

**APPENDIX R. NATIONAL ENERGY SAVINGS AND NET PRESENT VALUE USING  
ALTERNATIVE ENERGY PRICE SCENARIOS**

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**APPENDIX R. NATIONAL ENERGY SAVINGS AND NET PRESENT VALUE USING  
ALTERNATIVE ENERGY PRICE SCENARIOS**

**R.1 INTRODUCTION**

This appendix presents national energy savings (NES) and net present value (NPV) results for alternative installation costs (for non-weatherized gas furnaces and gas boilers), and alternative energy price scenarios from Energy Information (EIA)'s *Annual Energy Outlook 2005* (AEO 2005)<sup>1</sup> and *Annual Energy Outlook 2006* (AEO 2006)<sup>2</sup> for all product classes. DOE explained the calculations of NES and NPV using the reference installation costs and the default energy price forecast in Chapter 10, National Impact Analysis.

**R.2 RESULTS USING ALTERNATIVE ENERGY PRICE SCENARIOS**

For each product class, DOE calculated NES and NPV using energy price scenarios from the High and Low Economic Growth cases in AEO 2005 and AEO 2006. The NES results are the same in each energy price scenario. As one would expect, the NPV is most favorable using prices in the High Growth scenario, and least favorable using prices in the Low Growth scenario.

**R.2.1 NES/NPV Results Using High Economic Growth Scenario**

**Table R.2.1 Cumulative National Energy Savings and Consumer Net Present Value for Non-Weatherized Gas Furnaces (High Growth)**

Trial Standard Level (TSL)	Efficiency Level (AFUE)	NES (Quads)		NPV (billion 2004 \$)	
		AEO 2005	AEO 2006	AEO 2005	AEO 2006
1	80% AFUE	0.01	0.01	0.04	0.04
2	80% AFUE	0.01	0.01	0.04	0.04
3	81% AFUE	0.32	0.34	0.02	0.11
4	90% AFUE	2.87	2.98	-0.01	0.73
5	96% AFUE	4.91	5.18	-14.25	-12.72

**Table R.2.2 Cumulative National Energy Savings and Consumer Net Present Value for Weatherized Gas Furnaces (High Growth)**

Trial Standard Level (TSL)	Efficiency Level (AFUE)	NES (Quads)		NPV (billion 2004 \$)	
		AEO 2005	AEO 2006	AEO 2005	AEO 2006
1	80% AFUE	0.002	0.002	0.005	0.05
2	83% AFUE	0.10	0.11	0.21	0.23
3	83% AFUE	0.10	0.11	0.21	0.23
4	83% AFUE	0.10	0.11	0.21	0.23
5	83% AFUE	0.10	0.11	0.21	0.23

**Table R.2.3 Cumulative National Energy Savings and Consumer Net Present Value for Mobile Home Gas Furnaces (High Growth)**

Trial Standard Level (TSL)	Efficiency Level (AFUE)	NES (Quads)		NPV (billion 2004 \$)	
		AEO 2005	AEO 2006	AEO 2005	AEO 2006
1	80% AFUE	0.02	0.02	0.05	0.06
2	80% AFUE	0.02	0.02	0.05	0.06
3	81% AFUE	0.01	0.01	-0.004	0.05
4	90% AFUE	0.06	0.06	0.07	0.24
5	90% AFUE	0.06	0.06	0.07	0.24

**Table R.2.4 Cumulative National Energy Savings and Consumer Net Present Value for Non-Weatherized Oil-Fired Furnaces (High Growth)**

Trial Standard Level (TSL)	Efficiency Level (AFUE)	NES (Quads)		NPV (billion 2004 \$)	
		AEO 2005	AEO 2006	AEO 2005	AEO 2006
1	80% AFUE	0.001	0.001	0.003	0.004
2	82% AFUE	0.03	0.02	0.05	0.06
3	82% AFUE	0.03	0.02	0.05	0.06
4	84% AFUE	0.05	0.05	-0.02	0.01
5	85% AFUE	0.06	0.06	-0.06	-0.02

**Table R.2.5 Cumulative National Energy Savings and Consumer Net Present Value for Hot Water Gas Boilers (High Growth)**

Trial Standard Level (TSL)	Efficiency Level (AFUE)	NES (Quads)		NPV (billion 2004 \$)	
		AEO 2005	AEO 2006	AEO 2005	AEO 2006
1	82% AFUE	0.14	0.15	0.25	0.28
2	84% AFUE	0.25	0.26	0.36	0.41
3	84% AFUE	0.25	0.26	0.36	0.41
4	84% AFUE	0.25	0.26	0.36	0.41
5	99% AFUE	1.10	1.16	-2.30	-2.24

**Table R.2.6 Cumulative National Energy Savings and Consumer Net Present Value for Oil-Fired Boilers (High Growth)**

Trial Standard Level (TSL)	Efficiency Level (AFUE)	NES (Quads)		NPV (billion 2004 \$)	
		AEO 2005	AEO 2006	AEO 2005	AEO 2006
1	83% AFUE	0.01	0.01	0.03	0.04
2	83% AFUE	0.01	0.01	0.03	0.04
3	83% AFUE	0.01	0.01	0.03	0.04
4	84% AFUE	0.02	0.02	-0.01	0.02
5	95% AFUE	0.27	0.28	-0.96	-0.63

## R.2.2 NES/NPV Results Using Low Economic Growth Scenario

**Table R.2.7 Cumulative National Energy Savings and Consumer Net Present Value for Non-Weatherized Gas Furnaces (Low Growth)**

Trial Standard Level (TSL)	Efficiency Level (AFUE)	NES (Quads)		NPV (billion 2004 \$)	
		AEO 2005	AEO 2006	AEO 2005	AEO 2006
1	80% AFUE	0.01	0.01	0.03	0.04
2	80% AFUE	0.01	0.01	0.03	0.04
3	81% AFUE	0.29	0.28	-0.06	0.14
4	90% AFUE	2.53	2.47	-0.75	1.04
5	96% AFUE	4.35	4.30	-14.02	-10.18

**Table R.2.8 Cumulative National Energy Savings and Consumer Net Present Value for Weatherized Gas Furnaces (Low Growth)**

Trial Standard Level (TSL)	Efficiency Level (AFUE)	NES (Quads)		NPV (billion 2004 \$)	
		AEO 2005	AEO 2006	AEO 2005	AEO 2006
1	80% AFUE	0.002	0.002	0.004	0.005
2	83% AFUE	0.09	0.09	0.17	0.21
3	83% AFUE	0.09	0.09	0.17	0.21
4	83% AFUE	0.09	0.09	0.17	0.21
5	83% AFUE	0.09	0.09	0.17	0.21

**Table R.2.9 Cumulative National Energy Savings and Consumer Net Present Value for Mobile Home Gas Furnaces (Low Growth)**

Trial Standard Level (TSL)	Efficiency Level (AFUE)	NES (Quads)		NPV (billion 2004 \$)	
		AEO 2005	AEO 2006	AEO 2005	AEO 2006
1	80% AFUE	0.02	0.02	0.04	0.06
2	80% AFUE	0.02	0.02	0.04	0.06
3	81% AFUE	0.01	0.01	-0.01	0.05
4	90% AFUE	0.06	0.06	0.04	0.26
5	90% AFUE	0.06	0.06	0.04	0.26

**Table R.2.10 Cumulative National Energy Savings and Consumer Net Present Value for Oil-Fired Furnaces (Low Growth)**

Trial Standard Level (TSL)	Efficiency Level (AFUE)	NES (Quads)		NPV (billion 2004 \$)	
		AEO 2005	AEO 2006	AEO 2005	AEO 2006
1	80% AFUE	0.001	0.001	0.003	0.004
2	82% AFUE	0.02	0.02	0.05	0.06
3	82% AFUE	0.02	0.02	0.05	0.06
4	84% AFUE	0.05	0.04	-0.03	0.02
5	85% AFUE	0.06	0.05	-0.07	-0.01

**Table R.2.11 Cumulative National Energy Savings and Consumer Net Present Value for Hot Water Gas Boilers (Low Growth)**

Trial Standard Level (TSL)	Efficiency Level (AFUE)	NES (Quads)		NPV (billion 2004 \$)	
		AEO 2005	AEO 2006	AEO 2005	AEO 2006
1	82% AFUE	0.13	0.13	0.20	0.28
2	84% AFUE	0.23	0.23	0.26	0.41
3	84% AFUE	0.23	0.23	0.26	0.41
4	84% AFUE	0.23	0.23	0.26	0.41
5	99% AFUE	1.01	1.01	-2.40	-1.72

