Princeton Municipal Light Department

August 12, 2025

MMWEC
MASSACHUSETTS MUNICIPAL
WHOLESALE ELECTRIC COMPANY
Public Energy Partners

Agenda

- Introduction/Overview
- Market Recap
- Sample Power Supply
  - Princeton Power Supply
- MMWEC/Sample Hedging Efforts
  - MMWEC/Princeton Hedging Efforts
- Peer Analysis
- “Value Added” Services
- Future Resource Opportunities
- NextZero & Connected Homes

MMWEC

- Founded in 1969 to serve the consumer-owned, municipal utilities of Massachusetts
- Joint action / collective strength of municipal utilities – entering New England Power Pool
- In 1976, through state legislature, ascertained non-profit status enabling tax-exempt funding opportunities
  - $7 billion in funding
- Today – joint action efforts continue for benefit of network of municipalities
  - Power supply, financial risk management, & ancillary services
    - 780 MW ownership interest
    - Manage 2.8 GW portfolio

Weather Recap

January 2025

- Jan 2025 Avg High = 35.37°
- Jan 2025 Avg Low = 23.73° [lowest temp was on 1/22 = 10.04°]
- Jan 2025 Avg Temp = 29.55°
  - Jan 2025 had 16 days below normal
  - Jan 2025 had 9 days below 5-degrees-below-normal
  - Jan 2025 had 2 days below 10-degrees-below-normal
  - Jan 2025 had 1 day below 15-degrees-below-normal

- How cold was Jan 2025 versus long term norms
  - 20-year Avg Temp = 30.91° [Jan 2025 was 1.36° below the 20-year Avg Temp]
  - 10-year Avg Temp = 31.56° [Jan 2025 was 2.01° below the 10-year Avg Temp]
  - Load came in approximately 6.4% greater than winter-normalized forecast

- How cold was Jan 2025 versus the last cold winter...Jan 2022
  - Jan 2022 Avg Temp = 27.92° [1.63° below Jan 2025 Avg Temp]
    - Jan 2022 was 2.99° below the 20-year Avg Temp
    - Jan 2022 was 3.64° below the 10-year Avg Temp
    - Load came in 8% greater than winter-normalized forecast

February 2025

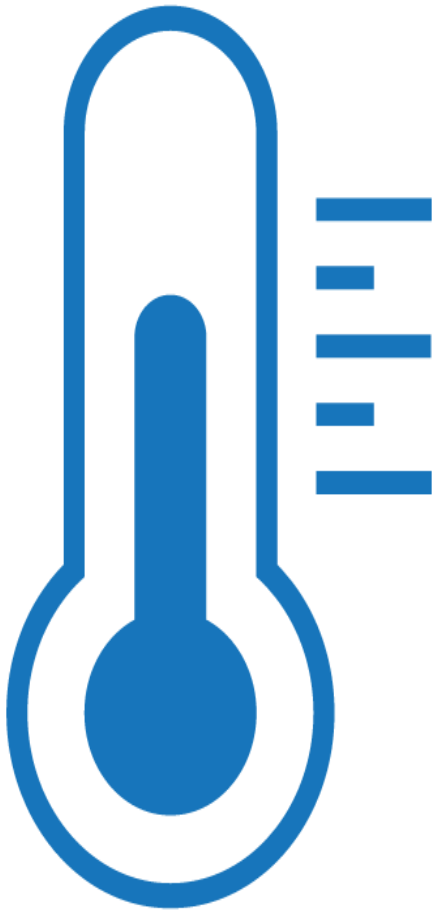
- Feb 2025 Avg High = 37.14°
- Feb 2025 Avg Low = 24.14° [lowest temp was on 2/2 = 8.75°]
- Feb 2025 Avg Temp = 30.64°
  - Feb 2025 had 18 days below normal
  - Feb 2025 had 10 days below 5-degrees-below-normal
  - Feb 2025 had 1 days below 10-degrees-below-normal
  - Feb 2025 had 0 day below 15-degrees-below-normal
  - Feb 2025 had 10 days above normal

- How cold was Feb 2025 versus long term norms
  - 20-year Avg Temp = 32.51° [Feb 2025 was 1.87° below the 20-year Avg Temp]
  - 10-year Avg Temp = 33.44° [Feb 2025 was 2.80° below the 10-year Avg Temp]
  - Load came in approximately 7.8% greater than winter-normalized forecast

- How cold was Feb 2025 versus the last cold winter...Feb 2022
  - Feb 2022 Avg Temp = 33.24° [2.60° above Feb 2025 Avg Temp]
    - Feb 2022 was 0.73° below the 20-year Avg Temp
    - Feb 2022 was 0.20° below the 10-year Avg Temp

MMWEC Public Energy Partners

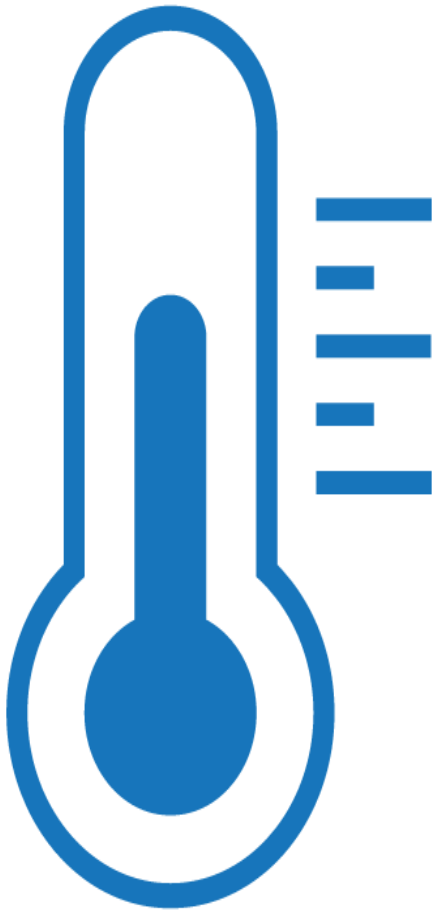
Weather Recap



2022

	Jan 2025	Feb 2025
Avg Temp:	29.55° 27.92°	30.64°
10-year avg:	31.56°	33.44°
Difference:	2.01° below 3.64° below	2.80° below
Actual Load vs Winter Normalized Forecasted Load:	6.4% 8%	7.8%

