

Mid-Term Modification Requests

Energy Efficiency Advisory Council

September 20, 2023



Mid-Term Modification Requests

- The Companies seek the **advice and collaboration** of the Council at this initial stage.
- Berkshire and Liberty are seeing similar trends in high demand for heat pumps and have closely coordinated to assist in Council and Department review.
- Important policy items to address in a collaborative manner.
- No vote or action is requested today; will ask for a vote at the October meeting.



Mid-Term Modification Requests

- Each Company will present basic information regarding its MTM budget increase requests and then some additional common slides.
- Our residential sector MTM has unique, nuanced issues regarding cost-effectiveness we wish to work through with you; our C&I and IE MTMs do not have this issue.
- Each Company projects its resi sector Benefit Cost Ratio will be slightly below 1.0 (0.94/0.99, post-MTM, for Liberty and Berkshire, respectively). Each Company will strive to exceed 1.0, but this is not the current forecast. This creates an issue with the statutory and Guidelines standard for cost-effectiveness measured at the sector level. G.L. c. 25 s. 25(b)(3).
- Keeping up with high demand for heat pumps drives this issue. Heat pumps reduce GHGs but do not screen well for cost-effectiveness. Each Company has vigorously promoted all elements of its plan, including electrification measures. But success in delivering heat pumps is reducing BCRs, and we want to be transparent in working through that tension with you.



Liberty Mid-Term Modification

September 20, 2023



Mid-Term Modification

**Residential Sector -
Existing Buildings:**

\$4.2M increase

- Primary drivers:
 - unprecedented interest in and demand for heat pump measures both full and partial displacements
 - Increased demand for residential weatherization

**Income Eligible Sector –
Existing Buildings:**

\$800k increase.

- Primary driver:
 - greater than planned scale of multi-family weatherization and heating system replacement projects in the pipeline

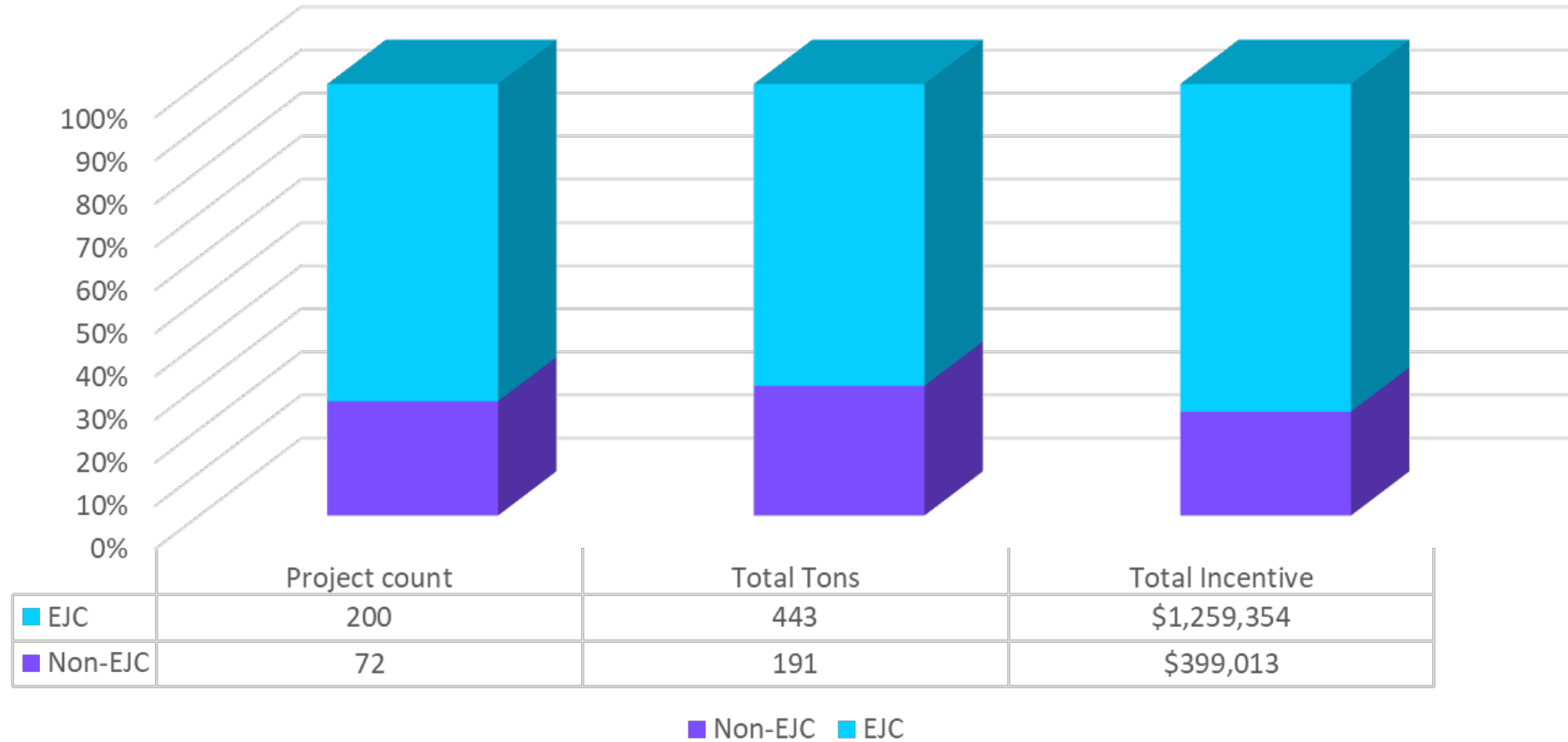
**Commercial & Industrial
Sector - Existing Buildings:**