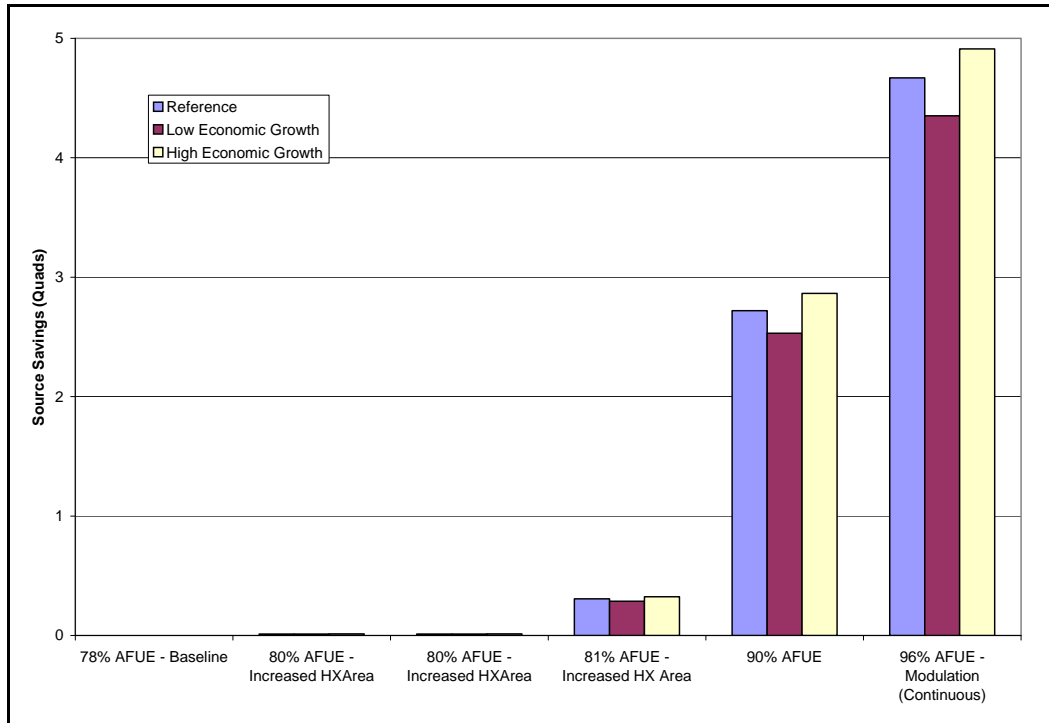
**Table R.2.12 Cumulative National Energy Savings and Consumer Net Present Value for Oil-Fired Boilers (Low Growth)**

Trial Standard Level (TSL)	Efficiency Level (AFUE)	NES (Quads)		NPV (billion 2004 \$)	
		AEO 2005	AEO 2006	AEO 2005	AEO 2006
1	83% AFUE	0.01	0.01	0.02	0.03
2	83% AFUE	0.01	0.01	0.02	0.03
3	83% AFUE	0.01	0.01	0.02	0.03
4	84% AFUE	0.02	0.02	-0.01	0.02
5	95% AFUE	0.25	0.25	-0.94	-0.54

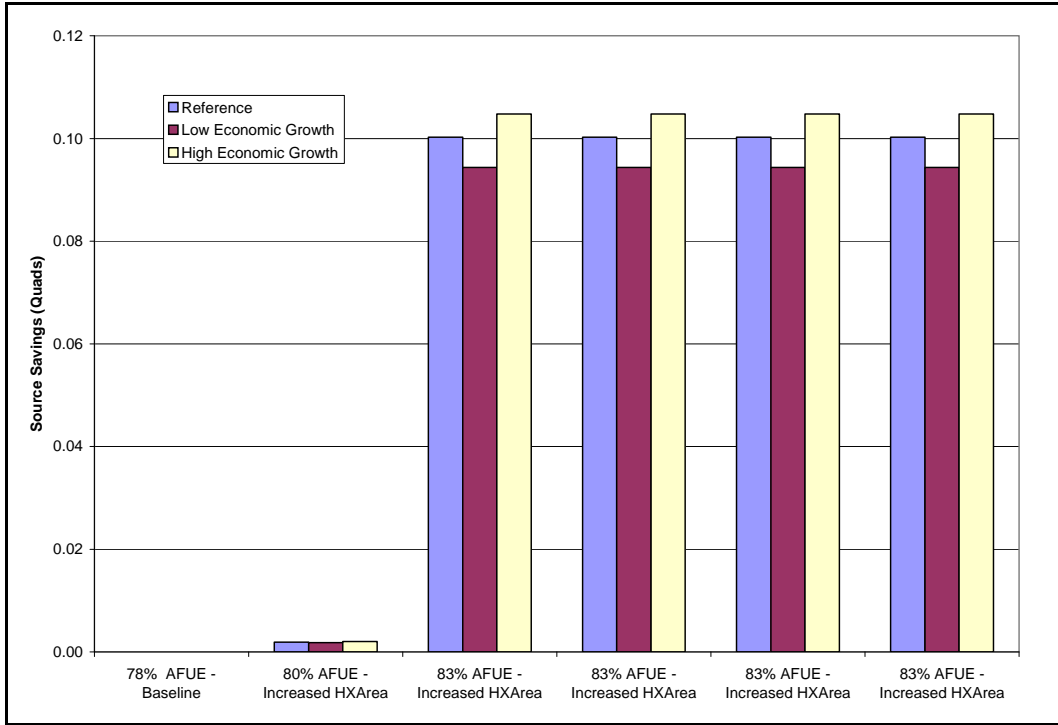
### R.3 RESULTS USING ALTERNATIVE ENERGY PRICE SCENARIOS— COMPARISON (AEO 2005)

The following figures graphically display the NES and NPV using AEO 2005 for all product classes under the low growth, the reference case, and the high growth energy price scenarios.

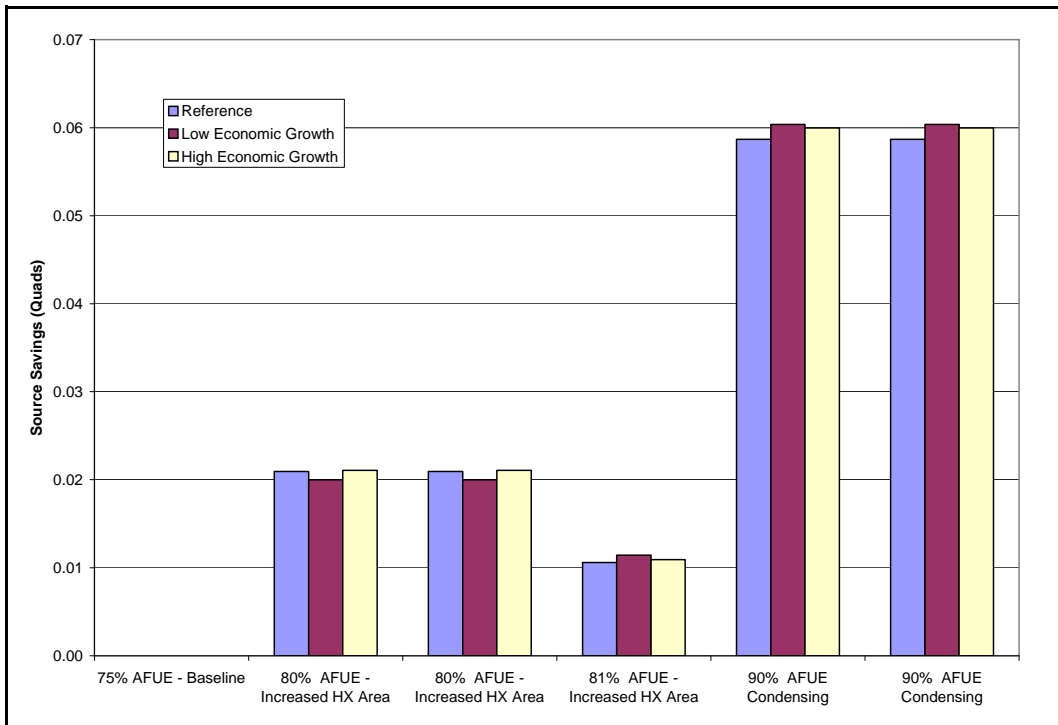
#### R.3.1 National Energy Savings (NES)



