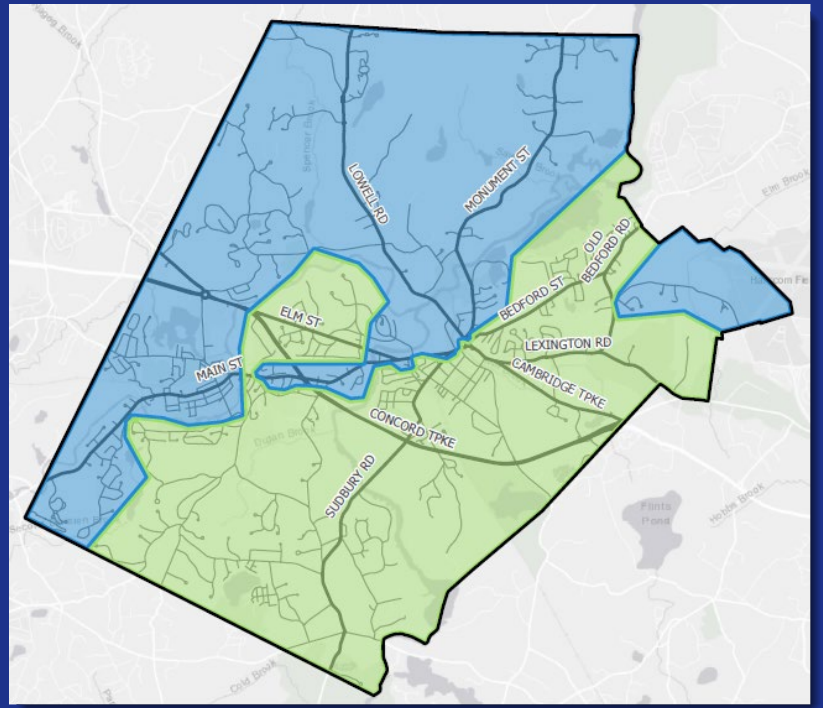
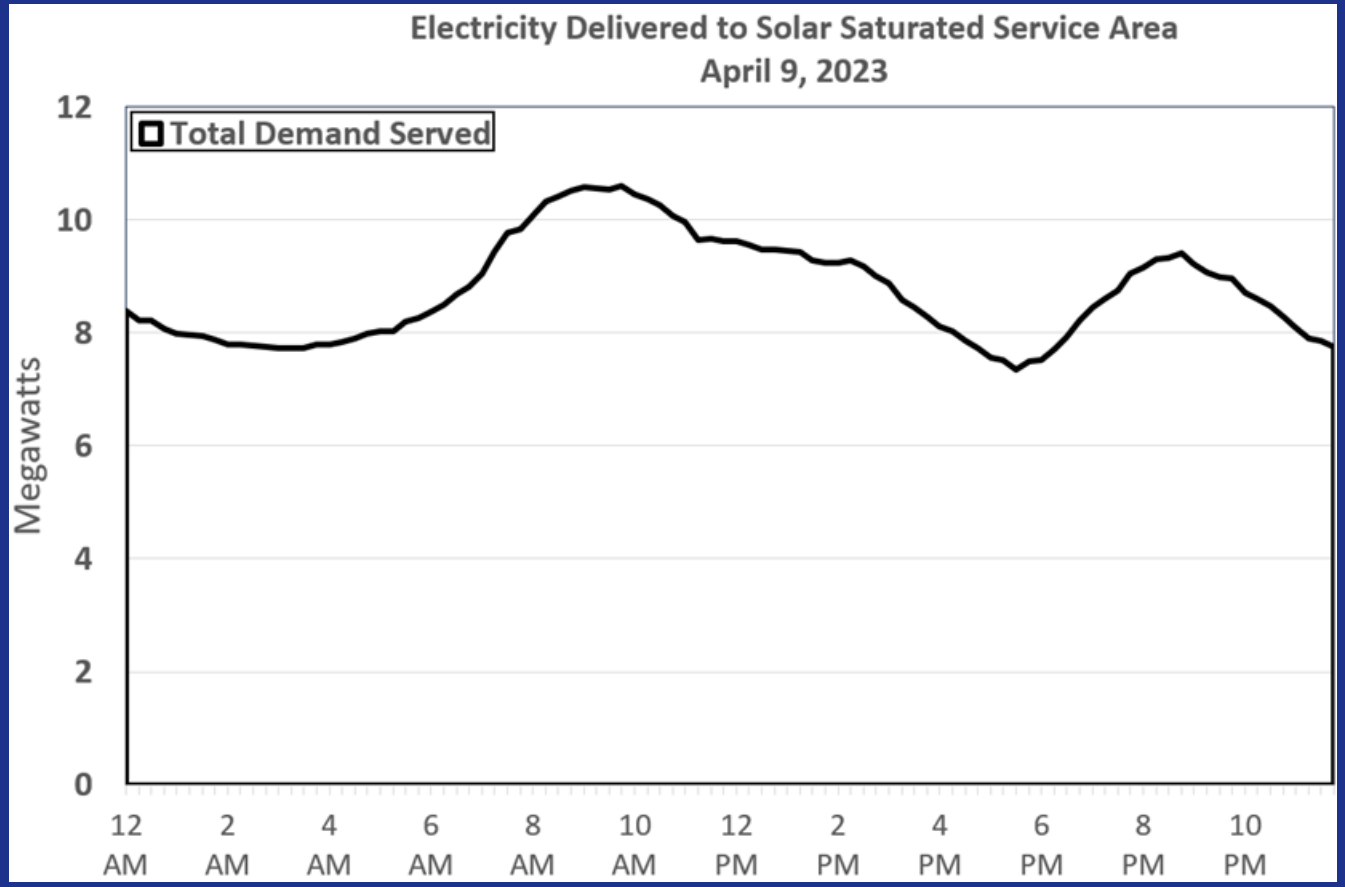
ARTICLE 1: In-town Utility Scale Battery