\$1.1M increase.

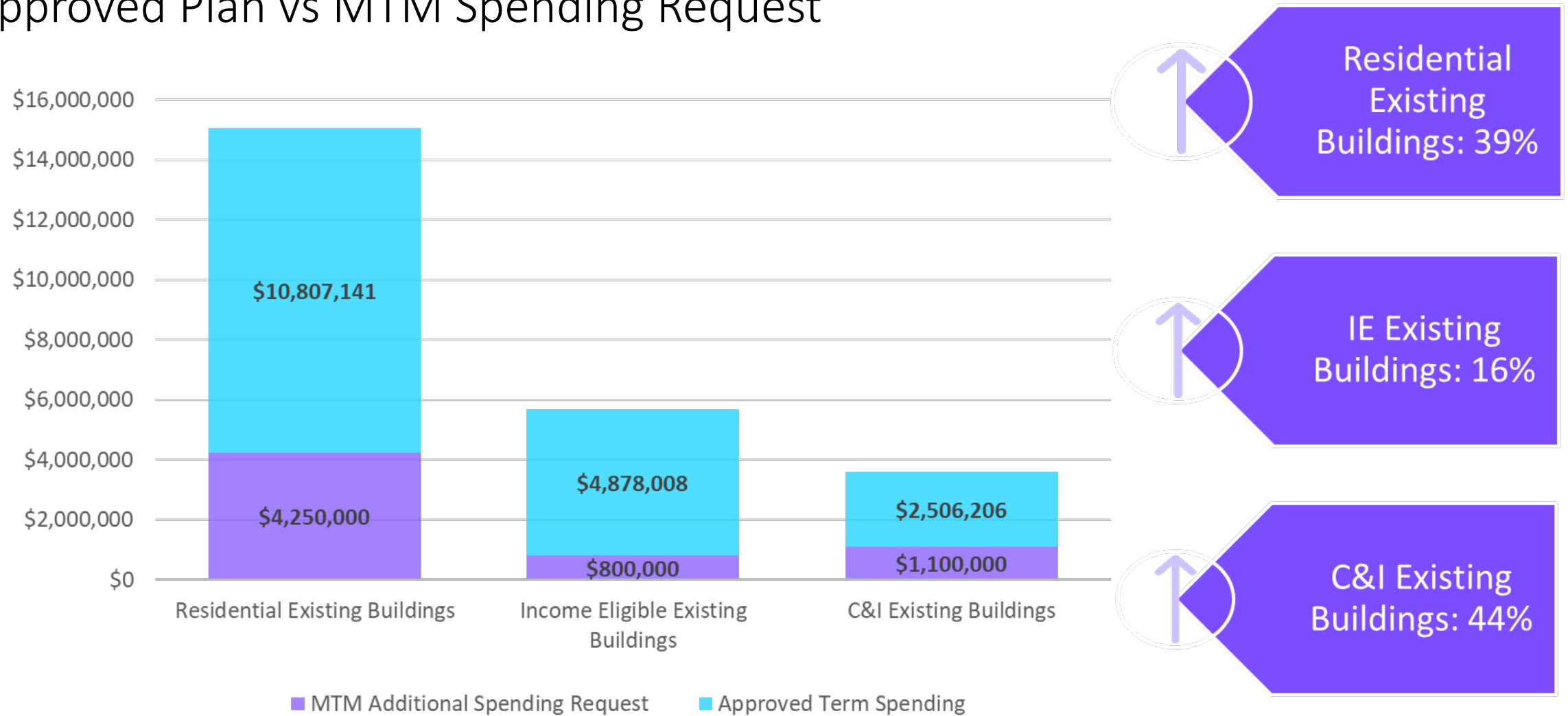
- Primary driver:
 - increasing demand for prescriptive electrification measures

