

CHAPTER 11. CONSUMER SUBGROUP ANALYSIS

TABLE OF CONTENTS

11.1	INTRODUCTION	11-1
11.2	SUBGROUPS DEFINITION	11-1
11.2.1	Senior-Only Households.....	11-1
11.2.2	Low-Income Households.....	11-1
11.3	INPUTS TO THE LIFE-CYCLE COST AND PAYBACK PERIOD SUBGROUP ANALYSIS.....	11-2
11.4	RESULTS	11-3
11.4.1	Senior-Only.....	11-3
11.4.2	Low-Income.....	11-4

LIST OF TABLES

Table 11.2.1	RECS 2005 Definitions of Low-Income Households by Yearly Income.....	11-2
Table 11.3.1	Household Population.....	11-2
Table 11.3.2	Weighted-Average Annual Energy Use for Microwaves and Countertop Combination Ovens	11-3
Table 11.3.3	Weighted-Average Annual Energy Use for Over the Range Combination Ovens	11-3
Table 11.4.1	Microwave and Countertop Combination Ovens: LCC and PBP Results for Senior-Only Households	11-3
Table 11.4.2	Over the Range Combination Ovens: LCC and PBP Results for Senior-Only Households.....	11-4
Table 11.4.3	Microwave and Countertop Combination Ovens:: LCC and PBP Results for Low-Income Households	11-4
Table 11.4.4	Over the Range Combination Ovens: LCC and PBP Results for Low-Income Households.....	11-4

CHAPTER 11. CONSUMER SUBGROUP ANALYSIS

11.1 INTRODUCTION

Chapter 8 describes the life-cycle cost (LCC) and payback period (PBP) analyses that examine impacts of energy conservation standards on the U.S. population. In analyzing the potential impact of new or amended standards on residential consumers, DOE further evaluates the impact on identifiable groups of consumers (i.e., subgroups) that may be disproportionately affected by a national standard level. The consumer subgroup analysis evaluates impacts by analyzing the LCC and PBPs for subgroups of residential consumers.

For microwave oven standby mode and off mode, DOE identified two consumer subgroups that warranted further study: (a) households composed of people 65 years of age or older (senior-only); and (b) households at or below the poverty line (low-income).

DOE determined the impact on consumer subgroups for microwave and combination ovens using the LCC Spreadsheet Model, which allows for the examination of particular consumer subgroups. Chapter 8 explains in detail the inputs to the model used in determining LCC and PBPs.

This chapter describes the subgroup identification in further detail and gives the results of the LCC and PBP analyses for the considered subgroups.

11.2 SUBGROUPS DEFINITION

11.2.1 Senior-Only Households

Senior-only households have occupants who are all at least 65 years of age. Based on the DOE Energy Information Administration (EIA)'s Residential Energy Consumption Survey of 2005 (RECS), senior-only households comprise 17 percent of the country's households.¹

11.2.2 Low-Income Households

As defined in the RECS survey, low-income households are considered to be those at or below the "poverty line." The "poverty line" varies with household size, head of household age, and family income. Table 11.2.1 summarizes the income level baselines for selecting low-income households from the RECS sample. The RECS survey classifies 15 percent of the country's households as low-income.

Table 11.2.1 RECS 2005 Definitions of Low-Income Households by Yearly Income

Household Size	Average Income in \$		
	48 Contiguous States and D.C.	Alaska	Hawaii
1	9,570	11,950	11,010
2	12,830	16,030	14,760
3	16,090	20,100	18,510
4	19,350	24,190	22,260
5	22,610	28,270	26,010
6	25,870	32,350	29,760
7	29,130	36,430	33,510
8	32,390	40,510	37,260
9	35,650	44,590	41,010
10	38,910	48,670	44,760
11	42,170	52,750	48,510
12	45,430	56,830	52,260
13	48,690	60,910	56,010
14	51,950	64,990	59,760
15	55,210	69,070	63,510

11.3 INPUTS TO THE LIFE-CYCLE COST AND PAYBACK PERIOD SUBGROUP ANALYSIS

Table 11.3.1 summarizes the household population for microwave and combination ovens, while Tables 11.3.2 and 11.3.3 summarize the weighted-average annual energy use for the households analyzed in the consumer subgroup analyses. These values are compared against the weighted-average values for the national sample.