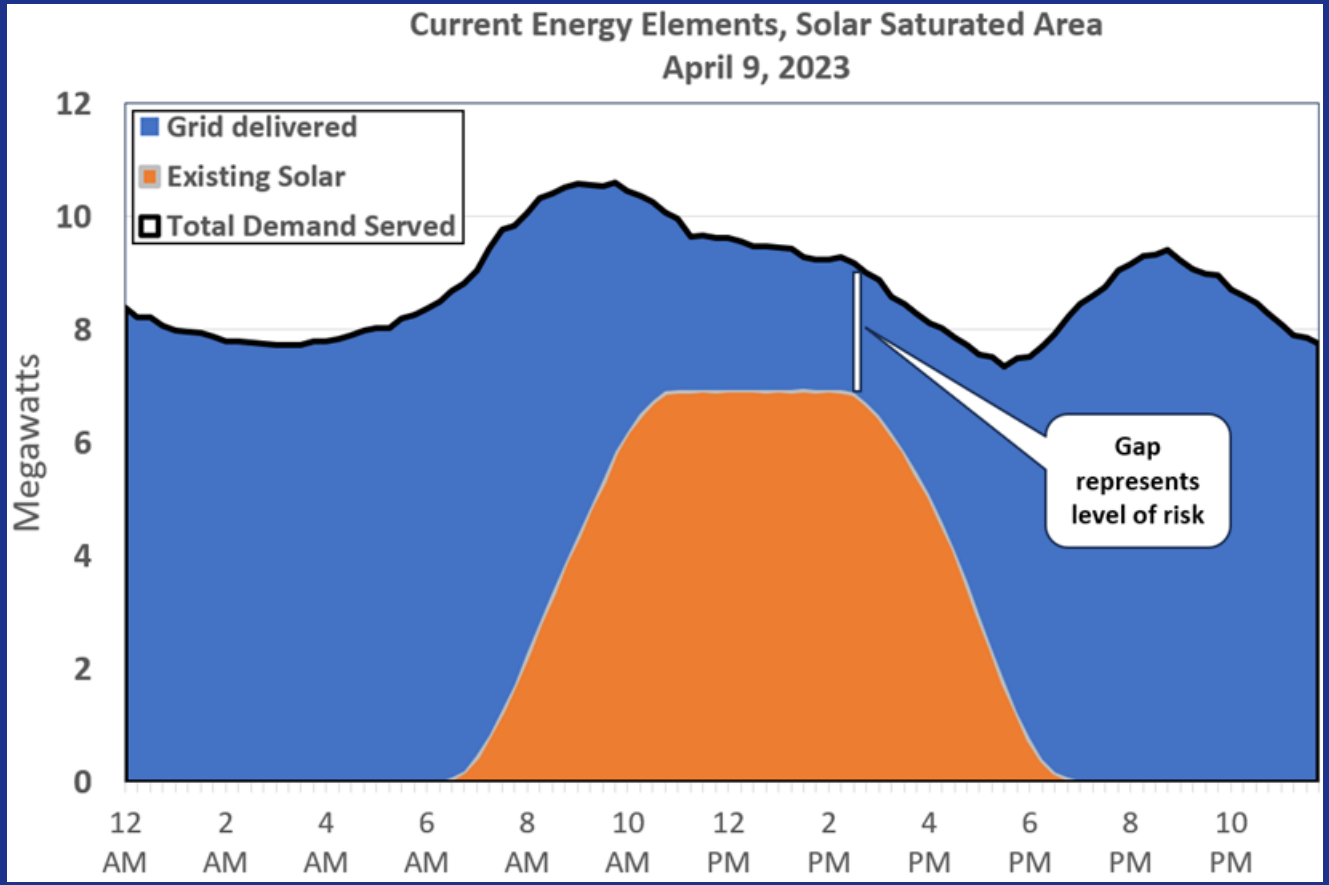
To determine whether the Town will authorize the Town Treasurer with the approval of the Select Board, to borrow by the issuance of general obligation bonds or notes under the provisions of Mass. Gen. Laws c. 44 or any other authority, a sum not to exceed $10,400,000 for the design and construction of grid-scale battery storage in the Town of Concord, the funds so borrowed to be expended for engineering design and legal services; hearings; permits and other approvals; material, construction, and installation specifications; bid preparation; materials purchase; construction and installation services; control systems; and distribution and expansions, upgrades and improvements, and to be repaid in the first instance from revenues of the Concord Municipal Light Plant, or take any other action relative thereto.