Weather Recap

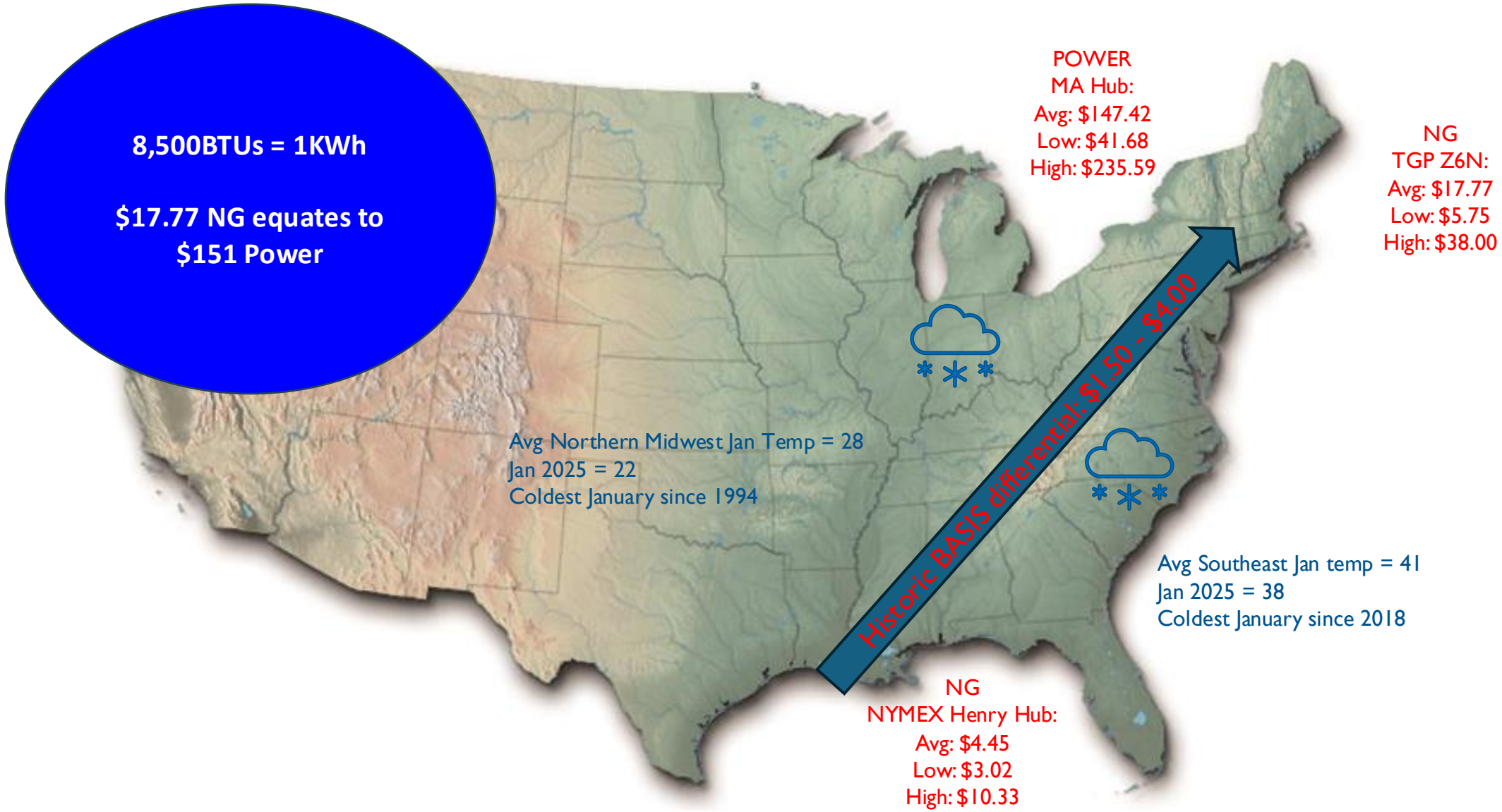


2022

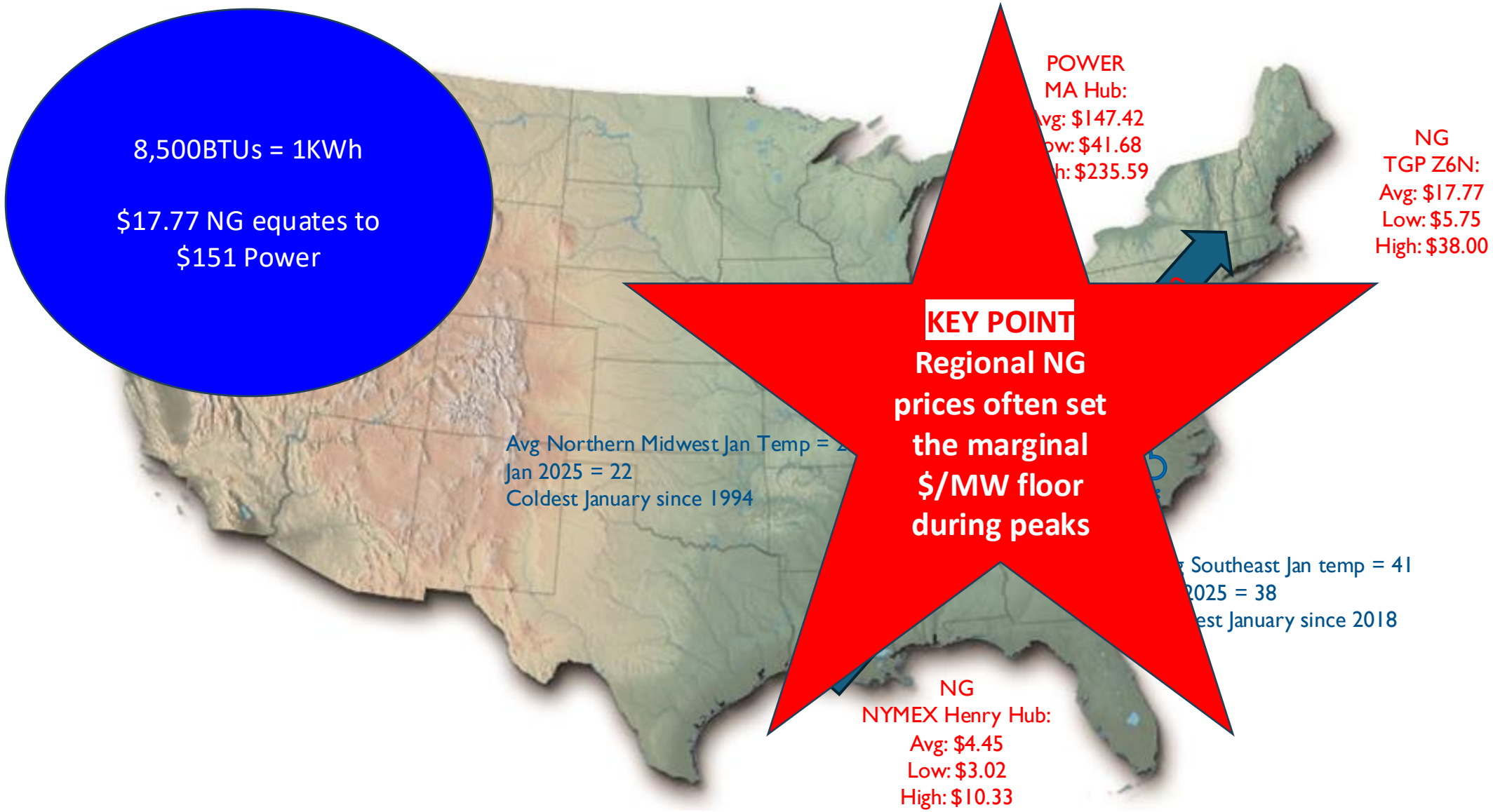
	Jan 2025	Feb 2025
Avg Temp:	29.55°	30.64°
	27.92°	
10-year avg:		
Difference:	2.01° below	below
	3.64° below	
Actual Load vs Winter Normalized Forecasted Load:	6.4%	
	8%	

KEY POINT
Load deviations from forecasted projections are legitimate (often underappreciated) risk

January 2025 Natural Gas Basis Impact



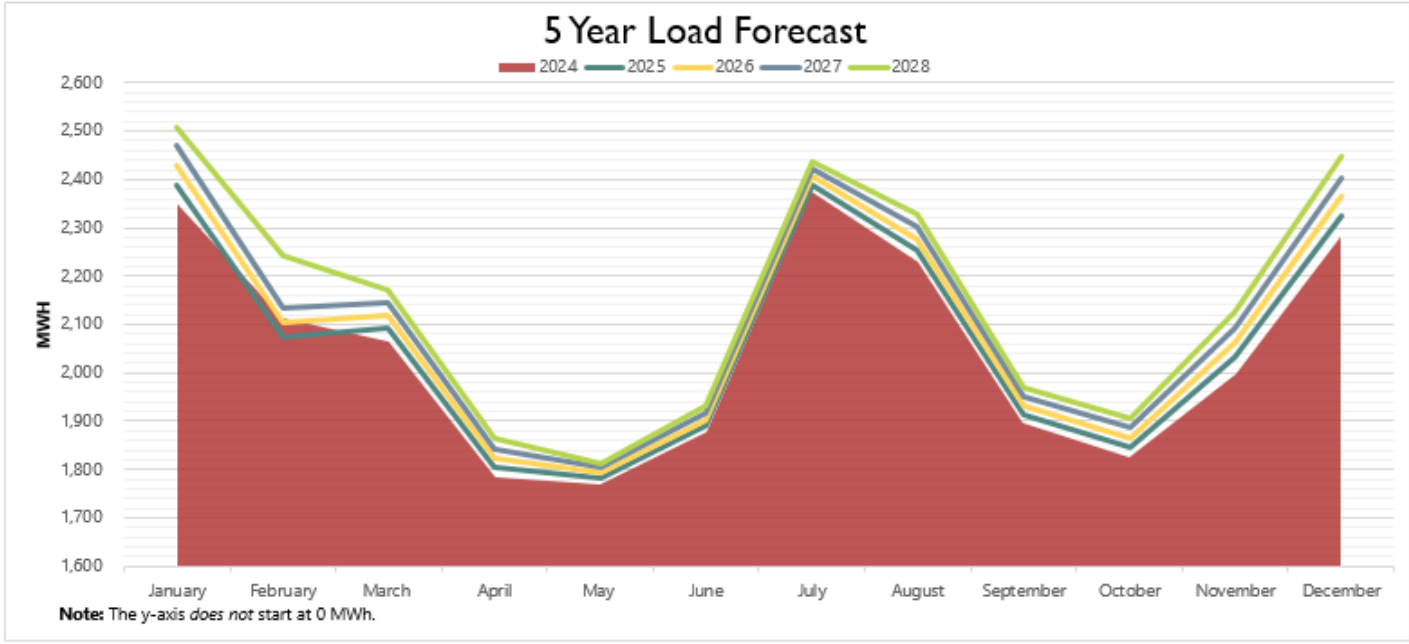
January 2025 Natural Gas Basis Impact



New England [MA Hub] Power

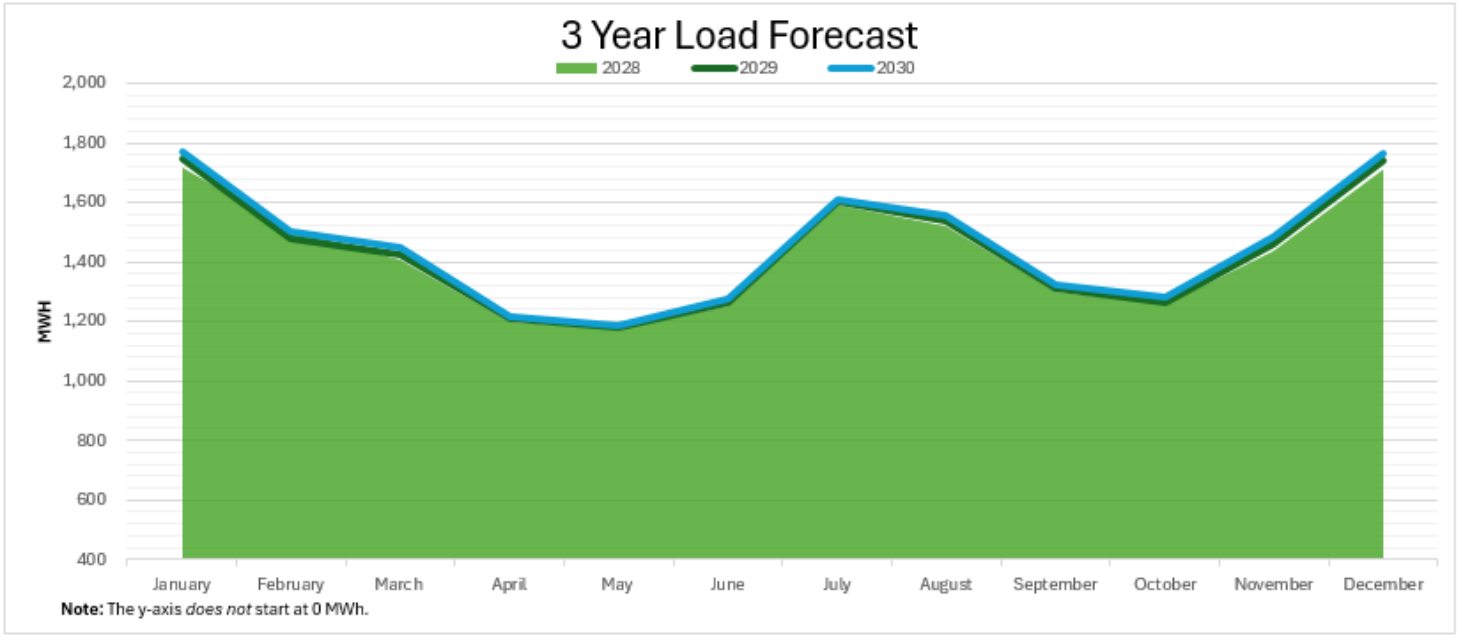
	OnPeak	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
1	January	63.15	29.60	44.72	161.34	54.39	77.44	147.42	133.28	130.63	115.38	111.13	117.09	118.24	117.80	116.60	116.39
2	February	38.39	25.05	82.90	113.95	54.30	38.76	131.17	110.10	104.30	109.67	105.44	110.42	110.92	110.56	109.55	109.59
3	March	40.67	19.17	38.16	65.84	66.62	26.31	47.91	68.83	66.12	48.41	57.16	58.29	58.55	57.71	57.11	57.34
4	April	29.50	20.13	28.05	62.81	29.94	28.12	42.88	50.43	47.41	43.59	44.05	44.78	44.97	44.16	43.66	44.39
5	May	26.76	18.23	27.82	80.24	25.44	30.21	39.24	44.30	42.90	40.29	41.64	42.68	42.49	41.91	41.91	42.64
6	June	25.19	22.40	45.14	75.51	41.64	45.17	55.42	54.99	51.43	46.26	45.42	46.31	46.49	45.96	45.88	46.49
7	July	33.97	27.87	43.93	107.86	49.23	60.64	94.14	87.53	82.31	77.10	67.24	65.29	65.25	64.71	64.68	65.09
8	August	30.53	28.92	59.84	107.32	30.89	41.29	69.36	70.83	70.06	66.93	57.69	60.02	59.86	59.36	59.41	59.82
9	September	24.04	24.80	53.94	63.09	41.84	35.67	50.61	47.40	48.35	43.75	43.76	44.55	44.32	43.91	43.96	44.78
10	October	23.62	29.05	65.72	59.58	28.17	40.46	43.32	44.69	40.99	40.65	41.04	41.74	41.37	40.91	40.67	41.49
11	November	36.63	30.06	60.77	71.20	39.78	44.30	60.01	63.85	55.86	50.56	51.54	52.28	51.73	51.46	51.52	52.14
12	December	46.18	42.99	70.74	119.04	42.20	90.75	101.95	92.14	83.58	76.10	79.75	80.11	77.29	76.23	75.97	76.59
	Annual Avg	34.89	26.52	51.81	90.65	42.04	46.59	73.62	72.36	68.66	63.22	62.15	63.63	63.45	62.89	62.58	63.06

Paxton: 5-Year Load Forecast



5 Year Load Forecast					
Month	2024	2025	2026	2027	2028
January	2,348	2,387	2,429	2,471	2,509
February	2,114	2,072	2,103	2,133	2,241
March	2,065	2,092	2,118	2,144	2,170
April	1,784	1,804	1,824	1,843	1,863
May	1,769	1,782	1,794	1,804	1,812
June	1,876	1,890	1,903	1,918	1,933
July	2,373	2,390	2,407	2,423	2,439
August	2,230	2,253	2,277	2,303	2,330
September	1,895	1,912	1,931	1,950	1,970
October	1,825	1,845	1,866	1,886	1,906
November	1,998	2,032	2,062	2,093	2,125
December	2,283	2,323	2,364	2,405	2,448
Total	24,560	24,782	25,078	25,374	25,745

Princeton: 3-Year Load Forecast



3 Year Load Forecast			
Month	2028	2029	2030
January	1,720	1,744	1,771
February	1,510	1,479	1,500
March	1,406	1,426	1,445
April	1,196	1,207	1,218
May	1,175	1,182	1,189
June	1,251	1,262	1,274
July	1,593	1,602	1,611
August	1,522	1,538	1,554
September	1,297	1,310	1,322
October	1,255	1,266	1,279
November	1,439	1,460	1,485
December	1,711	1,740	1,766
Total	17,074	17,217	17,414