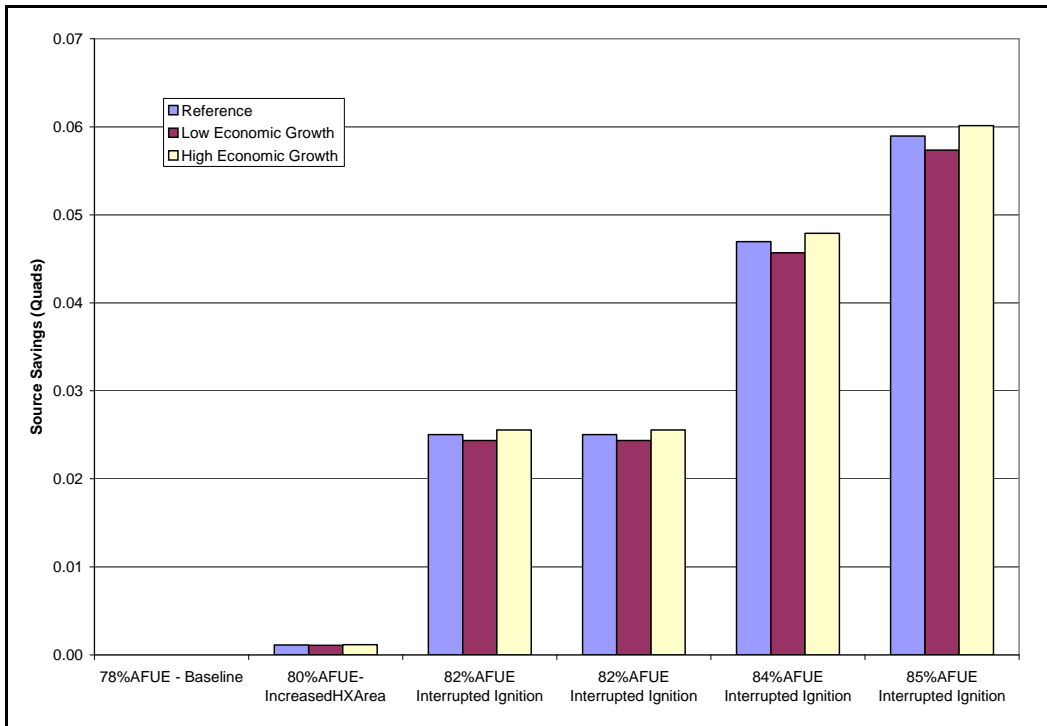
**Figure R.3.1 Non-Weatherized Gas Furnace Energy Price Scenarios Using AEO 2005 Price Data (NES)**



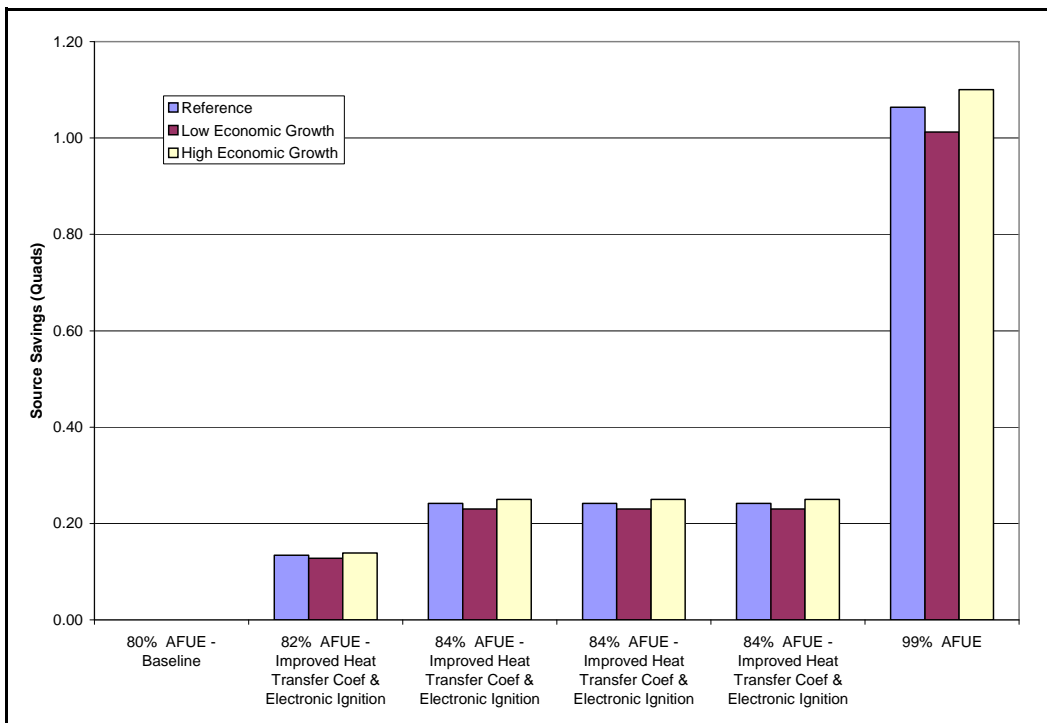
**Figure R.3.2 Weatherized Gas Furnace Energy Price Scenarios Using AEO 2005 Price Data (NES)**



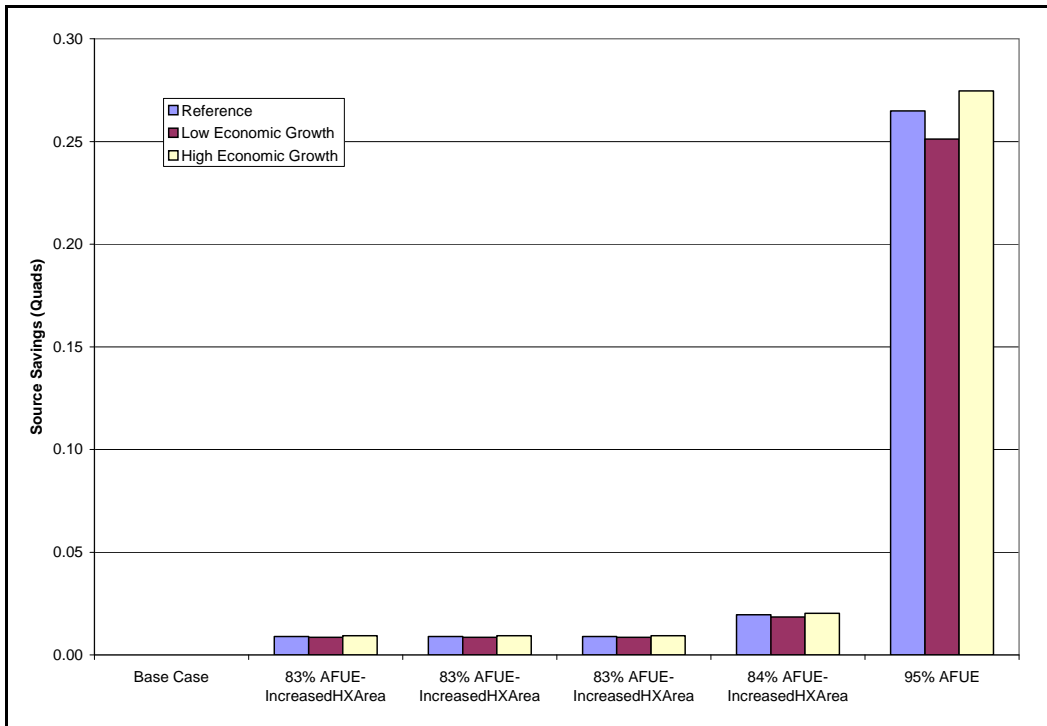
**Figure R.3.3 Mobile Home Furnace Energy Price Scenarios Using AEO 2005 Price Data (NES)**



**Figure R.3.4 Oil-Fired Furnace Energy Price Scenarios Using AEO 2005 Price Data (NES)**



**Figure R.3.5 Gas Boiler Energy Price Scenarios Using AEO 2005 Price Data (NES)**



**Figure R.3.6 Oil-Fired Boiler Energy Price Scenarios Using AEO 2005 Price Data (NES)**

### R.3.2 Net Present Value (NPV)

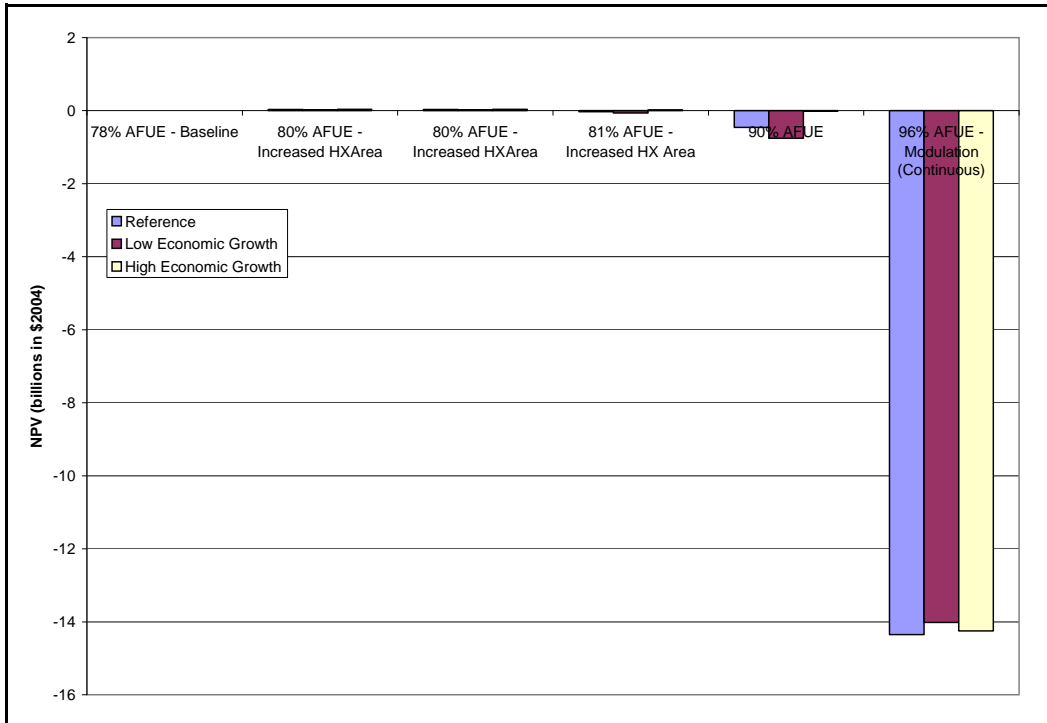


Figure R.3.7 Non-Weatherized Gas Furnace Energy Price Scenarios Using AEO 2005 Price Data (NPV)