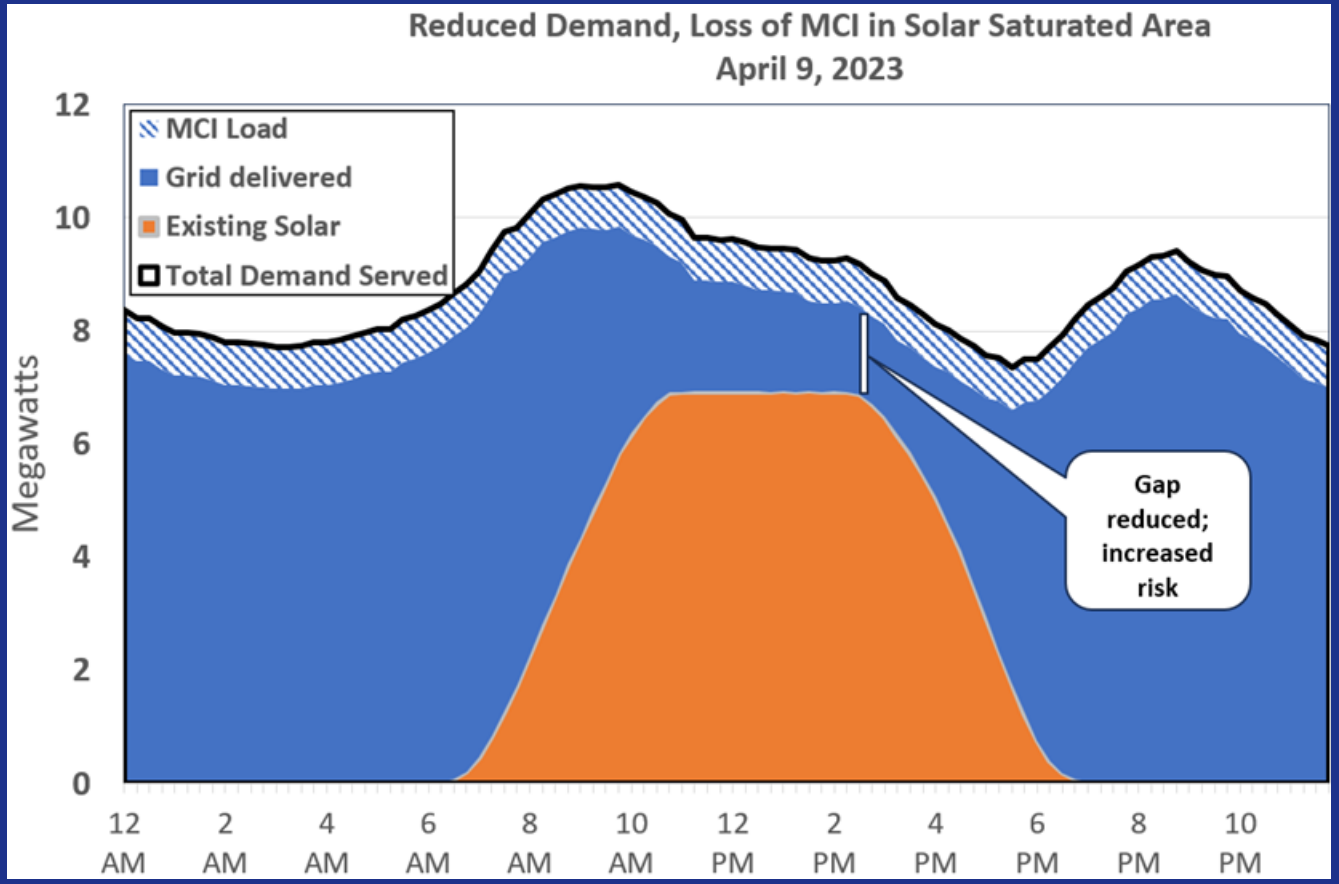
Concord Circuits

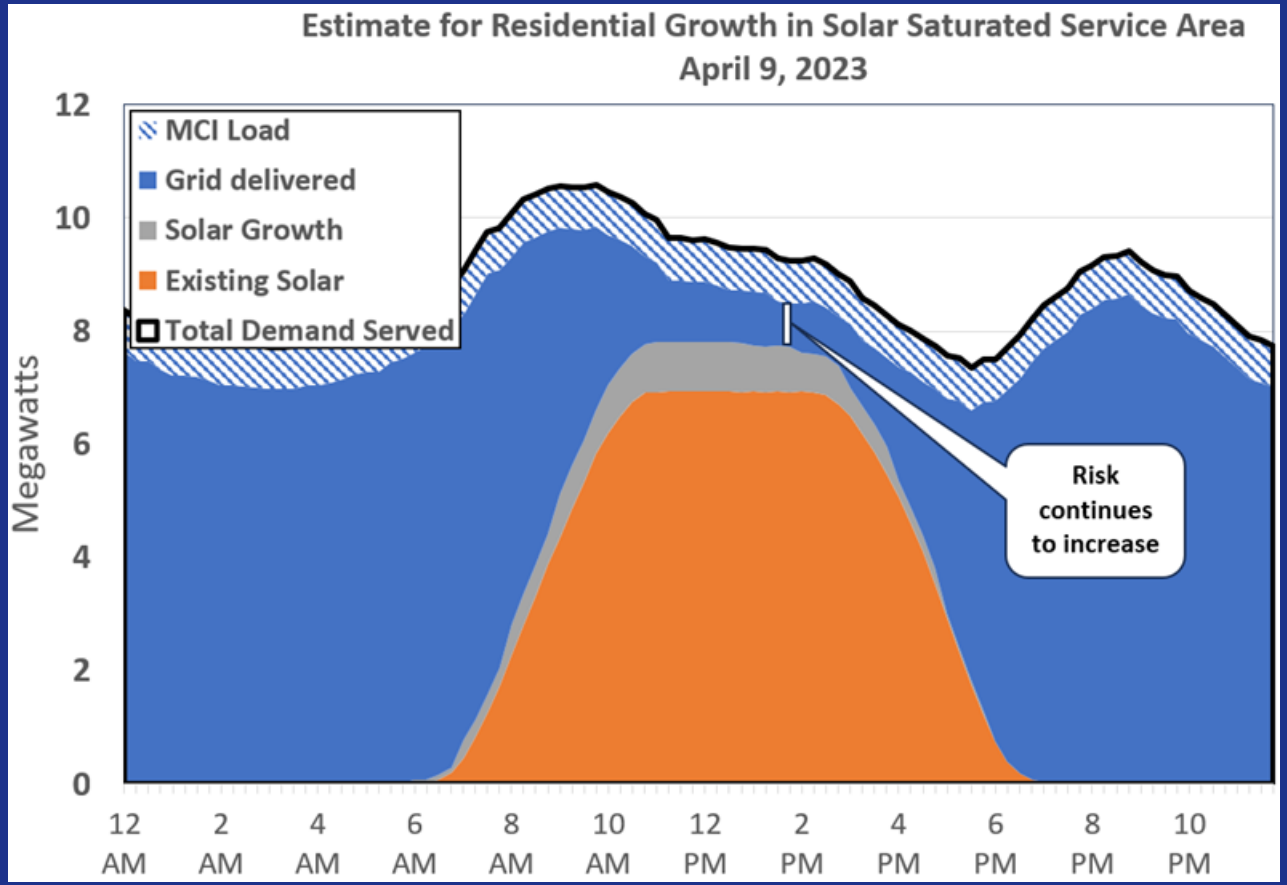
- Circuit 2 (blue) has 7 megawatts of solar.
- At times of the year, the demand for customers on that circuit drops extremely low.
- The circuits need a minimum load of 1.25 megawatts.