NUCLEAR

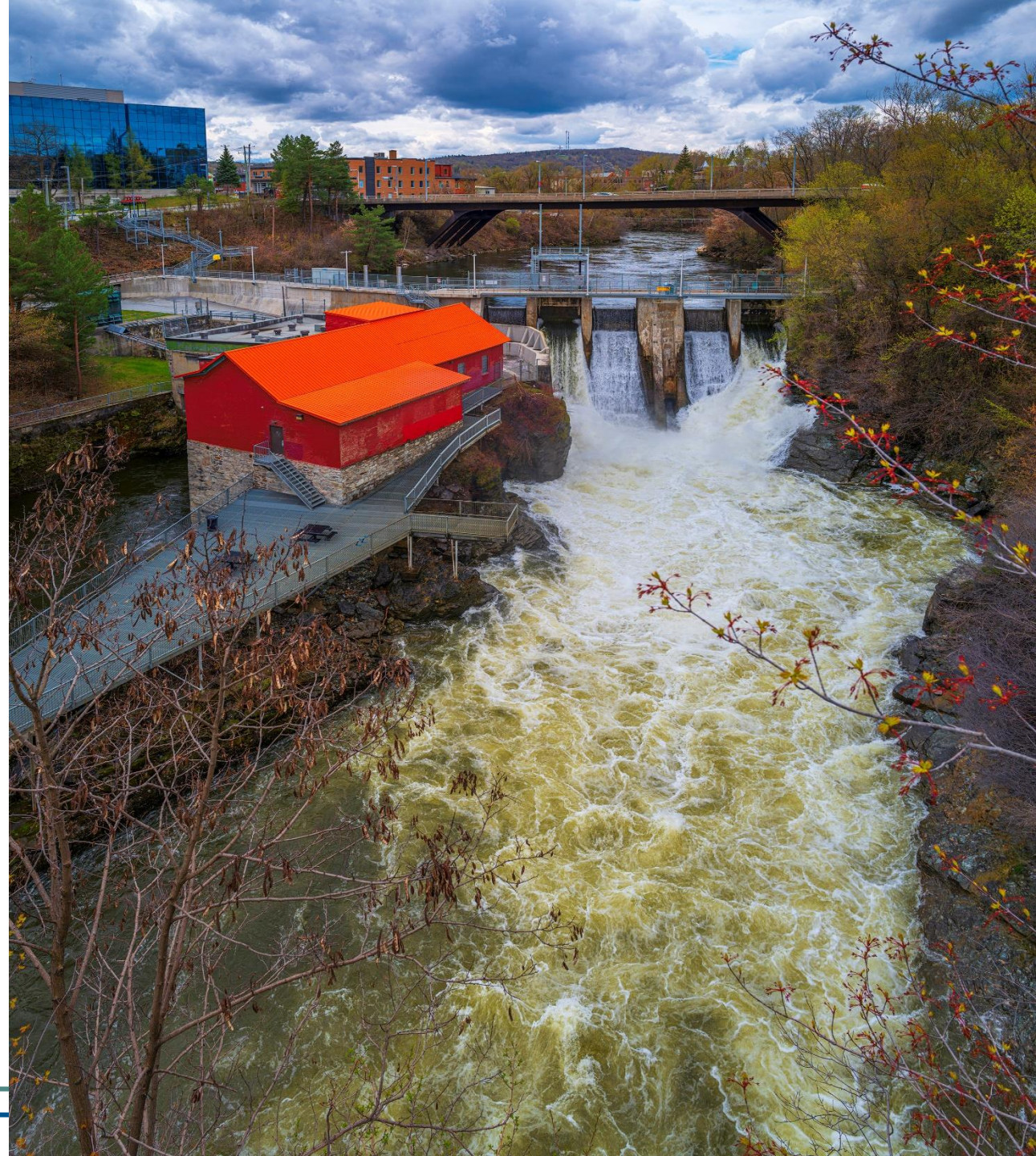
Calendar 2024

- Seabrook
  - MWhs: 8,555
  - Total Cost: $259,184
  - $/MWh: $31
- Millstone
  - MWhs: 3,589
  - Total Cost: $146,911
  - $/MWh: $41

HYDRO

Calendar 2024

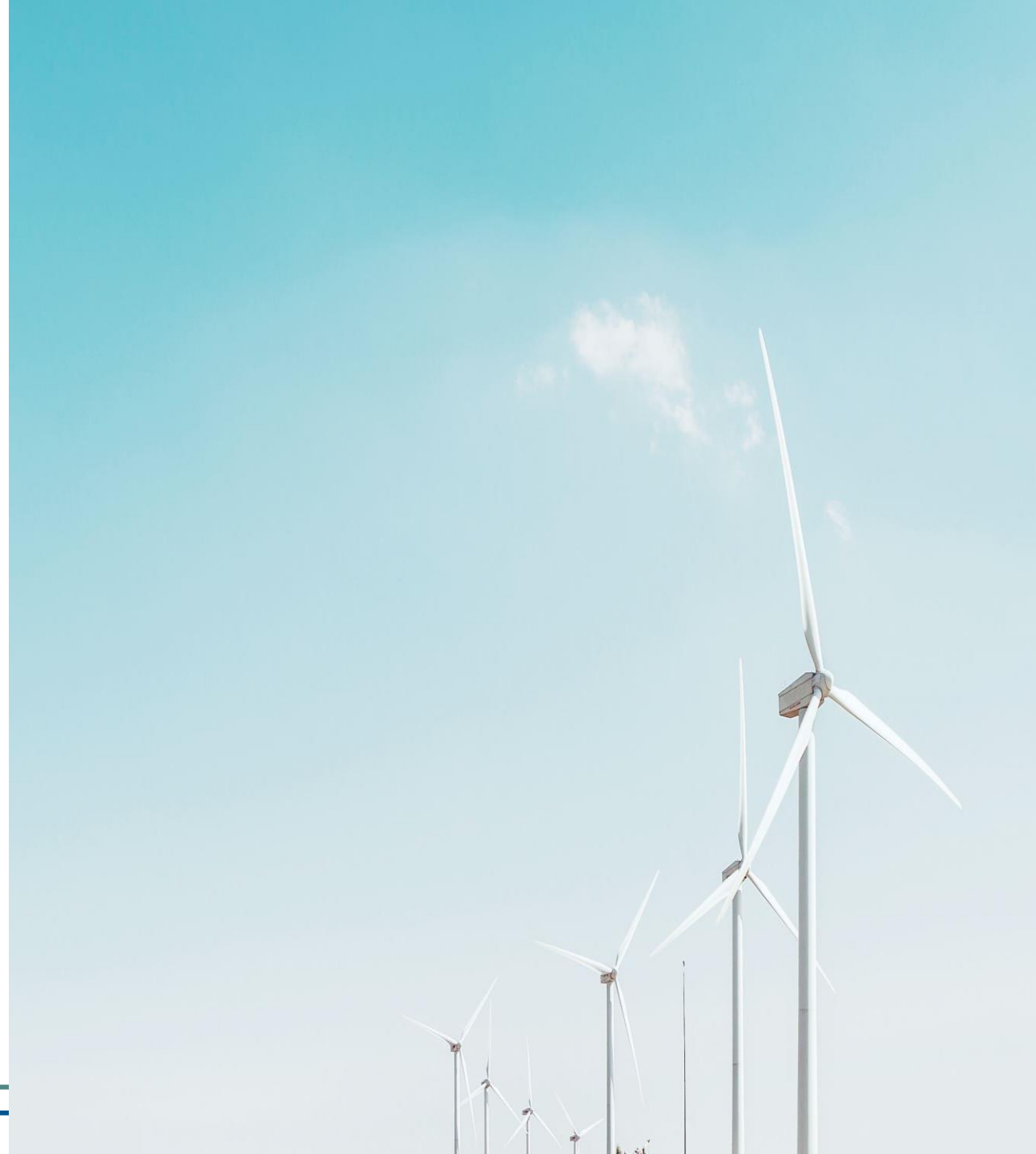
- NYPA
  - MWhs: 1,788
  - Total Cost: $58,964
  - $/MWh: $33
- Eagle Creek
  - MWhs: 517
  - Total Cost: $32,057
  - $/MWh: $62
- First Light
  - MWhs: 378
  - Total Cost: $30,537
  - $/MWh: $81



WIND

Calendar 2024

- Hancock Wind
  - MWhs: 592
  - Total Cost: $33,121
  - $/MWh: $56
- Berkshire Wind 1 & 2
  - MWhs: 1,111
  - Total Cost: $377,168
  - $/MWh: $339



