APPENDIX 8.3. LCC AND PBP RESULTS USING ALTERNATIVE INSTALLATION COST SCENARIOS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDIX 8.3. LCC AND PBP RESULTS USING ALTERNATIVE INSTALLATION COST SCENARIOS

8.3.1 INTRODUCTION

This appendix presents life-cycle cost (LCC) and payback period (PBP) results using alternative installation costs for non-weatherized gas furnaces and gas boilers. These results are presented as high and low sensitivity cases. For non-weatherized gas furnaces, DOE used two alternative sources: a 1994 Gas Research Institute (GRI) report, and data from Natural Resources Canada (NRCanada) (see Chapter 8 for references). For gas boilers, DOE used the GRI report as an alternative source.

8.3.2 LCC AND PBP RESULTS FOR NON-WEATHERIZED GAS FURNACES USING ALTERNATIVE INSTALLATION COSTS

Table 8.3.2.1 LCC and PBP Results for Non-Weatherized Gas Furnaces Using GRI Installation Costs

	LCC					Payback	
Design Option: AFUE/Electricity	**Average**	**Average Savings**	**Net Cost**	**No Impact***	**Net Benefit**	**Median**	**Average***
	$	**$**	**%**	**%**	**%**	**years**	**years**
78%	$10,022						
80%	$10,042	-$1	1%	99%	1%	21.2	60.3
80% PSC+	$10,031	$7	17%	27%	56%	5.4	5.8
80% ECM	$10,121	-$60	60%	27%	14%	23.1	33.8
80% BC/ECM+	$10,069	-$22	51%	27%	22%	17.3	26.4
80% 2-stage mod.	$9,965	$40	33%	27%	40%	8.6	13.8
80% 2-mod. ECM	$10,042	-$14	48%	27%	26%	15.4	21.2
80% 2-stage mod. BC/ECM+	$10,029	$0	45%	27%	28%	14.4	21.0
81% 8% Cat. III	$10,088	-$42	7%	27%	66%	1.4	38.2
81% PSC+	$10,077	-$34	8%	26%	66%	2.2	29.4
81% ECM	$10,167	-$101	49%	26%	25%	15.5	30.9
81% BC/ECM+	$10,115	-$63	42%	26%	32%	13.0	26.7
81% 2-stage Mod, no Cat. III	$9,892	$88	19%	26%	55%	5.6	10.0
81% 2-stage Mod ECM	$10,094	-$59	42%	26%	32%	13.0	24.6
81% 2-stage Mod BC/ECM+	$10,080	-$44	40%	26%	34%	12.3	23.6

82%	$10,808	-$579	70%	26%	4%	8.4	204.4
82% PSC+	$10,798	-$571	70%	26%	4%	12.0	192.8
82% ECM	$10,887	-$638	71%	26%	3%	66.6	189.6
82% BC/ECM+	$10,836	-$600	67%	26%	6%	49.1	141.3
82% 2-stage Mod	$10,741	-$543	65%	26%	9%	20.9	146.0
82% 2-stage Mod ECM	$10,817	-$598	67%	26%	7%	47.6	143.9
82% 2-stage Mod BC/ECM+	$10,802	-$582	65%	26%	8%	40.9	121.2
83%	$11,685	-$1,235	74%	26%	0%	177.5	345.8
90% Baseline Cond.	$10,181	-$168	49%	26%	25%	15.8	46.1
90% PSC+	$10,171	-$159	51%	15%	34%	11.8	41.0
90% ECM	$10,272	-$240	60%	15%	24%	20.3	48.6
90% BC/ECM+	$10,221	-$194	58%	15%	27%	18.1	43.5
91% 2-stage Mod ECM	$10,163	-$155	54%	15%	30%	15.2	40.7
91% 2-stage BC/ECM+	$10,142	-$133	53%	15%	31%	15.1	37.7
91% Step Mod ECM	$10,383	-$342	63%	15%	21%	21.3	54.4
91% Step Mod BC/ECM+	$10,375	-$329	63%	15%	22%	21.0	48.9
92%Incr. HX Area	$10,189	-$180	55%	15%	30%	14.6	43.3
92% PSC+	$10,179	-$170	58%	2%	40%	11.7	36.8
92% ECM	$10,280	-$269	72%	2%	26%	20.6	45.8
92% BC/ECM+	$10,229	-$219	69%	2%	30%	18.4	39.6
93% 2-stage Mod ECM	$10,177	-$168	63%	2%	35%	15.0	39.2
93% 2-stage Mod BC/ECM+	$10,155	-$147	63%	2%	36%	15.0	36.2
93% Step Mod ECM	$10,399	-$387	75%	2%	24%	21.1	50.4
93% Step Mod BC/ECM+	$10,389	-$376	74%	2%	24%	21.0	45.4
96% Step Mod ECM	$11,018	-$996	87%	2%	11%	31.7	91.9
96% Step Mod BC/ECM+	$11,031	-$1,009	89%	0%	11%	32.6	87.3