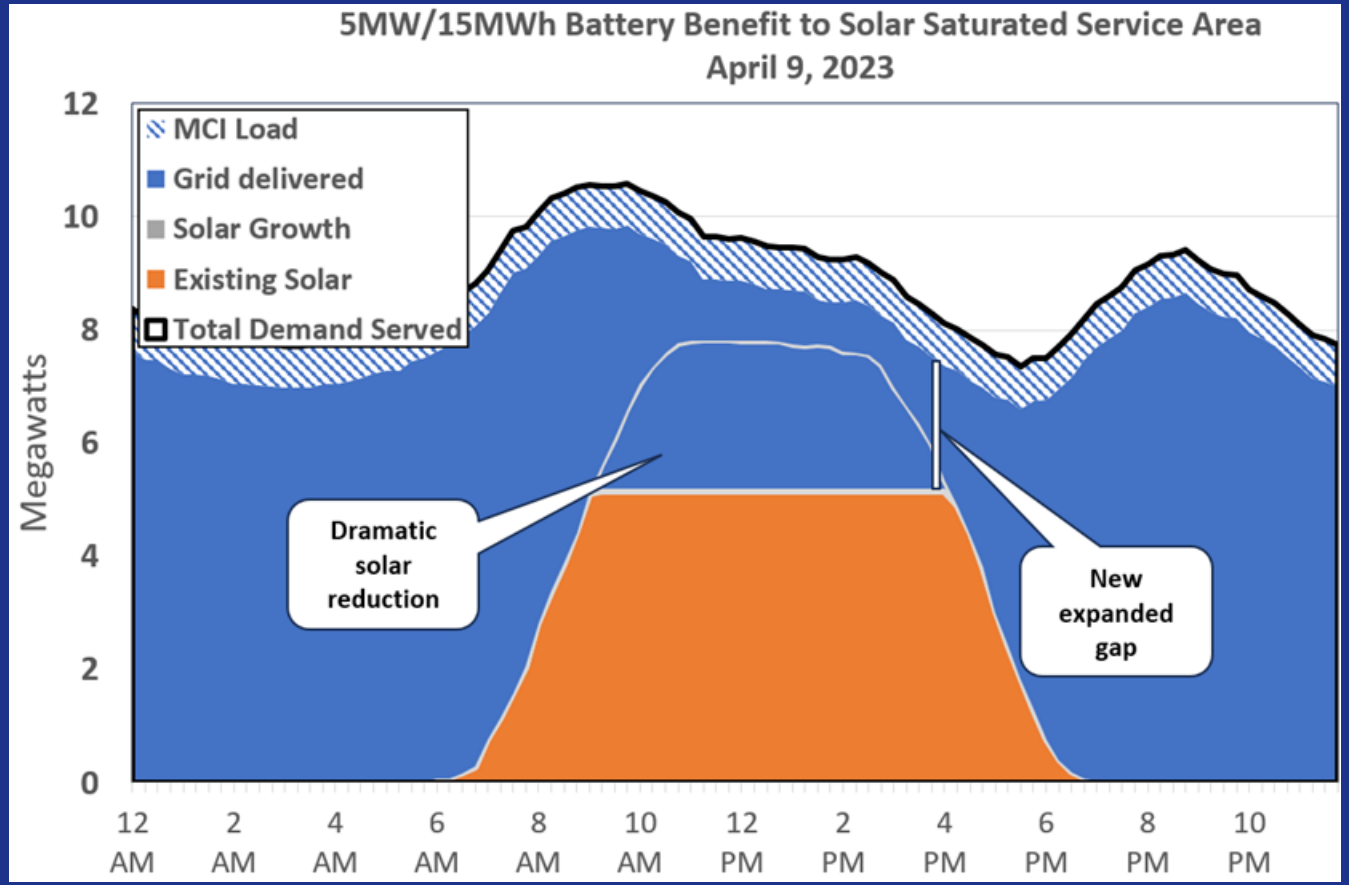



Electricity Delivered to Solar Saturated Service Area
April 9, 2023
Total Demand Served
Megawatts
12
10
8
6
4
2
0
12 AM
2 AM
4 AM
6 AM
8 AM
10 AM
12 PM
2 PM
4 PM
6 PM
8 PM
10 PM


Current Energy Elements, Solar Saturated Area
April 9, 2023
Grid delivered
Existing Solar
Total Demand Served
Megawatts
12
10
8
6
4
2
0
Gap represents level of risk
12 AM
2 AM
4 AM
6 AM
8 AM
10 AM
12 PM
2 PM
4 PM
6 PM
8 PM
10 PM


Reduced Demand, Loss of MCI in Solar Saturated Area
April 9, 2023
MCI Load
Grid delivered
Existing Solar
Total Demand Served
Megawatts
12
10
8
6
4
2
0
12 AM
2 AM
4 AM
6 AM
8 AM
10 AM
12 PM
2 PM
4 PM
6 PM
8 PM
10 PM
Gap reduced; increased risk

