

*Jones Residence  
Energy Cost Analysis*

for

Mr. and Mrs. Joe Jones  
1234 First Street  
Warmnister, Pa 18974



Prepared By:

Jeffrey A. Smith  
J.A. Smith Heating & Air Cond Inc  
360 Patricia Drive  
Warminster, Pa 18974  
215-956-9400 x113  
Wednesday, March 26, 2008



## Project Summary

### General Project Information

Project Title:	Jones Residence	Company Name:	J.A. Smith Heating & Air Cond Inc
Designed By:	Jeffrey A Smith	Company Rep:	Jeffrey A. Smith
Project Date:	3/26/08	Company Address:	360 Patricia Drive
Project Comment:	Based on standard 1800-2000 sq ft home with an oil hot air furnace. System size is 3 tons with 85,000 btuh oil furnace.	Company City:	Warminster, Pa 18974
		Company Phone:	215-956-9400 x113
		Company Fax:	215-672-5116
Client Name:	Mr. and Mrs. Joe Jones	Company E-Mail Address:	jeff@jasmithheating.com
Client Address:	1234 First Street	Company Website:	www.jasmithheating.com
Client City:	Warmnister, Pa 18974		
Client Phone:			
Client Fax:			

### Design Data

Building Area:	1,800 sq.ft.	Cooling Load:	32,048 Btuh
People:	5	Heating Load:	71,832 Btuh
Occupancy:	12	Loads Adj. Factor:	0.77
		AC On Temp.:	50 °F
Actual City:	Philadelphia, Pennsylvania		
Weather Ref. City:	Philadelphia, Pennsylvania		
Summer Outdoor:	95 °F	Winter Outdoor:	0 °F
Summer Indoor:	75 °F	Winter Indoor:	72 °F
Cooling Hours:	960	Degree Days:	5,023