* “No impact” means that the base case furnace assigned to the household has greater efficiency than the level indicated, so the household is not affected.

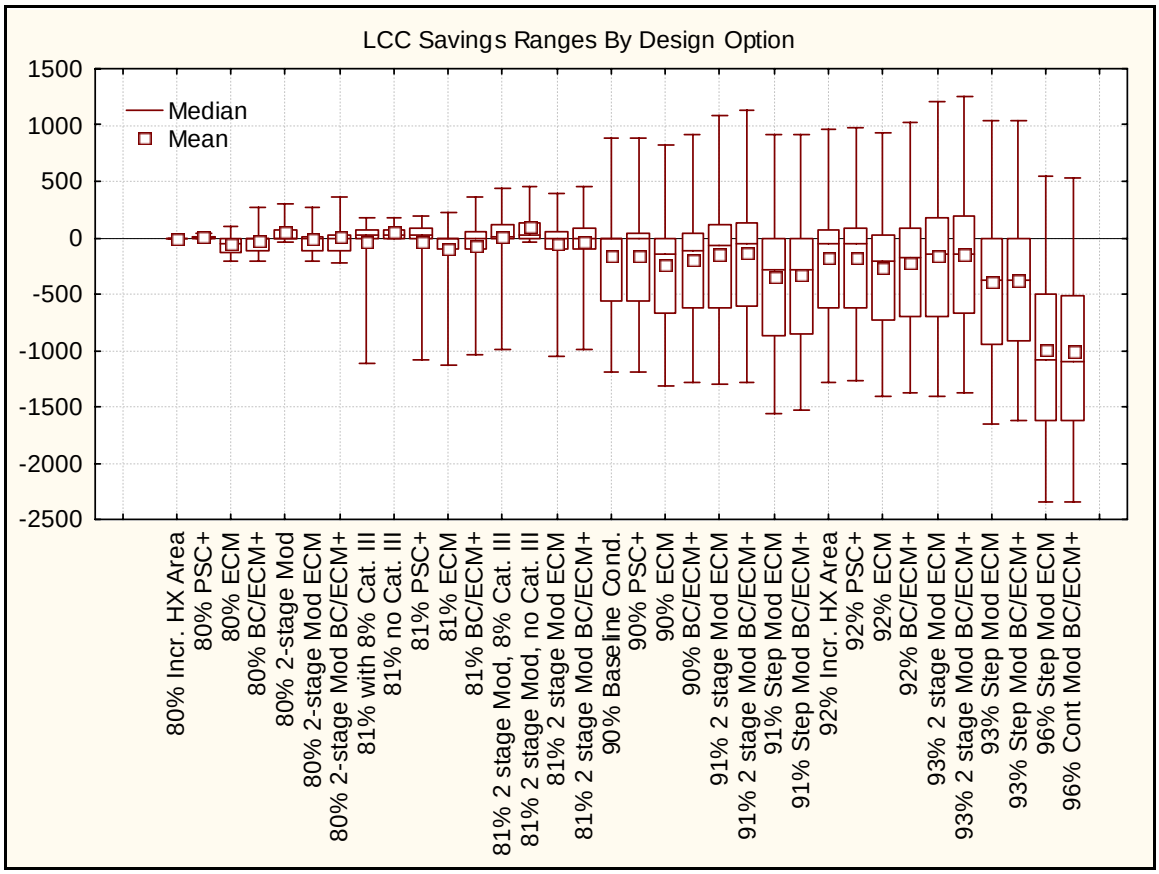

Figure 8.3.2.1 National LCC Savings for Non-Weatherized Gas Furnaces, Using GRI Data