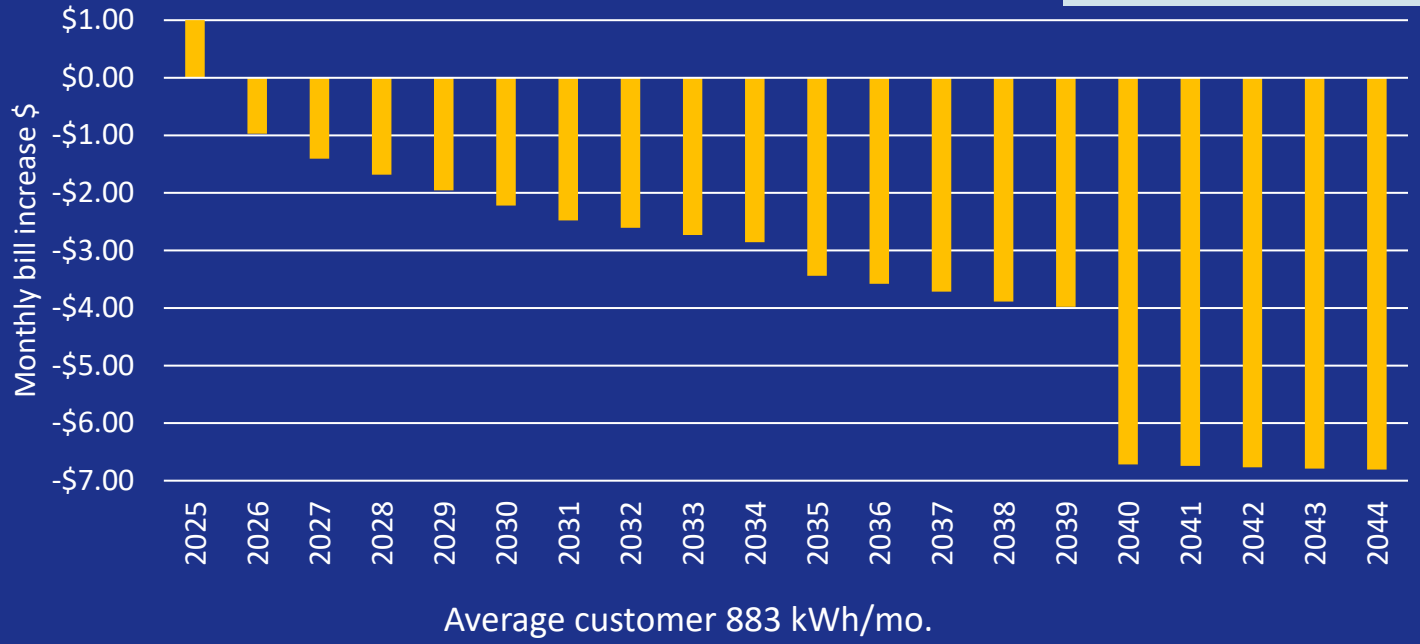

Estimate for Residential Growth in Solar Saturated Service Area
April 9, 2023
MCI Load
Grid delivered
Solar Growth
Existing Solar
Total Demand Served
Megawatts
0
2
4
6
8
10
12
12 AM
2 AM
4 AM
6 AM
8 AM
10 AM
12 PM
2 PM
4 PM
6 PM
8 PM
10 PM
Risk continues to increase


5MW/15MWh Battery Benefit to Solar Saturated Service Area
April 9, 2023
MCI Load
Grid delivered
Solar Growth
Existing Solar
Total Demand Served
Megawatts
12
10
8
6
4
2
0
Dramatic solar reduction
New expanded gap
12 AM
2 AM
4 AM
6 AM
8 AM
10 AM
12 PM
2 PM
4 PM
6 PM
8 PM
10 PM