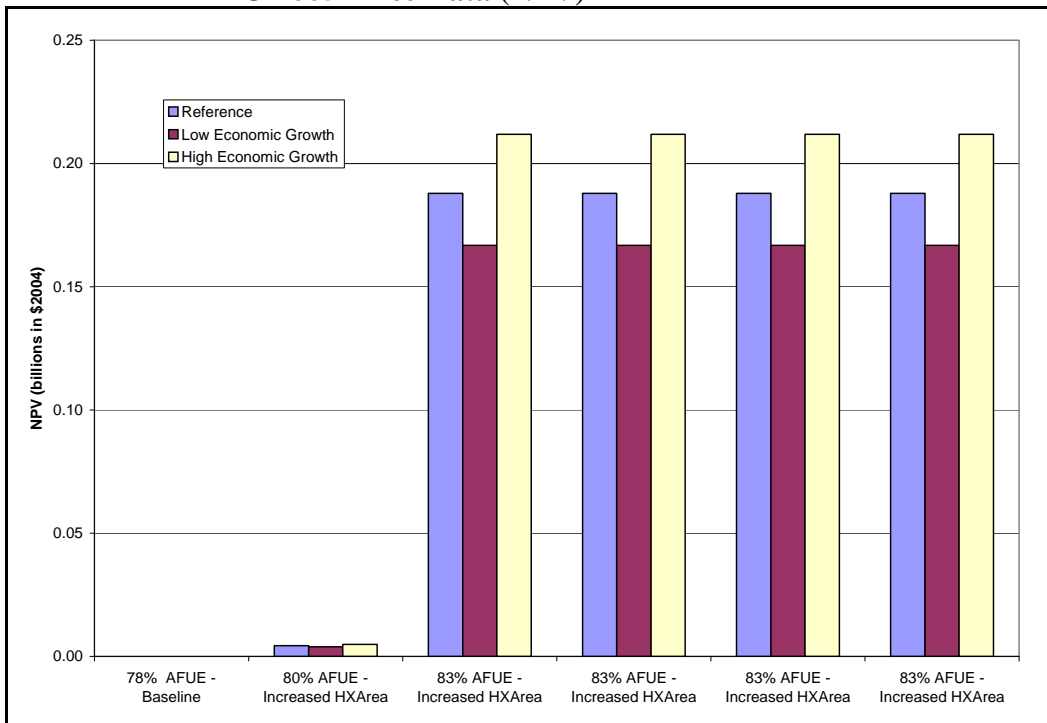
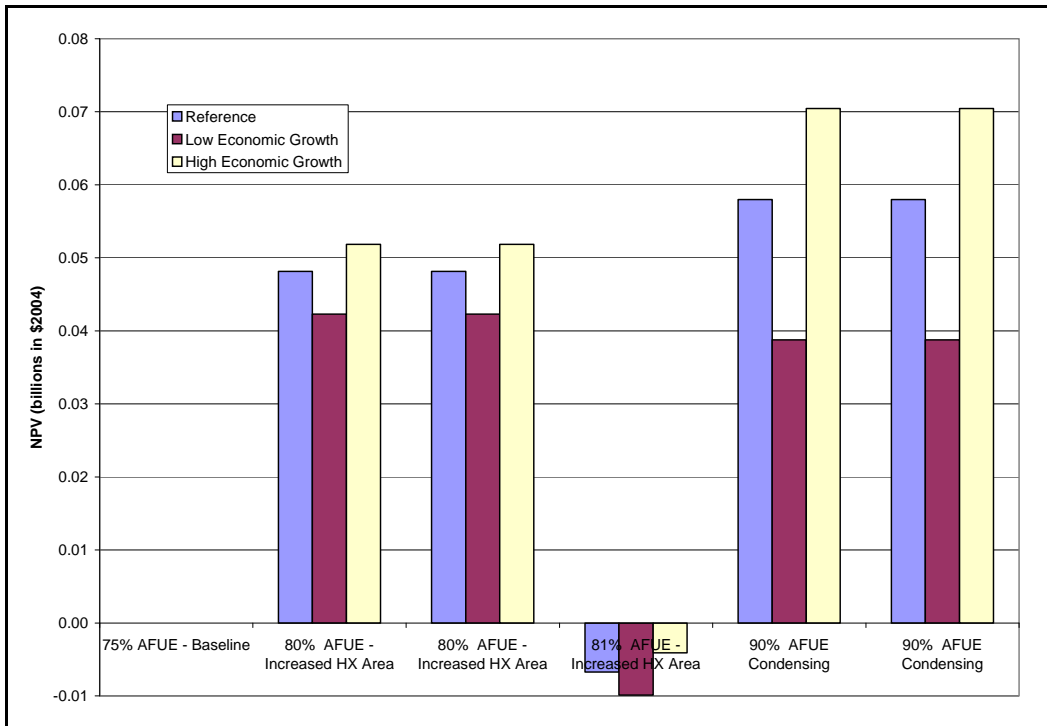
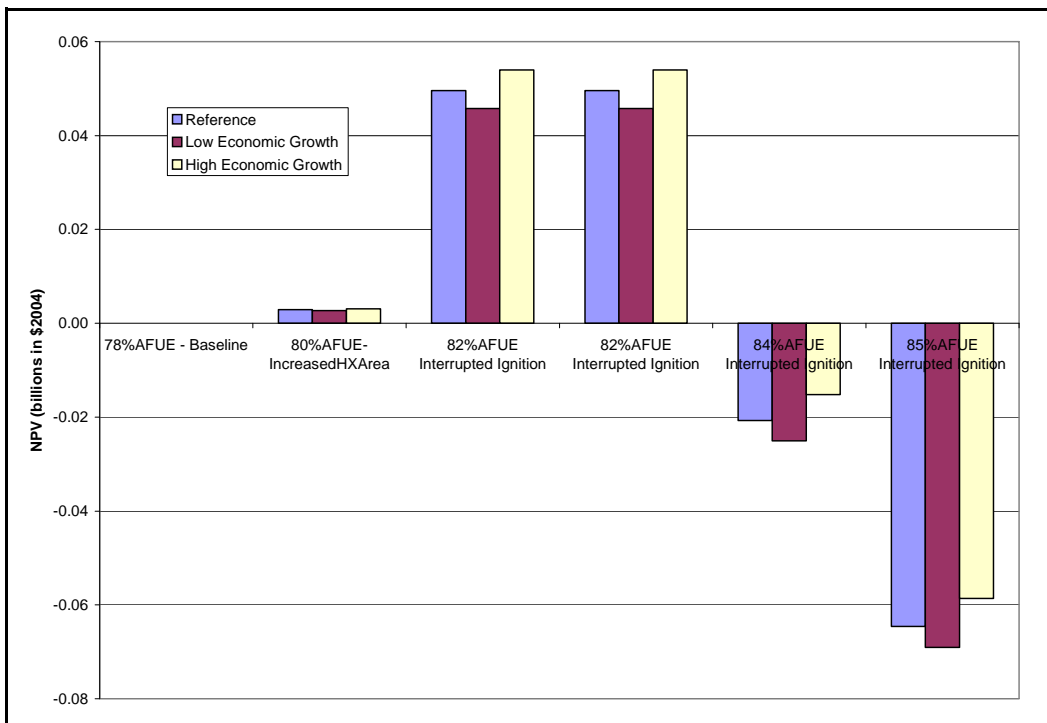


