

**APPENDIX 8B. DETAILED LIFE-CYCLE COST AND PAYBACK PERIOD
ANALYSIS RESULTS**

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APPENDIX 8B. DETAILED LIFE-CYCLE COST AND PAYBACK PERIOD ANALYSIS RESULTS

8B.1 INTRODUCTION

This appendix contains detailed output from the life-cycle cost (LCC) and payback period (PBP) analysis for automatic commercial ice makers, as developed using the LCC spreadsheet. LCC and PBPs are presented for each of the 21¹ equipment classes at each efficiency level. See chapter 8 of the technical support document (TSD) for an explanation of the LCC spreadsheet.

LCC savings output obtained from the LCC analysis are in the form of distributions. LCC savings distributions were generated by performing 10,000 separate simulations using the LCC spreadsheet, and allowing the spreadsheet to select values for numerous inputs given probability distributions for each input. Given the results of the LCC model simulations, for each equipment type, the U.S. Department of Energy (DOE) calculated summary statistics—average values for LCC, product installation costs and operating costs; a distribution of customers who: (1) receive benefits in the form of lower LCC results; (2) are not affected by the standards; or (3) experience a cost in the form of increased LCC from equipment ownership. Results of the LCC and accompanying PBP analyses are shown in the tables in this appendix.

Also included in this appendix are two graphical presentations for each of the LCC and PBP results. One plots LCC savings distribution for all equipment classes analyzed. The figures illustrate the mean and median values on the plot with the help of red and blue markers, respectively. Additionally, the mean and median values are surrounded by rectangular boxes used to represent the 25th and 75th percentile values. The lower edge of the elongated rectangle represents 25th percentile, which means that 25 percent of the customers will experience LCC savings below the value represented by the bottom of the rectangle if the standard were set at level in question. The upper edge of the elongated rectangle represents the 75th percentile. Finally, each of the rectangles includes two “tails,” or two vertical black lines, extending downward to represent the 5th percentile (lower end) and upward to represent the 95th percentile (upper end).

To simplify the presentation, all efficiency levels are presented as numbered levels. Hence, the efficiency level called baseline in other chapters of this TSD is presented as Level 1. All higher efficiency levels are numbered sequentially, from Level 1 to Level 7.

The remainder of this appendix presents the tabular and graphical results for the 21 equipment classes analyzed for the automatic commercial ice maker rulemaking.

¹ One class, self-contained, water cooled, small continuous units have no shipments. Thus, they have not been defined in the analyses and are not shown herein.

8B.2 LIFE-CYCLE COST RESULTS

8B.2.1 LIFE-CYCLE COST RESULTS FOR ICE-MAKING HEAD, WATER-COOLED, SMALL, BATCH (IMH-W-SMALL-B)

Table 8B.2.1 LCC Results for Ice-Making Head, Water-Cooled, Small, Batch (IMH-W-Small-B)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings			Payback Period, Median <i>Years</i>	
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %		Net Benefit %
1	4,292	4,214	10,316	14,530	0	NA	NA	NA	NA
2	3,865	4,265	10,022	14,287	244	0	49	51	1.37
3	3,695	4,275	9,904	14,179	279	0	27	73	1.16
4	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

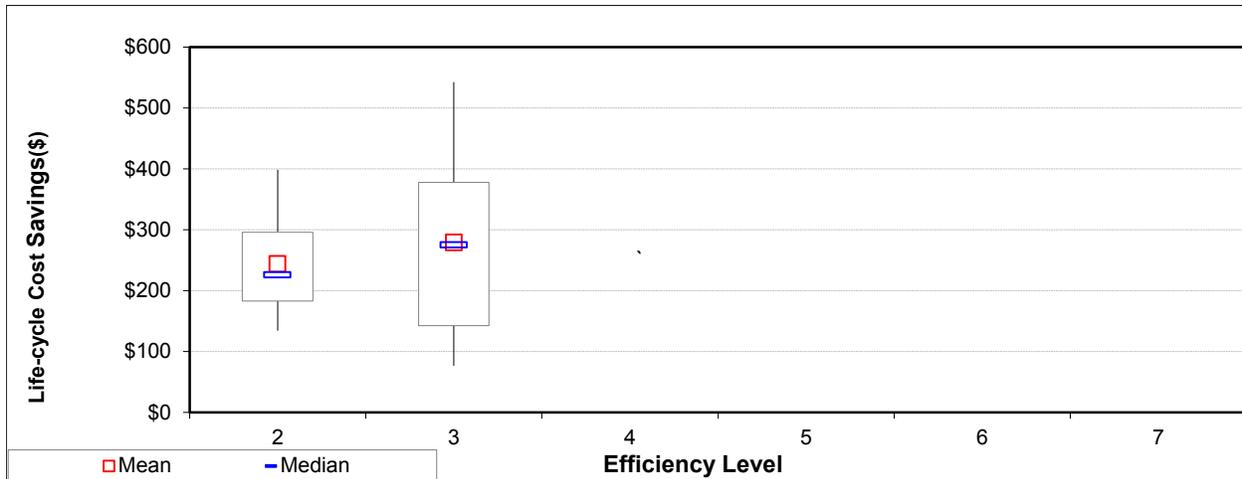


Figure 8B.2.1 LCC Results for Ice-Making Head, Water-Cooled, Small, Batch (IMH-W-Small-B)

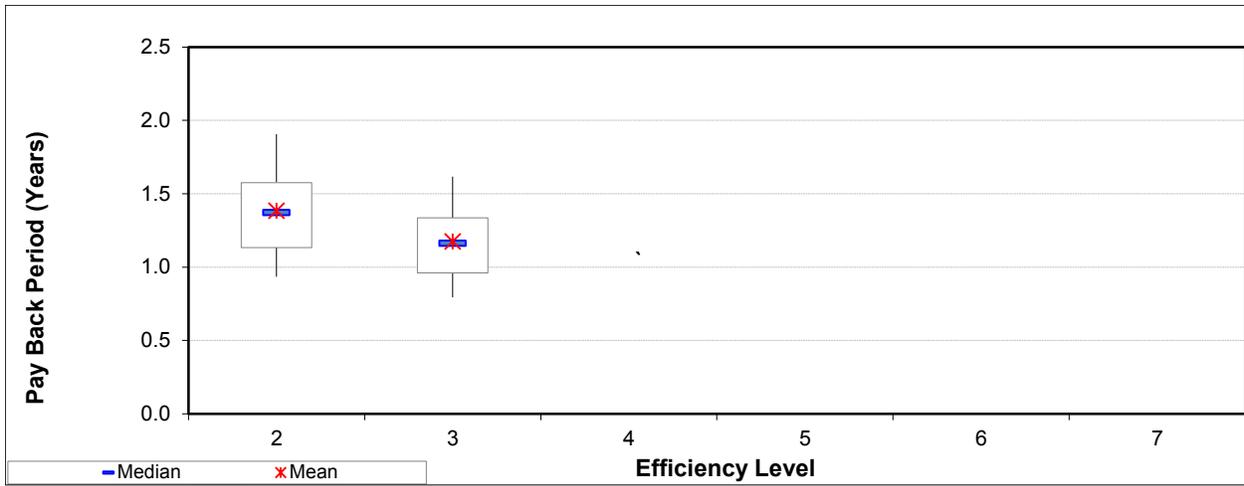


Figure 8B.2.2 PBP Results for Ice-Making Head, Water-Cooled, Small, Batch (IMH-W-Small-B)

8B.2.2 LIFE-CYCLE COST RESULTS FOR ICE-MAKING HEAD, WATER-COOLED, LARGE, BATCH (IMH-W-MED-B)

Table 8B.2.2 LCC Results for Ice-Making Head, Water-Cooled, Large, Batch (IMH-W-Med-B)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings			Payback Period, Median <i>Years</i>	
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %		Net Benefit %
1	7,825	6,979	23,512	30,491	0	NA	NA	NA	NA
2	7,044	7,019	22,975	29,994	499	0	26	74	0.59
3	NA	NA	NA	NA	NA	NA	NA	NA	NA
4	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

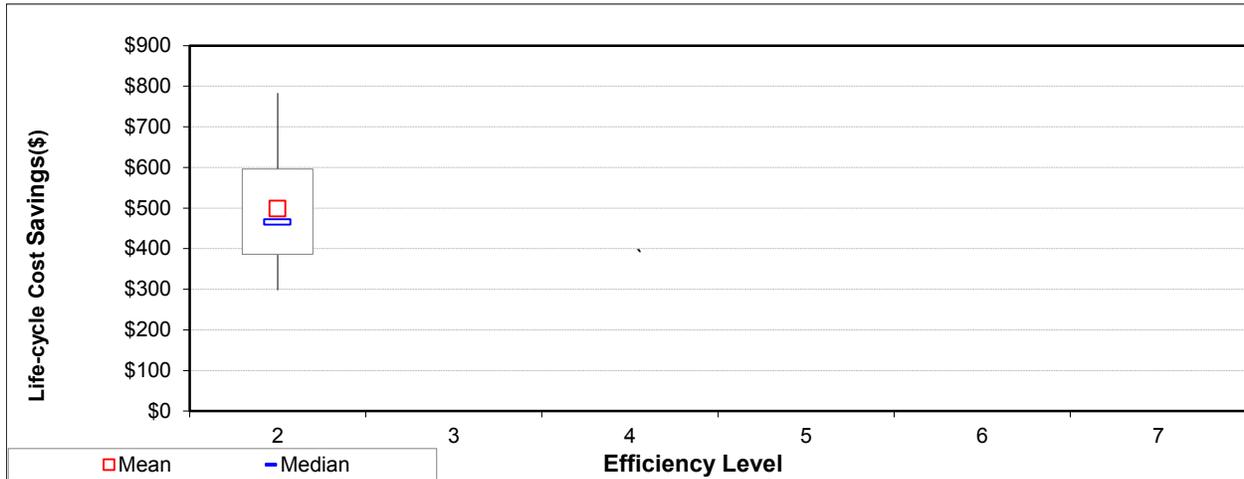


Figure 8B.2.3 LCC Results for Ice-Making Head, Water-Cooled, Large, Batch (IMH-W-Med-B)

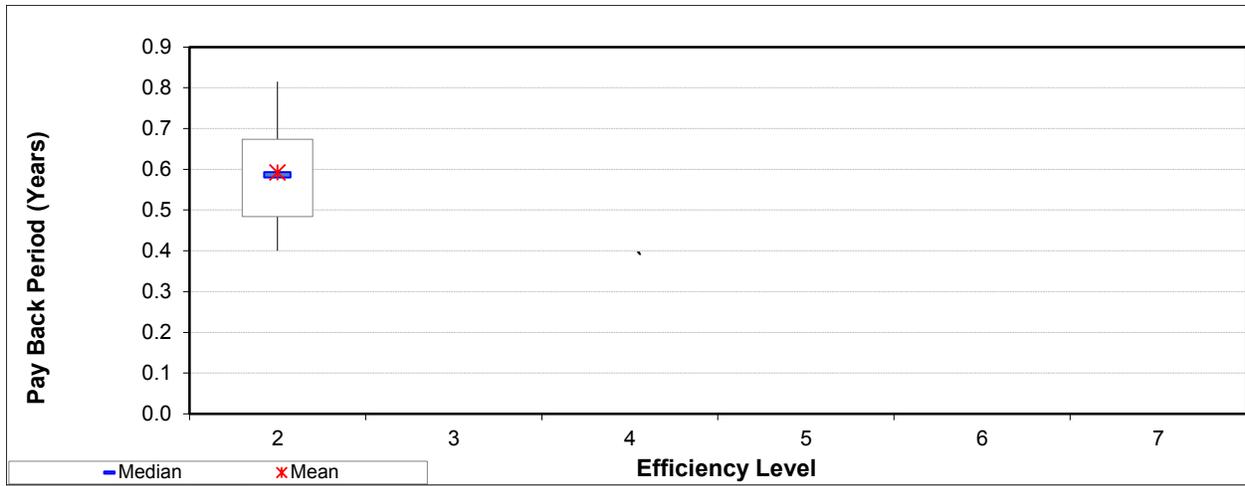


Figure 8B.2.4 PBP Results for Ice-Making Head, Water-Cooled, Large, Batch (IMH-W-Med-B)

8B.2.3 LIFE-CYCLE COST RESULTS FOR ICE-MAKING HEAD, WATER-COOLED, LARGE, BATCH (IMH-W-LARGE-B)

Table 8B.2.3 LCC Results for Ice-Making Head, Water-Cooled, Large, Batch (IMH-W-Large-B)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings			Payback Period, Median <i>Years</i>	
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %		Net Benefit %
1	10,972	13,423	38,030	51,453	0	NA	NA	NA	0.00
2	9,877	13,442	37,277	50,719	735	0	18	82	0.20
3	9,767	13,451	37,201	50,653	801	0	18	82	0.27
4	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