Rate Impact

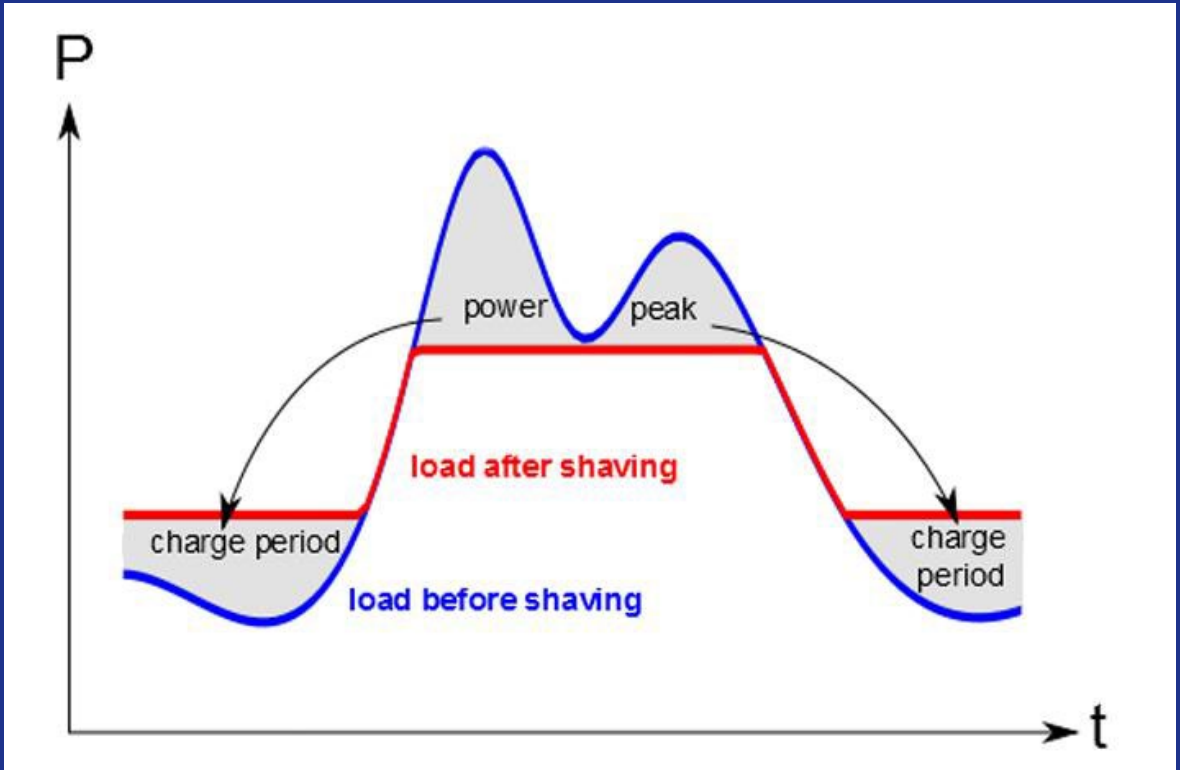
	Million $
Capital Cost	$10.4
IRA Credit	$2.6
20-yr NPV	$3.1

4.99MW / 14.97MWh



Average customer 883 kWh/mo.

Peak Shaving



Battery size

Recommended size:
4.9MW / 14.97MWh

A bigger battery:

- Better manages solar saturation.
- Allows rate payers to invest in more solar capacity
- More progress towards Town's 60MWh storage goal
- Lower capital cost per MW due to economies of scale
- Takes advantage of more dollars of the IRA credit
- Higher cashflow in dollars; more savings to ratepayers

2017

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
Impacts on Goals	
Outstanding Issues	System Engineering, Cost
Case Studies	Minster Electric, Sterling Municipal Light Department

Alternatives we have explored:

- Curtailment – reduce or shut off the solar
  - Illegal or unsafe
- Connect or reconfigure the circuits
  - Short-term emergency only; you lose power protection and resilience. Changes are time-consuming and costly.
- Third-party battery construction
  - Their priority on peak shaving does not solve our resilience issue or allow for future solar expansion.
- Adding load
  - Early stages; requires capital investment dependent on certainty

Utility-Scale Battery Storage

1. Protects the distribution system to ensure there is no downtime or damage.
2. Allows for continued expansion of in-town solar.
3. Saves emissions and money by shaving the peak.

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