FOSSIL FUEL

Calendar 2024

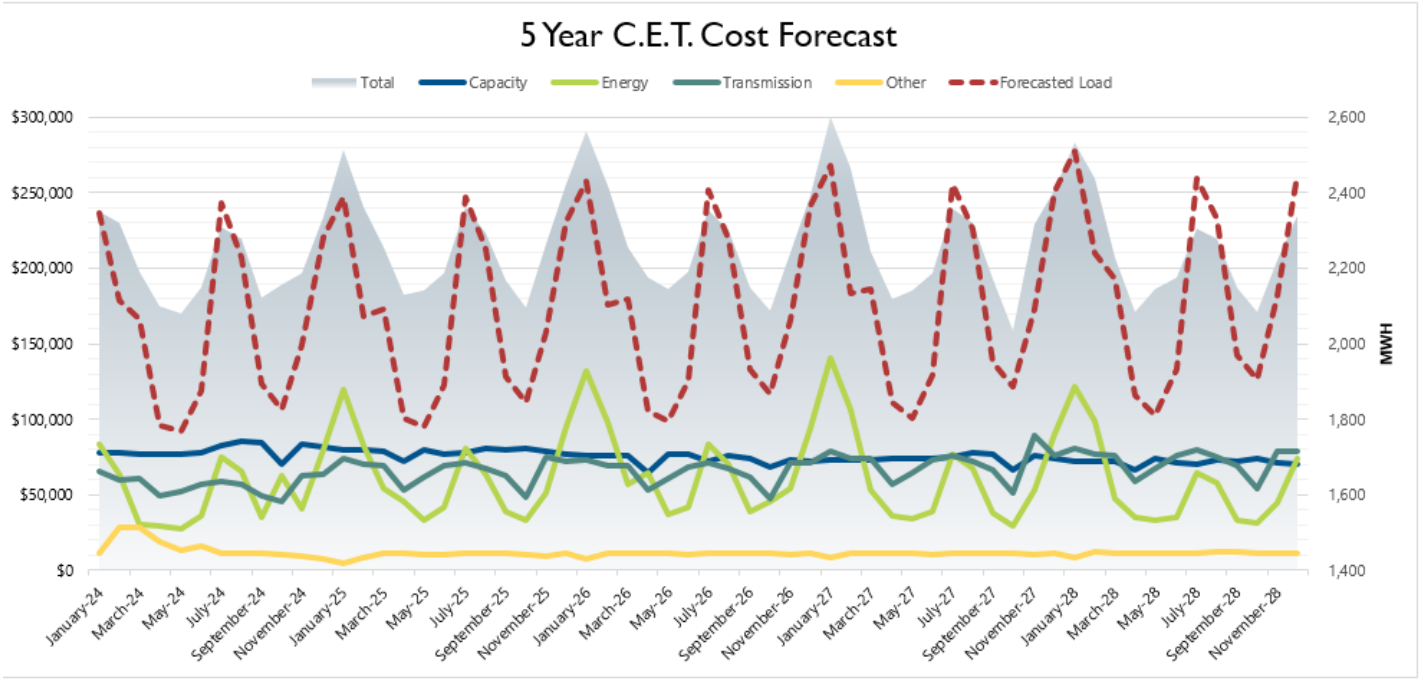
- Stony Brook
  - Capacity: $153,849

Paxton: CET Cost Forecast by Asset

Resource	Mwh	Capacity $	Energy $	Transmission $	Other $	Total $	Total $/Mwh
Resources in Front of Meter							
Berkshire Wind	1,111.073	$ 377,168.04	$ -	$ -	$ -	$ 377,168.04	$ 339.46
Eagle Creek	517.059	$ -	$ 32,057.65	$ -	$ -	$ 32,057.65	$ 62.00
FirstLight Hydro	378.326	$ -	$ 30,537.62	$ -	$ -	$ 30,537.62	$ 80.72
Hancock Wind	592.292	$ -	$ 33,121.42	$ -	$ -	$ 33,121.42	$ 55.92
Hedged Power	3,613.337	$ -	$ 220,929.59	$ -	$ -	$ 220,929.59	$ 61.14
Hydro Quebec I and II	-	$ -	$ -	$ (7,832.61)	$ -	$ (7,832.61)	$ -
Millstone	3,589.403	$ 114,203.40	$ 28,051.38	$ 4,656.36	$ -	$ 146,911.14	$ 40.93
NYPA	1,788.271	$ 13,015.92	$ 8,798.29	$ 37,149.81	$ -	$ 58,964.02	$ 32.97
Open Position Power	4,415.198	$ -	$ 237,815.83	$ -	$ -	$ 237,815.83	$ 53.86
Seabrook	8,555.047	$ 219,743.57	$ 38,771.41	$ 669.37	$ -	$ 259,184.35	$ 30.30
Stony Brook Intermediate	-	$ 100,078.32	$ -	$ 4,417.31	$ -	$ 104,495.63	$ -
Stony Brook Peaking	-	$ 46,167.60	$ -	$ 3,187.11	$ -	$ 49,354.71	$ -
Resources in Front of Meter Total	**24,560.006**	**$ 870,376.85**	**$ 630,083.18**	**$ 42,247.35**	**$ -**	**$ 1,542,707.38**	**$ 62.81**
Capacity							
ISO Capacity Net Charge	-	$ 96,924.89	$ -	$ -	$ -	$ 96,924.89	$ -
ISO Net Forward Reserve	-	$ (13,704.67)	$ -	$ -	$ -	$ (13,704.67)	$ -
Capacity Total	**-**	**$ 83,220.22**	**$ -**	**$ -**	**$ -**	**$ 83,220.22**	**$ -**
Transmission							
ISO OATT Charge (RNS)	-	$ -	$ -	$ 644,352.50	$ -	$ 644,352.50	$ -
Local Network Service (LNS)	-	$ -	$ -	$ (4,623.22)	$ -	$ (4,623.22)	$ -
Transmission Total	**-**	**$ -**	**$ -**	**$ 639,729.28**	**$ -**	**$ 639,729.28**	**$ -**
Other							
ISO Expenses	-	$ -	$ -	$ -	$ 127,578.73	$ 127,578.73	$ -
MMWEC Service Charges	-	$ -	$ -	$ -	$ 50,843.12	$ 50,843.12	$ -
Other Total	**-**	**$ -**	**$ -**	**$ -**	**$ 178,421.85**	**$ 178,421.85**	**$ -**
Grand Total	**24,560.006**	**$ 953,597.07**	**$ 630,083.18**	**$ 681,976.63**	**$ 178,421.85**	**$ 2,444,078.73**	**$ 99.51**

Paxton: 5-Year CET Cost Forecast

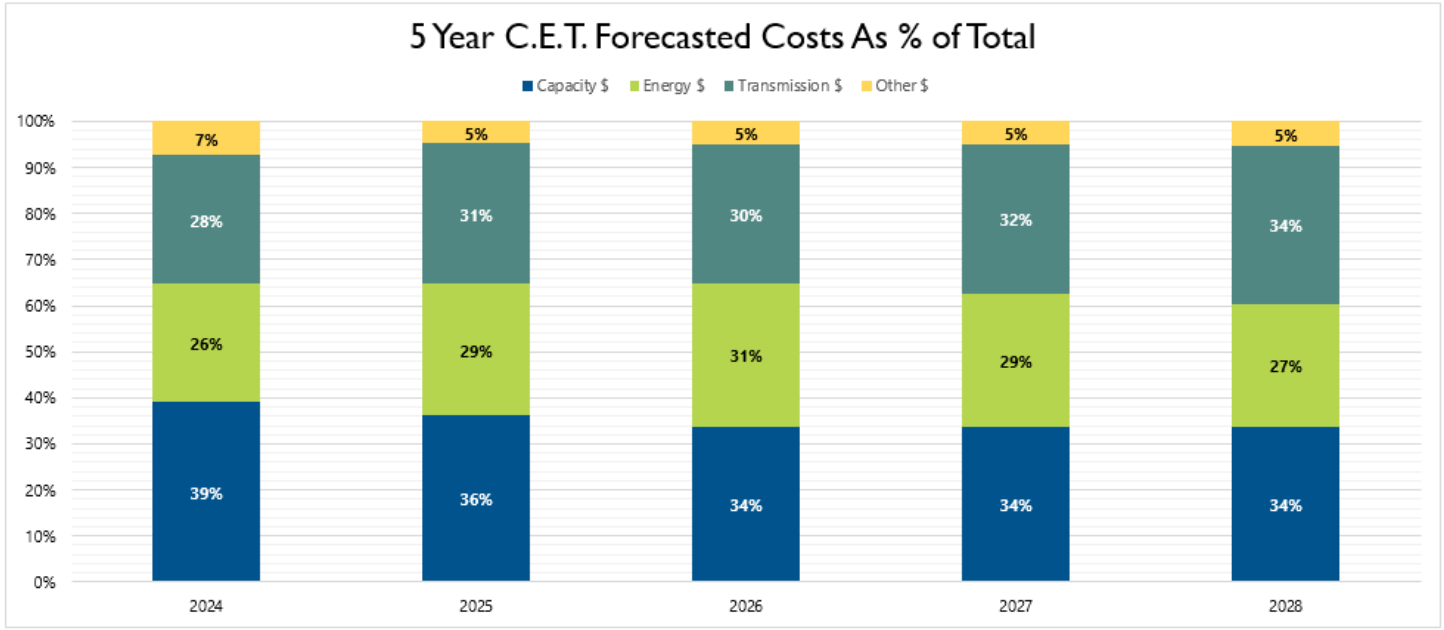
5-Year Forecasted C.E.T. Cost Summary



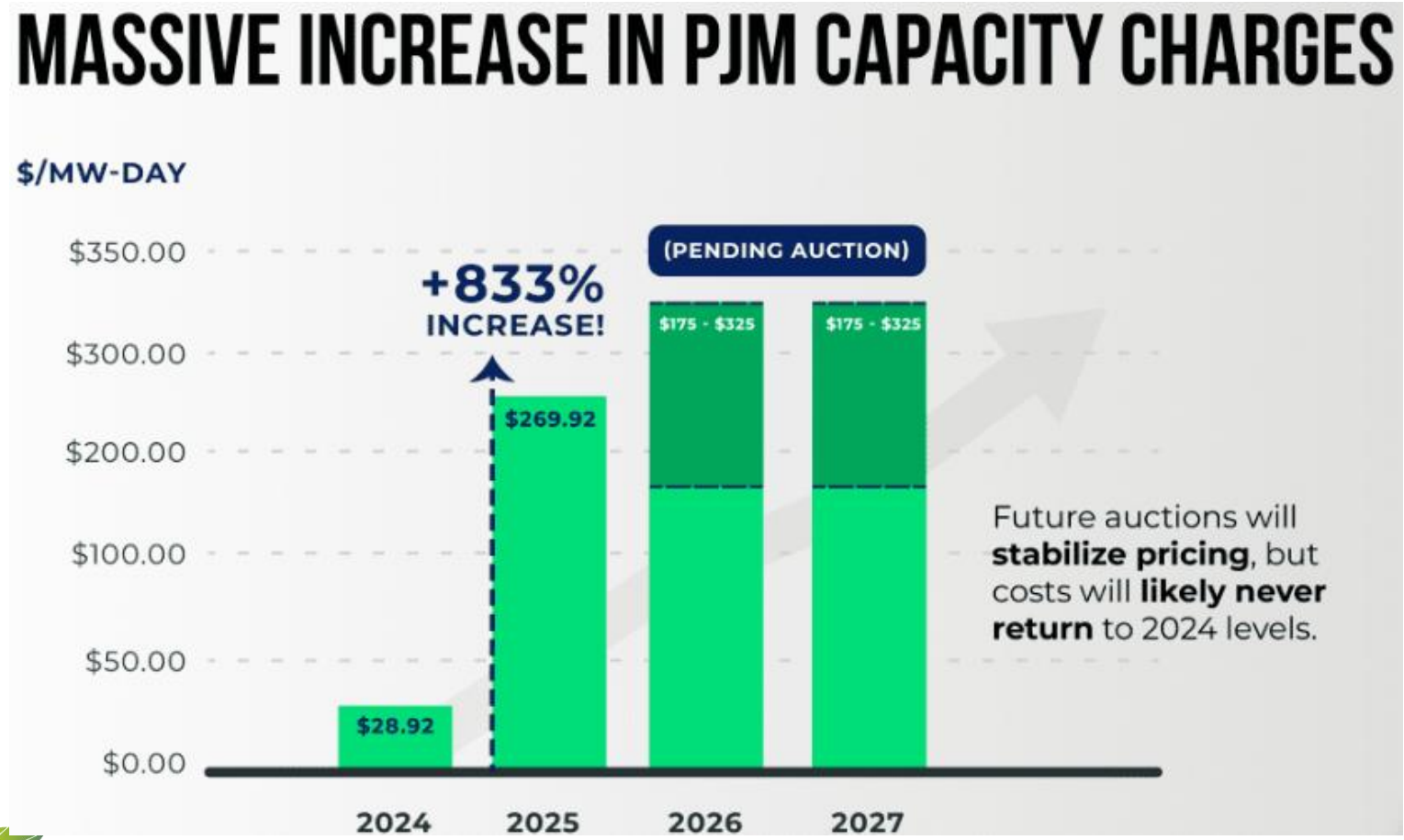
Forecasted Annual C.E.T. Costs

	Forecasted Load	Capacity		Energy		Transmission		Other		Total	
Year	MWh	Total $	$/MWh	Total $	$/MWh	Total $	$/MWh	Total $	$/MWh	Total $	$/MWh
2024	24,560	$953,597	$38.83	$630,083	$25.65	$681,977	$27.77	$178,422	$7.26	$2,444,079	$99.51
2025	24,782	$940,693	$37.96	$740,530	$29.88	$794,031	$32.04	$122,692	$4.95	$2,597,947	$104.83
2026	25,078	$883,778	$35.24	$817,370	$32.59	$787,117	$31.39	$130,296	$5.20	$2,618,560	$104.42
2027	25,374	$887,129	$34.96	$765,933	$30.19	$853,665	$33.64	$132,282	$5.21	$2,639,009	$104.00
2028	25,745	$859,414	$33.38	$677,627	$26.32	$872,110	$33.87	$135,593	$5.27	$2,544,744	$98.84

Paxton: 5-Year CET Cost Forecast as % of Total



Capacity Renewal Risk
Non-Asset Owner Beware



2025-2026 PJM Capacity Auction & Its Consumer Impact

Key Takeaways:

- Results of PJM's capacity auction for the 2025-2026 delivery year **increased capacity charges by 833%.**
- The increase in PJM energy prices will affect residential and commercial consumers **throughout 13 states.**
- Businesses can expect commercial **energy bills to increase by up to 29%** starting in **June 2025.**
- Business owners need to create a **proactive energy strategy** to navigate increasing commercial energy prices.
- On **April 21, 2025**, the FERC approved the new PJM capacity auction price cap and floor for the 2026-2027 and 2027-2028 delivery years.
- PJM's pricing floor will be **$175/MW-Day** with a cap of **$325/MW-day** to help control costs as supply and demand imbalances are addressed.