Table 8.3.2.2 LCC and PBP Results for Non-Weatherized Gas Furnaces Using NRCan Installation Costs

	LCC					Payback	
Design Option: AFUE/Electricity	**Average**	**Average Savings**	**Net Cost**	**No Impact***	**Net Benefit**	**Median**	**Average***
	$	**$**	**%**	**%**	**%**	**years**	**years**
78%	$9,656						
80%	$9,483	$1	0%	99%	1%	1.0	1.3
80% PSC+	$9,472	$9	17%	26%	57%	5.3	4.7
80% ECM	$9,561	-$57	60%	26%	14%	22.6	33.0
80% BC/ECM+	$9,508	-$18	50%	26%	23%	17.0	25.7
80% 2-stage mod.	$9,407	$42	33%	26%	41%	8.4	13.2
80% 2-mod. ECM	$9,482	-$11	48%	26%	26%	15.0	20.4
80% 2-stage mod. BC/ECM+	$9,468	$4	45%	26%	29%	14.2	20.2
81% 8% Cat. III	$9,472	$2	7%	26%	67%	1.4	20.1
81% PSC+	$9,462	$10	8%	26%	67%	2.1	16.2
81% ECM	$9,551	-$57	49%	26%	25%	15.3	24.8
81% BC/ECM+	$9,498	-$17	42%	26%	32%	12.8	21.8
81% 2-stage Mod, no Cat. III	$9,333	$90	19%	26%	56%	5.4	9.1
81% 2-stage Mod ECM	$9,477	-$14	42%	26%	32%	12.7	20.0
81% 2-stage Mod BC/ECM+	$9,463	$2	40%	26%	35%	12.0	19.6
82%	$9,970	-$375	70%	26%	4%	7.3	100.6
82% PSC+	$9,959	-$367	69%	26%	5%	9.6	102.7
82% ECM	$10,048	-$433	71%	26%	4%	53.5	128.2
82% BC/ECM+	$9,996	-$394	67%	26%	7%	39.0	94.8
82% 2-stage Mod	$9,903	-$339	65%	26%	10%	16.4	72.7
82% 2-stage Mod ECM	$9,977	-$392	67%	26%	8%	37.8	99.4
82% 2-stage Mod BC/ECM+	$9,962	-$376	65%	26%	9%	33.2	87.6
83%	$10,422	-$718	74%	26%	0%	93.0	193.7
90% Baseline Cond.	$9,373	$18	45%	26%	29%	10.7	25.2
90% PSC+	$9,363	$27	46%	16%	38%	8.9	23.0
90% ECM	$9,463	-$54	57%	16%	27%	15.8	33.5
90% BC/ECM+	$9,412	-$8	54%	16%	31%	14.3	31.0

91% 2-stage Mod ECM	$9,353	$31	50%	16%	34%	12.6	29.5
91% 2-stage BC/ECM+	$9,332	$53	49%	16%	36%	12.4	27.2
91% Step Mod ECM	$9,574	-$156	61%	16%	24%	18.2	42.8
91% Step Mod BC/ECM+	$9,565	-$143	60%	16%	24%	17.9	39.1
92%Incr. HX Area	$9,380	$6	51%	16%	33%	12.0	28.3
92% PSC+	$9,370	$15	55%	2%	44%	10.1	25.2
92% ECM	$9,471	-$84	69%	2%	29%	17.6	35.7
92% BC/ECM+	$9,420	-$33	65%	2%	33%	15.6	31.1
93% 2-stage Mod ECM	$9,367	$17	59%	2%	39%	13.4	31.3
93% 2-stage Mod BC/ECM+	$9,345	$39	58%	2%	40%	13.3	27.8
93% Step Mod ECM	$9,589	-$201	72%	2%	26%	18.9	41.2
93% Step Mod BC/ECM+	$9,579	-$190	72%	2%	27%	18.7	38.0
96% Step Mod ECM	$10,176	-$779	87%	2%	11%	27.7	74.0
96% Step Mod BC/ECM+	$10,189	-$792	89%	0%	11%	28.3	76.3

* “No impact” means that the base case furnace assigned to the household has greater efficiency than the level indicated, so the household is not affected.

