

ZEB Program Performance Report



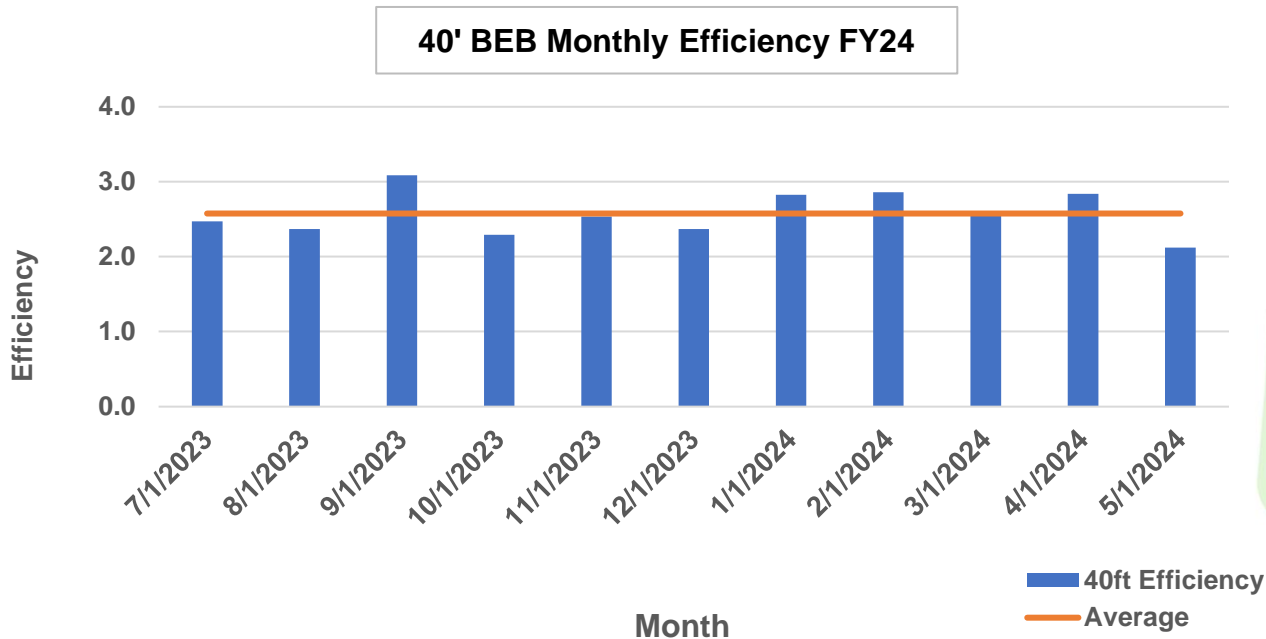
July 2022 – May 2024

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Monthly Fleet Efficiency (Total Miles)

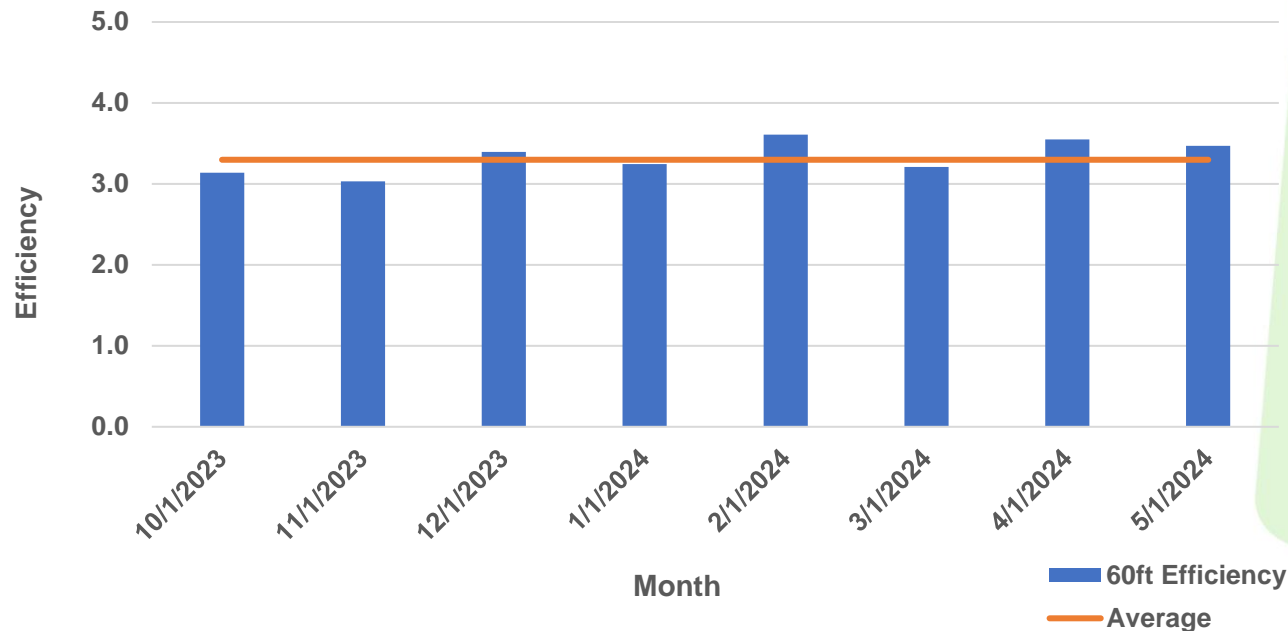


Notes:

- 2.6 Avg kwh per mile
- 466 kw (New Flyer) and 444 kw (Gillig) on board storage
- 80% battery utilization
- Scheduled Range: 130 Miles
- Efficiency calculated at meter

Monthly Fleet Efficiency (Total Miles)

60' BEB Monthly Efficiency FY24

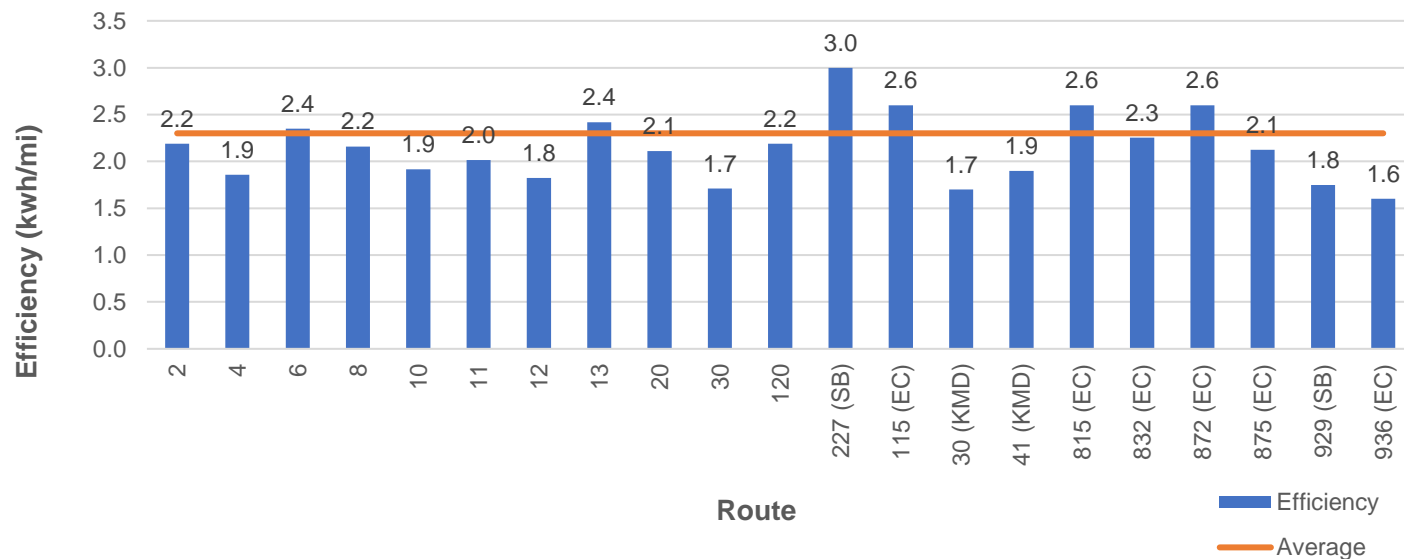


Notes:

- Avg 3.3 kwh per mile
- 610 kw on board storage
- 80% battery utilization
- Scheduled Range: 130 Miles
- Efficiency calculated at bus, not meter

Avg. Efficiency by Route (Revenue Miles)

Route Efficiency (Revenue Miles)