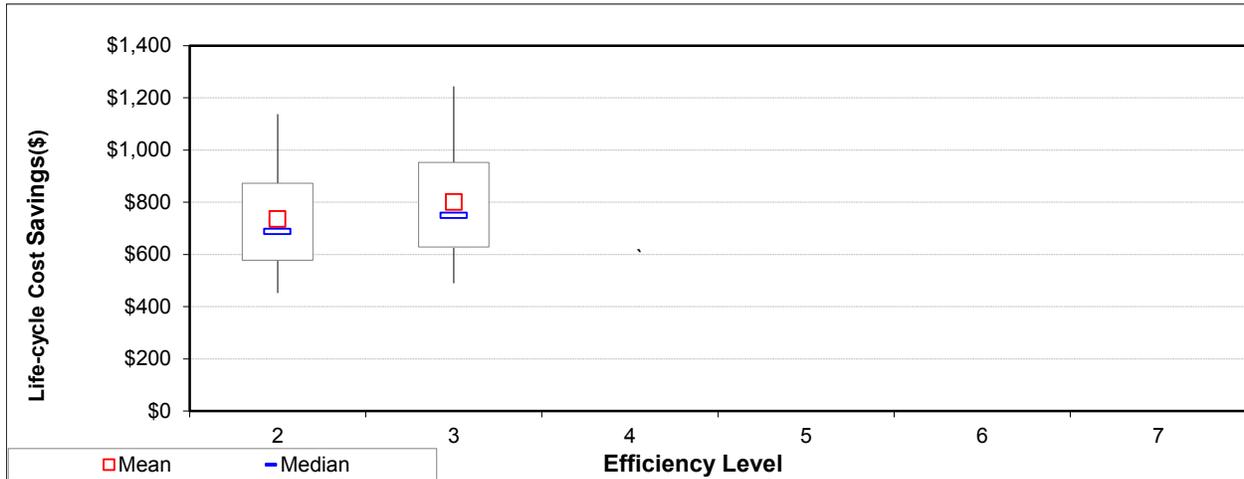


Figure 8B.2.5 LCC Results for Ice-Making Head, Water-Cooled, Large, Batch (IMH-W-Large-B)

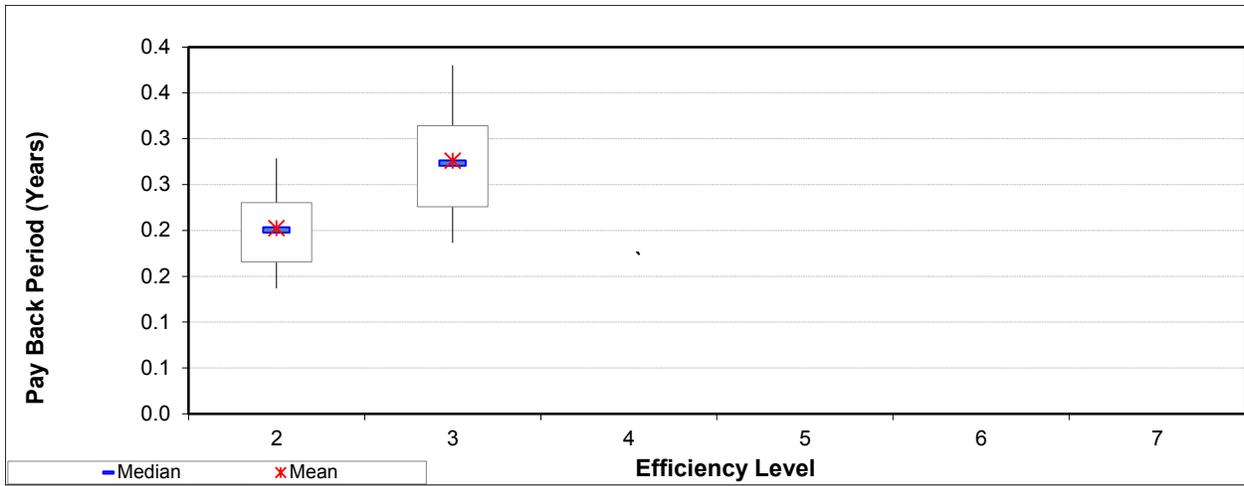


Figure 8B.2.6 PBP Results for Ice-Making Head, Water-Cooled, Large, Batch (IMH-W-Large-B)

8B.2.4 LIFE-CYCLE COST RESULTS FOR ICE-MAKING HEAD, AIR-COOLED, SMALL, BATCH (IMH-A-SMALL-B)

Table 8B.2.4 LCC Results for Ice-Making Head, Air-Cooled, Small, Batch (IMH-A-Small-B)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings			Payback Period, Median <i>Years</i>	
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %		Net Benefit %
1	5,639	4,222	6,216	10,438	0	NA	NA	NA	NA
2	5,078	4,238	5,829	10,067	372	0	41	59	0.33
3	4,797	4,261	5,636	9,896	462	0	24	76	0.52
4	4,516	4,310	5,442	9,752	524	0	8	92	0.90
5	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

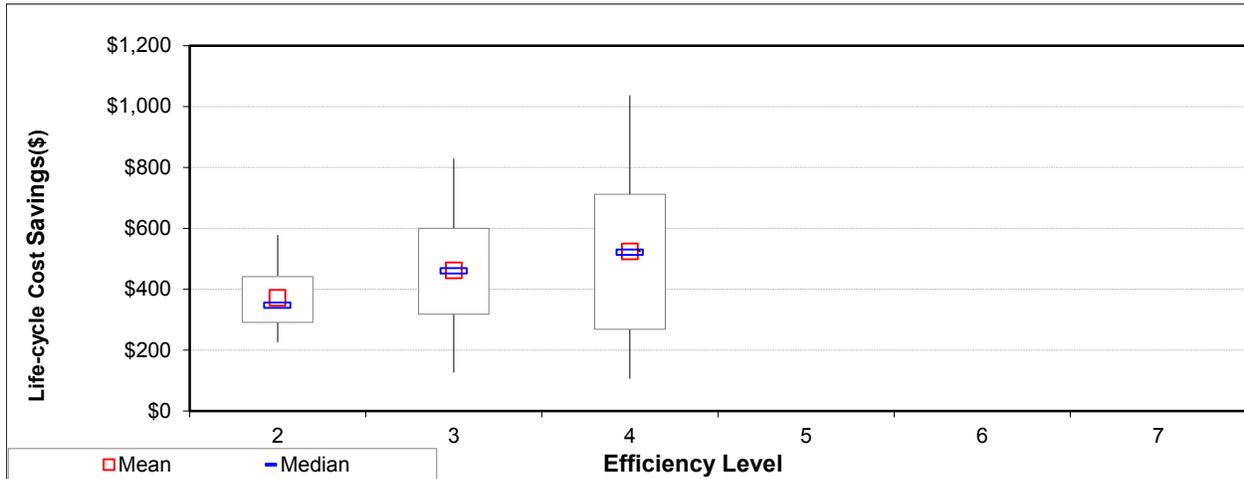


Figure 8B.2.7 LCC Results for Ice-Making Head, Air-Cooled, Small, Batch (IMH-A-Small-B)

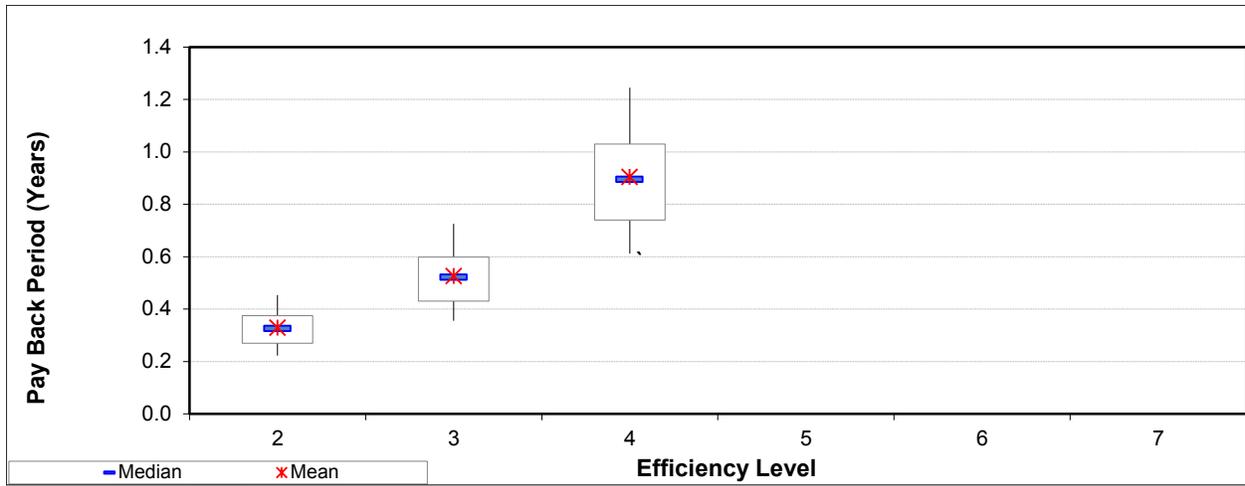


Figure 8B.2.8 PBP Results for Ice-Making Head, Air-Cooled, Small, Batch (IMH-A-Small-B)

8B.2.5 LIFE-CYCLE COST RESULTS FOR ICE-MAKING HEAD, AIR-COOLED, LARGE, BATCH (IMH-A-LARGE-B)

Table 8B.2.5 LCC Results for Ice-Making Head, Air-Cooled, Large, Batch (IMH-A-Large-B)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings			Payback Period, Median <i>Years</i>	
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %		Net Benefit %
1	9,366	8,188	11,317	19,505	0	NA	NA	NA	NA
2	8,432	8,207	10,674	18,881	625	0	31	69	0.23
3	7,964	8,332	10,352	18,684	675	0	10	90	1.17
4	7,497	8,389	10,030	18,420	883	0	2	98	1.23
5	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

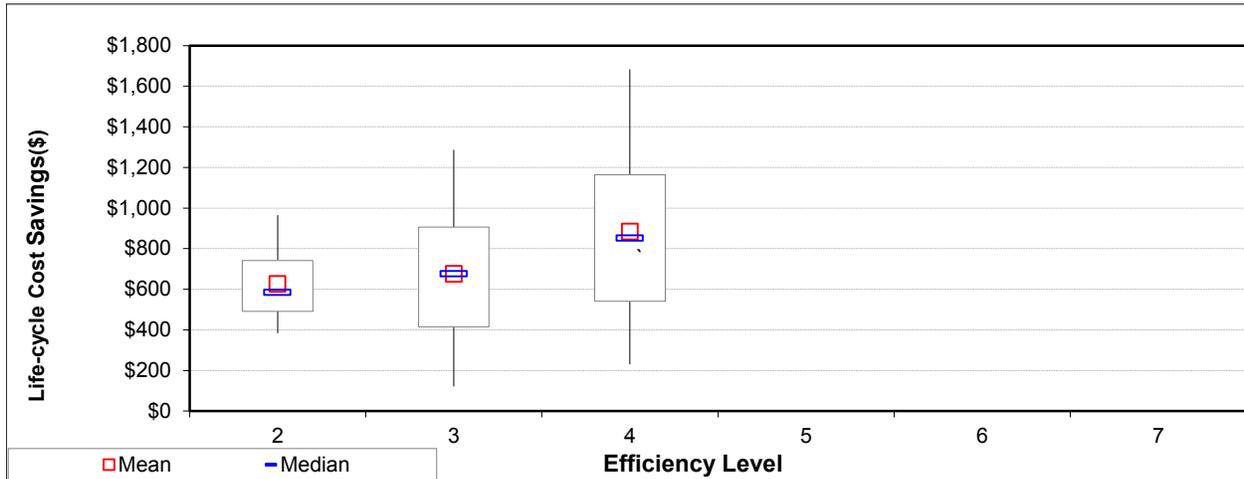


Figure 8B.2.9 LCC Results for Ice-Making Head, Air-Cooled, Large, Batch (IMH-A-Large-B)

