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Comprehensive Current Rates Review Follow-up

Belmont Light

PREPARED BY: DAYMARK ENERGY ADVISORS
PREPARED FOR: BELMONT LIGHT BOARD OF DIRECTORS
DATE: OCTOBER 16, 2024

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Follow-Up Items

1. COS Results with Revised Allocators
2. Residential Customer Charge Approach
3. On-Peak Definition for Summer; Weekend versus Weekday
4. EFR TOU Buyback Credit
5. Movement towards COS
6. System Benefits and Future Time-of-Use
7. Future Rate Considerations
8. Final Recommendations and Next Steps

1. COS Results with Revised Allocators

- In reviewing the COS results, we discovered an error in the allocation of energy-related expenses and deviation from the DPU report and our load research.
- We also determined a need to reclassify a portion of generation expenses on a demand-related basis and allocated based on the summer coincident peaks (4CP).
  - The non-general purchased power expense categories such as FCM purchases, ISO purchases, etc.
- The results were significant revisions in the allocated costs among the rate classes.
  - As a change from the results presented to the Board in September, note that Low-Income and Large Municipal (E) were determined to be under-contributing towards their indicated cost of service
  - Commercial Heating (F) and Commercial Lighting (G) were determined to be over-contributing

1. COS Results with Revised Allocators (Cont.)

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Daymark Allocated Cost of Service Model

Belmont Light

Total Allocated Costs

	Total System	Residential (A)	Commercial Revenues (B)	Commercial Power Revenues (E)	Commercial Heating Revenues (F)	Commercial Lighting Revenues (G)	Low-Income Revenues (LI)	Public Street Lighting Revenues (SL)	Small Municipal Revenues (MB)	Large Municipal Revenues (ME)	Time of Use (TOU)	Total System
Operations and Maintenance Expense	23,608	15,117	2,864	3,475	261	37	303	37	215	1,074	225	23,608
Depreciation & Amortization	1,640	985	211	247	28	2	18	11	17	100	20	1,640
Taxes	8	5	1	1	0	0	0	0	0	0	0	8
Interest	435	260	54	62	7	1	5	11	4	25	5	435
Other Expenses	-	0	0	0	0	0	0	0	0	0	0	0
Margins	5,159	3,040	650	762	85	6	56	136	53	310	61	5,159
Non-Sales Revenue	(1,730)	(1,022)	(218)	(256)	(28)	(2)	(19)	(42)	(18)	(104)	(21)	(1,730)
2023 ALLOCATED COST OF SERVICE (FORECAST)	**29,120**	**18,385**	**3,561**	**4,292**	**352**	**44**	**363**	**154**	**272**	**1,406**	**291**	29,120
		63.1%	12.2%	14.7%	1.2%	0.2%	1.2%	0.5%	0.9%	4.8%	1.0%	1
2023 ALLOCATED COST OF SERVICE	**29,120**	**18,386**	**3,561**	**4,292**	**352**	**44**	**363**	**154**	**272**	**1,406**	**291**	29,120
2023 REVENUE COLLECTED AT CURRENT RATES	**29,120**	**17,331**	**4,071**	**5,069**	**393**	**63**	**227**	**70**	**322**	**1,331**	**243**	29,120
(DEFICIENCY)/SURPLUS	**(0)**	**(1,055)**	**509**	**777**	**41**	**19**	**(136)**	**(84)**	**50**	**(75)**	**(47)**	(0)
RATE INCREASE/(DECREASE) TO EQUAL COS	**0.0%**	**6.1%**	**-12.5%**	**-15.3%**	**-10.5%**	**-30.1%**	**59.68%**	**120.9%**	**-15.6%**	**5.7%**	**19.5%**	

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2. Residential Customer Charge Approach Assuming 3-Year Phase In