Capacity Renewal Risk
Non-Asset Owner (Closer to Home) Beware

AUCTION	Cleared Generation (MW)	Imports (MW)	Cleared DR[2] (MW)	Total Capacity Acquired (MW)	Capacity Required (MW)	Closing Price[3] (kW-month)	Excess Supply or Shortfall (MW)	Prorated Price (kW-month)
FCA #1 (2010/11)	30,865	933	2,279	34,077	32,305	$4.50	1,772	$4.25
FCA #2 (2011/12)	32,207	2,298	2,778	37,283	32,528	$3.60	4,755	$3.12
FCA #3 (2012/13)	32,228	1,900	2,867	36,996	31,965	$2.95	5,031	$2.54[4]
FCA #4 (2013/14)	32,247	1,993	3,261	37,501	32,127	$2.95	5,374	$2.53[5]
FCA #5 (2014/15)	31,439	2,011	3,468	36,918	33,200	$3.21	3,718	$2.86[6]
FCA #6 (2015/16)	30,757	1,924	3,628	36,309	33,456	$3.43	2,853	$3.13[7]
FCA #7[8] (2016/17)	31,641	1,830	2,748	36,220	32,968	$3.15[9]	3,252	$2.74[10]
FCA #8[11] (2017/18)	29,435	1,237	3,040	33,702	33,855	$7.02 / $15[12]	(143)[13]	n/a

In the NEMA (Northeast Massachusetts/Boston) region within the ISO New England Forward Capacity Market (FCM), capacity prices in 2014, for the Capacity Commitment Period (CCP) 2017/2018, showed a significant appreciation compared to the previous year.

Key Observations from 2014:

- **Higher Clearing Price:** The FCA 8 (Forward Capacity Auction) held in 2014 for the CCP 2017/2018 cleared at **$15.000/kW-month for new capacity and $7.025/kW-month for existing capacity**.
- **Comparison to Previous Year:** In FCA 7 (held in 2013 for CCP 2016/2017), the NEMA/Boston zone cleared at a **floor price of $3.150/kW-month**, with a specific NEMA/Boston price of $14.999/kW-month.
- **Driver for Appreciation:** The significant jump in price for the 2017/2018 period, as determined by the 2014 auction, was linked to a **small deficit in necessary power system resources** for that future period.

5 Year Forecasted Hedge Portfolio

MLP/Date	Legend		Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25
Paxton	5x16 Hedge %		80%	80%	81%	79%	82%	79%	81%	79%	79%	69%	68%
	7x8 + 2x16 Hedge %		81%	81%	80%	90%	79%	79%	80%	81%	90%	78%	73%
AR/	Targeted Hedge %		80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
	5x16 Variance		0%	0%	1%	-1%	2%	-1%	1%	-1%	-1%	-11%	-12%
70%	7x8+2x16 Variance		1%	1%	0%	10%	-1%	-1%	0%	1%	10%	-2%	-7%
10%	Rec. Peak Purchase Volume		-	-	-	-	-	-	-	-	-	0.30	0.40
20%	Rec. Off Peak Purchase Volume		-	-	-	-	-	-	-	-	-	-	0.20

	Legend	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26
	5x16 Hedge %	68%	63%	71%	55%	76%	66%	52%	55%	66%	59%	68%	61%
	7x8 + 2x16 Hedge %	68%	71%	78%	58%	87%	77%	64%	66%	78%	70%	78%	72%
	Targeted Hedge %	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
	5x16 Variance	-12%	-17%	-9%	-25%	-4%	-14%	-28%	-25%	-14%	-21%	-12%	-19%
	7x8+2x16 Variance	-12%	-9%	-2%	-22%	7%	-3%	-16%	-14%	-2%	-10%	-2%	-8%
	Rec. Peak Purchase Volume	0.40	0.60	0.30	0.70	0.10	0.40	1.10	0.90	0.40	0.60	0.40	0.70
	Rec. Off Peak Purchase Volume	0.40	0.30	-	0.50	-	0.10	0.50	0.40	0.10	0.20	0.10	0.20

	Legend	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27	Nov-27	Dec-27
	5x16 Hedge %	59%	62%	69%	77%	76%	65%	51%	54%	66%	72%	66%	60%
	7x8 + 2x16 Hedge %	66%	70%	78%	88%	86%	77%	62%	66%	77%	85%	78%	71%
	Targeted Hedge %	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
	5x16 Variance	-21%	-18%	-11%	-3%	-4%	-15%	-29%	-26%	-14%	-8%	-14%	-20%
	7x8+2x16 Variance	-14%	-10%	-2%	8%	6%	-3%	-18%	-14%	-3%	5%	-2%	-9%
	Rec. Peak Purchase Volume	0.80	0.60	0.30	0.10	0.10	0.40	1.00	0.90	0.40	0.20	0.40	0.70
	Rec. Off Peak Purchase Volume	0.40	0.30	-	-	-	0.10	0.50	0.40	0.10	-	0.10	0.30

	Legend	Jan-28	Feb-28	Mar-28	Apr-28	May-28	Jun-28	Jul-28	Aug-28	Sep-28	Oct-28	Nov-28	Dec-28
	5x16 Hedge %	59%	60%	69%	77%	76%	64%	50%	52%	64%	71%	66%	60%
	7x8 + 2x16 Hedge %	66%	68%	78%	88%	87%	75%	60%	64%	74%	84%	75%	69%
	Targeted Hedge %	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
	5x16 Variance	-21%	-20%	-11%	-3%	-4%	-16%	-30%	-28%	-16%	-9%	-14%	-20%
	7x8+2x16 Variance	-14%	-12%	-2%	8%	7%	-5%	-20%	-16%	-6%	4%	-5%	-11%
	Rec. Peak Purchase Volume	0.80	0.70	0.30	0.10	0.10	0.50	1.10	1.00	0.50	0.30	0.50	0.70
	Rec. Off Peak Purchase Volume	0.40	0.30	0.10	-	-	0.10	0.60	0.40	0.10	-	0.10	0.30

3 Year Forecasted Hedge Portfolio

MLP	Legend - 2028	Jan-28	Feb-28	Mar-28	Apr-28	May-28	Jun-28	Jul-28	Aug-28	Sep-28	Oct-28	Nov-28	Dec-28
Princeton	5x16 Hedge %	50%	52%	62%	74%	72%	49%	38%	39%	49%	57%	53%	50%
	7x8 + 2x16 Hedge %	53%	54%	65%	80%	77%	55%	41%	45%	54%	65%	58%	55%
	Targeted Hedge %	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
40	5x16 Variance	-30%	-28%	-18%	-6%	-8%	-31%	-42%	-41%	-31%	-23%	-27%	-30%
40	7x8+2x16 Variance	-27%	-26%	-15%	0%	-3%	-25%	-39%	-35%	-26%	-15%	-22%	-25%
20	Rec. Peak Purchase Volume (MW)	0.7	0.7	0.4	0.1	0.1	0.6	1	0.9	0.6	0.4	0.6	0.7
	Rec. Off Peak Purchase Volume (MW)	0.6	0.5	0.3	0	0	0.4	0.8	0.6	0.4	0.2	0.4	0.5

MLP	Legend - 2029	Jan-29	Feb-29	Mar-29	Apr-29	May-29	Jun-29	Jul-29	Aug-29	Sep-29	Oct-29	Nov-29	Dec-29
Princeton	5x16 Hedge %	49%	52%	62%	73%	71%	49%	37%	39%	48%	57%	52%	50%
	7x8 + 2x16 Hedge %	53%	54%	64%	80%	77%	54%	41%	45%	53%	65%	57%	54%
	Targeted Hedge %	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
40	5x16 Variance	-31%	-28%	-18%	-7%	-9%	-31%	-43%	-41%	-32%	-23%	-28%	-30%
40	7x8+2x16 Variance	-27%	-26%	-16%	0%	-3%	-26%	-39%	-35%	-27%	-15%	-23%	-26%
20	Rec. Peak Purchase Volume (MW)	0.8	0.7	0.4	0.1	0.1	0.6	1	1	0.6	0.4	0.6	0.8
	Rec. Off Peak Purchase Volume (MW)	0.6	0.5	0.3	0	0	0.4	0.8	0.7	0.5	0.2	0.4	0.6

MLP	Legend - 2030	Jan-30	Feb-30	Mar-30	Apr-30	May-30	Jun-30	Jul-30	Aug-30	Sep-30	Oct-30	Nov-30	Dec-30
Princeton	5x16 Hedge %	31%	33%	38%	43%	44%	40%	32%	32%	38%	42%	36%	31%
	7x8 + 2x16 Hedge %	34%	36%	41%	48%	49%	45%	37%	38%	43%	49%	39%	35%
	Targeted Hedge %	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
40	5x16 Variance	-49%	-47%	-42%	-37%	-36%	-40%	-48%	-48%	-42%	-38%	-44%	-49%
40	7x8+2x16 Variance	-46%	-44%	-39%	-32%	-31%	-35%	-43%	-42%	-37%	-31%	-41%	-45%
20	Rec. Peak Purchase Volume (MW)	1.3	1.1	0.9	0.7	0.6	0.8	1.1	1.1	0.8	0.7	1	1.3
	Rec. Off Peak Purchase Volume (MW)	1	0.9	0.7	0.5	0.5	0.6	0.9	0.8	0.6	0.5	0.8	1

Hedge Execution

- "9 x 24"
  - 100% of hedge target in 1st nearby nine months
  - Front-loaded scaling of hedge target from 10th month out to 24th month out
    - Why "9 x 24"
      - Common hedging practices in alternative commodities: 12 to 48 months
      - Liquidity (premium) issues in New England Power market after 24 months
      - Less than "9 x 24" would potentially produce unacceptable levels of volatility
      - Next two (2) peak nearby periods (i.e. Jan/Feb and Jul/Aug) always covered
      - In line with traditional MLP levels of risk tolerance

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Hedge Execution

- "9 x 24" – post 9th nearby

  - Minimums
    - Months 10, 11, & 12: minimum **85%** of targeted hedge amount
    - Months 13, 14, & 15: minimum **70%** of targeted hedge amount
    - Months 16, 17, & 18: minimum **55%** of targeted hedge amount
    - Months 19, 20, & 21: minimum **40%** of targeted hedge amount
    - Months 22, 23, & 24: minimum **25%** of targeted hedge amount

  - Execution on 15th of New Month
    - Buy 15% of hedge target in 10th Nearby [85% to 100%]
    - Buy 15% of hedge target in 13th Nearby [70% to 85%]
    - Buy 15% of hedge target in 16th Nearby [55% to 70%]
    - Buy 15% of hedge target in 19th Nearby [40% to 55%]
    - Buy 15% of hedge target in 22nd Nearby [25% to 40%]
    - Buy 25% of hedge target in 25th Nearby [0% to 25%]

MMWEC Public Energy Partners

5 Year Forecasted "9x24 Scaling" Hedge Portfolio

MLP/Date	Legend	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25
Paxton	5x16 Hedge %	79%	80%	80%	81%	79%	82%	79%	81%	79%	79%	69%	68%
	7x8 + 2x16 Hedge %	81%	81%	81%	80%	90%	79%	79%	80%	81%	90%	78%	73%
	Targeted Hedge %	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
AR/	Hedge % to Execute	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	68%
	5x16 Variance	-1%	0%	0%	1%	-1%	2%	-1%	1%	-1%	-1%	-11%	0%
70%	7x8+2x16 Variance	1%	1%	1%	0%	10%	-1%	-1%	0%	1%	10%	-2%	5%
10%	Rec. Peak Purchase Volume	-	-	-	-	-	-	-	-	-	-	0.30	-
20%	Rec. Off Peak Purchase Volume	-	-	-	-	-	-	-	-	-	-	-	-

MLP/Date	Legend	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26
Paxton	5x16 Hedge %	68%	63%	71%	55%	76%	66%	52%	55%	66%	59%	68%	61%
	7x8 + 2x16 Hedge %	68%	71%	78%	58%	87%	77%	64%	66%	78%	70%	78%	72%
	Targeted Hedge %	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
AR/	Hedge % to Execute	68%	68%	56%	56%	56%	44%	44%	44%	32%	32%	32%	20%
	5x16 Variance	0%	-5%	15%	-1%	20%	22%	8%	11%	34%	27%	36%	41%
70%	7x8+2x16 Variance	0%	3%	22%	2%	31%	33%	20%	22%	46%	38%	46%	52%
10%	Rec. Peak Purchase Volume	-	0.20	-	-	-	-	-	-	-	-	-	-
20%	Rec. Off Peak Purchase Volume	-	-	-	-	-	-	-	-	-	-	-	-