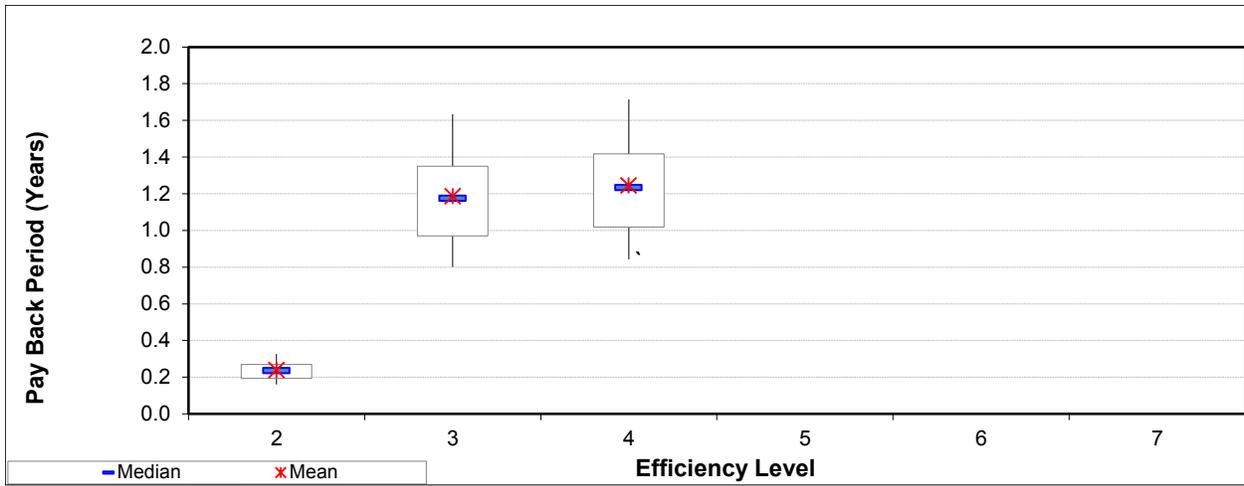


Figure 8B.2.10 PBP Results for Ice-Making Head, Air-Cooled, Large, Batch (IMH-A-Large-B)

8B.2.6 LIFE-CYCLE COST RESULTS FOR REMOTE CONDENSING UNIT, WATER-COOLED, LARGE, BATCH (RCU-SMALL-B)

Table 8B.2.6 LCC Results for Remote Condensing Unit, Water-Cooled, Large, Batch (RCU-Small-B)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings			Payback Period, Median <i>Years</i>	
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %		Net Benefit %
1	11,328	7,280	12,178	19,459	0	NA	NA	NA	NA
2	10,310	7,300	11,478	18,777	684	0	43	57	0.22
3	9,632	7,360	11,011	18,371	857	0	13	87	0.54
4	9,462	7,389	10,894	18,283	934	0	12	88	0.67
5	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

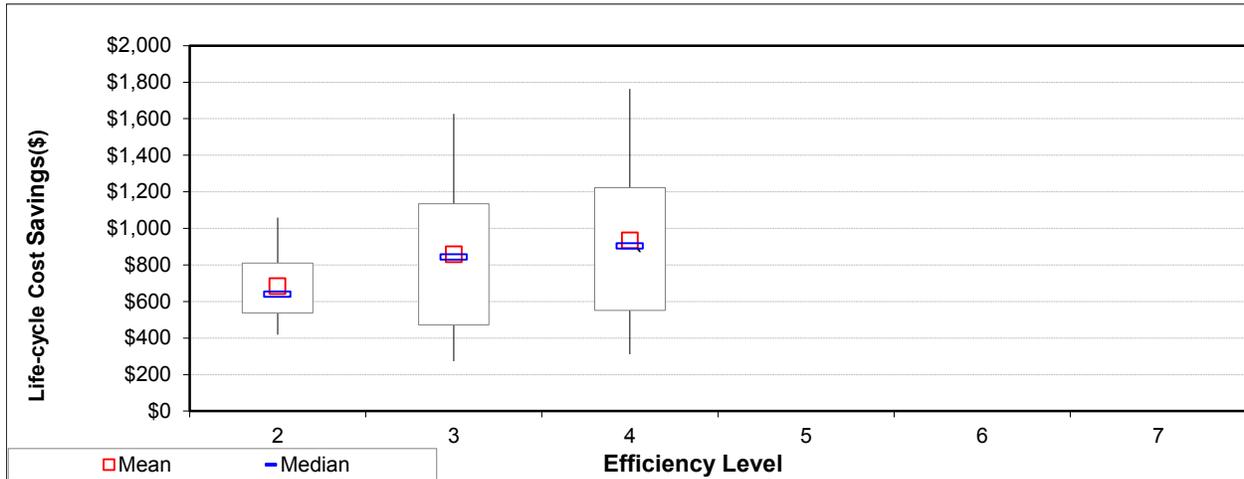


Figure 8B.2.11 LCC Results for Remote Condensing Unit, Water-Cooled, Large, Batch (RCU-Small-B)

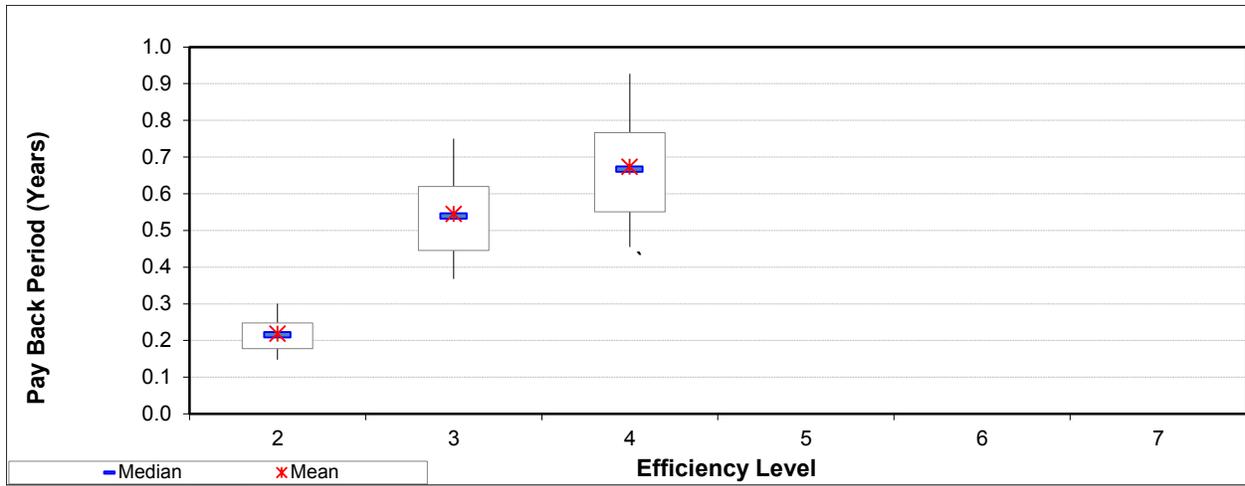


Figure 8B.2.12 PBP Results for Remote Condensing Unit, Water-Cooled, Large, Batch (RCU-Small-B)

8B.2.7 LIFE-CYCLE COST RESULTS FOR REMOTE CONDENSING UNIT, WATER-COOLED, LARGE, BATCH (RCU-LARGE-B)

Table 8B.2.7 LCC Results for Remote Condensing Unit, Water-Cooled, Large, Batch (RCU-Large-B)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings			Payback Period, Median <i>Years</i>	
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %		Net Benefit %
1	13,983	14,278	18,343	32,620	0	NA	NA	NA	NA
2	12,727	14,303	17,478	31,781	842	0	45	55	0.23
3	11,889	14,407	16,901	31,308	1062	0	21	79	0.71
4	11,680	14,442	16,757	31,200	1093	0	15	85	0.82
5	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

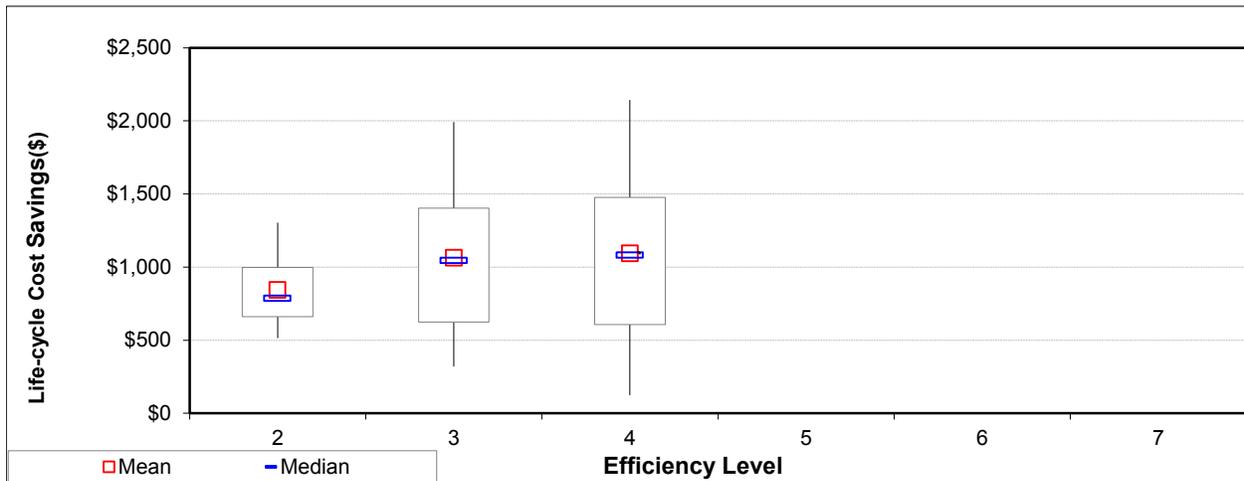


Figure 8B.2.13 LCC Results for Remote Condensing Unit, Water-Cooled, Large, Batch (RCU-Large-B)

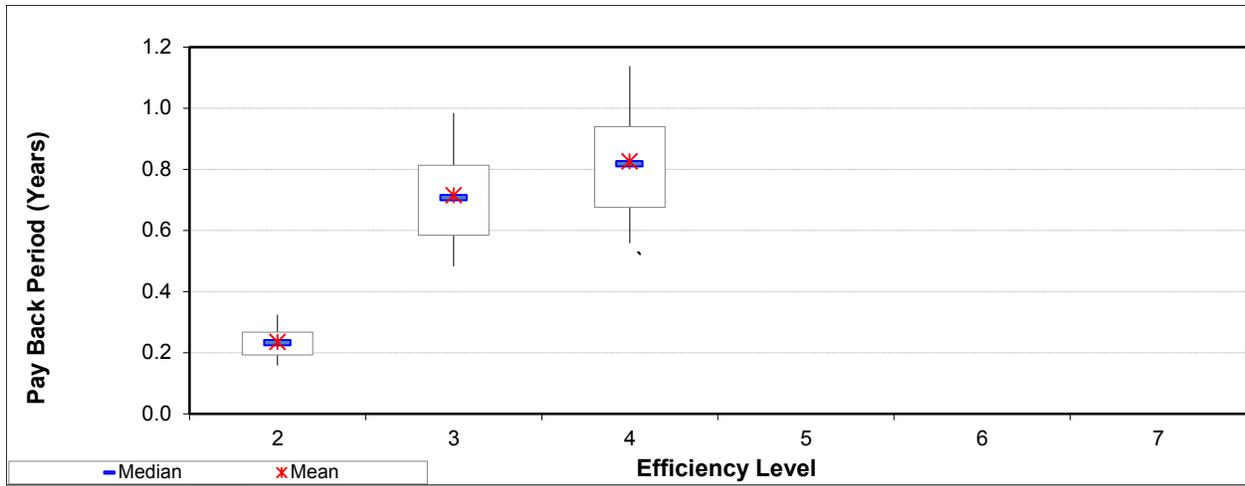


Figure 8B.2.14 PBP Results for Remote Condensing Unit, Water-Cooled, Large, Batch (RCU-Large-B)

8B.2.8 LIFE-CYCLE COST RESULTS FOR SELF-CONTAINED UNIT, WATER-COOLED, SMALL, BATCH (SCU-W-SMALL-B)

Table 8B.2.8 LCC Results for Self-Contained Unit, Water-Cooled, Small, Batch (SCU-W-Small-B)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings				Payback Period, Median <i>Years</i>
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %	Net Benefit %	
1	2,310	4,564	5,640	10,204	0	NA	NA	NA	NA
2	2,150	4,580	5,530	10,110	95	0	63	37	1.14
3	1,967	4,607	5,404	10,011	146	0	25	75	1.44
4	1,853	4,629	5,325	9,954	174	0	6	94	1.64
5	1,761	4,652	5,262	9,914	214	0	6	94	1.83
6	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

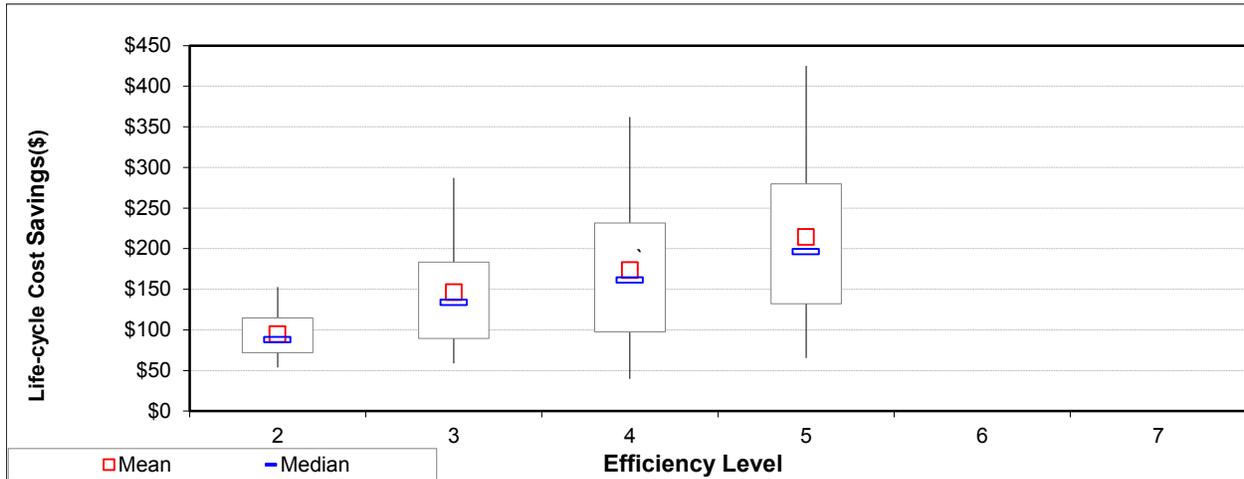


Figure 8B.2.15 LCC Results for Self-Contained Unit, Water-Cooled, Small, Batch (SCU-W-Small-B)