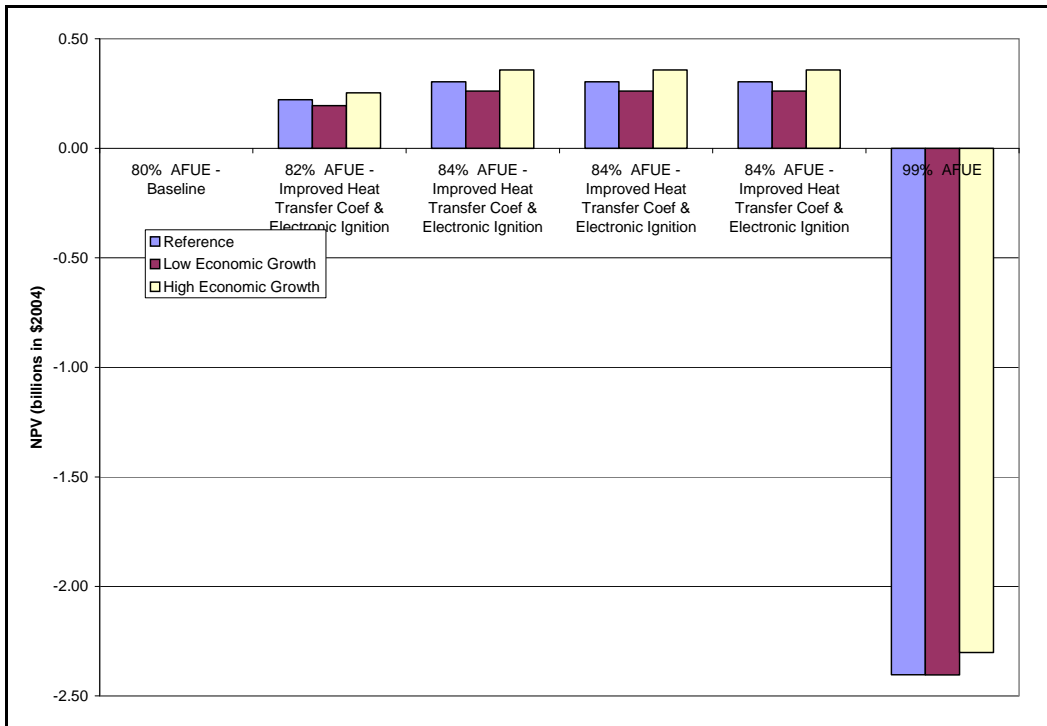
Figure R.3.8 Weatherized Gas Furnace Energy Price Scenarios Using AEO 2005 Price Data (NPV)



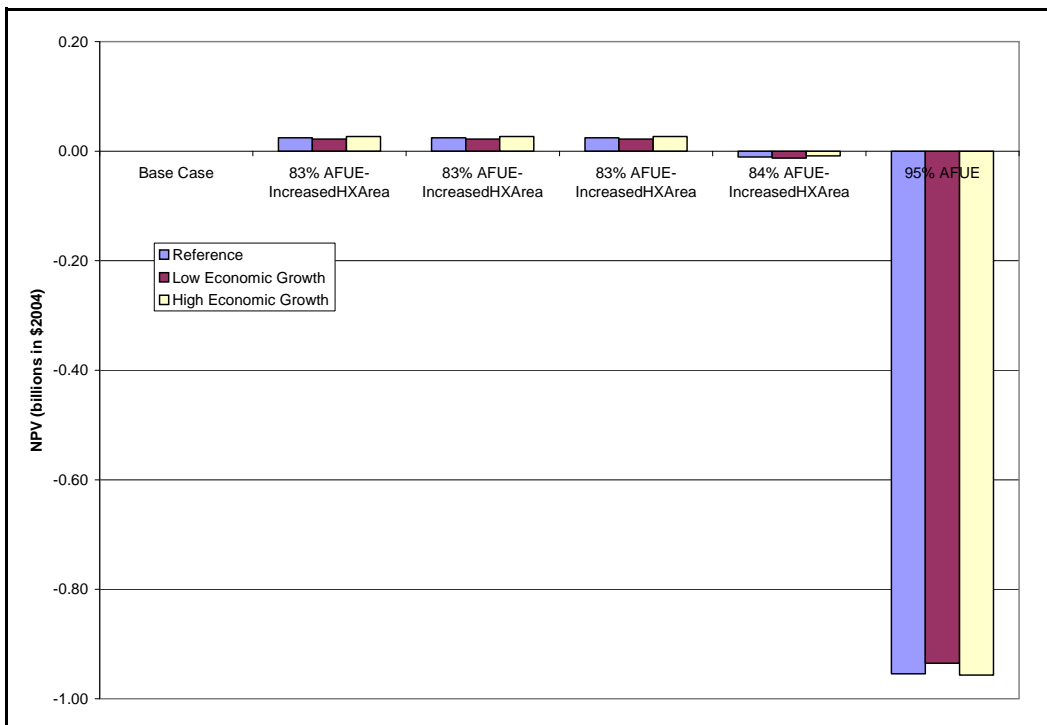
**Figure R.3.9 Mobile Home Furnace Energy Price Scenario Using AEO 2005 Price Data (NPV)**



**Figure R.3.10 Oil-Fired Furnace Energy Price Scenarios Using AEO 2005 Price Data (NPV)**



**Figure R.3.11 Gas Boiler Energy Price Scenarios Using AEO 2005 Price Data (NPV)**

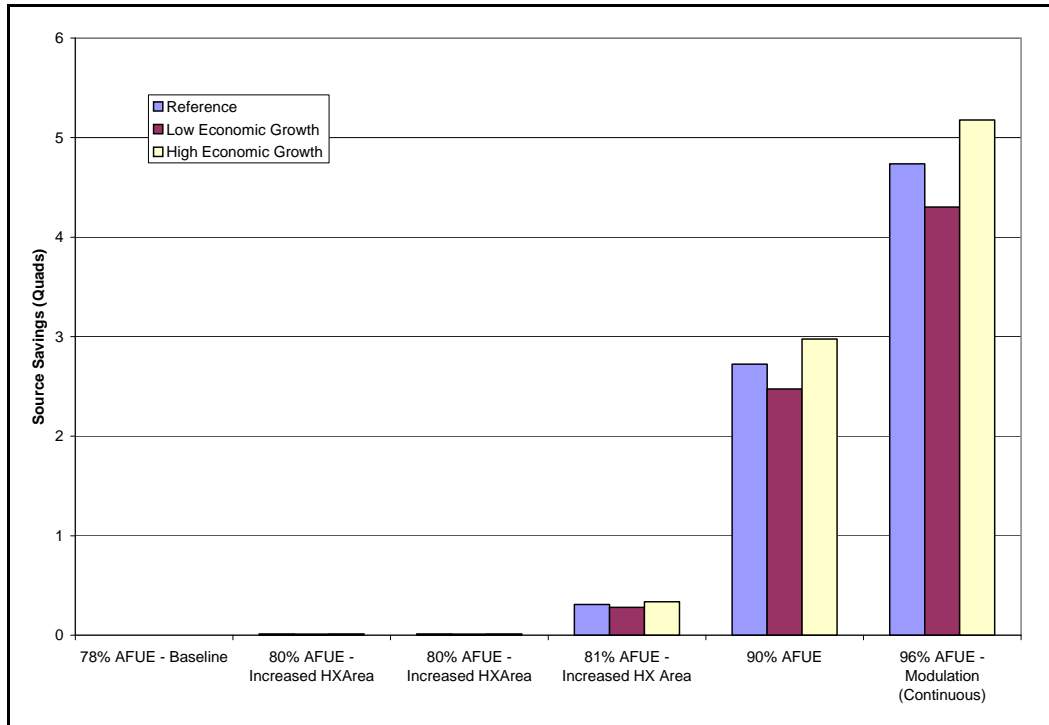


**Figure R.3.12 Oil-Fired Boiler Energy Price Scenarios Using AEO 2005 Price Data (NPV)**

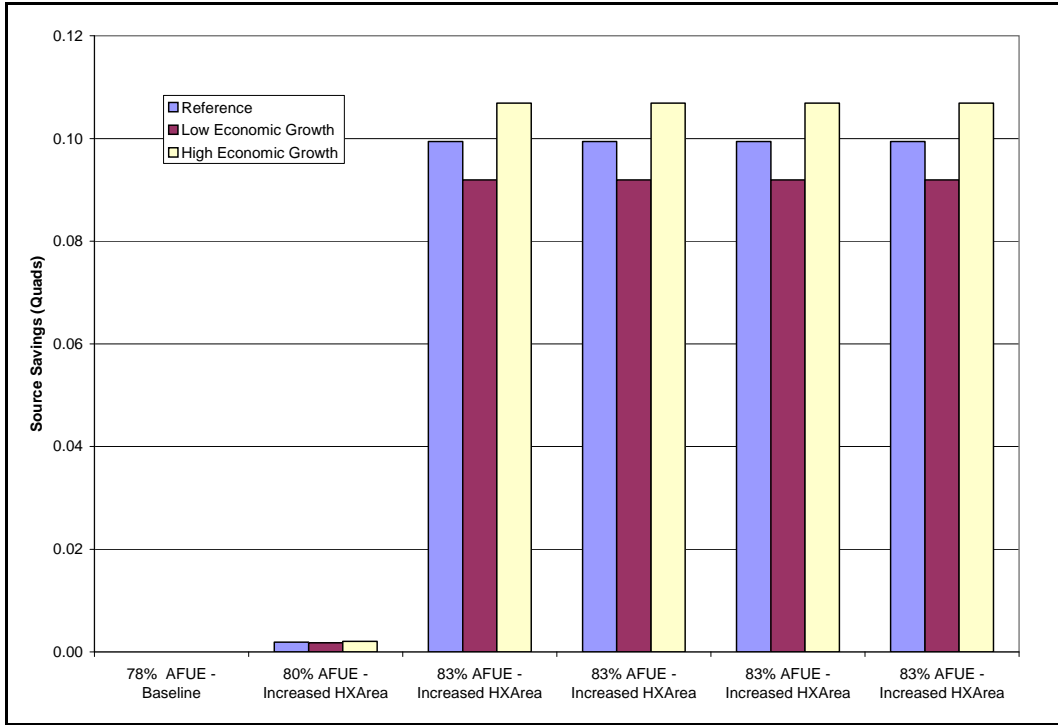
## R.4 RESULTS USING ALTERNATIVE ENERGY PRICE SCENARIOS— COMPARISON (AEO 2006)

The following figures graphically display the NES and NPV using AEO 2006 for all product classes under the low growth, the reference case, and the high growth energy price scenarios.