Where are Heat Pumps being Installed?

Heat Pumps Installations – EJC vs Non-EJC



Approved Plan vs MTM Spending Request



Liberty MTM

Program	LIFETIME ADJ. SAVINGS (MMBTu)			BENEFITS			BUDGET				BCR	
	2022-2024 Approved	2022-2024 with Proposed MTM	% Of Goal	2022-2024 Approved	2022-2024 with Proposed MTM	% Of Goal	2022-2024 Approved (nominal dollars)	Proposed MTM	2022-2024 with Proposed MTM	% Of Goal	Total Resource Cost	Projected BCR
	(f)	(g)	(g) ÷ (f)	(h)	(i)	(i) ÷ (h)	(j)	(k)	(l)	(l) ÷ (j)		
A - Residential	759,527	928,880	122%	\$15,941,042	\$18,673,929	117%	\$12,327,822	\$4,250,000	\$16,577,822	134%	\$19,769,700	0.94
A1 - Residential New Buildings	63,009	63,009	100%	\$1,219,617	\$1,219,617	100%	\$404,842	\$0	\$404,842	100%	\$406,595	3.00
A1a - Residential New Homes & Renovations	63,009	63,009	100%	\$1,219,617	\$1,219,617	100%	\$404,842	\$0	\$404,842	100%	\$406,595	3.00
A2 - Residential Existing Buildings	696,518	865,871	124%	\$14,721,425	\$17,454,312	119%	\$10,807,140	\$4,250,000	\$15,057,141	139%	\$18,269,261	0.96
A2a - Residential Coordinated Delivery	405,664	442,131	109%	\$9,177,075	\$10,175,153	111%	\$6,855,980	\$950,000	\$7,805,980	114%	\$8,280,960	1.23
A2b - Residential Conservation Services (RCS)	-	-		-	-		\$984,505	\$100,000	\$1,084,505	110%	\$1,063,008	
A2c - Residential Retail	290,855	423,741	146%	\$5,544,350	\$7,279,159	131%	\$2,966,655	\$3,200,000	\$6,166,655	208%	\$8,925,293	0.82
A3 - Residential Hard-to-Measure	-	-		-	-		\$1,115,840	\$0	\$1,115,840	100%	\$1,093,845	
B - Income Eligible	318,642	326,732	103%	\$15,519,152	\$17,676,094	114%	\$5,198,545	\$800,000	\$5,998,545	115%	\$5,964,580	2.96
B1 - Income Eligible Existing Buildings	318,642	326,732	103%	\$15,519,152	\$17,676,094	114%	\$4,878,009	\$800,000	\$5,678,008	116%	\$5,650,466	3.13
B1a - Income Eligible Coordinated Delivery	318,642	326,732	103%	\$15,519,152	\$17,676,094	114%	\$4,878,009	\$800,000	\$5,678,008	116%	\$5,650,466	3.13
B2 - Income Eligible Hard-to-Measure	-	-		-	-		\$320,536	\$0	\$320,536	100%	\$314,113	
C - Commercial & Industrial	548,286	430,458	79%	\$11,712,539	\$10,548,593	90%	\$3,568,321	\$1,100,000	\$4,668,321	131%	\$5,539,805	1.90
C1 - C&I New Buildings	87,638	87,638	100%	\$1,253,132	\$1,253,132	100%	\$418,241	\$0	\$418,241	100%	\$478,089	2.62
C1a - C&I New Buildings & Major Renovation	87,638	87,638	100%	\$1,253,132	\$1,253,132	100%	\$418,241	\$0	\$418,241	100%	\$478,089	2.62
C2 - C&I Existing Buildings	460,648	342,820	74%	\$10,459,407	\$9,295,461	89%	\$2,506,206	\$1,100,000	\$3,606,206	144%	\$4,430,500	2.10
C2a - C&I Existing Building Retrofit	315,594	234,483	74%	\$6,487,649	\$4,715,957	73%	\$1,866,883	\$0	\$1,866,883	100%	\$2,200,132	2.14
C2b - C&I New & Replacement Equipment	145,053	108,337	75%	\$3,971,758	\$4,579,504	115%	\$639,323	\$1,100,000	\$1,739,323	272%	\$2,230,368	2.05
C3 - C&I Hard-to-Measure	-	-		-	-		\$643,874	\$0	\$643,874	100%	\$631,216	
Grand Total	1,626,456	1,686,070	104%	\$43,172,732	\$46,898,616	109%	\$21,094,688	\$6,150,000	\$27,244,688	129%	\$31,274,084	1.50