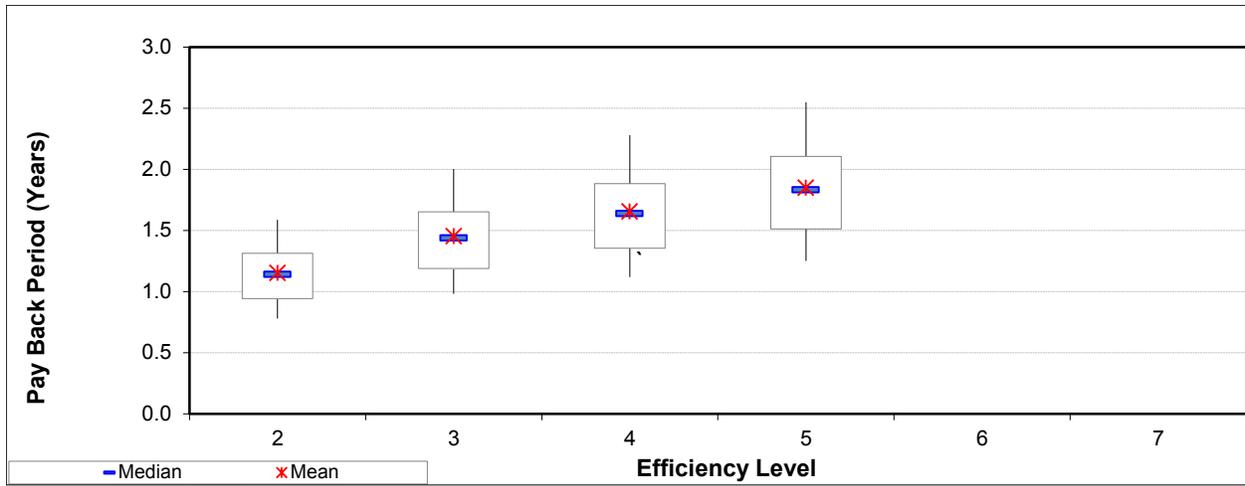


Figure 8B.2.16 PBP Results for Self-Contained Unit, Water-Cooled, Small, Batch (SCU-W-Small-B)

8B.2.9 LIFE-CYCLE COST RESULTS FOR SELF-CONTAINED UNIT, WATER-COOLED, LARGE, BATCH (SCU-W-LARGE-B)

Table 8B.2.9 LCC Results for Self-Contained Unit, Water-Cooled, Large, Batch (SCU-W-Large-B)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings				Payback Period, Median <i>Years</i>
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %	Net Benefit %	
1	4,183	4,586	10,867	15,453	0	NA	NA	NA	NA
2	3,892	4,602	10,667	15,269	185	0	60	40	0.63
3	3,559	4,618	10,438	15,056	399	0	60	40	0.59
4	3,351	4,629	10,294	14,924	450	0	50	50	0.59
5	3,143	4,640	10,151	14,792	454	0	30	70	0.60
6	3,018	4,655	10,065	14,720	426	0	10	90	0.68
7	2,560	4,693	9,750	14,444	659	0	0	100	0.76

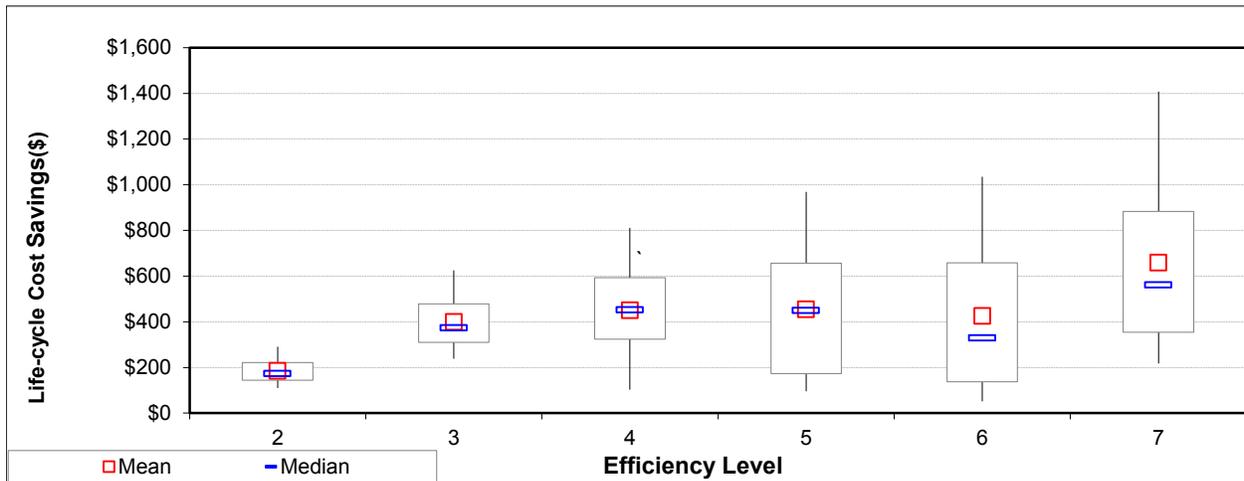


Figure 8B.2.17 LCC Results for Self-Contained Unit, Water-Cooled, Large, Batch (SCU-W-Large-B)

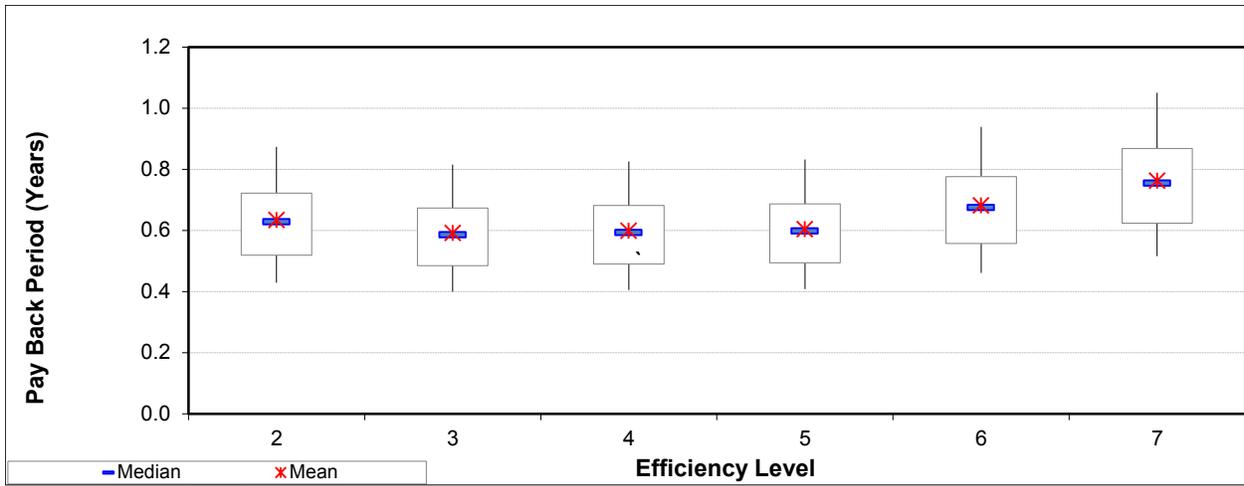


Figure 8B.2.18 PBP Results for Self-Contained Unit, Water-Cooled, Large, Batch (SCU-W-Large-B)

8B.2.10 LIFE-CYCLE COST RESULTS FOR SELF-CONTAINED UNIT, AIR-COOLED, SMALL, BATCH (SCU-A-SMALL-B)

Table 8B.2.10 LCC Results for Self-Contained Unit, Air-Cooled, Small, Batch (SCU-A-Small-B)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings				Payback Period, Median <i>Years</i>
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %	Net Benefit %	
1	3,635	4,564	4,613	9,177	0	NA	NA	NA	NA
2	3,382	4,580	4,439	9,019	159	0	68	32	0.72
3	3,093	4,613	4,240	8,853	229	0	19	81	1.05
4	2,913	4,636	4,115	8,751	331	0	19	81	1.14
5	2,732	4,653	3,991	8,645	438	0	19	81	1.13
6	2,624	4,663	3,916	8,579	457	0	10	90	1.12
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

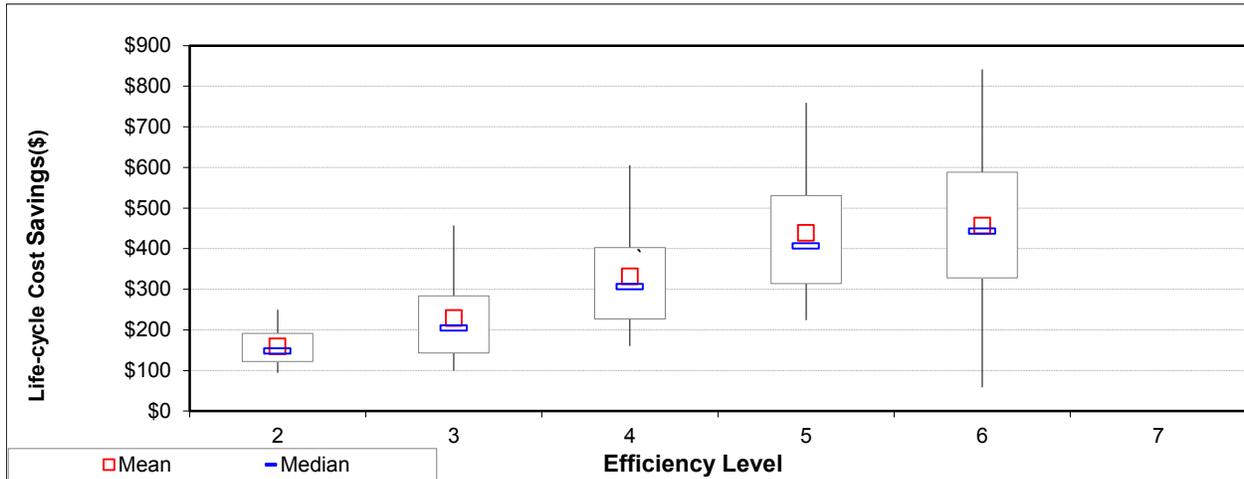


Figure 8B.2.19 LCC Results for Self-Contained Unit, Air-Cooled, Small, Batch (SCU-A-Small-B)

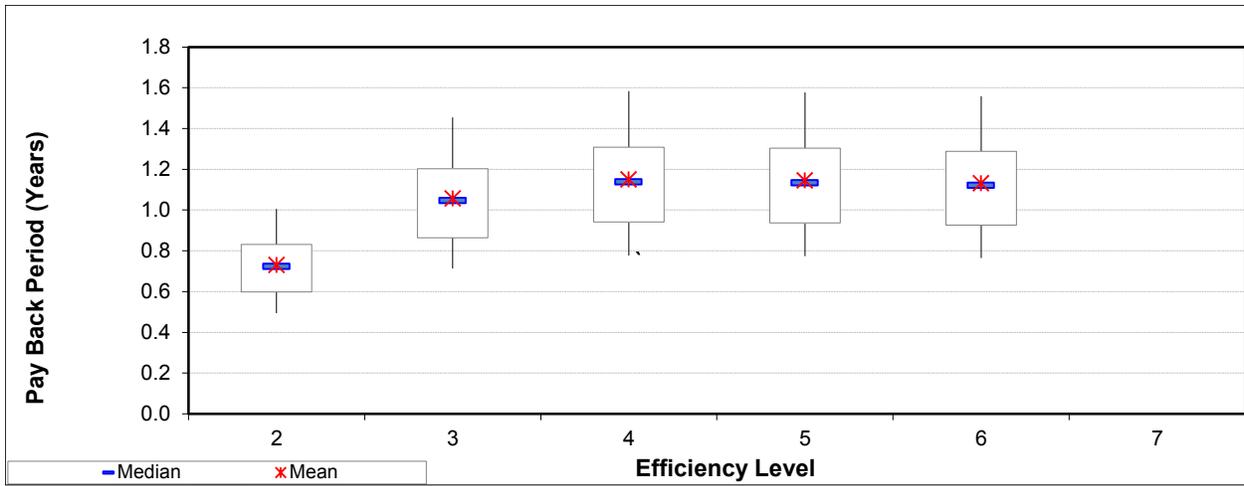


Figure 8B.2.20 PBP Results for Self-Contained Unit, Air-Cooled, Small, Batch (SCU-A-Small-B)