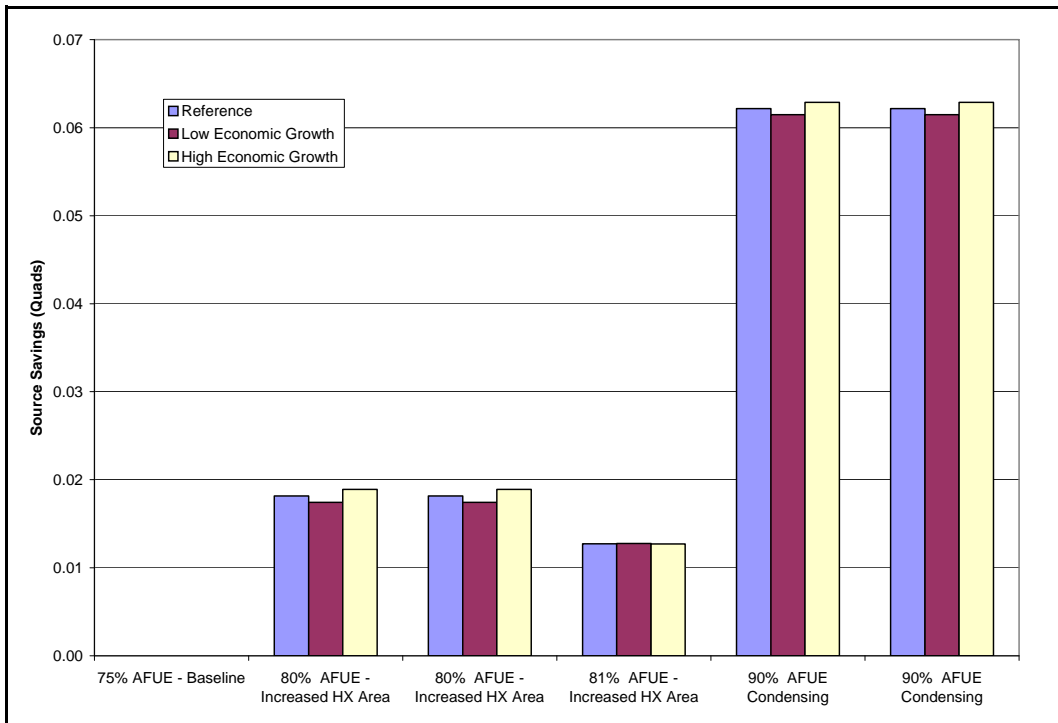
### R.4.1 National Energy Savings (NES)



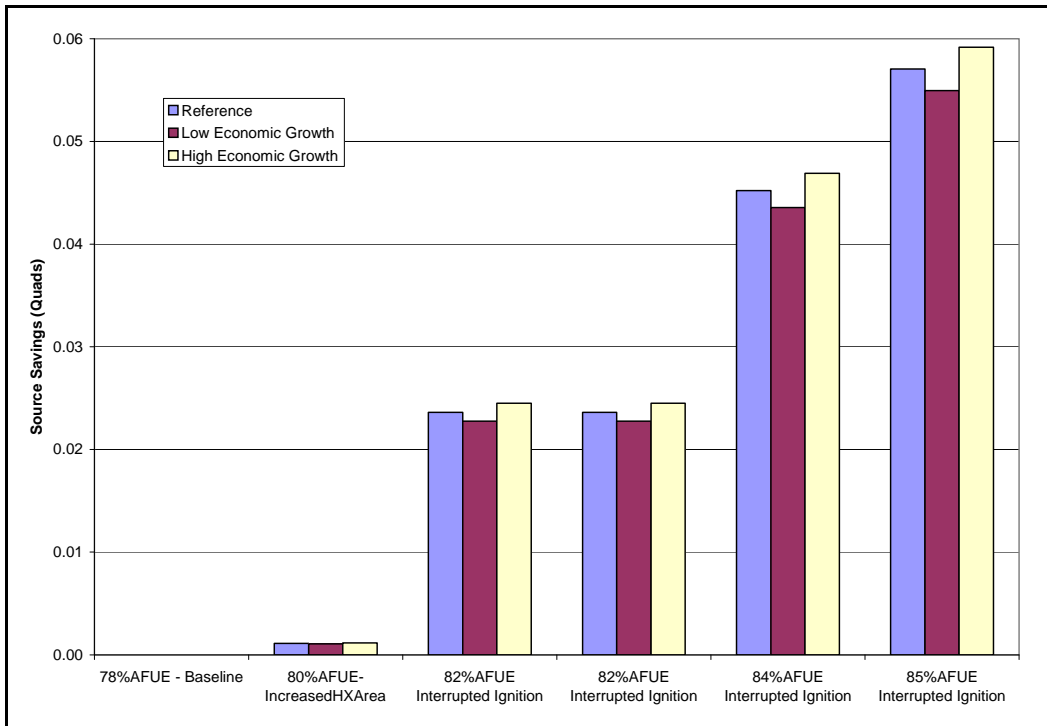
**Figure R.4.1 Non-Weatherized Gas Furnace Energy Price Scenarios Using AEO 2006 Price Data (NES)**



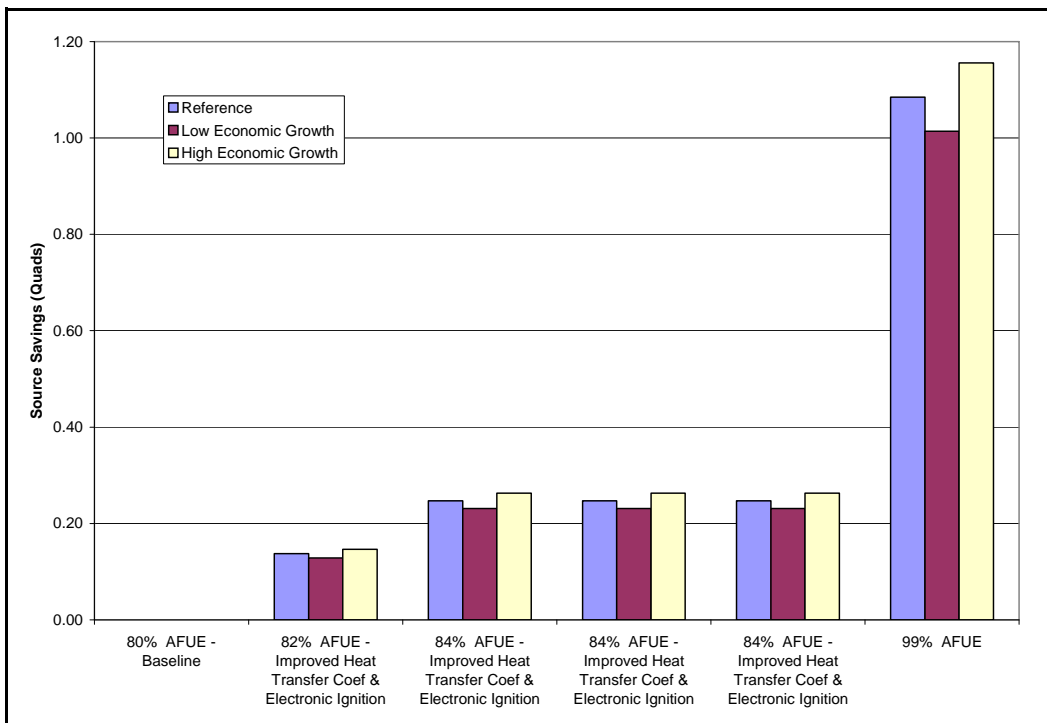
**Figure R.4.2 Weatherized Gas Furnace Energy Price Scenarios Using AEO 2006 Price Data (NES)**