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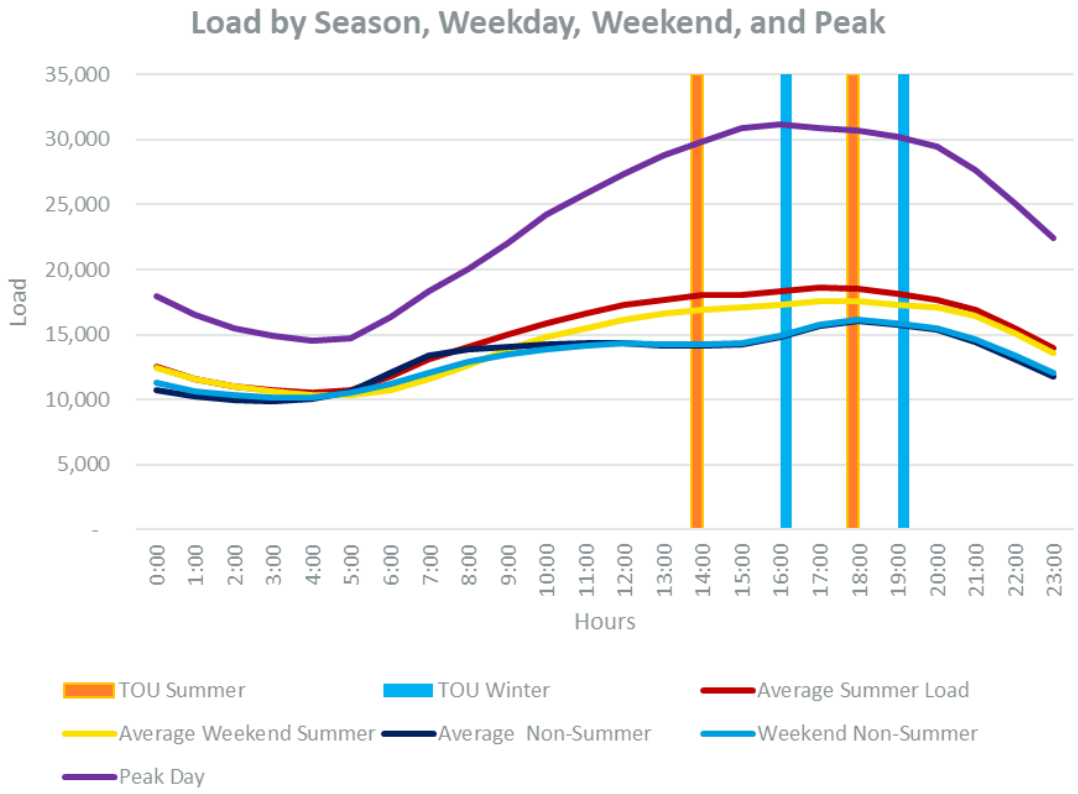
- Revenue Neutral Increase in Customer Charge
  - The following table demonstrates a movement towards the indicated COS by $3.37 each year over the next 3 years.
  - The reduction to the distribution energy charge would ~ $.0062/kWh.
  - This result will be incorporated in the movement towards cost-of-service in the following slides.
  - We recommend partial movement towards the cost of service in the interest of gradualism and to allow Belmont Light to reassess rates by the end of 2025 or 2026.

Uniform Approach				
Residential	Current	Year 1	Year 2	Year 3
Distribution Customer Charge	$12.60	**$15.97**	**$19.34**	**$22.71**
Energy Charges				
Distribution	0.07906	**0.07285**	**0.06665**	**0.06044**
Generation	0.11000	0.11000	0.11000	0.11000
Transmission	0.03844	0.03844	0.03844	0.03844
Conservation	0.00240	0.00240	0.00240	0.00240
Total Energy Charge	0.22990	**0.22369**	**0.21749**	**0.21128**

Municipal Utility	Customer Charge
Littleton	$ 5.00
Groton	$ 6.25
Wellesley	$ 9.00
Shrewsbury	$ 12.13
Belmont	$ 12.60
Taunton	$ 16.50
Concord	$ 18.50

3. On-Peak Definition for Summer; Weekend versus Weekday

- Our analysis found no rationale for trying to distinguish weekend versus weekday on-peak periods.
- We did find that moving the on-peak period from 1pm to 2pm better aligns with the system load and better reflects the periods of peak consumption.