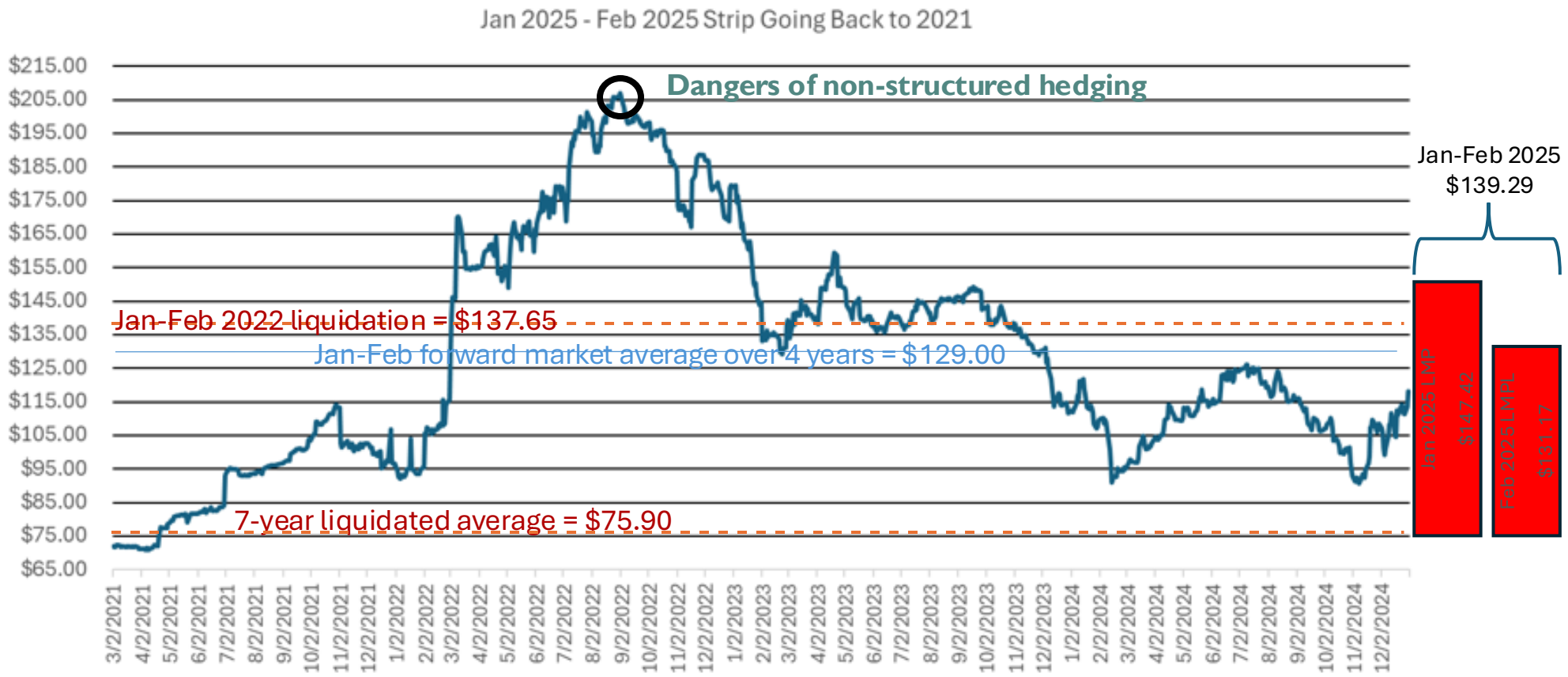
MLP/Date	Legend	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27	Nov-27	Dec-27
Paxton	5x16 Hedge %	59%	62%	69%	77%	76%	65%	51%	54%	66%	72%	66%	60%
	7x8 + 2x16 Hedge %	66%	70%	78%	88%	86%	77%	62%	66%	77%	85%	78%	71%
	Targeted Hedge %	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
AR/	Hedge % to Execute	20%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	5x16 Variance	39%	42%	69%	77%	76%	65%	51%	54%	66%	72%	66%	60%
70%	7x8+2x16 Variance	46%	50%	78%	88%	86%	77%	62%	66%	77%	85%	78%	71%
10%	Rec. Peak Purchase Volume	-	-	-	-	-	-	-	-	-	-	-	-
20%	Rec. Off Peak Purchase Volume	-	-	-	-	-	-	-	-	-	-	-	-

MLP/Date	Legend	Jan-28	Feb-28	Mar-28	Apr-28	May-28	Jun-28	Jul-28	Aug-28	Sep-28	Oct-28	Nov-28	Dec-28
Paxton	5x16 Hedge %	59%	60%	69%	77%	76%	64%	50%	52%	64%	71%	66%	60%
	7x8 + 2x16 Hedge %	66%	68%	78%	88%	87%	75%	60%	64%	74%	84%	75%	69%
	Targeted Hedge %	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
AR/	Hedge % to Execute	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	5x16 Variance	59%	60%	69%	77%	76%	64%	50%	52%	64%	71%	66%	60%
70%	7x8+2x16 Variance	66%	68%	78%	88%	87%	75%	60%	64%	74%	84%	75%	69%
10%	Rec. Peak Purchase Volume	-	-	-	-	-	-	-	-	-	-	-	-
20%	Rec. Off Peak Purchase Volume	-	-	-	-	-	-	-	-	-	-	-	-

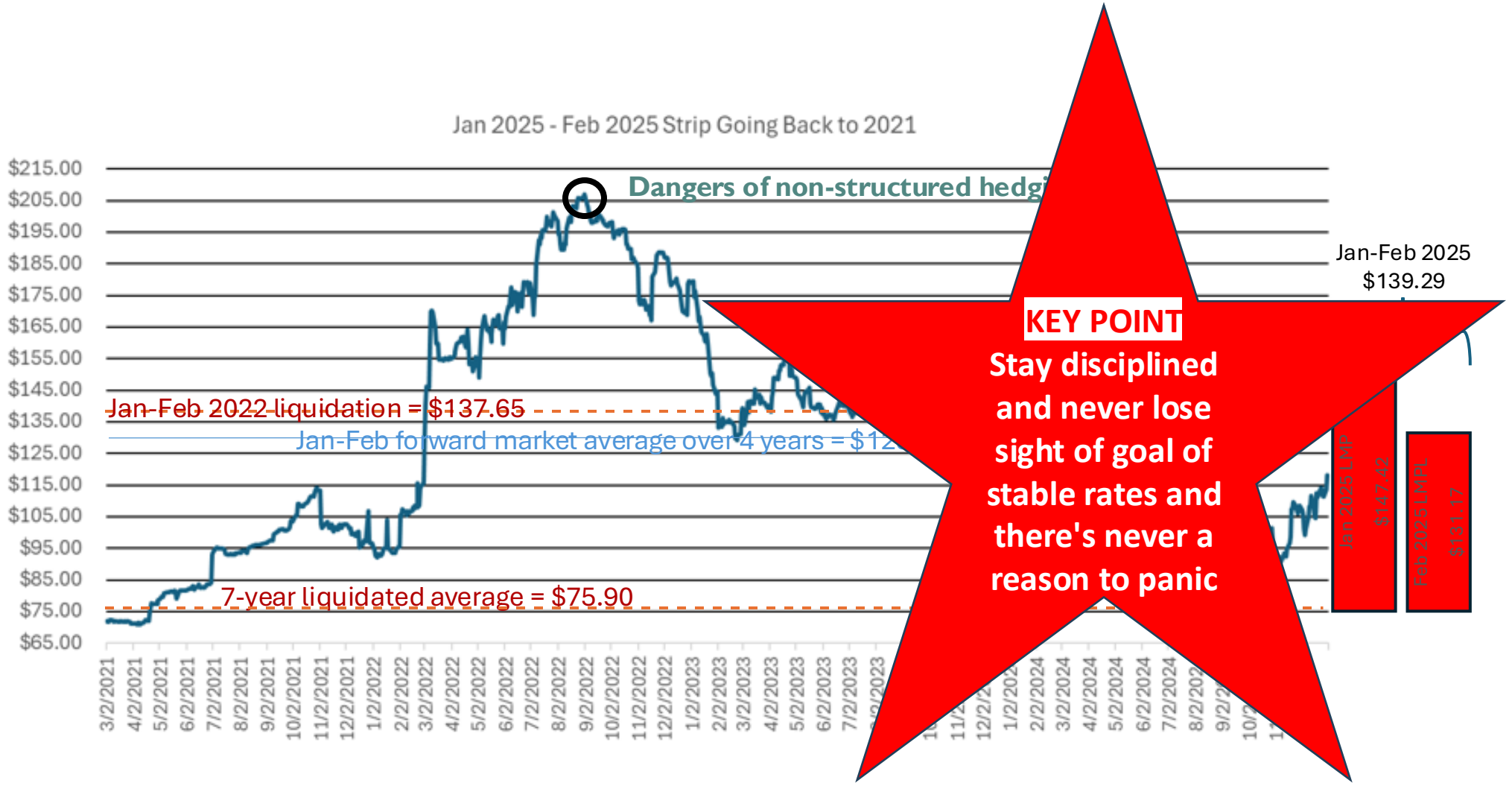
Joint Action Hedging Intangibles

- Power of One
  - **ALL** Members get Maximum Purchasing Power
- Competition For Our Business
  - Execution Optimization Through Competitive Bidding Process