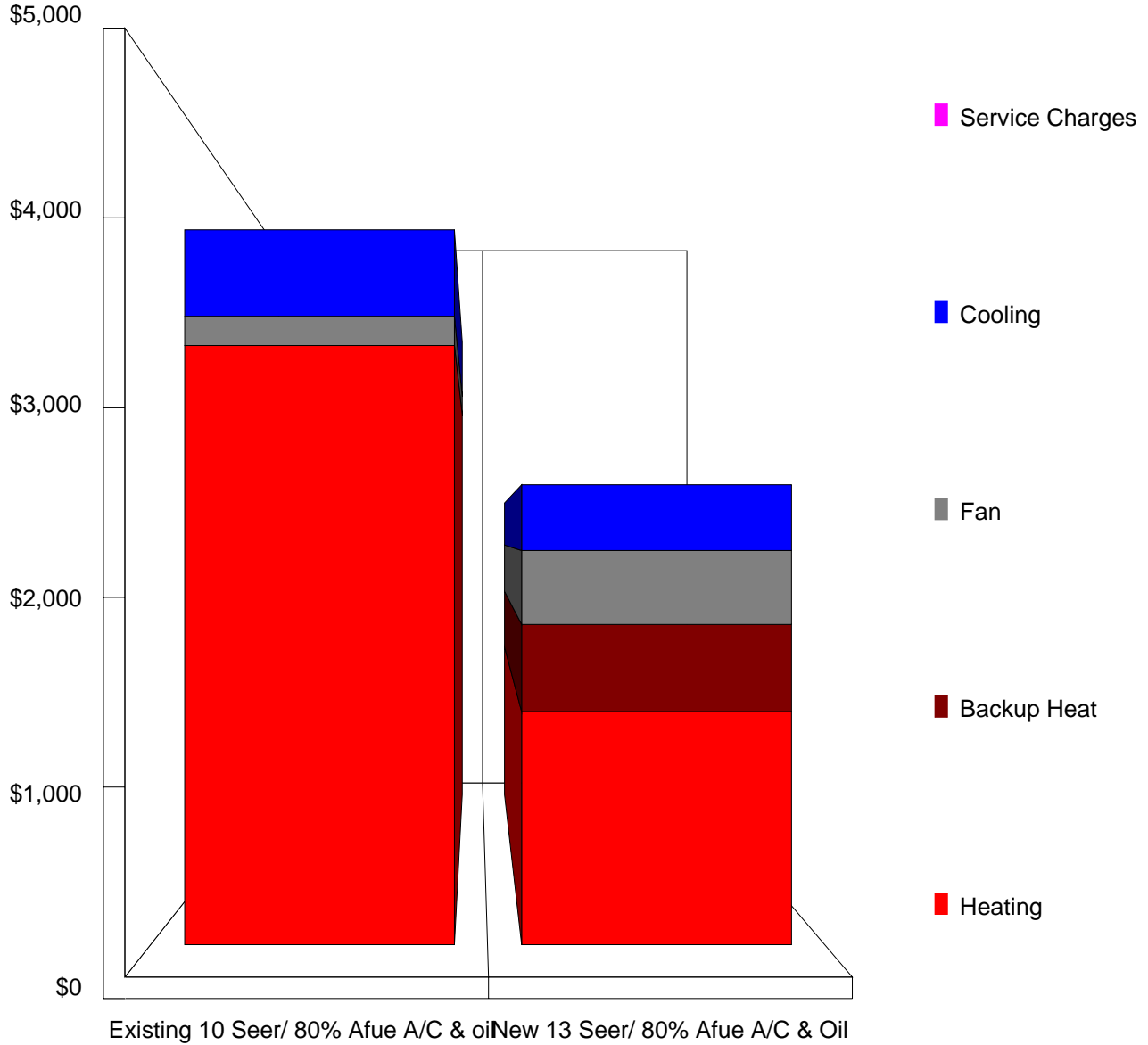
### Annual Operating Cost Estimate

System Description	Fuel Rates Set	Total Heating Cost	Total Cooling Cost	Annual Service Charges	Total Oper. Cost	Average Monthly Cost
Existing 10 Seer/ 80% Afue A/C & oil	1	\$3,571	\$491	\$0	\$4,061	\$338
New 13 Seer/ 80% Afue A/C & Oil	1	\$2,238	\$377	\$0	\$2,616	\$218



*Project Summary Bar Chart*

## System Operating Cost Comparison





## Comparison Report 1 - Sys. 6 vs. Sys. 7

### Existing 10 Seer/ 80% Afue A/C & oil

Cooling Type: Standard Air Conditioner  
 Model Number: 10 SEER

Efficiency: 10 SEER  
 Capacity: 36,000 Btuh  
 Compressor Warranty: 1 year  
 Outside Coil Warranty: none  
 Parts Warranty: 90 days  
 Labor Warranty: 90 days  
 Cooling Cost: \$491

Heating Type: Fuel Oil Furnace  
 Model Number:

Efficiency: 80 AFUE  
 Capacity: 85,000 Btuh  
 Heat Exchanger Warranty: none  
 Parts Warranty: none  
 Labor Warranty: none  
 Heating Cost: \$3,571

### New 13 Seer/ 80% Afue A/C & Oil

Cooling Type: Air Source Heat Pump  
 Model Number: 13HPD-036-230\*+C33-36\*

ARI Ref. No.: 590809  
 Efficiency: 13 SEER  
 Capacity: 34,200 Btuh  
 Compressor Warranty: 5 year  
 Outside Coil Warranty: 1 year  
 Parts Warranty: 1 year  
 Labor Warranty: 1 year  
 Cooling Cost: \$377

Heating Type: Air Source Heat Pump  
 Model Number: 13HPD-036-230\*+C33-36\*

47° Efficiency: 3.38 COP  
 17° Efficiency: 2.32 COP  
 47° Capacity: 33,200 Btuh  
 17° Capacity: 20,600 Btuh  
 Heat Exchanger Warranty: lifetime  
 Parts Warranty: 1 year  
 Labor Warranty: 1 year  
 Heating Cost: \$2,238

### Projected Cumulative Energy Cost Comparison

Year	Existing 10 Seer/ 80% Afue A/C & oil Annual Total Cost	New 13 Seer/ 80% Afue A/C & Oil Annual Total Cost	Annual Expected Savings	Cumulative Expected Savings
1	\$4,061	\$2,616	\$1,446	\$1,446
2	\$4,177	\$2,673	\$1,504	\$2,949
3	\$4,295	\$2,732	\$1,564	\$4,513
4	\$4,417	\$2,791	\$1,626	\$6,139
5	\$4,543	\$2,853	\$1,690	\$7,829
10	\$5,227	\$3,180	\$2,047	\$17,325
15	\$6,016	\$3,547	\$2,469	\$28,796
20	\$6,926	\$3,958	\$2,969	\$42,606
25	\$7,977	\$4,418	\$3,559	\$59,180
30	\$9,189	\$4,934	\$4,255	\$79,018



**Economic Analysis - Comparison Case 1 - Sys. 6 vs. Sys. 7**

Item	6 - Existing 10 Seer/ 80% Afue A/C & oil	7 - New 13 Seer/ 80% Afue A/C & Oil
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**First Year Costs**

Cooling	\$491	\$377
Heating	\$3,571	\$2,238

**System Costs**

System Cost	\$0.00	\$6,665.00
Net System Cost		\$6,665.00

**Loan Analysis**

Net Loan Amount		\$6,665.00
Annual Interest Rate		8.00%
Savings Over Loan Term of 120 Months		\$17,324.62
Monthly Average Savings		\$144.37
Monthly Loan Payment		\$80.86
Monthly Net Savings		\$63.51

**Investment Analysis**

Net Investment Amount		\$6,665.00
Savings Over System Lifetime of 20 Years		\$42,605.98
Monthly Average Savings		\$177.52
Break-Even Years (At Zero Interest)		4.3 Years
Return On Investment		25.10%