The Berkshire Gas Company Mid-Term Modification

09/20/2023



Mid-Term Modification

Residential Sector
\$2.8M increase

- Primary drivers:
 - Unprecedented interest in and demand for heat pumps measures both full and partial displacements
 - Increased cost to achieve residential Wx coupled with strong demand

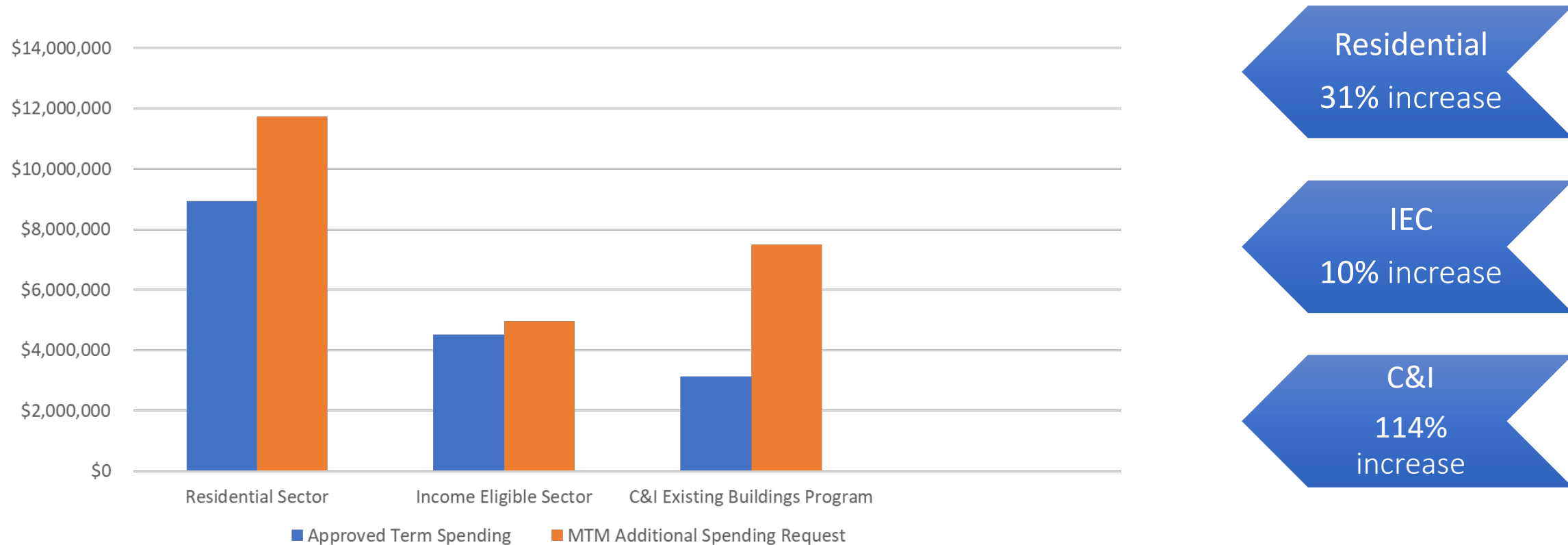
Income Eligible Sector
\$450k increase

- Primary drivers:
 - Greater than planned scale of multifamily and heating system replacement projects in pipeline