Winter 2025: Leadup versus Liquidation



Winter 2025: Leadup versus Liquidation



Intrinsic Hedge

Stony Brook Intermediate performance

RT market: 4 days / 2,895MWh / $166,000

DA market: 3 days / 4,673MWh / $233,000

ISO-NE: 3 days / 10,782MWh / $919,000

18,350MWh

$1,300,000 Total Gross Margin

1% entitlement = $13,000

5% entitlement = $65,000

10% entitlement = $130,000

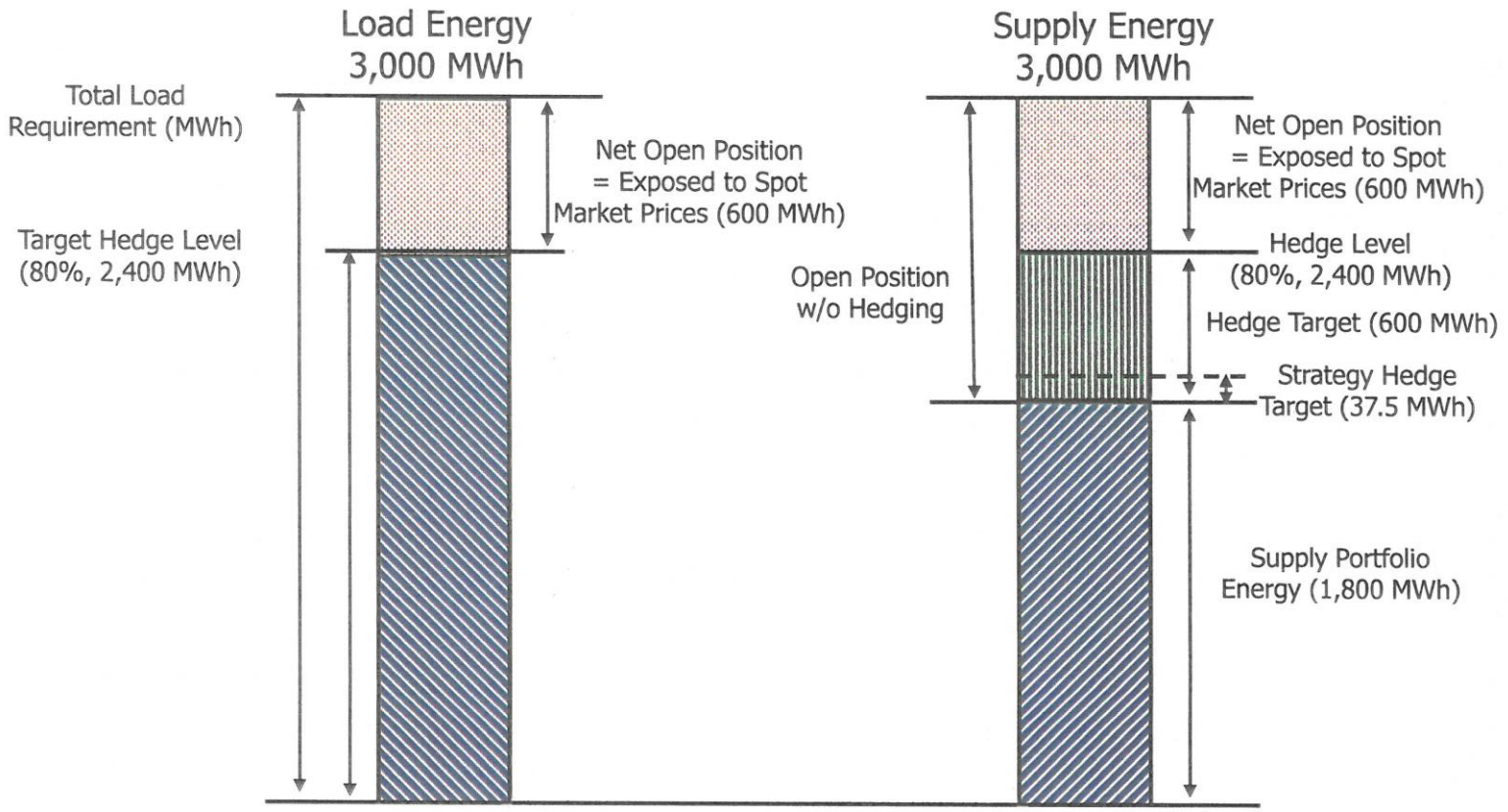
15% entitlement = $195,000

Peer Review

Resources / Hedged / Float	
80 / 20 / 0	One (1) Member
85 / 5 / 10	One (1) Member
65 / 25 / 10	One (1) Member
60 / 30 / 10	One (1) Member
50 / 40 / 10	One (1) Member
60 / 25 / 15	One (1) Member
20 / 65 / 15	One (1) Member
70 / 10 / 20	Two (2) Members
60 / 20 / 20	One (1) Member
55 / 25 / 20	Two (2) Members
50 / 30 / 20	Three (3) Members
45 / 35 / 20	One (1) Member
40 / 40 / 20	One (1) Member
35 / 45 / 20	One (1) Member
15 / 65 / 20	One (1)Member [Transitioning]
50 / 10 / 40	One (1) Member

Peer Review

Hedge Target Illustration



Peer Review

Resources / Hedged / Float		
80 / 20 / 0	1	One (1) Member
85 / 5 / 10	4	One (1) Member
65 / 25 / 10		One (1) Member
60 / 30 / 10		One (1) Member
50 / 40 / 10		One (1) Member
60 / 25 / 15	2	One (1) Member
20 / 65 / 15		One (1) Member
70 / 10 / 20	12	Two (2) Members
60 / 20 / 20		One (1) Member
55 / 25 / 20		Two (2) Members
50 / 30 / 20		Three (3) Members
45 / 35 / 20		One (1) Member
40 / 40 / 20		One (1) Member
35 / 45 / 20		One (1) Member
15 / 65 / 20		One (1)Member [Transitioning]
50 / 10 / 40	1	One (1) Member

Peer Review

Resources / Hedged / Float		Energy Cost ($/MWh)	Energy + Capacity + Transmission	Average 750kv Residential Revenue	DPU All Inclusive Rate Revenue
80 / 20 / 00	1 Member	25.20	32.70	119.14	158.10
85 / 05 / 10	1 Member	19.90	44.40	121.81	153.20
65 / 25 / 10	1 Member	34.90	62.30	151.00	213.80
60 / 30 / 10	1 Member	35.10	55.70	123.66	172.90
50 / 40 / 10	1 Member	32.90	65.40	108.08	
	4 Members	28.40	54.20	126.14	180.00
60 / 25 / 15	1 Member	30.10	52.20	110.18	170.90
20 / 65 / 15	1 Member	61.50	73.00	138.50	182.50
	2 Members	31.30	53.00	124.34	173.90
70 / 10 / 20	2 Members	34.00*	62.70*	158.50	173.90*
60 / 20 / 20	1 Member	48.90	69.50	138.32	165.90
55 / 25 / 20	2 Members	44.40**	60.50**	105.65**	168.30**
50 / 30 / 20	3 Members	49.00**	73.00**	148.22**	218.00**
45 / 35 / 20	1 Member	42.30	59.50	114.49	147.10
40 / 40 / 20	1 Member	42.60	65.20	115.88	157.30
35 / 45 / 20	1 Member	40.40	51.60	123.25	177.00
15 / 65 / 20	1 Member	78.10	91.40	124.36	168.00
	12 Members	51.40	68.70	132.92	171.70
50 / 10 / 40	1 Member	34.80	47.60	135.15	170.20

* Only one of two provided data

** Weighted averages based on approximate peak loads

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Peak Alerts / Behind The Meter Operation

- Have been operating BTM load reducers since 2016 – earliest dispatch in MA
- Nearly 50 MW of BTM generation dispatched in June
- 93% success rate in National Grid transmission zone
- Over $28 million in savings realized for MLPs since program inception

Peak Shaving: Options

How Do We "Reduce" the Peak?

- Demand Response
  - Connected Homes
- Dispatchable Generation
  - Diesel/Gas Fired Gen Storage
  - Batteries

connected homes

6.9MW

Remote Dispatch
10MW
Dispatch Instructions
15.5MW
Summer Temp Gen
14MW
TOTAL = 39.5MW

11.2MW

How Much is Peak Shaving Worth?

- $45,000/MW-year for avoided capacity (1 hour)
- $185,000/MW-year for avoided transmission (12 hours)

Peak Shaving Results

2017
Eversource: 11 of 12
National Grid: 12 of 12
ISO-NE [capacity]: YES
38 peaks called

2018
Eversource: 12 of 12
National Grid: 12 of 12
ISO-NE [capacity]: YES
46 peaks called

2019
Eversource: 12 of 12
National Grid: 12 of 12
ISO-NE [capacity]: YES
36 peaks called

2020
Eversource: 11 of 12
National Grid: 12 of 12
ISO-NE [capacity]: YES
48 peaks called

2021
Eversource: 12 of 12
National Grid: 11 of 12
ISO-NE [capacity]: NO
40 peaks called

2022
Eversource: 10 of 12
National Grid: 9 of 12
ISO-NE [capacity]: YES
46 peaks called

2023
Eversource: 10 of 12
National Grid: 10 of 12
ISO-NE [capacity]: YES
54 peaks called

2024
Eversource: 12 of 12
National Grid: 11 of 12
ISO-NE [capacity]: YES
84 peaks called

2017 - 2024
Eversource: 92%
National Grid: 91%
ISO-NE [capacity]: 7 of 8

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Peak Shaving: Results

Since 2017...

$28 million in avoided transmission and capacity costs.

LONG TERM DECARBONIZATION POWER SUPPLY OPPORTUNITIES

With the requirement of a municipal Greenhouse Gas Emissions Standard (GGES), another layer has been added to the management of Members' power portfolios. Members' power portfolios are now being examined based on meeting GGES and individual system environmental policy goals. Below is an aggregate chart of MMWEC Member power portfolios identifying the non-carbon emitting portions of the portfolios compared to the GGES targets prescribed by law.

Directionally, the current aggregate portfolio's non-carbon emitting generation accounts for approximately 50% of the aggregate systems' sales. The first GGES reporting milestones is in 2030 requiring the non-carbon portion of a portfolio to equal 50% of system sales. On an aggregated basis, the portfolio generally meets the requirements without major purchases. The gap widens for 2040 when the requirement expands to 75% of system sales attributable to non-carbon emitting generation. The portfolio is substantially open to the 2050 net-zero requirement. For the purposes of this chart, system sales remain flat.

In anticipation of meeting the 2030 requirement, MMWEC has commenced efforts regarding the renewal of the current Canadian hydroelectric supply contract, which expires in 2025. Beyond the 2030 measuring point, the hydroelectric supply contract with NYPA will renew in 2032. These two contracts set up the navigation of the remaining gap to comply with the 2040 requirement.

To close the portfolio's gap prior to the 2040 measuring point, MWMEC is actively considering opportunities to invest and/or obtain entitlements to power that contains the environmental attributes required to comply with the GGES. The advancement of the Inflation Reduction Act (IRA) has provided an entirely new perspective on existing and prospective opportunities and their underlying indicative value propositions.

OFFSHORE WIND

Counterpart: Avangrid

Original Timeline Milestones:

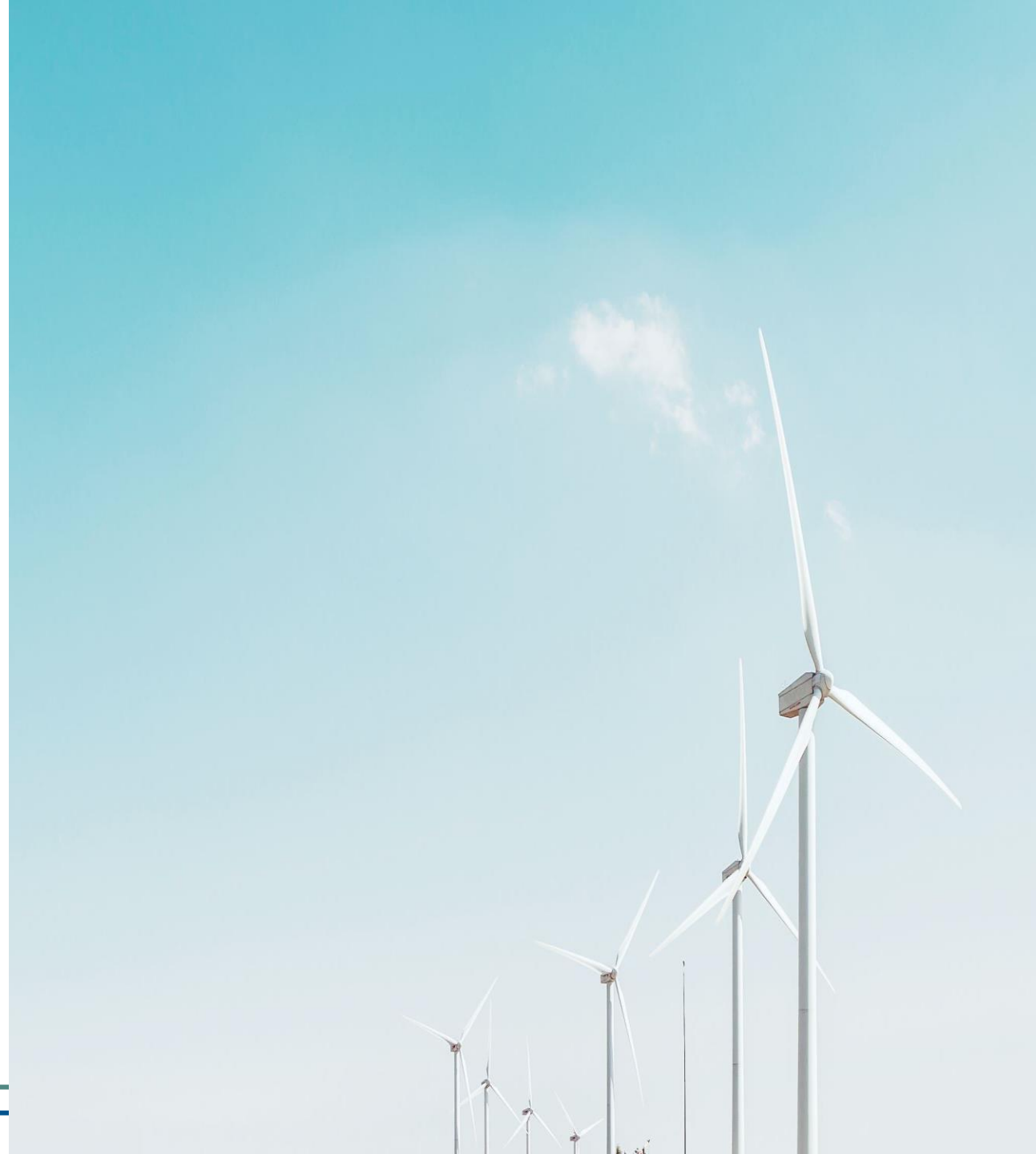
- MOU signing: February 2024
- Initial Bid Solicitation: March 2024
- Approved Allocations: September 2024