Table 11.3.1 Household Population

	All Models	
	Count	Weight
National	3835	97,672,832
Senior-Only	596	16,420,843
Senior-Only %	15.5%	16.8%
Low-Income	633	13,556,627
Low-Income %	16.5%	13.9

Table 11.3.2 Weighted-Average Annual Energy Use for Microwaves and Countertop Combination Ovens (kWh)

	All Households	Senior -Only	Low-Income
Baseline	34.75	34.69	34.74
CSL 1	17.38	17.35	17.37
CSL 2	13.03	13.01	13.03
CSL 3	8.69	8.67	8.68
CSL 4	0.17	0.17	0.17

Table 11.3.3 Weighted-Average Annual Energy Use for Over the Range Combination Ovens (kWh)

	All Households	Senior -Only	Low-Income
Baseline	39.10	39.03	39.08
CSL 1	32.15	32.09	32.13
CSL 2	23.46	23.42	23.45
CSL 3	19.11	19.08	19.11
CSL 4	0.35	0.35	0.35

11.4 RESULTS

Tables 11.4.1 through 11.4.4 below summarize the LCC results for microwave and combination ovens. The LCC results provide the average installed price; average lifetime operating cost (discounted); average life-cycle cost; average life-cycle cost savings; the percentage of consumers that are burdened with net costs, realize net savings, or are not impacted; and the median payback period.

11.4.1 Senior-Only

Table 11.4.1 Microwave and Countertop Combination Ovens: LCC and PBP Results for Senior-Only Households

Standby (W)	Life-Cycle Cost (2010\$)			Life-Cycle Cost Savings			Payback Period	
	Average Installed Price	Average Operating Cost	Average LCC	Average Savings (2010\$)	Households with			Median (years)
					Net Cost	No Impact*	Net Benefit	
4.00	\$223	\$31	\$254	NA	0%	100%	0%	NA
2.00	\$224	\$15	\$239	\$7	0%	54%	46%	0.2
1.50	\$224	\$12	\$236	\$10	0%	19%	81%	0.4
1.00	\$225	\$8	\$233	\$12	0%	0%	100%	1.0
0.02	\$230	\$0	\$230	\$15	0%	0%	100%	2.4

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

Table 11.4.2 Over the Range Combination Ovens: LCC and PBP Results for Senior-Only Households

Standby (W)	Life-Cycle Cost (2010\$)			Life-Cycle Cost Savings				Payback Period
	Average Installed Price	Average Operating Cost	Average LCC	Average Savings (2010\$)	Households with			Median (years)
					Net Cost	No Impact*	Net Benefit	
4.50	\$482	\$35	\$517	NA	0%	100%	0%	NA
3.70	\$482	\$28	\$511	\$6	0%	0%	100%	0.0
2.70	\$486	\$21	\$506	\$10	0%	0%	100%	2.0
2.20	\$496	\$17	\$513	\$4	25%	0%	75%	6.4
0.04	\$490	\$0	\$490	\$27	0%	0%	100%	1.8

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

11.4.2 Low-Income

Table 11.4.3 Microwave and Countertop Combination Ovens: LCC and PBP Results for Low-Income Households

Standby (W)	Life-Cycle Cost (2010\$)			Life-Cycle Cost Savings				Payback Period
	Average Installed Price	Average Operating Cost	Average LCC	Average Savings (2010\$)	Households with			Median (years)
					Net Cost	No Impact*	Net Benefit	
4.00	\$223	\$31	\$254	NA	0%	100%	0%	NA
2.00	\$223	\$15	\$239	\$7	0%	54%	46%	0.2
1.50	\$224	\$12	\$236	\$10	0%	19%	81%	0.4
1.00	\$225	\$8	\$233	\$12	0%	0%	100%	1.0
0.02	\$230	\$0	\$230	\$15	0%	0%	100%	2.4

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

Table 11.4.4 Over the Range Combination Ovens: LCC and PBP Results for Low-Income Households

Standby (W)	Life-Cycle Cost (2010\$)			Life-Cycle Cost Savings				Payback Period
	Average Installed Price	Average Operating Cost	Average LCC	Average Savings (2010\$)	Households with			Median (years)
					Net Cost	No Impact*	Net Benefit	
4.50	\$482	\$35	\$516	NA	0%	100%	0%	NA
3.70	\$482	\$28	\$510	\$6	0%	0%	100%	0.0
2.70	\$485	\$21	\$506	\$10	0%	0%	100%	2.0
2.20	\$496	\$17	\$513	\$4	25%	0%	75%	6.4
0.04	\$489	\$0	\$490	\$27	0%	0%	100%	1.8

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

REFERENCES

1. U.S. Department of Energy - Energy Information Administration, *Residential Energy Consumption Survey: 2005 Public Use Data Files*, 2005.
<<http://www.eia.doe.gov/emeu/recs/recspubuse05/pubuse05.html>>