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4. EFR TOU Buyback Credit

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- Avoided Cost Methodology
  - Examined forward energy prices to determine avoided energy costs
  - Generation capacity costs is based on 4CP and scaled according to the percent of residential load consumed during on-peak.
  - Transmission capacity costs is based on a 12CP methodology.
- We found general alignment with current rates but suggest a reduction to the summer on-peak period by 1 hour, to begin at 2 pm, in order to align with the suggested summer on-peak window.
- Evaluated on an average usage basis, TOU with reduction in on-peak buyback credit still desirable over standard Rate A with EFR, but overall benefit reduced by roughly half.

Summer			
Generation	**Avoided Cost Study**	**Current Rate**	**Difference**
On-Peak	$ 0.20744	$ 0.28501	$ 0.07757
Off-Peak	$ 0.04847	$ 0.05674	$ 0.00827
Transmission			
On-Peak	$ 0.10430	$ 0.11065	$ 0.00635
Off-Peak	$ -	$ -	$ -
Total			
On-Peak	$ 0.31174	$ 0.39566	$ 0.08392
Off-Peak	$ 0.04847	$ 0.05674	$ 0.00827

Non-Summer			
Generation	**Avoided Cost Study**	**Current Rate**	**Difference**
On-Peak	$ 0.0706	$ 0.0975	$ 0.02691
Off-Peak	$ 0.0559	$ 0.0619	$ 0.00602
Transmission			
On-Peak	$ 0.1121	$ 0.1383	$ 0.02619
Off-Peak	$ -	$ -	$ -
Total			
On-Peak	$ 0.18263	$ 0.23574	$ 0.05311
Off-Peak	$ 0.05588	$ 0.06190	$ 0.00602

5. Movement towards COS Assuming 3-Year Phase In

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	Rate A	Rate B	Rate E	Rate F	Rate G	Rate SL	Rate MB	Rate ME
Revenues ($1,000)	$ 413	$ (170)	$ (259)	$ (14)	$ (6)	$ 28	$ (17)	$ 25
Rate Impact	2%	-4%	-5%	-4%	-10%	40%	-5%	2%

- The following slides will present a 1/3 movement towards the COS result. A few assumptions were made that can be edited based on feedback:
  - Under-collection by TOU and Low Income are both contained within Residential Rate A.
  - No revenue neutral changes towards cost-of-service outside of the customer charge for Rate A.
  - The movement towards cost-of-service focused on the charge with the greatest deviation, which was the distribution energy charge almost exclusively (either upward or downward).

5. Movement towards COS Residential – Year 1

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Combined Residential Change		
	Current	2025
Distribution Customer Charge	$ 12.60	**$ 15.97**
Energy Charges		
Distribution	0.07906	**0.07887**
Generation	0.11000	0.11000
Transmission	0.03844	0.03844
Conservation	0.00240	0.00240
Total Energy Charge	0.22990	**0.22971**

Monthly Residential Bill			
average monthly usage	Current Bill	New Bill	Change
300 kWh	$ 81.57	$ 84.88	$ 3.31
550 kWh	$ 139.05	$ 142.31	$ 3.26
1000 kWh	$ 242.50	$ 245.68	$ 3.18

- The under-recovery of the distribution portion of the customer charge requires the COS movement to be concentrated in the distribution charge.
- The distribution energy charge is still lower than previous with the movement upward in the customer charge.

5. Movement towards COS Commercial – Year 1

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Cost of Service Change Non-Demand Commercial B		
	Current	2025
Distribution Customer Charge	$ 15.90	$ 15.90
Energy Charges		
Distribution	0.10010	**0.08953**
Generation	0.11600	0.11600
Transmission	0.03155	0.03155
Conservation	0.00240	0.00240
Total Energy Charge	0.25005	**0.23948**

Cost of Service Change Commercial B		
	Current	2025
Distribution Customer Charge	$ 15.90	$ 15.90
Energy Charges		
Distribution	0.06078	**0.05021**
Generation	0.09100	0.09100
Transmission	0.02910	0.02910
Conservation	0.00240	0.00240
Total Energy Charge	0.18328	**0.17271**
Demand Charges		
Distribution	6.54	6.54
Generation Winter	6.36	6.36
Generation Summer	14.50	14.50
Total Winter Demand Charge	12.90	12.90
Total Summer Demand Charge	21.04	21.04

- Rate B has the highest distribution energy charge.
- While the customer charge does not currently collect all customer costs, the distribution energy charge collects more than the COS results, thus both the demand and non-demand schedules should see the decrease in the energy component of the distribution charge.