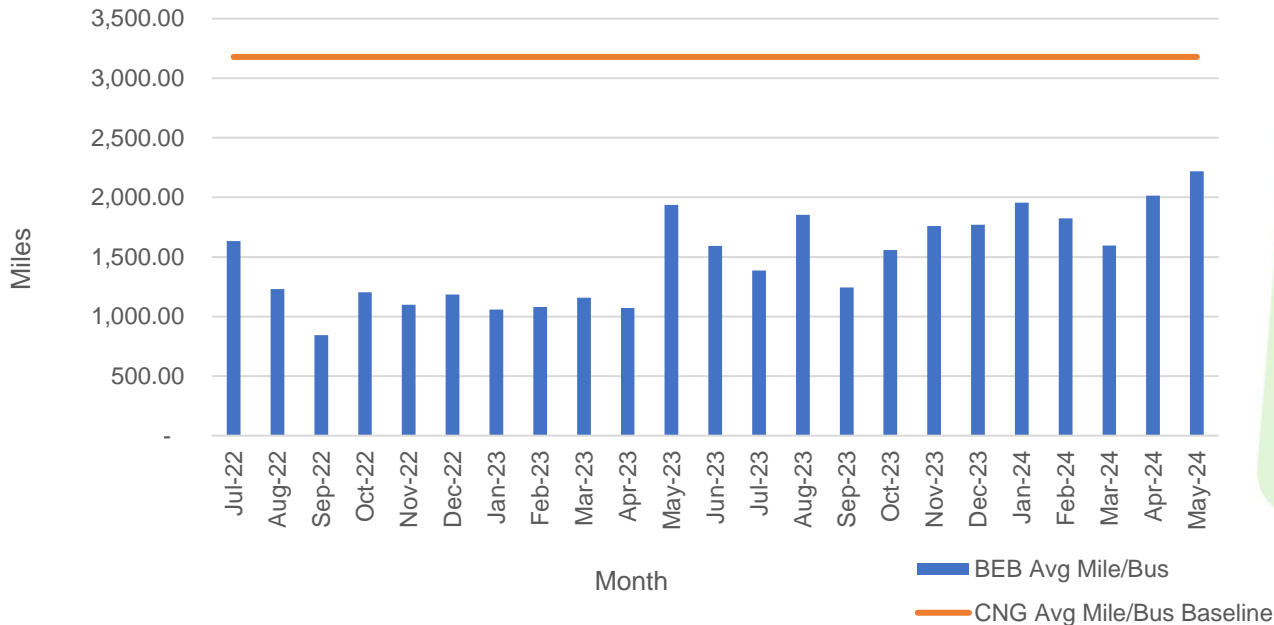


Notes:

- Efficiency calculated at bus, not meter
- Each route performs differently that effects the efficiency

CNG vs. ZEB Monthly Mileage

Monthly BEB vs. CNG Avg. Miles Per Bus

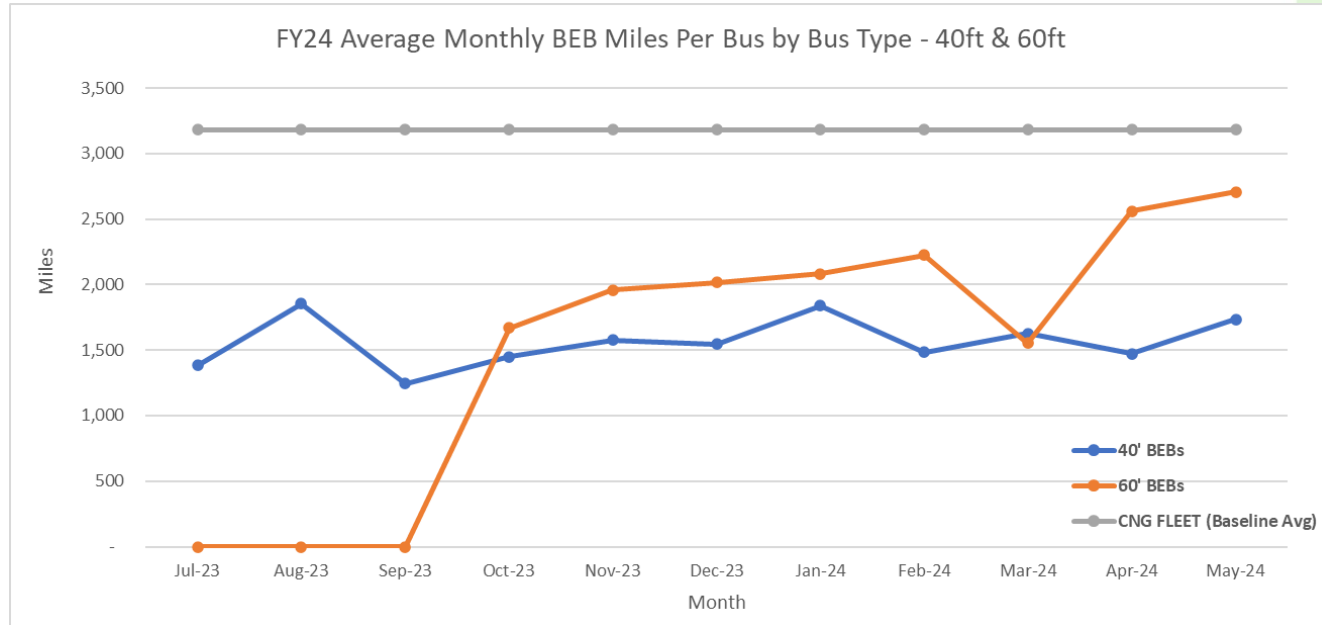


Avg. CNG	3,180
Avg. BEB	1,485

Note:

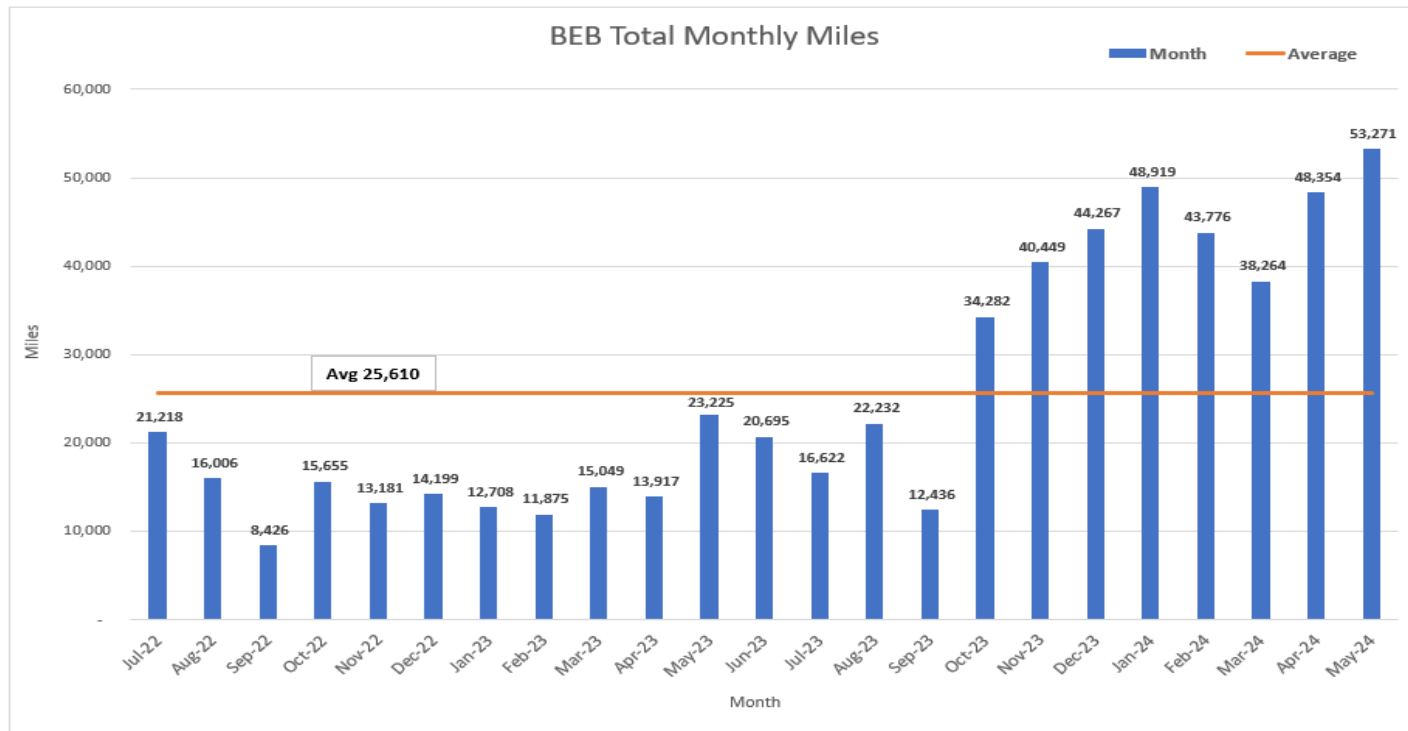
- Not 1 for 1 Replacement
- BEB Avg monthly miles/bus for FY24 is approximately 1,700/bus

Avg Monthly BEB Mileage/Bus - 40ft vs 60ft BEBs



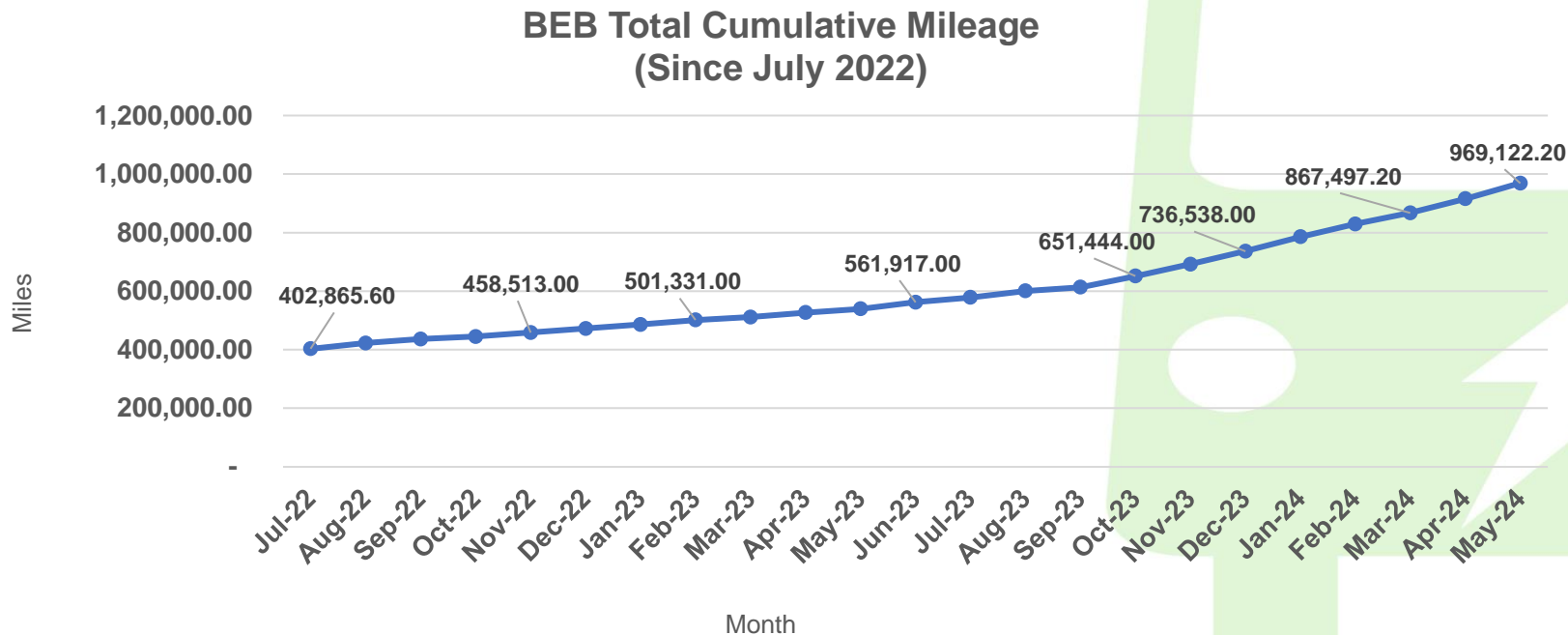
- 60ft BEBs average more miles per bus in a month than 40' BEBs thus far, since going into service in October 2023