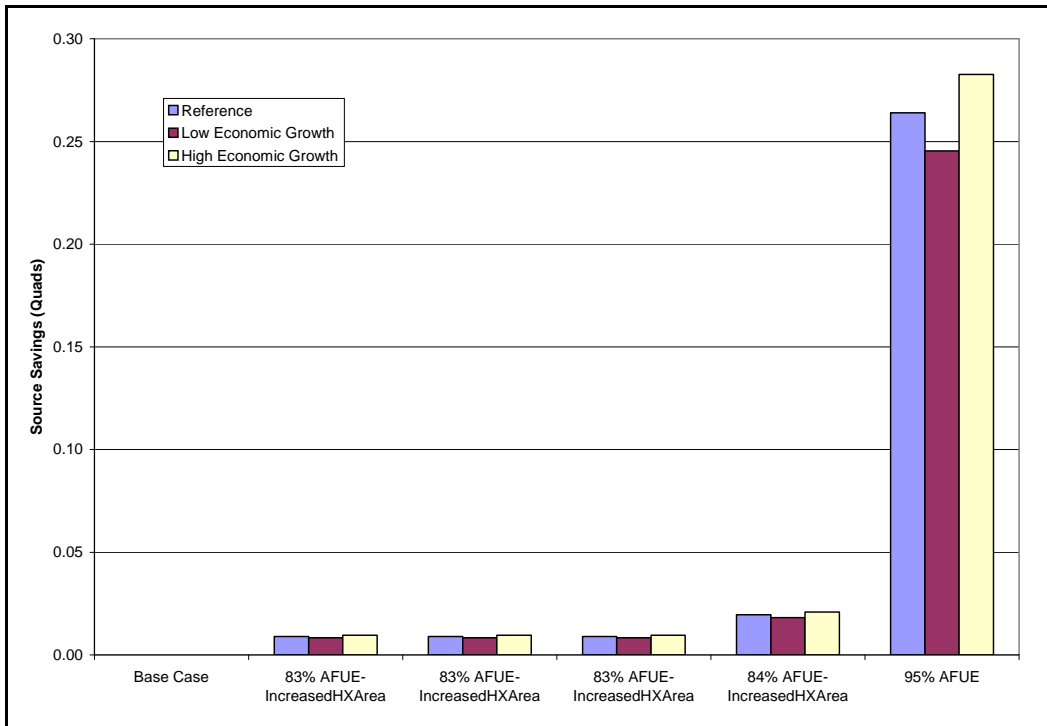
**Figure R.4.3 Mobile Home Furnace Energy Price Scenarios Using AEO 2006 Price Data (NES)**



**Figure R.4.4 Oil-Fired Furnace Energy Price Scenarios Using AEO 2006 Price Data (NES)**

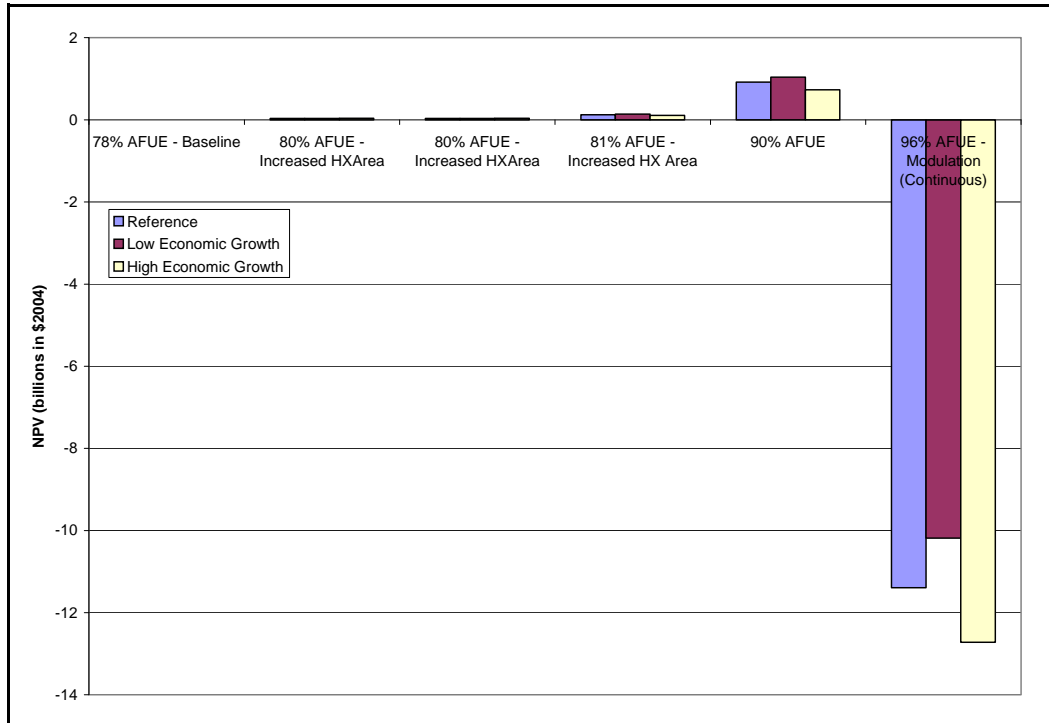


**Figure R.4.5 Gas Boiler Energy Price Scenarios Using AEO 2006 Price Data (NES)**

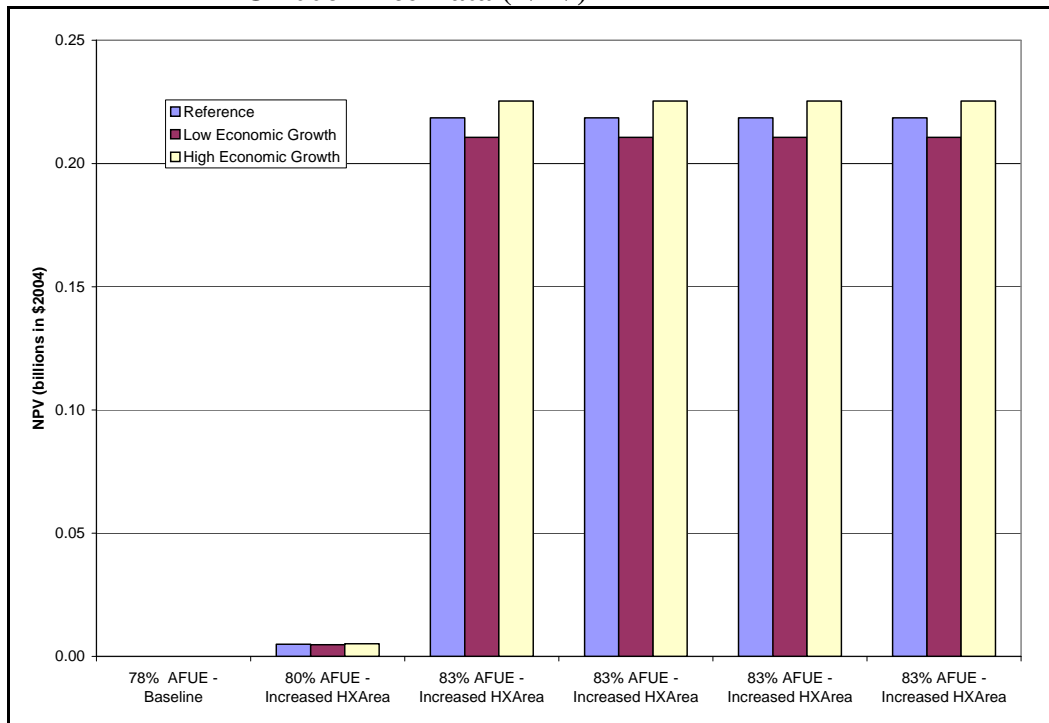


**Figure R.4.6 Oil-Fired Boiler Energy Price Scenarios Using AEO 2006 Price Data (NES)**

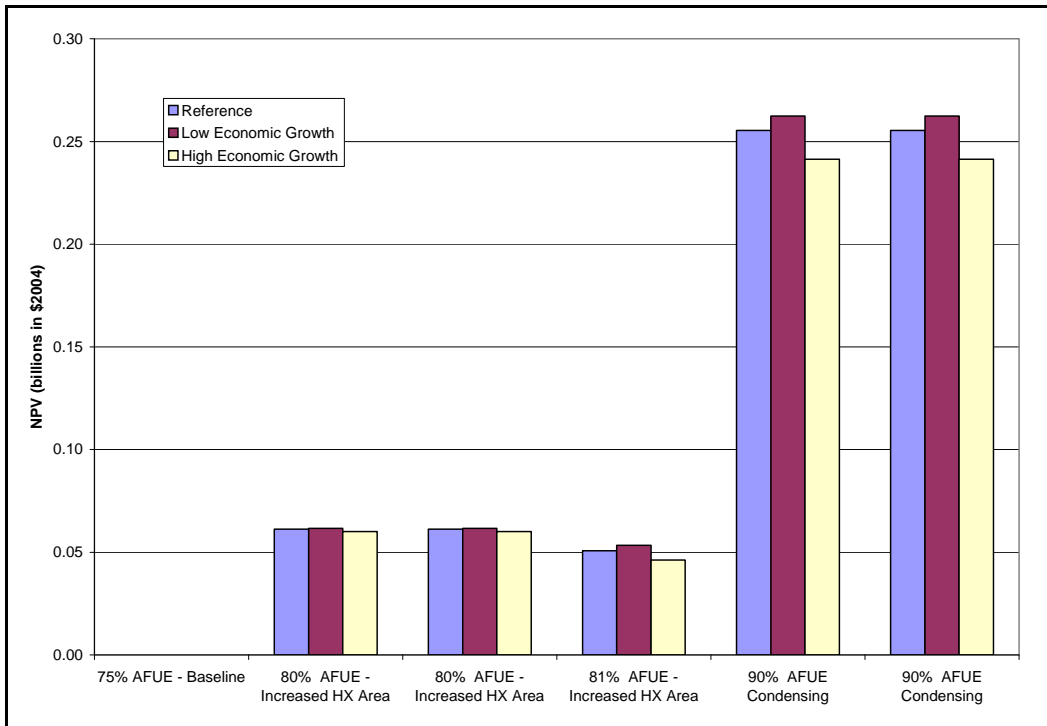
## R.4.2 Net Present Value (NPV)