5. Movement towards COS Commercial – Year 1 (Cont.)

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Cost of Service Change Commercial E		
	Current	2025
Distribution Customer Charge	$ 190.80	$ 190.80
Energy Charges		
Distribution	0.04645	**0.03543**
Generation	0.08200	0.08200
Transmission	0.02608	0.02608
Conservation	0.00240	0.00240
Total Energy Charge	0.15693	0.14591
Demand Charges		
Distribution	10.58	10.58
Generation Winter	10.60	10.60
Generation Summer	16.50	16.50
Total Winter Demand Charge	21.18	21.18
Total Summer Demand Charge	27.08	27.08

Cost of Service Change Commercial F		
	Current	2025
Distribution Customer Charge	$ 42.40	$ 42.40
Energy Charges		
Distribution	0.05529	0.05529
Generation	0.08400	**0.07803**
Transmission	0.02831	0.02831
Conservation	0.00240	0.00240
Total Energy Charge	0.17000	**0.16403**
Demand Charges		
Distribution	10.59	10.59
Generation Winter	9.00	9.00
Generation Summer	18.00	18.00
Total Winter Demand Charge	19.59	19.59
Total Summer Demand Charge	28.59	28.59

- Rate E is the best load factor rate code (54%). The high load factor allows for recovery of the distribution costs more quickly through the energy portion of the rate and allows for a reduction in the distribution energy charge.
- A unique rate, Rate F consumes the most during winter months (being the heating rate). The current rate recovers more than needed in the generation energy charge and can be reduced.

5. Movement towards COS Municipal MB – Year 1

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Cost of Service Change Non-Demand MB		
	Current	2025
Distribution Customer Charge	$ 15.90	$ 15.90
Energy Charges		
Distribution	0.09131	**0.07885**
Generation	0.11500	0.11500
Transmission	0.03117	0.03117
Conservation	0.00240	0.00240
Total Energy Charge	0.23988	**0.22742**

Cost of Service Change MB		
	Current	2025
Distribution Customer Charge	$ 15.90	$ 15.90
Energy Charges		
Distribution	0.05378	**0.04132**
Generation	0.08400	0.08400
Transmission	0.03412	0.03412
Conservation	0.00240	0.00240
Total Energy Charge	0.17430	**0.16184**
Demand Charges		
Distribution	6.88	6.88
Generation Winter	6.36	6.36
Generation Summer	14.50	14.50
Total Winter Demand Charge	13.24	13.24
Total Summer Demand Charge	21.38	21.38

- Consistent with the other commercial rates the distribution energy charge can be reduced.
- We do see a potential to consolidate this rate offering with the current Small Commercial Rate B as load factors and CP patterns are similar.

5. Movement towards COS Municipal ME – Year 1

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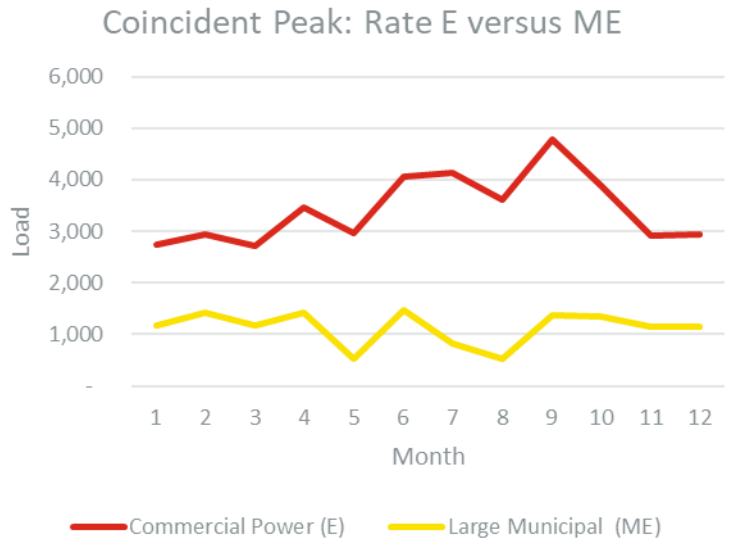
- The large municipal rate's distribution charge is very low relative to other rates.
- The increase is proposed in the energy charge portion of the distribution charge.
- Rate ME does have a different load profile than Rate E so no consolidation recommended.