BEB Total Monthly Mileage

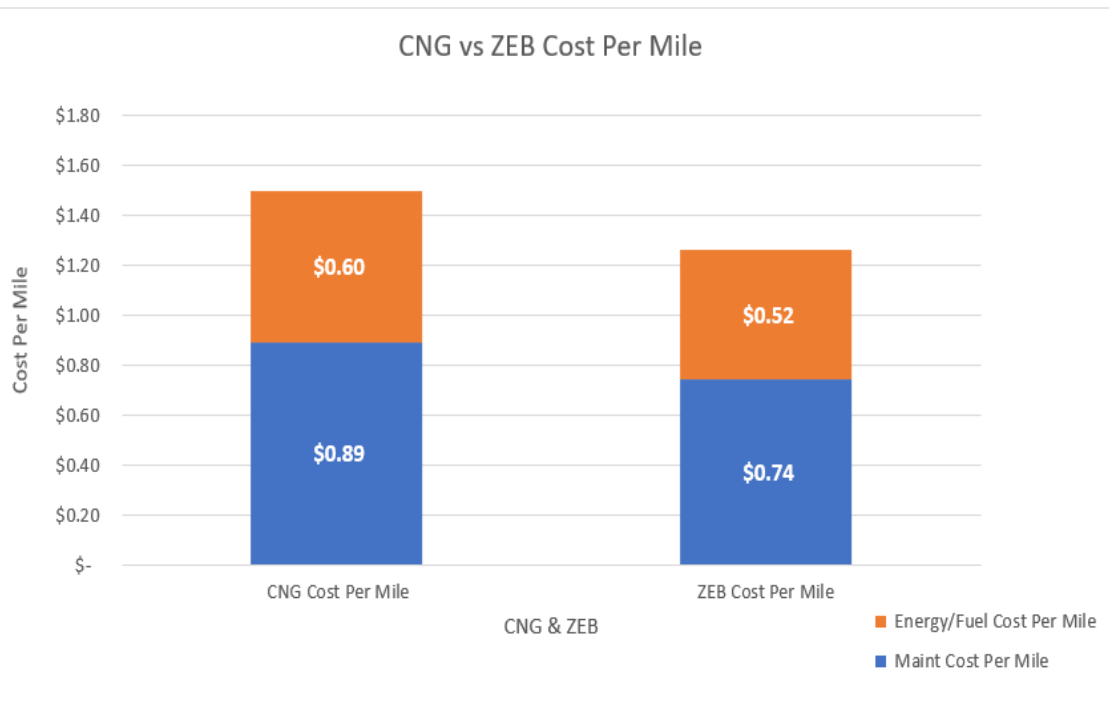


- Avg. approx. 25,000 miles/month since June 2022
- Above average since October 2023

BEB Cumulative Mileage



CNG vs. ZEB Fuel & Maintenance Cost/Per Mile



FY24	Maintenance Cost Per Mile	Energy/Fuel Cost Per Mile	Total Cost Per Mile
CNG Cost Per Mile	\$ 0.89	\$ 0.60	\$ 1.49
ZEB Cost Per Mile	\$ 0.74	\$ 0.52	\$ 1.26

Notes:

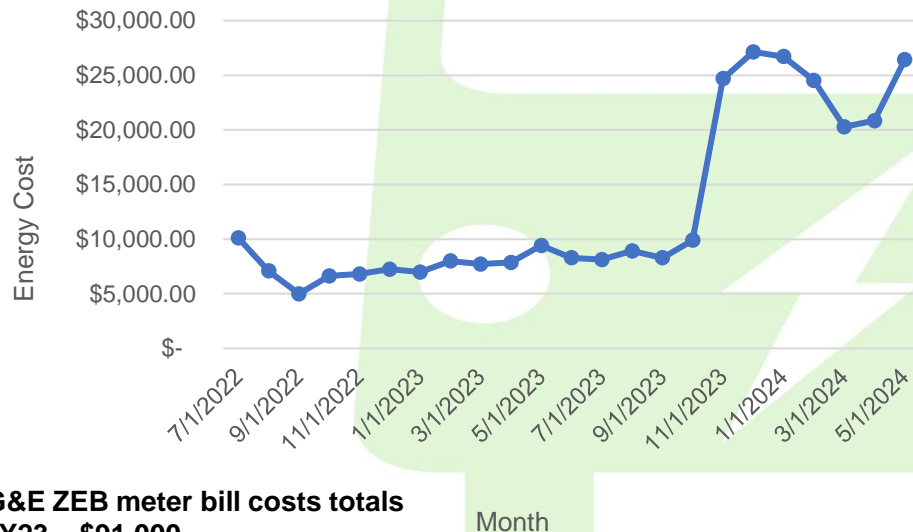
- Data from MTS & Transdev
- Maintenance cost/mile includes work order costs only
- Data from (July 2023 – May 2024)

Monthly ZEB kWh Consumption and Energy Bill Cost

Monthly kWh Consumption July 2022 - Present
(All Divisions)



Monthly ZEB Metered Energy Bill Cost

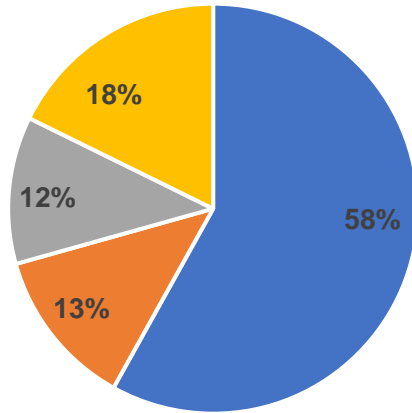


SDG&E ZEB meter bill costs totals

- FY23 – \$91,000
- FY24 – \$206,000 (through May)

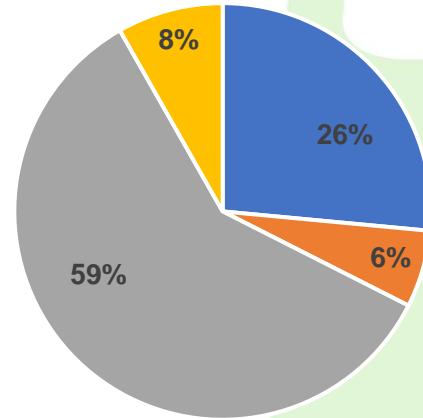
Energy Consumption by Division

FY23 Percentage of Energy Consumed by Division



■ IAD ■ EC ■ SB ■ KMD

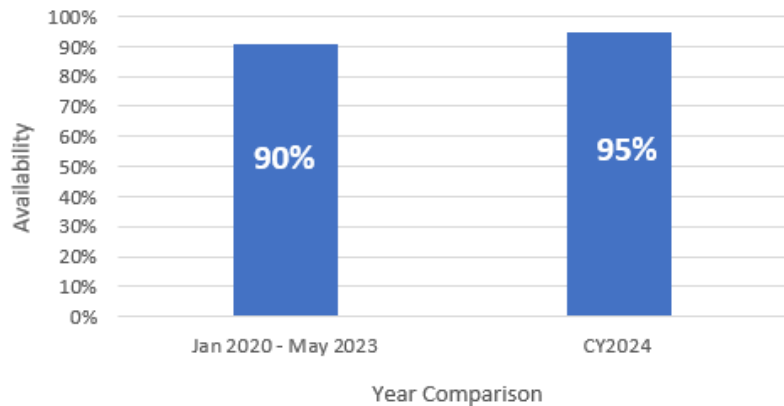
FY24 Percentage of Energy Consumed by Division