8B.2.11 LIFE-CYCLE COST RESULTS FOR SELF-CONTAINED UNIT, AIR-COOLED, LARGE, BATCH (SCU-A-LARGE-B)

Table 8B.2.11 LCC Results for Self-Contained Unit, Air-Cooled, Large, Batch (SCU-A-Large-B)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings			Payback Period, Median <i>Years</i>	
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %		Net Benefit %
1	3,599	4,574	4,796	9,370	0	NA	NA	NA	
2	3,349	4,601	4,624	9,225	146	0	67	33	
3	3,062	4,630	4,427	9,057	231	0	22	78	
4	2,884	4,648	4,303	8,951	337	0	22	78	
5	2,705	4,670	4,180	8,850	416	0	17	83	
6	NA	NA	NA	NA	NA	NA	NA	NA	
7	NA	NA	NA	NA	NA	NA	NA	NA	

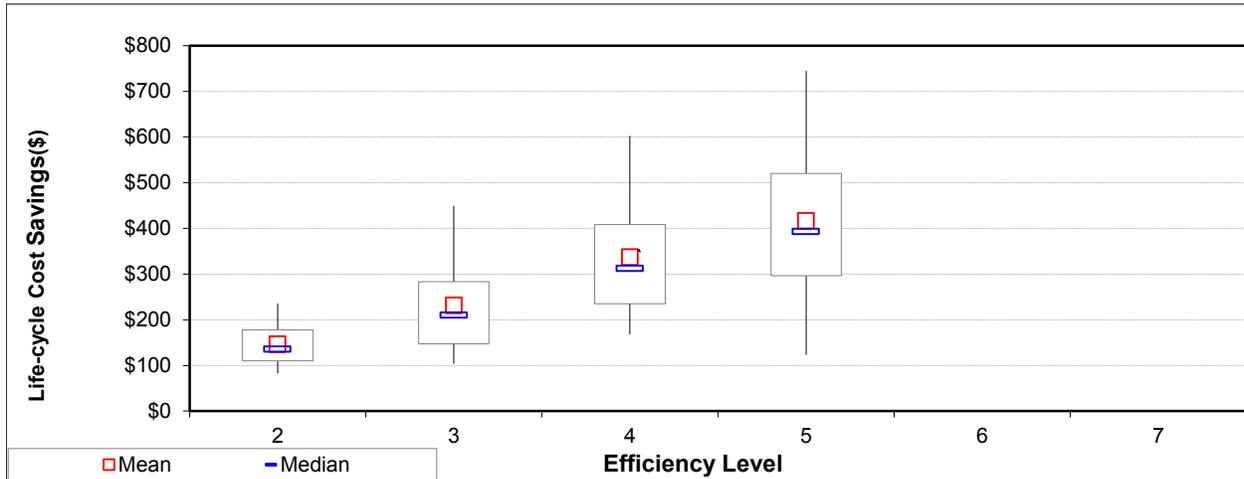


Figure 8B.2.21 LCC Results for Self-Contained Unit, Air-Cooled, Large, Batch (SCU-A-Large-B)

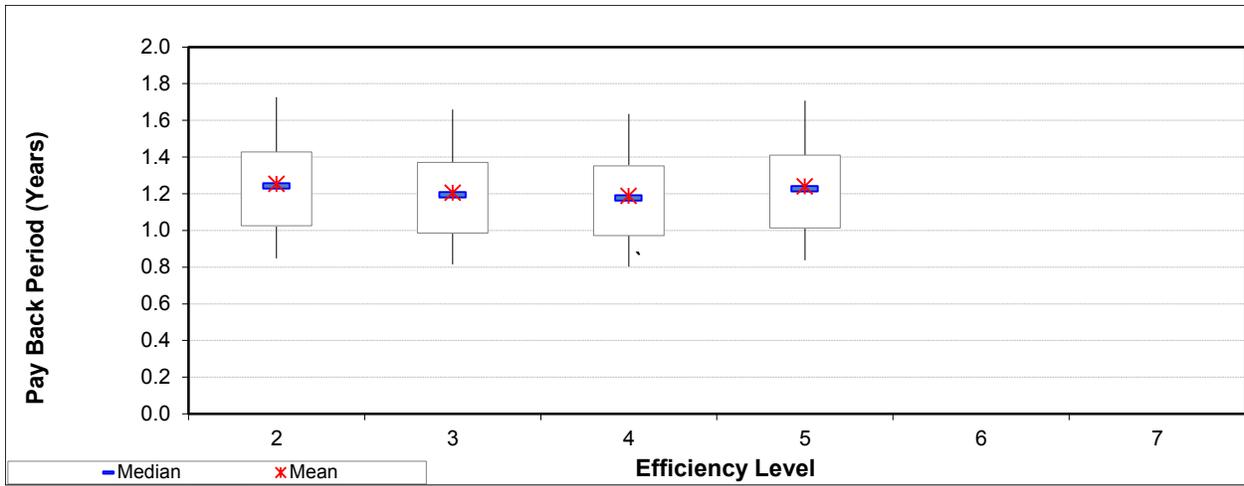


Figure 8B.2.22 PBP Results for Self-Contained Unit, Air-Cooled, Large, Batch (SCU-A-Large-B)

8B.2.12 LIFE-CYCLE COST RESULTS FOR ICE-MAKING HEAD, WATER-COOLED, SMALL, CONTINUOUS (IMH-W-SMALL-C)

Table 8B.2.12 LCC Results for Ice-Making Head, Water-Cooled, Small, Continuous (IMH-W-Small-C)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings				Payback Period, Median <i>Years</i>
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %	Net Benefit %	
1	11,848	6,943	21,317	28,260	0	NA	NA	NA	NA
2	10,665	6,951	20,503	27,454	NA	0	100	0	0.08
3	10,074	6,962	20,096	27,058	400	0	97	3	0.12
4	9,483	6,975	19,689	26,664	528	0	90	10	0.15
5	8,891	6,986	19,282	26,268	618	0	77	23	0.17
6	7,945	7,068	18,631	25,699	813	0	42	58	0.37
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

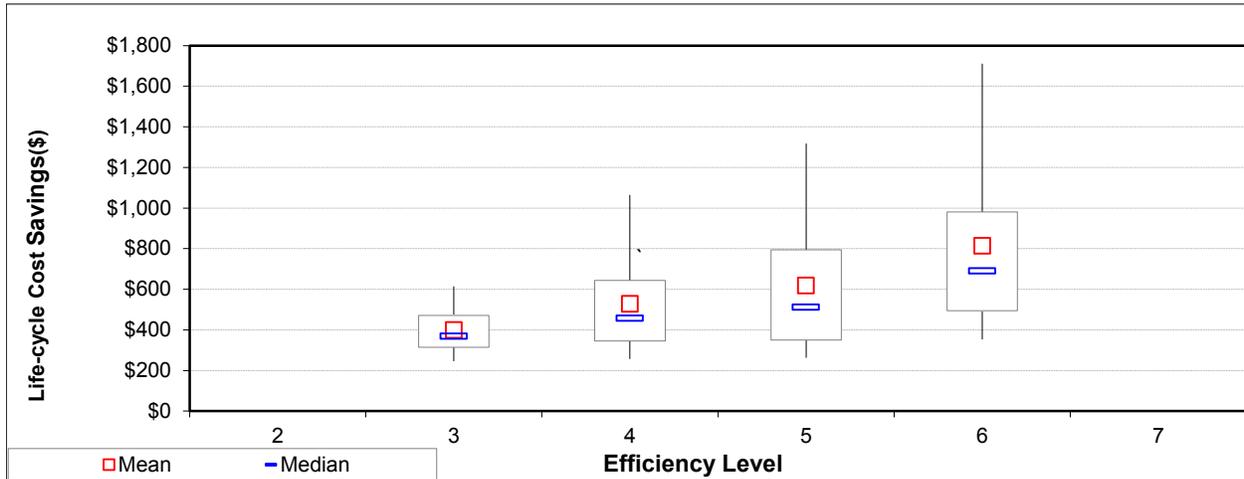


Figure 8B.2.23 LCC Results for Ice-Making Head, Water-Cooled, Small, Continuous (IMH-W-Small-C)

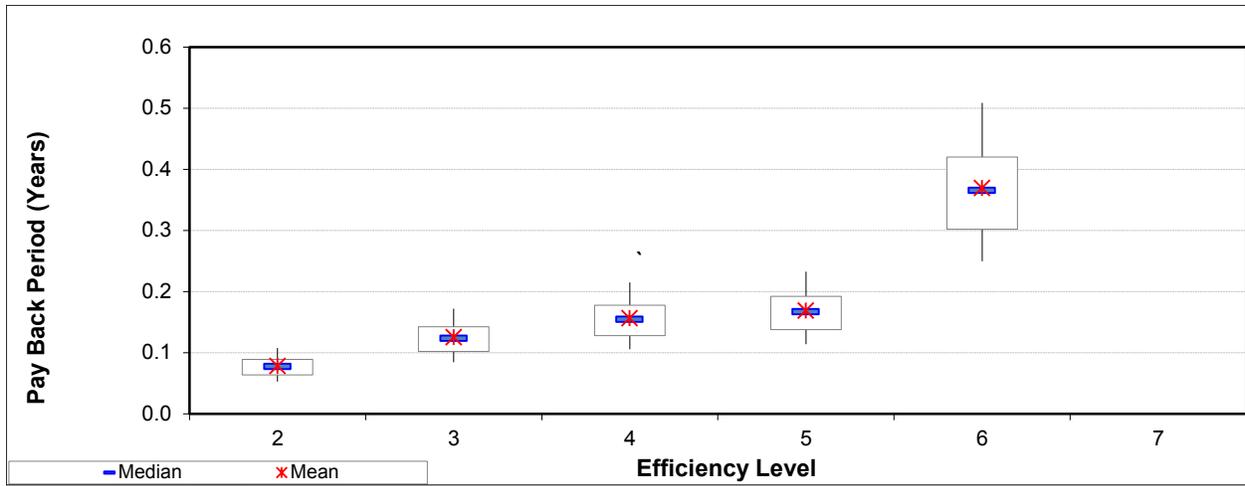


Figure 8B.2.24 PBP Results for Ice-Making Head, Water-Cooled, Small, Continuous (IMH-W-Small-C)

8B.2.13 LIFE-CYCLE COST RESULTS FOR ICE-MAKING HEAD, WATER-COOLED, LARGE, CONTINUOUS (IMH-W-LARGE-C)

Table 8B.2.13 LCC Results for Ice-Making Head, Water-Cooled, Large, Continuous (IMH-W-Large-C)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings			Payback Period, Median <i>Years</i>	
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %		Net Benefit %
1	9,329	9,801	23,306	33,107	0	NA	NA	NA	NA
2	8,399	9,830	22,666	32,495	NA	0	100	0	0.35
3	7,933	9,846	22,345	32,191	NA	0	100	0	0.37
4	7,468	9,881	22,025	31,906	287	0	94	6	0.49
5	7,096	10,001	21,769	31,769	205	0	75	25	1.02
6	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

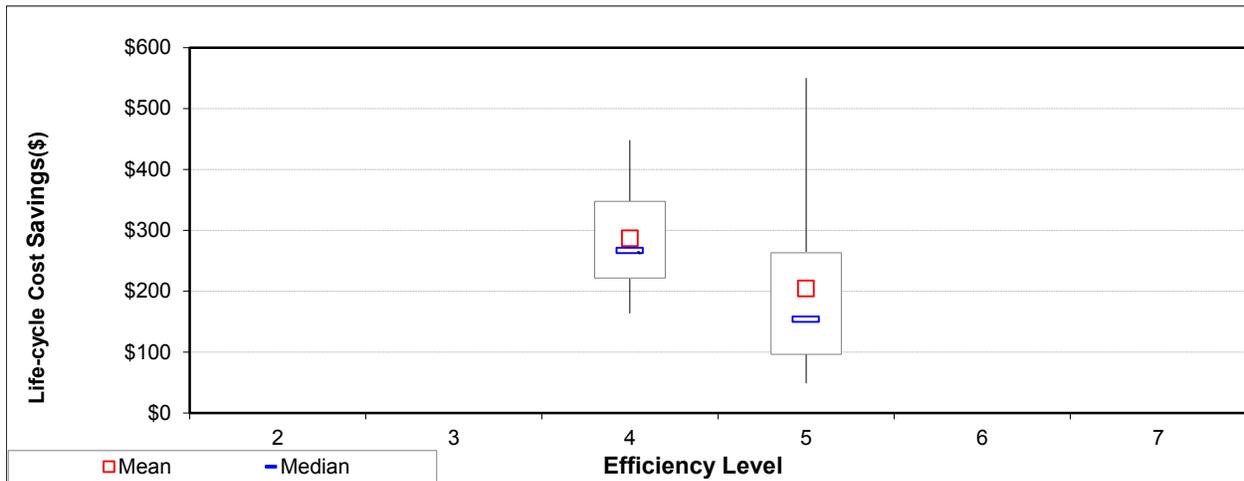


Figure 8B.2.25 LCC Results for Ice-Making Head, Water-Cooled, Large, Continuous (IMH-W-Large-C)