Cost of Service Change ME		
	Current	2025
Distribution Customer Charge	$ 190.80	$ 190.80
Energy Charges		
Distribution	0.02335	**0.02675**
Generation	0.08200	0.08200
Transmission	0.02410	0.02410
Conservation	0.00240	0.00240
Total Energy Charge	0.13185	**0.13525**
Demand Charges		
Distribution	4.94	4.94
Generation Winter	6.36	6.36
Generation Summer	14.50	14.50
Total Winter Demand Charge	11.30	11.30
Total Summer Demand Charge	19.44	19.44

5. Movement towards COS Lighting – Year 1

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Cost of Service Change Streetlight		
	Current	2025
Energy Charge		
All kWh	$0.25853	**$ 0.36271**

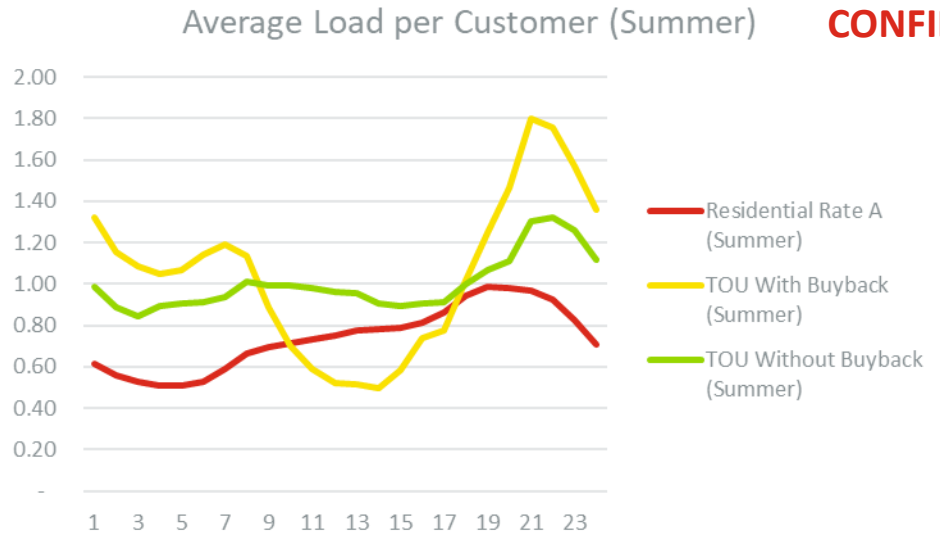
Streetlighting Annual Bill		
	2021	2025
Rate	$ 0.25853	**$ 0.36271**
Energy (kWh)	748,905	270,177
Total Bill ($1,000s)	$ 193.6	$ 98.0