Anticipated Start Date: 2029

MMWEC Allocation: 50 MW [Permitted]

Expected Duration: 25+ year project

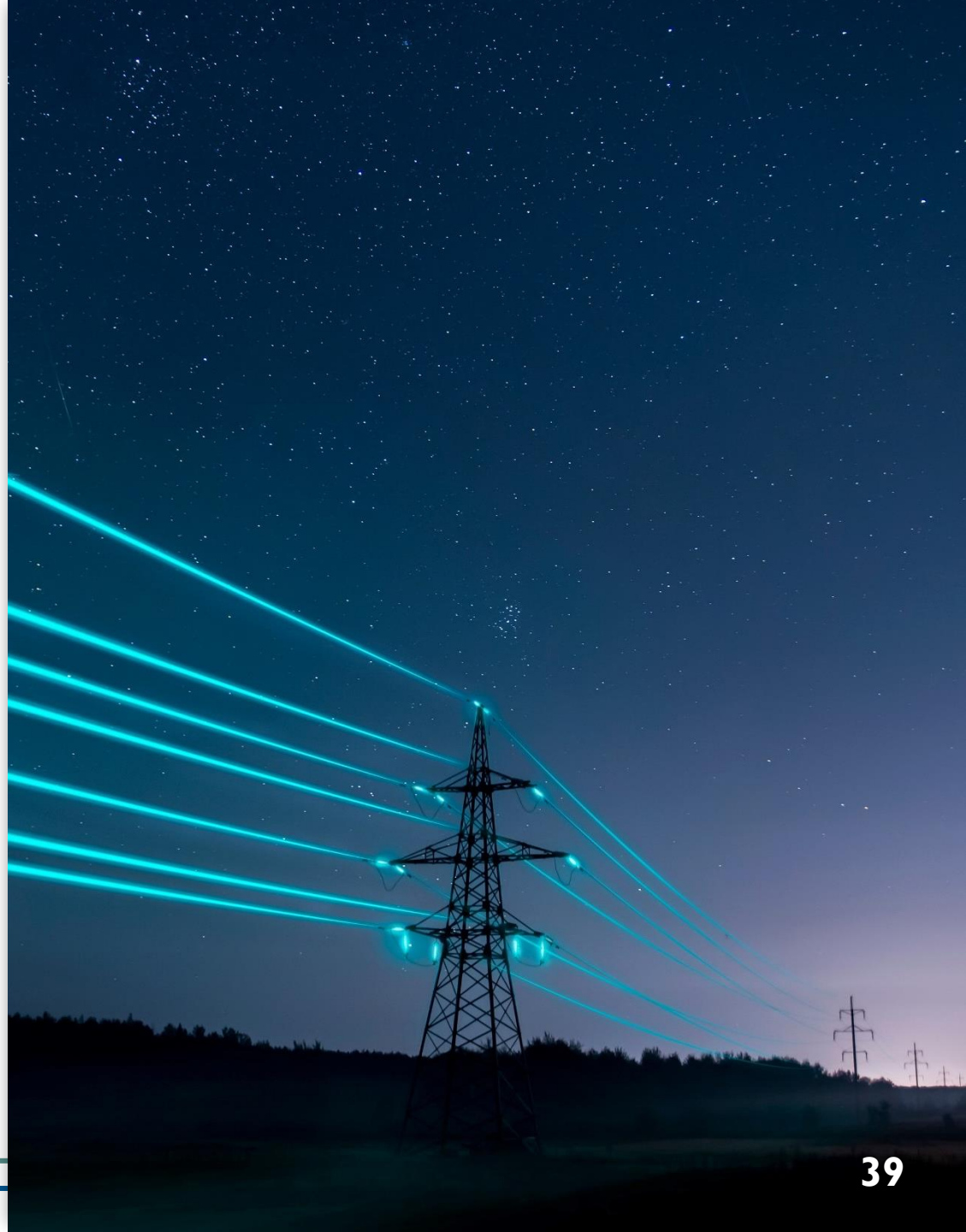
Pricing: Released when Appropriate



TRANSMISSION

Actively advocating for and exploring opportunities in public power transmission ownership.

A broad, regional transmission buildout is being advanced as both a solution to New England's winter reliability risks and a way to facilitate the development of needed renewable power generation. MMWEC's strategy is to capitalize on the forces driving a regional transmission buildout. The New England states' anticipated grant application under the U.S. Department of Energy's Grid Innovation Program creates an opportunity for MMWEC and other public power entities to own transmission. The program's administrator has specifically called for "states partnering with public utilities" and for the development of innovative approaches that include, among others, "local government agencies." The grant application timetable creates an immediate window of opportunity to seek to have MMWEC's transmission strategy, which calls for public power ownership, incorporated into the states' grant applications. MMWEC should conduct and coordinate outreach both to state officials and to other New England public power entities to advocate for a public power ownership carve out option, which can reasonably be characterized as a way to improve the likelihood that the state's application is selected for funding. If successful, the carve out will give MMWEC the option of pursuing ownership of regional transmission.

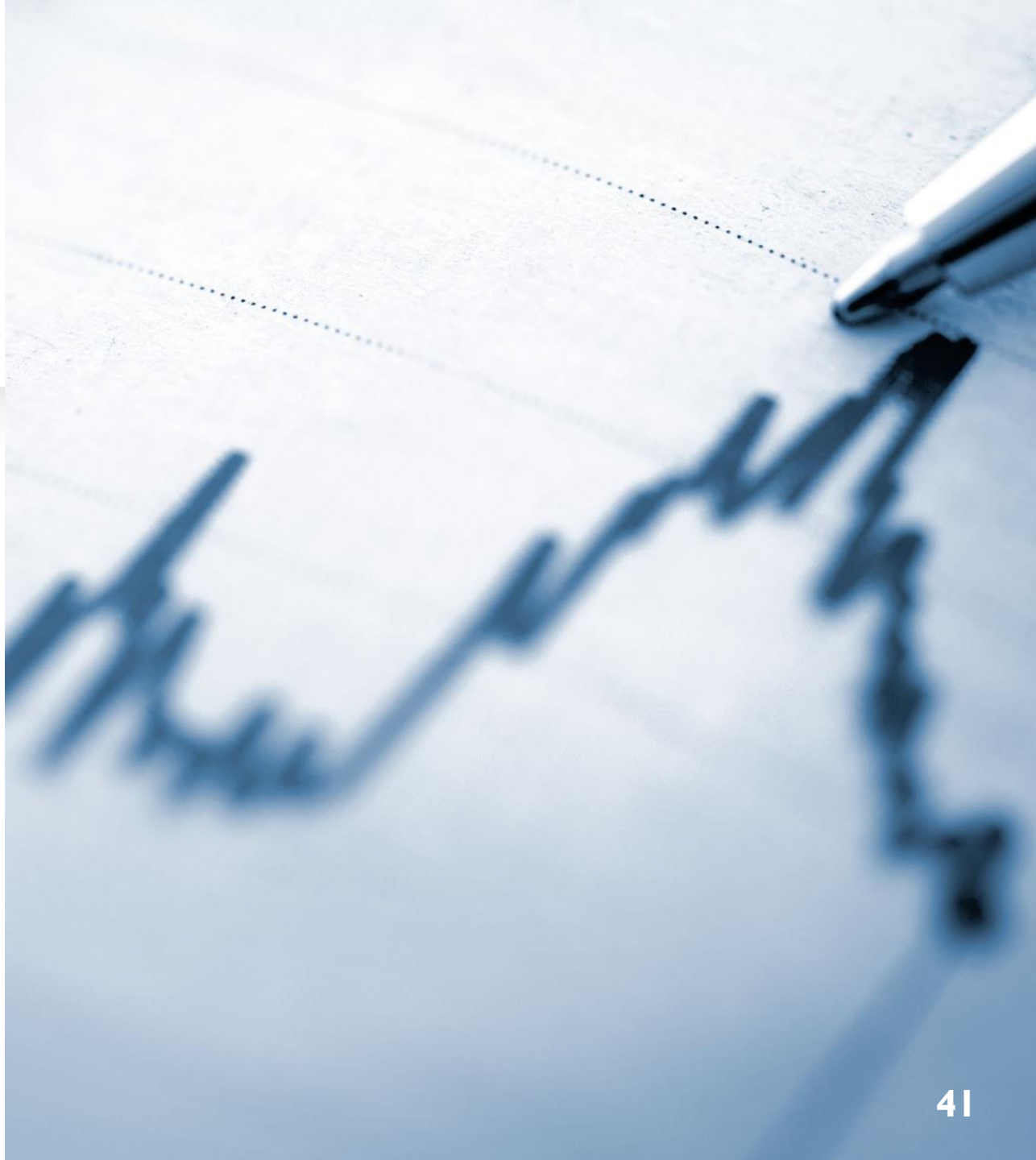


BATTERIES

MMWEC has continued to lead the development of behind the meter (BTM) battery projects in Member service territories. MMWEC selected **Lightshift Energy (formerly Delorean Power)** as the best value for all participants. MMWEC negotiated a memorandum of understanding (MOU) with Lightshift to help lock in the contract shared savings on behalf of participants. To streamline contracting, MMWEC will develop a set of form contract documents including an energy storage services agreement between participants and Lightshift, as well as an administrative services agreement between MMWEC and participants to help administer the ESSAs. Since the initial round, several other MLPs have expressed an interest in joining the project. In the next weeks, participants will hold board votes to authorize general managers of participants to execute the form agreements. It is expected that the first phase of the projects will achieve commercial operation in the first quarter of 2024. Ten systems have taken their Commission votes and are moving forward with final negotiations of definitive agreements and commenced the siting and scoping process.

ENTITLEMENTS

The climate bill did not specify when an MLP needs to adopt a GGES, but logically it must be done before 2030 when the first GGES standard report is mandated. The sooner an MLP adopts decarbonization strategies aligned with GGES, it makes it easier to see how new opportunities fit into the portfolio. Having a GGES will demonstrate that your MLP has a plan for expansion of non-carbon emitting resources in your system's portfolio. This can provide a counter to environmental advocates who may claim your MLP isn't taking action to address climate change. The execution of purchasing new renewables or RECs should be consistent with "dollar cost averaging" and layered into the portfolio over time. This ensures that all the transactions will not have the same time duration and price point, delivering diversity into your portfolio. As renewable generation continues to evolve, improved capacity factors should be realized along with declining costs.



2022 & 2023 NextZero Program Participation

Paxton Light saw over 235 energy efficiency and decarbonization audits conducted through CET.

NextZero approved over 80 energy efficiency appliance rebates for Paxton Light customers.

NextZero approved 25 heating and cooling rebates for Paxton Light.

Massachusetts Municipal Wholesale Electric Company (MMWEC) is a not-for-profit, public corporation and political subdivision of the Commonwealth of Massachusetts created by an Act of the General Court in 1975 and authorized to issue tax-exempt debt to finance a wide range of energy facilities. MMWEC provides a variety of power supply, financial, risk management and other services to the state's consumer owned municipal utilities.

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MASSACHUSETTS MUNICIPAL
WHOLESALE ELECTRIC COMPANY
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