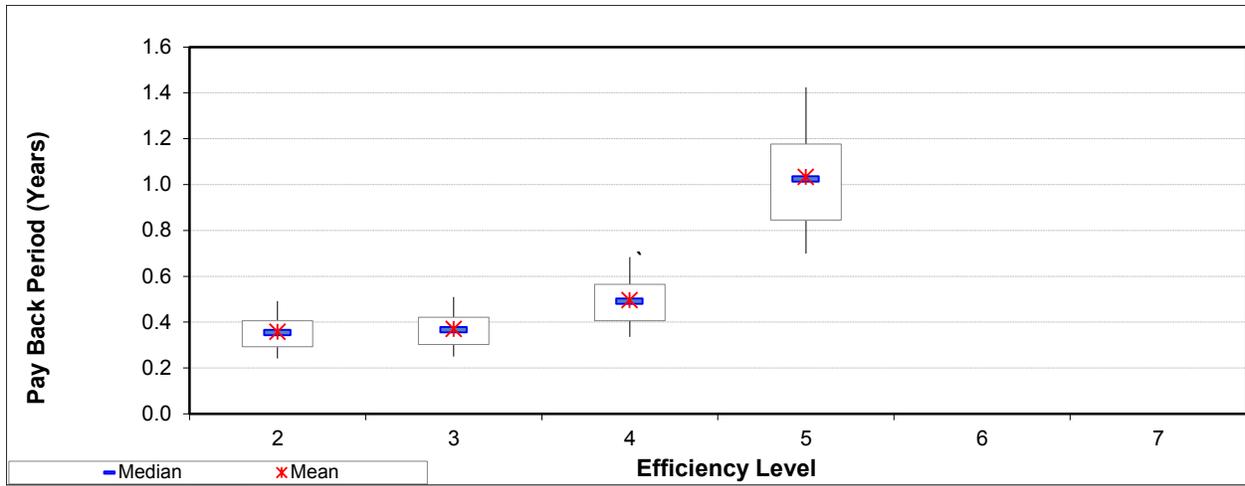


Figure 8B.2.26 PBP Results for Ice-Making Head, Water-Cooled, Large, Continuous (IMH-W-Large-C)

8B.2.14 LIFE-CYCLE COST RESULTS FOR ICE-MAKING HEAD, AIR-COOLED, SMALL, CONTINUOUS (IMH-A-SMALL-C)

Table 8B.2.14 LCC Results for Ice-Making Head, Air-Cooled, Small, Continuous (IMH-A-Small-C)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings				Payback Period, Median <i>Years</i>
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %	Net Benefit %	
1	5,849	5,825	6,667	12,492	0	NA	NA	NA	NA
2	5,266	5,859	6,266	12,125	368	0	96	4	0.66
3	4,975	5,881	6,065	11,946	428	0	94	6	0.73
4	4,684	5,903	5,865	11,768	425	0	90	10	0.77
5	4,392	5,926	5,664	11,590	443	0	84	16	0.79
6	4,101	6,084	5,464	11,548	333	2	76	22	1.70
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

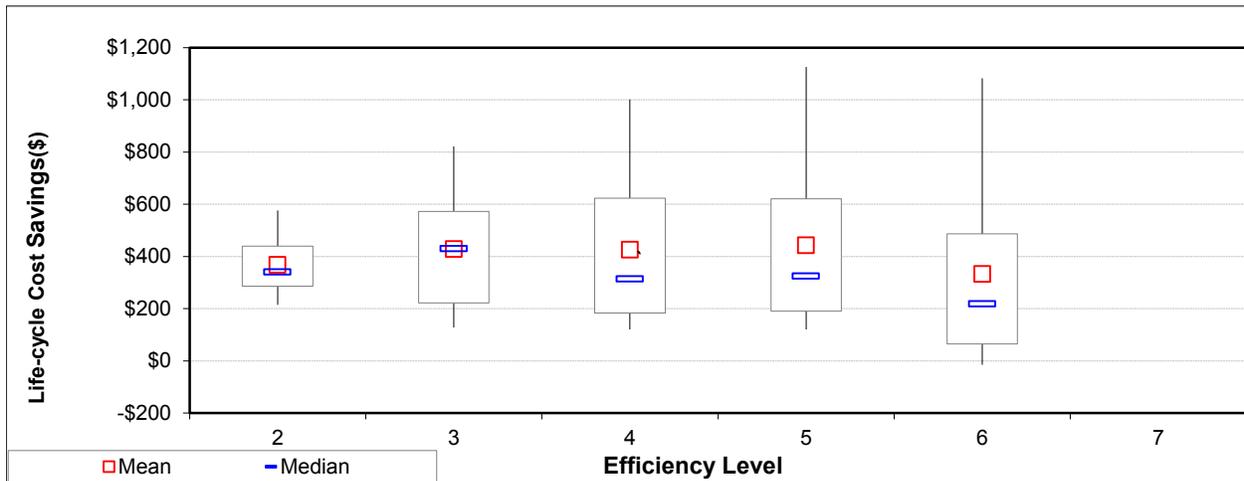


Figure 8B.2.27 LCC Results for Ice-Making Head, Air-Cooled, Small, Continuous (IMH-A-Small-C)

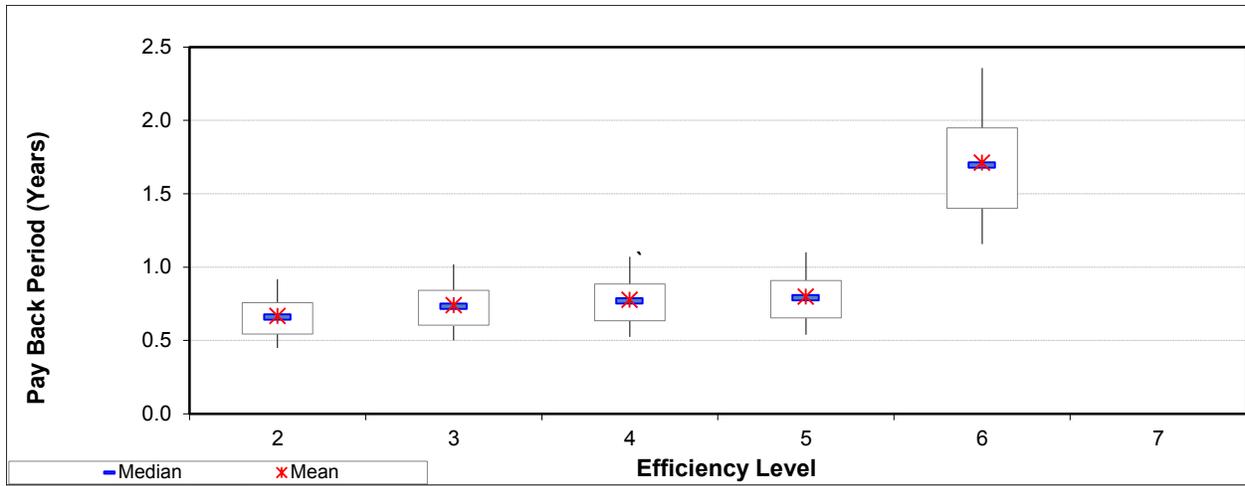


Figure 8B.2.28 PBP Results for Ice-Making Head, Air-Cooled, Small, Continuous (IMH-A-Small-C)

8B.2.15 LIFE-CYCLE COST RESULTS FOR ICE-MAKING HEAD, AIR-COOLED, LARGE, CONTINUOUS (IMH-A-LARGE-C)

Table 8B.2.15 LCC Results for Ice-Making Head, Air-Cooled, Large, Continuous (IMH-A-Large-C)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings				Payback Period, Median <i>Years</i>
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %	Net Benefit %	
1	11,519	9,801	12,990	22,790	0	NA	NA	NA	NA
2	10,370	9,841	12,198	22,039	NA	0	100	0	0.40
3	9,795	9,855	11,803	21,658	NA	0	100	0	0.36
4	9,220	9,870	11,407	21,276	384	0	91	9	0.34
5	8,645	9,884	11,011	20,895	570	0	82	18	0.33
6	8,070	10,002	10,615	20,618	849	0	82	18	0.67
7	7,495	10,146	10,220	20,366	1102	0	82	18	0.98

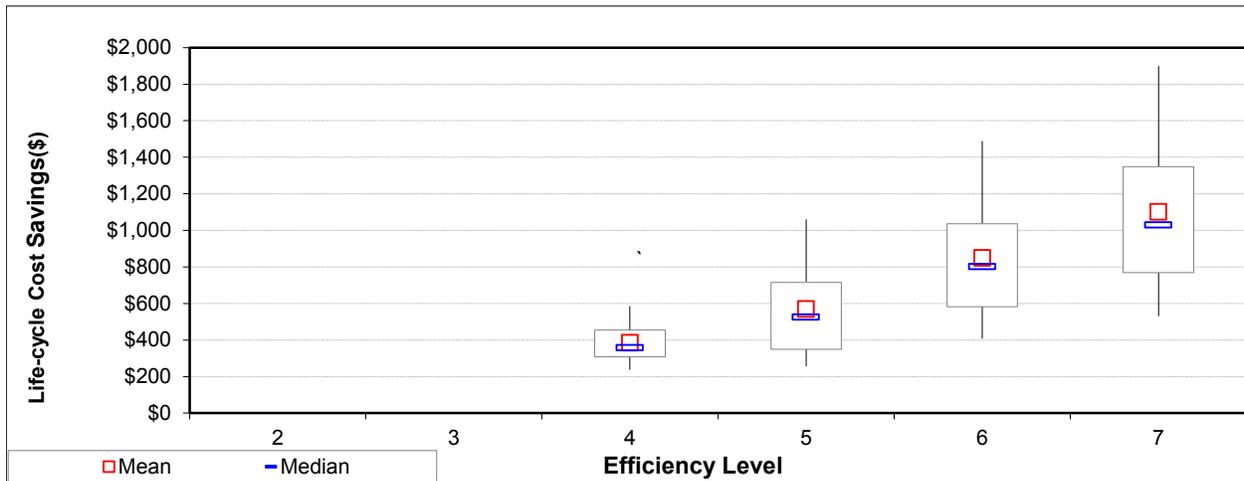


Figure 8B.2.29 LCC Results for Ice-Making Head, Air-Cooled, Large, Continuous (IMH-A-Large-C)

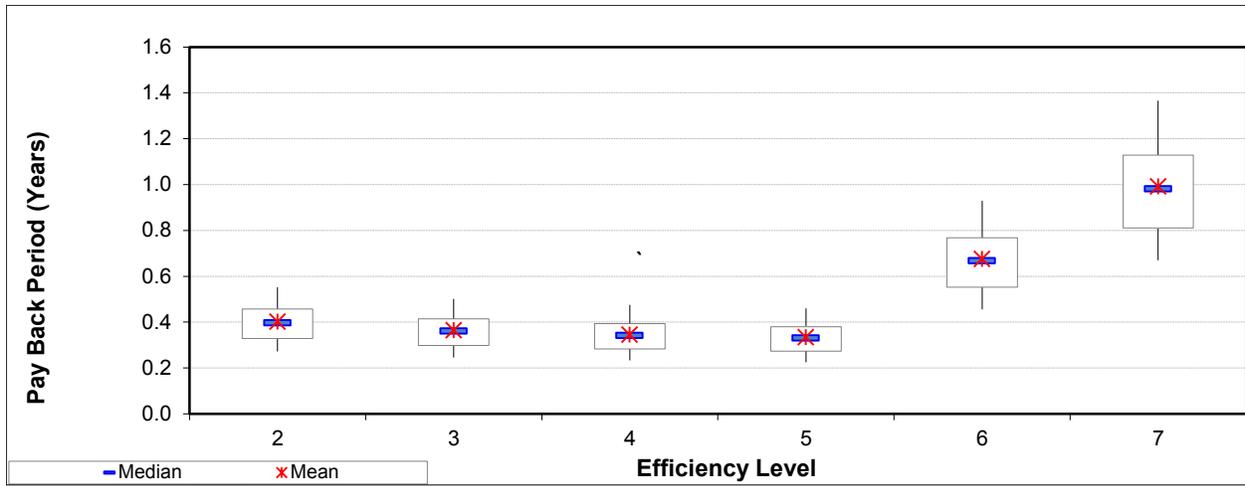


Figure 8B.2.30 PBP Results for Ice-Making Head, Air-Cooled, Large, Continuous (IMH-A-Large-C)