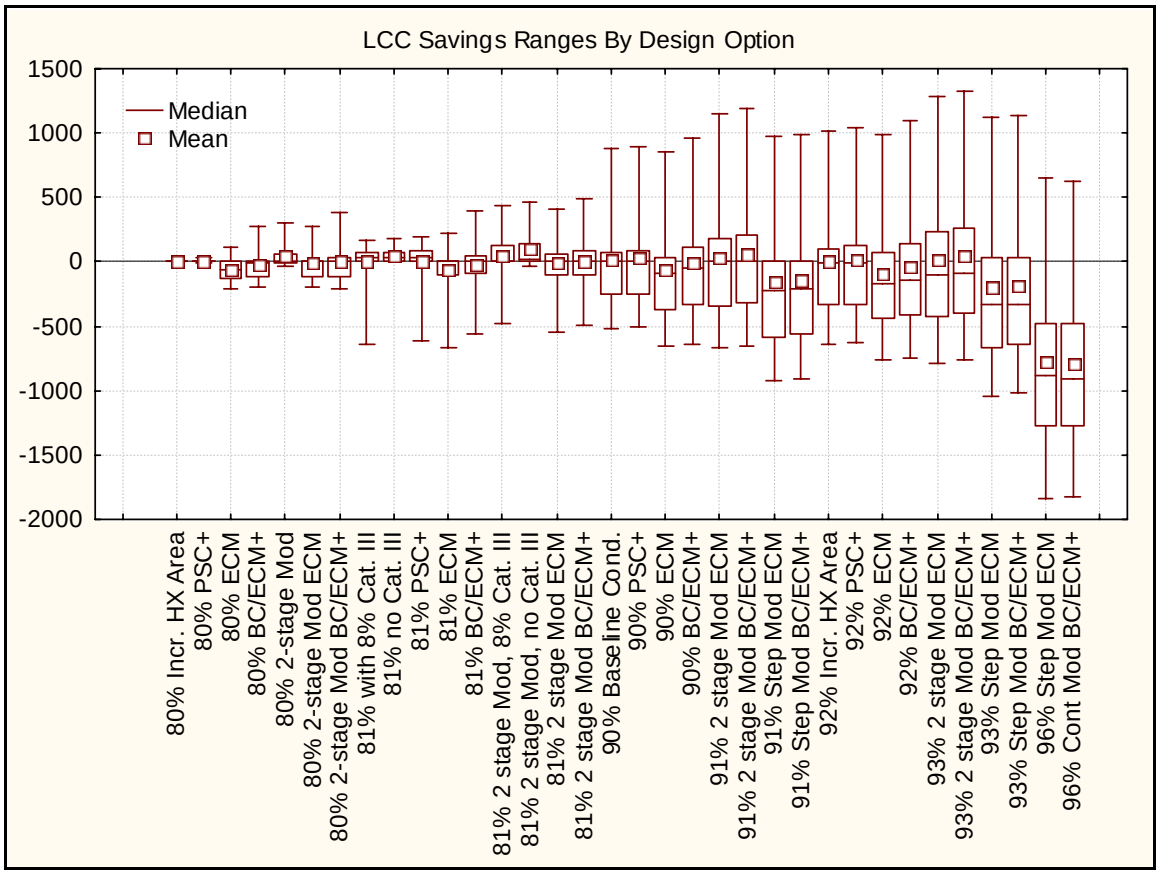

Figure 8.3.2.2 National LCC Savings for Non-Weatherized Gas Furnaces, Using NRCan Data

8.3.3 LCC AND PBP RESULTS FOR GAS BOILERS USING ALTERNATIVE INSTALLATION COSTS

Table 8.3.3.1 LCC and PBP Results for Hot-Water Gas Boilers Using GRI Installation Costs