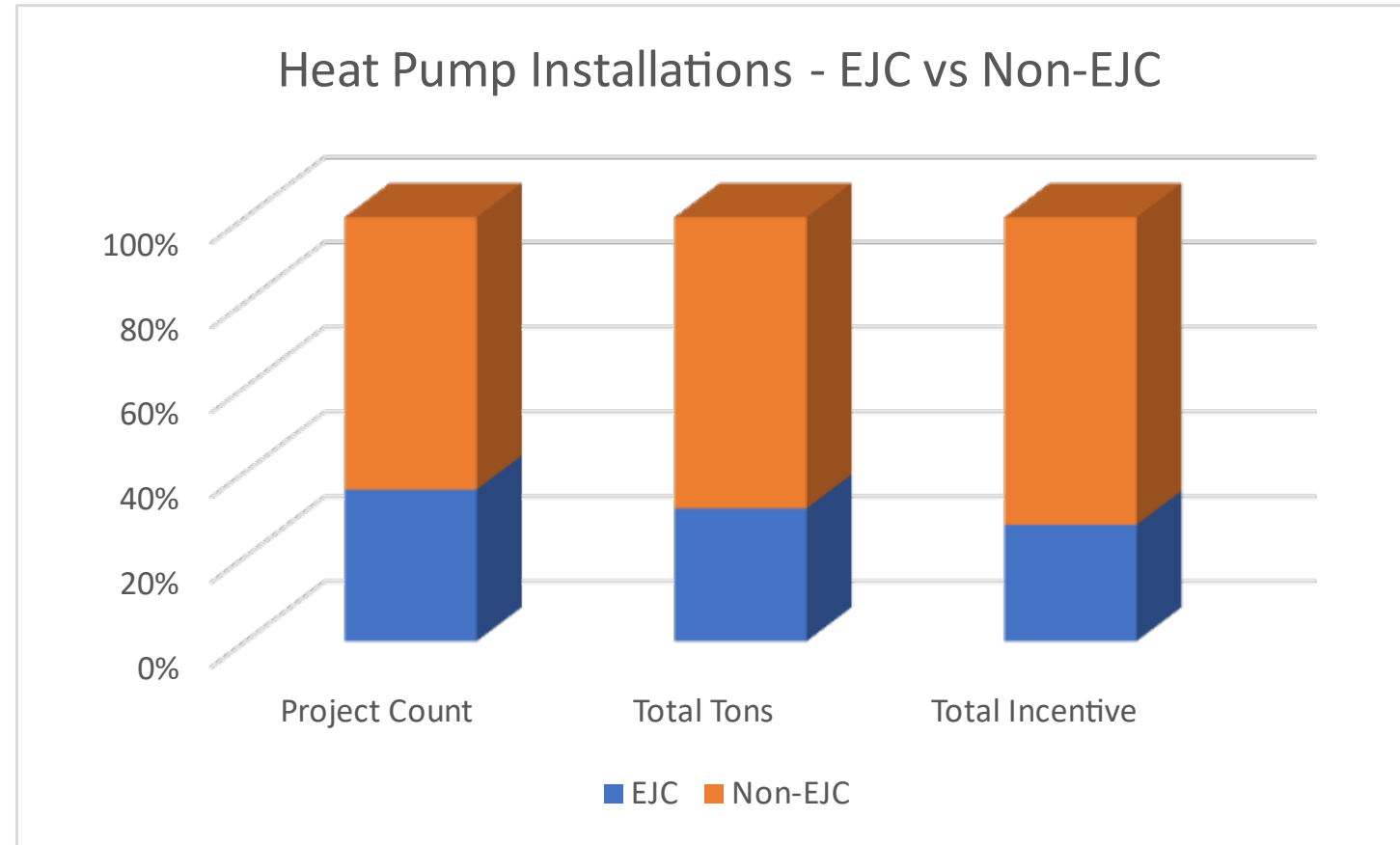
Commercial &
Industrial Sector
\$4.35M increase

- Primary drivers:
 - Unprecedented interest in and demand for heat pumps and large electrification measures both full and partial displacements
 - Greater than planned pipeline for large C&I projects both retrofit and replacement equip.