8B.2.16 LIFE-CYCLE COST RESULTS FOR REMOTE CONDENSING UNIT, WATER-COOLED, LARGE, CONTINUOUS (RCU-SMALL-C)

Table 8B.2.16 LCC Results for Remote Condensing Unit, Water-Cooled, Large, Continuous (RCU-Small-C)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings			Payback Period, Median <i>Years</i>	
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %		Net Benefit %
1	12,158	7,719	12,241	19,960	0	NA	NA	NA	NA
2	11,272	7,733	11,632	19,365	NA	0	100	0	0.19
3	10,156	7,828	10,863	18,691	678	0	87	13	0.62
4	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

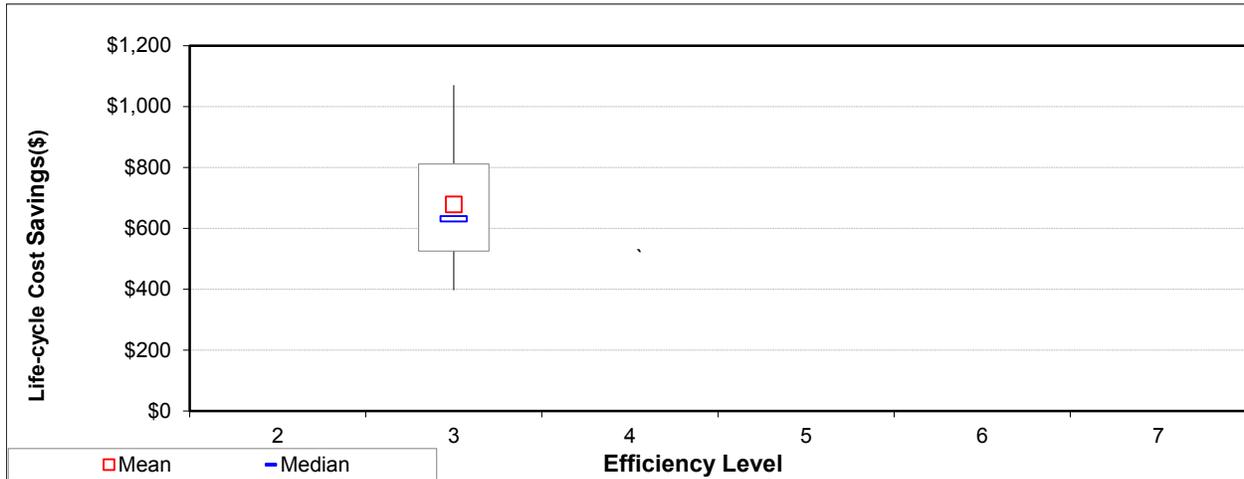


Figure 8B.2.31 LCC Results for Remote Condensing Unit, Water-Cooled, Large, Continuous (RCU-Small-C)

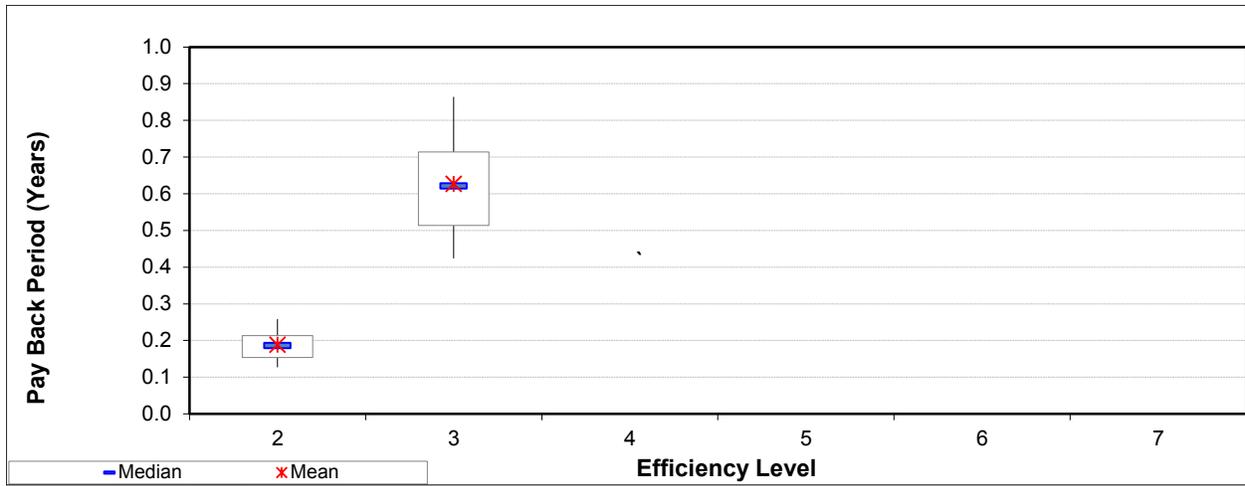


Figure 8B.2.32 PBP Results for Remote Condensing Unit, Water-Cooled, Large, Continuous (RCU-Small-C)

8B.2.17 LIFE-CYCLE COST RESULTS FOR REMOTE CONDENSING UNIT, WATER-COOLED, LARGE, CONTINUOUS (RCU-LARGE-C)

Table 8B.2.17 LCC Results for Remote Condensing Unit, Water-Cooled, Large, Continuous (RCU-Large-C)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings			Payback Period, Median <i>Years</i>	
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %		Net Benefit %
1	15,078	11,529	16,749	28,278	0	NA	NA	NA	NA
2	13,979	11,545	15,993	27,537	NA	0	100	0	0.17
3	12,594	11,694	15,039	26,733	811	0	85	15	0.76
4	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

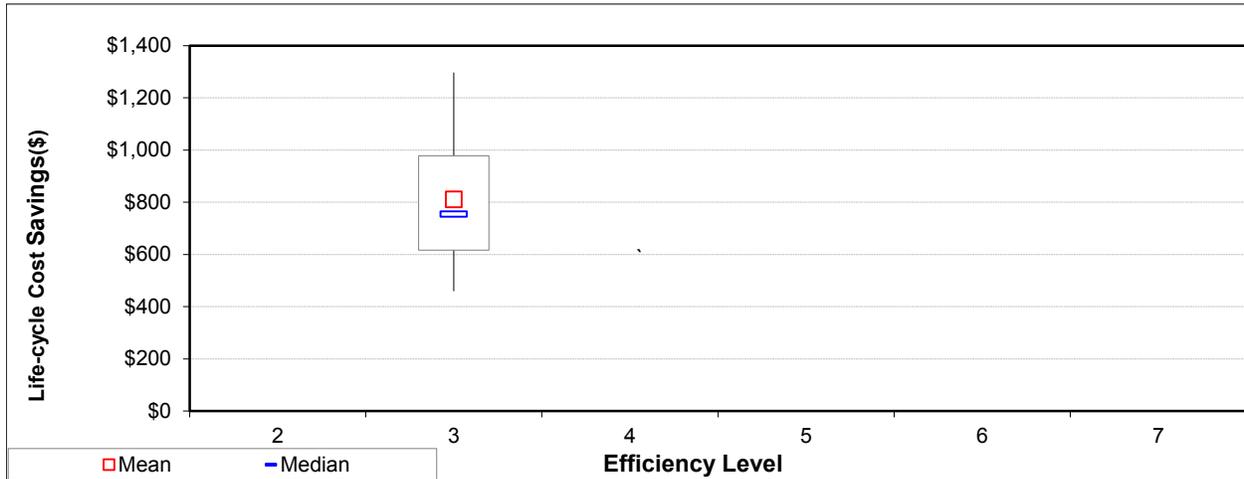


Figure 8B.2.33 LCC Results for Remote Condensing Unit, Water-Cooled, Large, Continuous (RCU-Large-C)

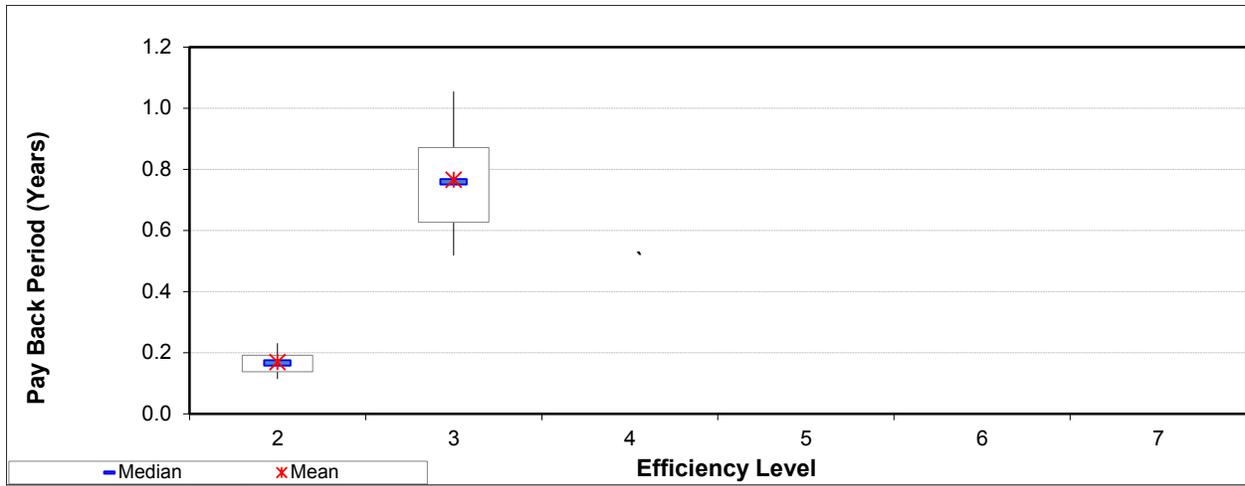


Figure 8B.2.34 PBP Results for Remote Condensing Unit, Water-Cooled, Large, Continuous (RCU-Large-C)

8B.2.18 LIFE-CYCLE COST RESULTS FOR SELF-CONTAINED UNIT, WATER-COOLED, LARGE, CONTINUOUS (SCU-W-LARGE-C)

Table 8B.2.18 LCC Results for Self-Contained Unit, Water-Cooled, Large, Continuous (SCU-W-Large-C)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings			Payback Period, Median <i>Years</i>	
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %		Net Benefit %
1	3,471	4,493	8,052	12,545	0	NA	NA	NA	NA
2	3,350	4,499	7,969	12,468	NA	0	100	0	0.61
3	3,143	4,512	7,827	12,339	NA	0	100	0	0.67
4	2,933	4,525	7,682	12,207	132	0	23	77	0.68
5	2,850	4,528	7,625	12,153	186	0	23	77	0.65
6	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

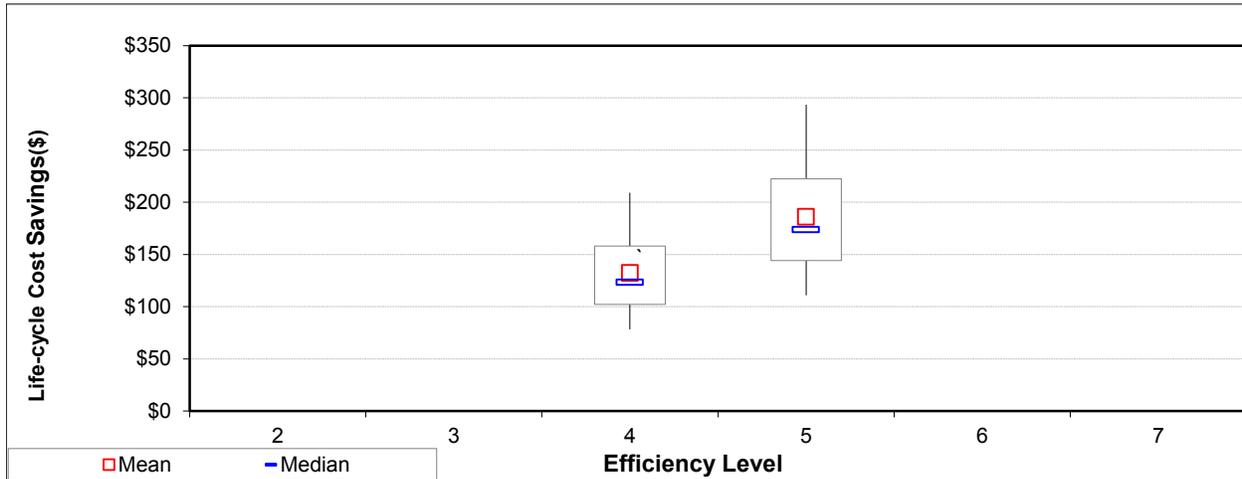


Figure 8B.2.35 LCC Results for Self-Contained Unit, Water-Cooled, Large, Continuous (SCU-W-Large-C)