	LCC					Payback	
Design Option: AFUE/Electricity	**Average LCC**	**Average Savings**	**Net Cost**	**No Impact**	**Net Benefit**	**Median**	**Average**
80% Baseline	$10,564						
81%	$10,299	$93	0%	65%	35%	2.1	2.4
81% 2-stage modulation	$10,527	-$36	38%	44%	18%	9.9	14.8
81% Imp Circ Pump	$10,549	-$48	41%	44%	16%	15.1	55.9
82%	$10,243	$125	3%	44%	53%	2.5	3.3
82% 2-stage modulation	$10,470	-$36	48%	30%	22%	9.3	19.6
82% Imp Circ Pump	$10,492	-$51	51%	30%	19%	19.1	42.9
83%	$10,184	$166	5%	30%	66%	2.5	3.3
83% 2-stage modulation	$10,412	-$29	59%	15%	27%	9.9	23.3
83% Imp Circ Pump	$10,434	-$46	61%	15%	24%	17.8	39.6
84%	$10,127	$215	6%	15%	79%	2.5	3.4
84% 2-stage modulation	$10,355	$0	62%	6%	32%	10.5	22.7
84% Imp Circ Pump	$10,377	-$20	63%	6%	31%	15.1	31.4
88%	$11,288	-$870	68%	6%	26%	27.7	54.0
91%	$11,902	-$1,466	82%	3%	15%	40.3	97.0
99%	$12,383	-$1,946	90%	0%	10%	33.2	75.1

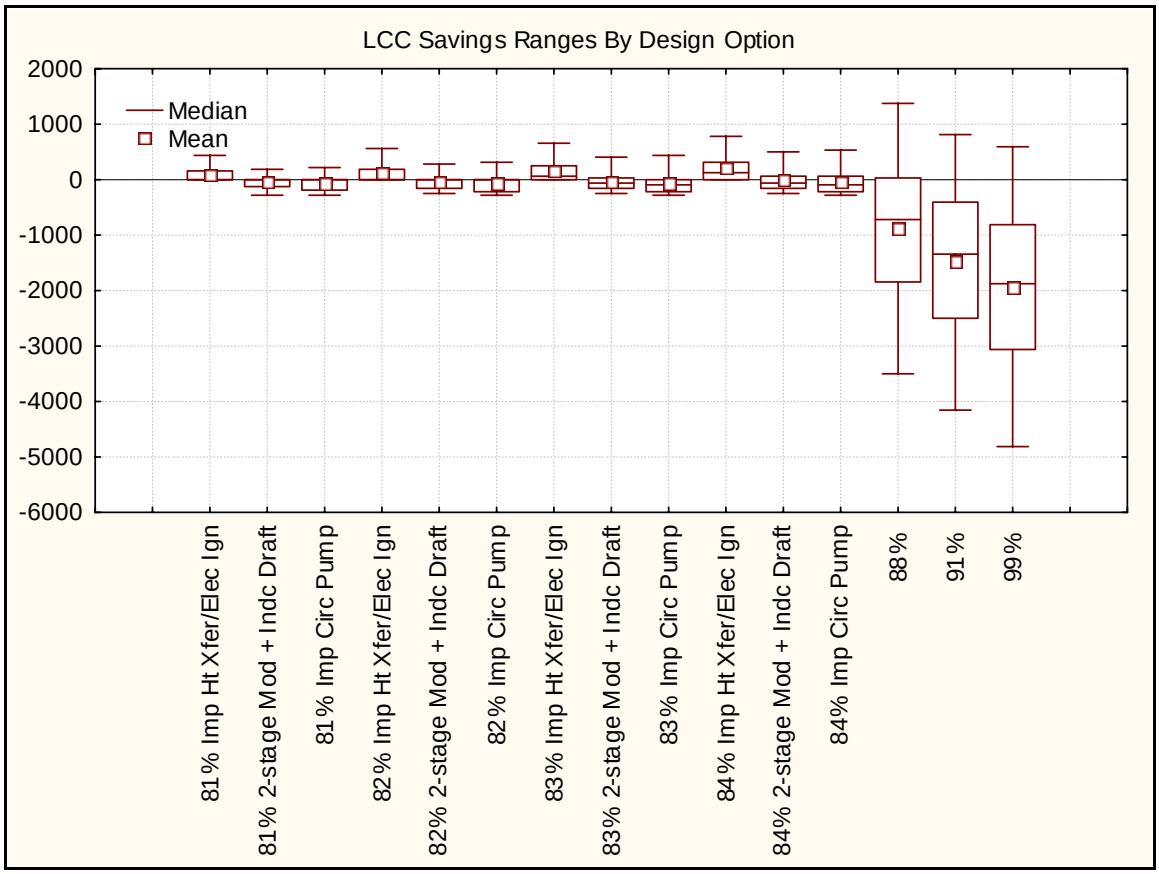

Figure 8.3.3.1 National LCC Savings for Gas Boilers, Using GRI Data