■ IAD ■ EC ■ SB ■ KMD

Availability

Charger Availability Historical vs. CY2024

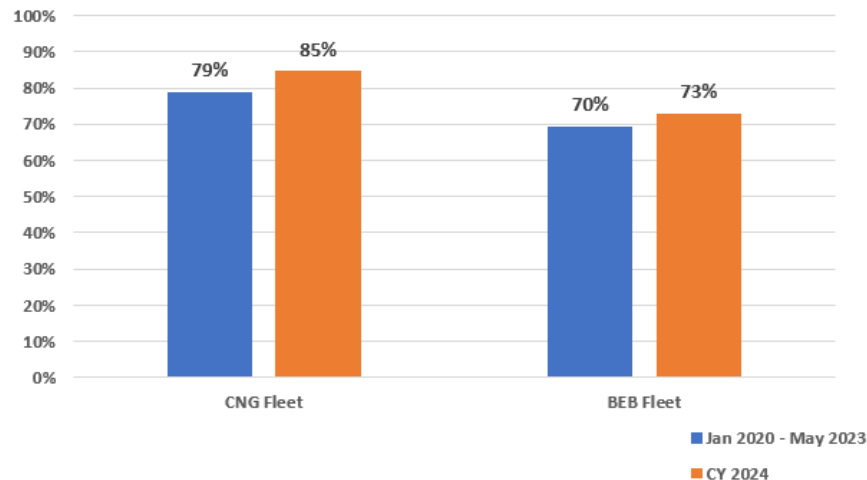


Charger Availability-

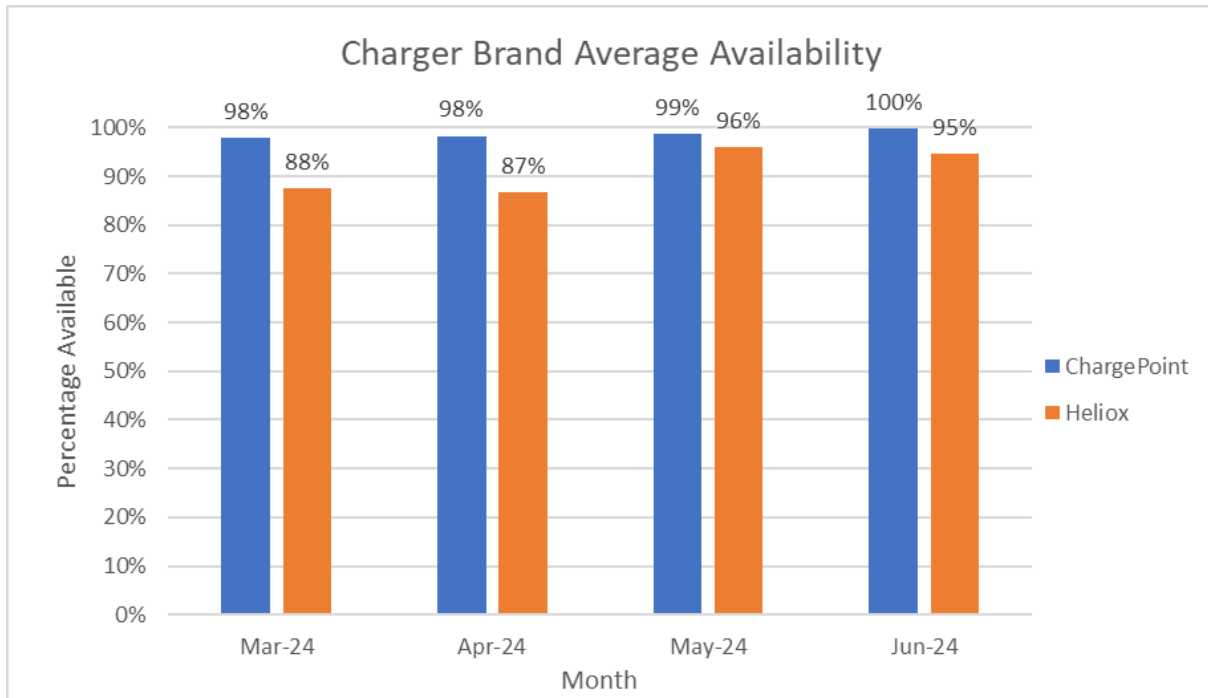
- Includes ChargePoint and Heliox Chargers