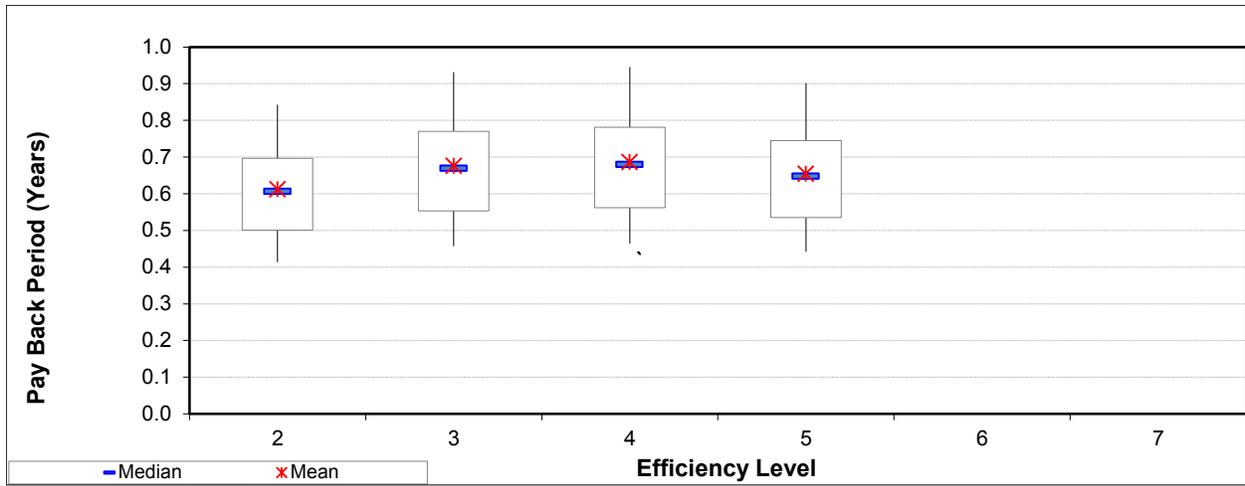


Figure 8B.2.36 PBP Results for Self-Contained Unit, Water-Cooled, Large, Continuous (SCU-W-Large-C)

8B.2.19 LIFE-CYCLE COST RESULTS FOR SELF-CONTAINED UNIT, AIR-COOLED, SMALL, CONTINUOUS (SCU-A-SMALL-C)

Table 8B.2.19 LCC Results for Self-Contained Unit, Air-Cooled, Small, Continuous (SCU-A-Small-C)

Efficiency Level Number	Efficiency Level <i>kWh/year</i>	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings			Payback Period, Median <i>Years</i>	
		Installed Cost <i>2010\$</i>	Total Discounted Operating Cost <i>2010\$</i>	LCC, All Customers <i>2010\$</i>	Affected Customers' Average Savings <i>2010\$</i>	% of Customers that Experience			
						Net Cost %	No Impact %		Net Benefit %
1	3,635	4,469	4,364	8,832	0	NA	NA	NA	NA
2	3,382	4,507	4,189	8,697	NA	0	100	0	1.74
3	3,093	4,542	3,990	8,533	NA	0	100	0	1.55
4	2,985	4,550	3,916	8,466	NA	0	100	0	1.43
5	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	NA	NA	NA	NA	NA	NA	NA	NA	NA

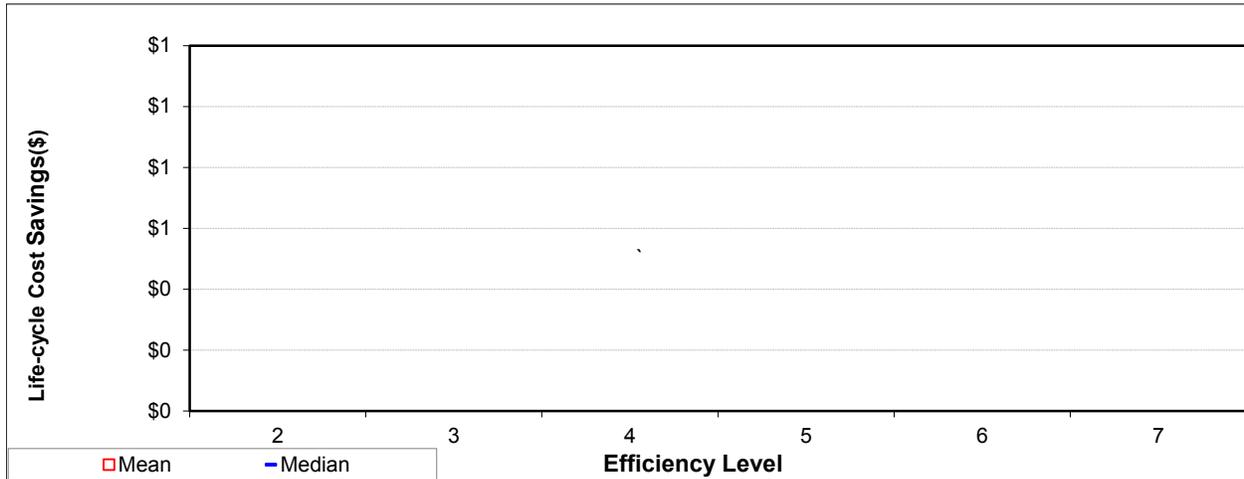


Figure 8B.2.37 LCC Results for Self-Contained Unit, Air-Cooled, Small, Continuous (SCU-A-Small-C)

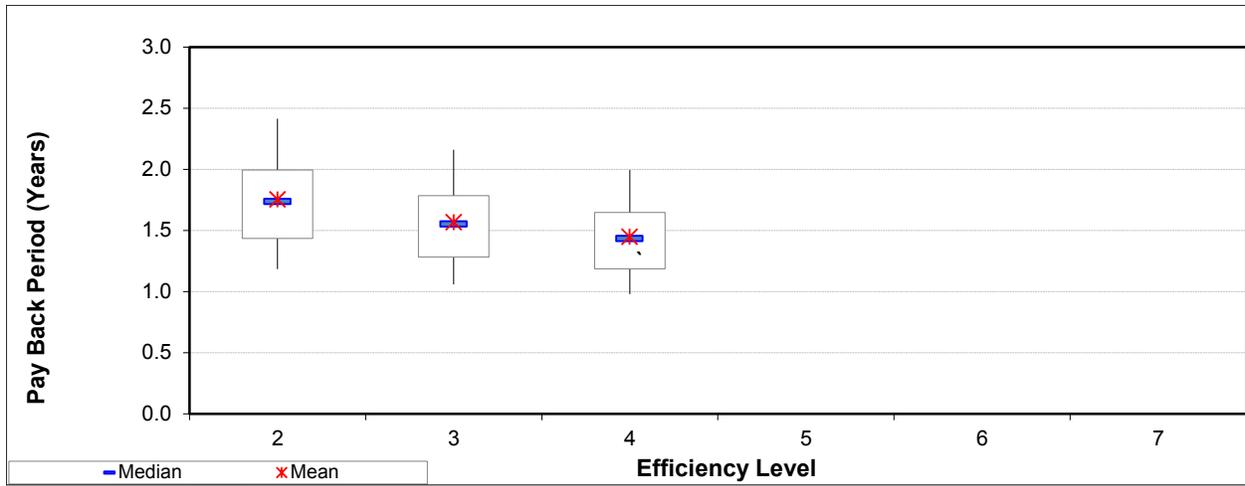


Figure 8B.2.38 PBP Results for Self-Contained Unit, Air-Cooled, Small, Continuous (SCU-A-Small-C)

8B.2.20 LIFE-CYCLE COST RESULTS FOR SELF-CONTAINED UNIT, AIR-COOLED, LARGE, CONTINUOUS (SCU-A-LARGE-C)

Table 8B.2.20 LCC Results for Self-Contained Unit, Air-Cooled, Large, Continuous (SCU-A-Large-C)

Efficiency Level Number	Efficiency Level kWh/year	Life-Cycle Cost, All Customers			Life-Cycle Cost Savings				Payback Period, Median Years
		Installed Cost 2010\$	Total Discounted Operating Cost 2010\$	LCC, All Customers 2010\$	Affected Customers' Average Savings 2010\$	% of Customers that Experience			
						Net Cost %	No Impact %	Net Benefit %	
1	5,387	6,324	6,528	12,853	0	NA	NA	NA	NA
2	5,012	6,324	6,270	12,594	NA	0	100	0	0.00
3	4,583	6,383	5,974	12,358	NA	0	100	0	0.84
4	4,314	6,428	5,790	12,218	NA	0	100	0	1.11
5	4,046	6,481	5,605	12,086	132	0	95	5	1.34
6	3,778	6,540	5,420	11,961	189	0	90	10	1.53
7	3,456	6,860	5,199	12,059	-40	25	66	9	3.17

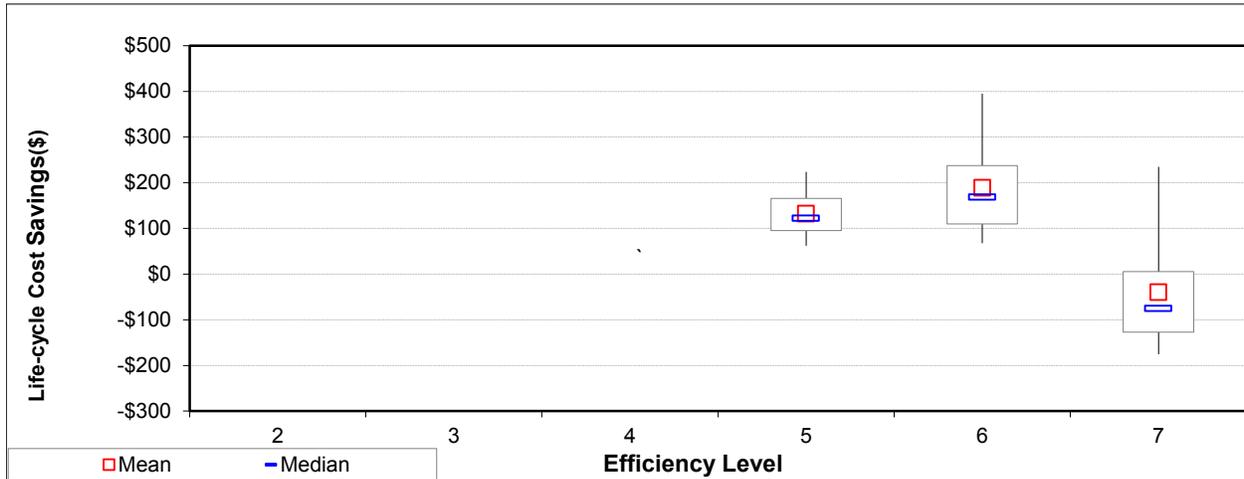


Figure 8B.2.39 LCC Results for Self-Contained Unit, Air-Cooled, Large, Continuous (SCU-A-Large-C)

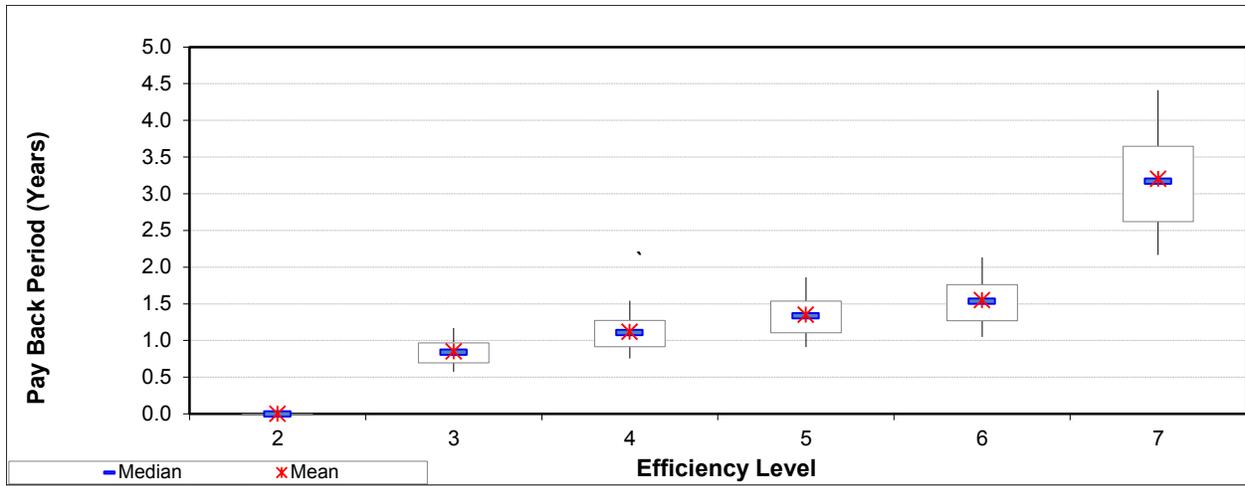


Figure 8B.2.40 PBP Results for Self-Contained Unit, Air-Cooled, Large, Continuous (SCU-A-Large-C)