Approved Plan vs MTM Spending Request



Where are Heat Pumps being installed?



	Project Count	Total Tons	Total Incentive
EJC	36%	31%	27%
Non-EJC	64%	69%	73%

Berkshire MTM

Program	LIFETIME ADJ. SAVINGS (MMBTu)			BENEFITS			BUDGET				BCR	
	2022-2024 Approved	2022-2024 with Proposed MTM	% Of Goal	2022-2024 Approved	2022-2024 with Proposed MTM	% Of Goal	2022-2024 Approved (nominal dollars)	Proposed MTM	2022-2024 with Proposed MTM	% Of Goal	Total Resource Cost	Projected BCR
	(f)	(g)	(g) ÷ (f)	(h)	(i)	(i) ÷ (h)	(j)	(k)	(l)	(l) ÷ (j)		
A - Residential	666,409	686,675	103%	\$13,853,976	\$13,788,274	100%	\$8,941,299	\$ 2,800,000	\$ 11,741,299	131%	\$13,992,125	0.99
A1 - Residential New Buildings	33,773	33,773	100%	\$620,372	\$620,372	100%	\$242,810	\$0	\$ 242,810	100%	\$221,919	3.60
A1a - Residential New Homes & Renovations	33,773	33,773	100%	\$620,372	\$620,372	100%	\$242,810	\$0	\$242,810	100%	\$172,449	2.80
A2 - Residential Existing Buildings	632,636	652,902	103%	\$13,233,604	\$13,167,902	100%	\$8,203,812	\$2,660,000	\$ 10,863,812	132%	\$13,185,000	1.00
A2a - Residential Coordinated Delivery	390,054	360,835	93%	\$8,544,738	\$8,044,320	94%	\$4,315,460	\$950,000	\$5,265,460	122%	\$5,779,369	1.39
A2b - Residential Conservation Services (RCS)	-	-	0%	-	-	0%	\$785,462	\$180,000	\$965,462	123%	\$948,356	
A2c - Residential Retail	242,582	292,067	120%	\$4,688,867	\$5,123,581	109%	\$3,102,890	\$1,530,000	\$4,632,890	149%	\$6,457,275	0.79
A3 - Residential Hard-to-Measure	-	-	-	-	-	-	\$494,676	\$140,000	\$634,676	128%	\$634,676	
B - Income Eligible	280,941	278,973	99%	\$14,810,898	\$17,830,972	120%	\$4,527,097	\$450,000	\$4,977,097	110%	\$5,116,590	3.48
B1 - Income Eligible Existing Buildings	280,941	278,973	99%	\$14,810,898	\$17,830,972	120%	\$4,424,848	\$450,000	\$ 4,874,848	110%	\$4,955,769	3.60
B1a - Income Eligible Coordinated Delivery	280,941	278,973	99%	\$14,810,898	17,830,972	120%	\$4,424,848	\$450,000	4,874,848	110%	4,955,769	3.60
B2 - Income Eligible Hard-to-Measure	-	-	-	-	-	-	\$102,249	\$0	\$102,249	100%	\$160,821	
C - Commercial & Industrial	562,265	995,397	177%	\$13,314,286	\$28,781,542	216%	\$3,807,210	\$4,350,000	\$8,157,210	214%	\$16,093,455	1.79
C1 - C&I New Buildings	47,646	83,494	175%	\$831,799	\$831,799	100%	\$354,866	\$0	\$354,866	100%	\$599,201	1.39
C1a - C&I New Buildings & Major Renovations	47,646	47,646	100%	\$831,799	\$831,799	100%	\$354,866	\$0	\$354,866	100%	\$388,277	2.14
C2 - C&I Existing Buildings	514,618	911,903	177%	\$12,482,487	\$27,949,743	224%	\$3,136,889	\$4,350,000	\$7,486,889	239%	\$15,212,648	1.84
C2a - C&I Existing Building Retrofit	292,366	594,030	203%	\$6,189,275	\$11,933,507	193%	\$1,844,617	\$2,550,000	\$4,394,617	238%	\$6,045,615	1.97
C2b - C&I New & Replacement Equipment	222,252	317,873	143%	\$6,293,212	\$16,016,236	255%	\$1,292,272	\$1,800,000	\$3,092,272	239%	\$9,167,033	1.75
C3 - C&I Hard-to-Measure	-	-	-	-	-	-	\$315,455	\$0	\$315,455	100.00%	\$281,607	
Grand Total	1,509,615	1,961,044	130%	\$41,979,160	\$60,400,788	144%	\$17,275,606	\$7,600,000	\$24,875,606	144%	\$35,202,170	1.72