Bus Availability

BEB & CNG Bus Average Availability

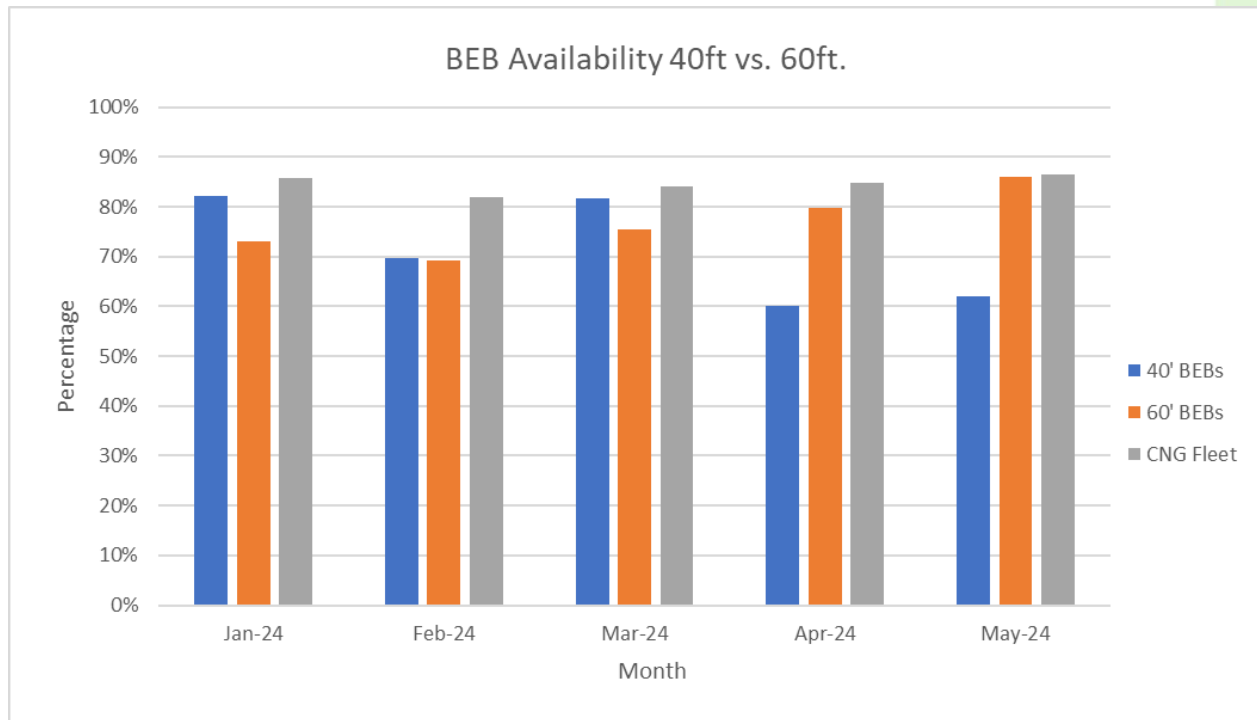


Charger Availability



- No major breakdowns with chargers
- Damaged pantograph due to tow truck – fixed in May

BEB Availability



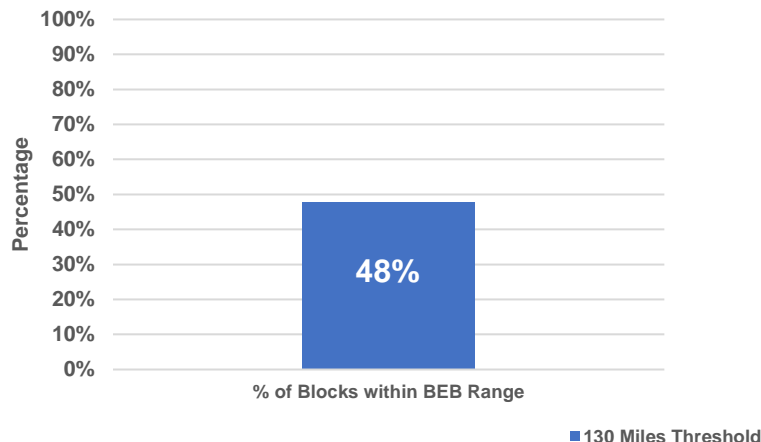
- BEBs to this point are not as available as CNGs.
- 60' BEBs so far have been slightly more available than 40' BEBs

Block Limitations

Notes:

- Avg system block length
 - 136 Miles
- Max block length:
 - 508 Miles – Rt 235

Percentage of Blocks within BEB Range for All Divisions



Route	Route Block	Division	Start	End	Duration	Distance	Vehicle	Within Range (130 Mile Threshold)
832	883202	ECBMF	200p	452p	2h52	28.737	40' Bus	In Range
2	200203	KMDGAR	1215p	803p	7h48	72.020	40' Bus	In Range
227	922708	SBMF	528a	1006a	4h38	82.433	60' Bus	In Range
10	201005	KMDGAR	538a	1255p	7h17	84.134	60' Bus	In Range
41	204103	KMDGAR	507a	1212p	7h05	100.213	40' Bus	In Range
8	100802	IADGAR	600a	344p	9h44	110.813	40' Bus	In Range
874	887402	ECBMF	620a	704p	12h44	127.876	40' Bus	In Range
3	900307	SBMF	546a	747p	14h01	129.403	40' Bus	In Range
10	201004	KMDGAR	534a	934p	16h00	156.161	60' Bus	Not In Range
8	100803	IADGAR	614a	827p	14h13	170.418	40' Bus	Not In Range
874	887401	ECBMF	500a	1011p	17h11	175.584	40' Bus	Not In Range
41	204104	KMDGAR	510a	804p	14h54	197.218	40' Bus	Not In Range
1	900101	SBMF	411a	1225x	20h14	213.432	40' Bus	Not In Range
235	223506	KMDGAR	501a	825p	15h24	378.909	60' Bus	Not In Range
235	223505	KMDGAR	459a	1122p	18h23	454.662	60' Bus	Not In Range
235	223502	KMDGAR	428a	1222x	19h54	508.803	60' Bus	Not In Range

Summary

- Environmental Factors Effect Efficiency
 - Topography
 - Speed
 - Climate
 - Driver Behavior
- Increasing monthly BEB mileage per bus trending
- BEB cost/mile is slightly cheaper than CNG buses thus far
- Reliable charging infrastructure thus far
- BEB availability is showing slight improvement but not as reliable as CNG buses
- Range (143 miles on Avg)
 - Range varies based on environmental factors (max 150 miles)
 - Limited routes/blocks available within range limitation
 - Size/Type of Bus