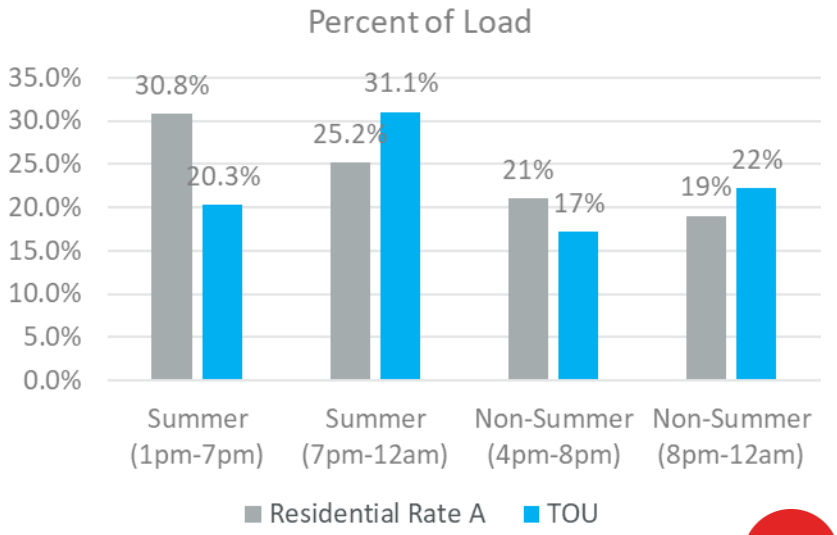
Cost of Service Change Private Lighting				
	Current		2025	
Fixed Charge $/Month				
Pole	$	1.47	$	1.47
MV 175	$	23.59		**Retire**
MV 400	$	47.79	**$**	**42.50**
LED 216 (400w eq.)	$	-	**$**	**28.32**

- Streetlighting saw a significant drop in energy consumption over the past 3 years. While the rate increase is sizable, total bill is substantially lower.
- For private lighting, we suggest the retirement of mercury vapor 175 watt.
- We suggest Belmont Light consider an LED offering as private lighting becomes replaced in the future.

6. System Benefits and Future Time-of-Use

- The average load graph shows that a significant amount of load moves to after on-peak hours.
- Before considering overall system benefits, continual refinements to the pilot to ensure best definition of window periods.





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6. System Benefits and Future Time-of-Use (Cont.)

- Demand charges offer strongest price signals and best reflect size-related costs.
- For non-distribution demand rates, we suggest utilizing the existing structure for demand charges, but redefining the billing demand as applicable only during on-peak period for summer and non-summer.
- Several benefits from utilizing demand charges for on-peak price signals including:
  - Less effort to design
  - Stronger price signal during peak periods
- Hypothetical example shows potential cost savings from shifting peak consumption.
  - Example for Rate E but applicable to all demand rates.

Cost of Service Change Commercial E		
	Current	**TOU Shift**
Max kW Off-Peak	150	200
Max kW on Peak	200	100
Monthly kWh	73,000	73,000

Cost of Service Change Commercial E		
	Current	**TOU Shift**
Distribution Customer Charge	$ 190.80	$ 190.80
Energy Charges		
Distribution	0.04645	0.04645
Generation	0.08200	0.08200
Transmission	0.02608	0.02608
Conservation	0.00240	0.00240
Total Energy Charge	0.15693	0.15693
Demand Charges		
Distribution	10.58	10.58
Generation Summer	16.50	16.50
Total Summer Demand Charge	27.08	27.08
Total Summer Bill	$ 17,063	$ 15,413

7. Future Rate Considerations

- Heat-Pump Rate Considerations:
  - Generally, customers who have adopted efficient heat-pump technology, have a lower overall cost to serve with higher load factors.
  - Straight kWh charges tend to over-recover costs when heat-pump customers are included in general residential rates.
    - Example: Unitil proposed reduction in the distribution energy charge.
  - Eligibility qualifications for the offering should be considered with minimum efficiency ratings and size requirements.

- Other Rate Considerations:
  - Demand response: Critical peak pricing, smart thermostat program, battery to grid
  - Energy only, Time-of-Use, for the commercial and municipal classes
  - Seasonal generation energy charges

8. Final Recommendations and Next Steps

Primary Considerations

- Customer charge for residential
- Revision of on-peak window (reduced to 2pm-7pm for summer)
- TOU buyback credit
- 1/3 movement towards COS
- Consolidation of Commercial B and MB
- Demand charges TOU based
- Commercial energy-only, TOU based

Other Considerations (now or later)

- Seasonal generation energy charges
- Heat pump rate
- Demand Response programs

Next steps

- Daymark: Incorporate green-light items, conduct proof of revenue, draft tariff redline revisions
- Belmont Light: Announce rate changes, schedule public hearings, perform education and outreach, conduct Board vote

Thank you

Let’s continue the conversation

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