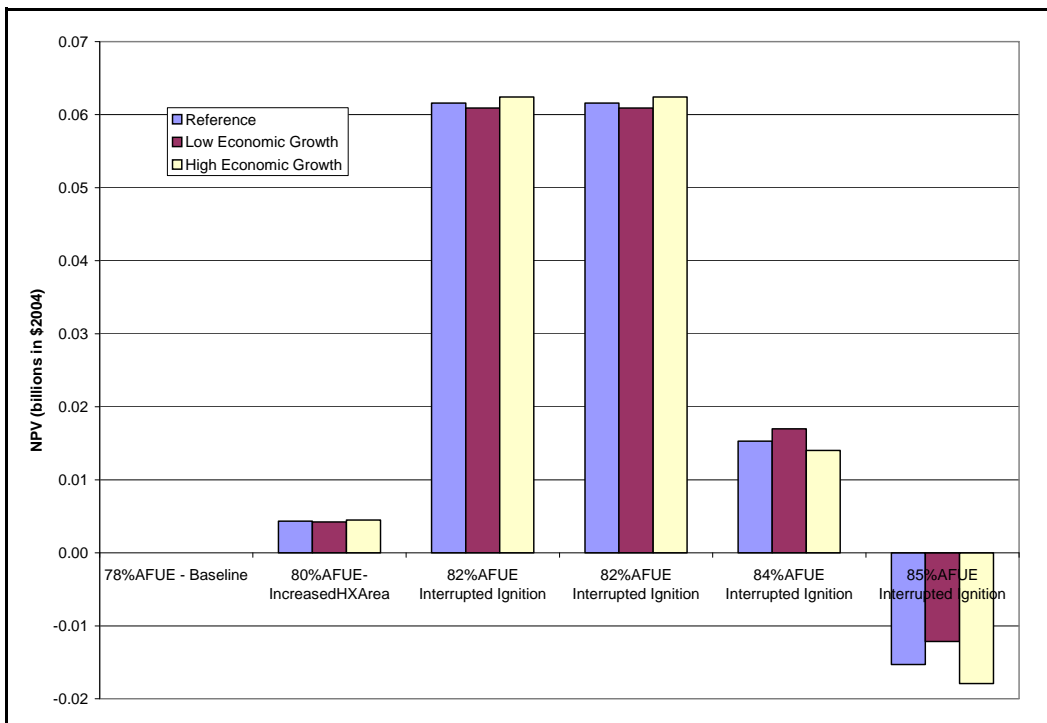
**Figure R.4.7 Non-Weatherized Gas Furnace Energy Price Scenarios Using AEO 2006 Price Data (NPV)**



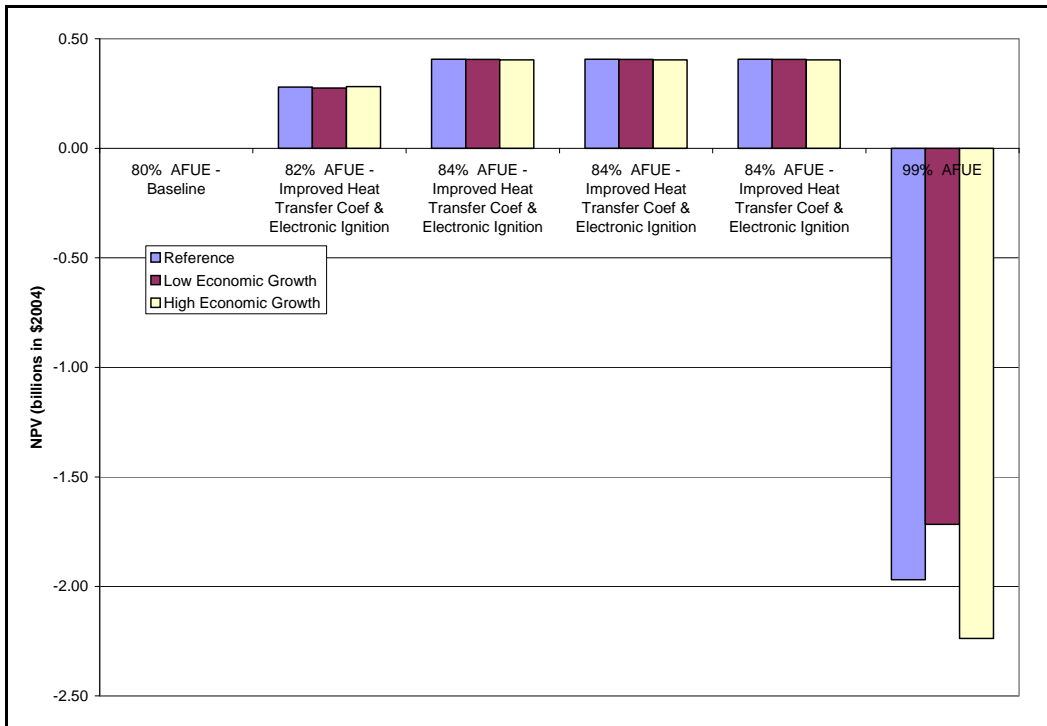
**Figure R.4.8 Weatherized Gas Furnace Energy Price Scenarios Using AEO 2006 Price Data (NPV)**



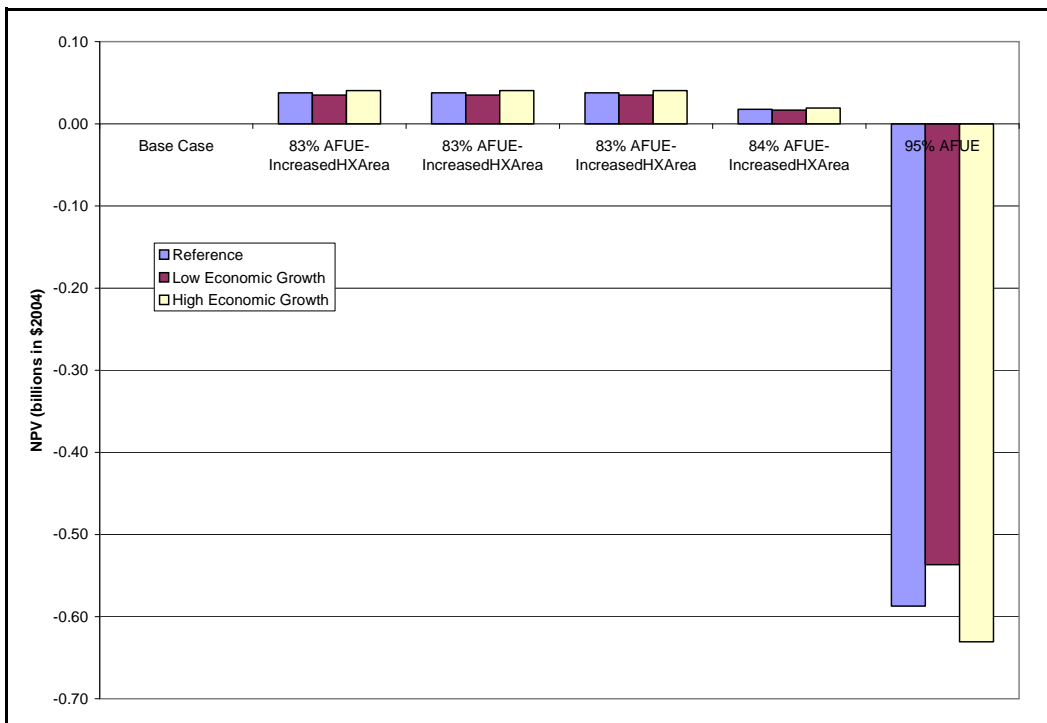
**Figure R.4.9 Mobile Home Furnace Energy Price Scenario Using AEO 2006 Price Data (NPV)**



**Figure R.4.10 Oil-Fired Furnace Energy Price Scenarios Using AEO 2006 Price Data (NPV)**



**Figure R.4.11 Gas Boiler Energy Price Scenarios Using AEO 2006 Price Data (NPV)**



**Figure R.4.12 Oil-Fired Boiler Energy Price Scenarios Using AEO 2006 Price Data (NPV)**

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