Gas to Electric Heat Pump BCRs

Residential HP Measure	2022 BCR	2023 BCR	2024 BCR
Central Ducted Heat Pump Partially Displacing Existing Furnace, Gas	0.30	0.37	0.57
Central Ducted Heat Pump Fully Displacing Existing Furnace, Gas	0.12	0.23	0.45
MSHP with Integrated Controls Partially Displacing Existing Boiler, Gas	0.23	0.30	0.67
MSHP with Integrated Controls Fully Displacing Existing Boiler, Gas	0.12	0.22	0.52

A 22-24 Issue and Potential Solutions

- Residential sector level BCRs of 0.94 (Liberty) and 0.99 (Berkshire) are very close and sensitive to many variables—cannot predict with 100% accuracy where we will land.
- Benefit-Cost Ratios are highly dependent on the results of the Avoided Energy Supply Costs study and evaluation studies, and future BCRs for the same efforts could be higher or lower depending on the results of the then-applicable AESC and evaluation factors.
- Not just a small PA issue—low-BCR measures reduce portfolio BCRs for all.
- Liberty and Berkshire are asking for *higher* budgets for heat pump measures to support *more* gas-to-heat pump conversions, but we do not want regulators/Council surprised and cannot risk cost-recovery issues—regulatory certainty on priorities and principles is a must.
- There is strong continuing customer demand for these measures, and we do not want to withdraw measures and confuse the market.
- There are levers we can pull/actions we can take to raise projected sector-level BCRs, but each has consequences we wish to review with you to receive your feedback.

A 22-24 Issue and Potential Solutions

- Levers within Liberty and Berkshire's control to raise sector-level BCR:
 - Cap or curtail the number of heat pumps offered in the term; set a limit and close off rebates when the limit is hit
 - Increase weatherization—already underway; could potentially increase more, but currently WX BCR is only slightly over 1.0
 - Extend special weatherization offers to recipients of prescriptive heat pump incentives
 - Increase thermostats—would need very high volumes
 - Increase showerheads (cost-effective in part because of water-savings benefits)—would need very high volumes
 - Increase HPWH (measure has not had high uptake, but is cost-effective)
 - Reduce or reallocate evaluation or other Hard-to-Measure Costs
 - Others?

A 22-24 Issue and Potential Solutions

- Factors that Liberty and Berkshire cannot control that may raise sector-level BCR:
 - Apply results of recent NEI studies to benefits achieved in 2022 (study was not complete in 2022)
 - Identify new/increase NEIs and have increased GHG-reduction benefits from replacing fuel
 - Revise incentive levels—would likely require statewide coordination
 - Revise the Social Cost of Carbon
 - Combine residential and income-eligible sector BCRs
 - Require physical removal of existing gas heating systems for whole home systems

A 22-24 Issue and Potential Solutions

- Using some combination of the levers above, could likely project sector-level BCRs to screen above 1.0 to address statutory concerns.
- But these projections may not hold—possible the actual production for the term would result in a sector-level BCR below 1.0 if uptake for heat pumps continues higher than planned. We aim for transparency on this possibility and this tension between deeper GHG reductions and cost-effectiveness issues.
- Our proposal is to keep meeting customer demand for heat pumps, but we recognize the need to work through issues and welcome your suggestions.