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# Building Energy Analysis Report

Report Generated by Efilm, an EnergyPlus based program.

Date: 12/27/2012

## Project Information

Title: EPD U  
Address:  
City/State/Zip: BETHESDA, MD 20817

## Analyst

Name: Manny Hondroulis  
Company: Energy Products Distribution  
Address: 9223 Harford Road  
City/State/Zip: Baltimore, MD 21234

## Building Owner

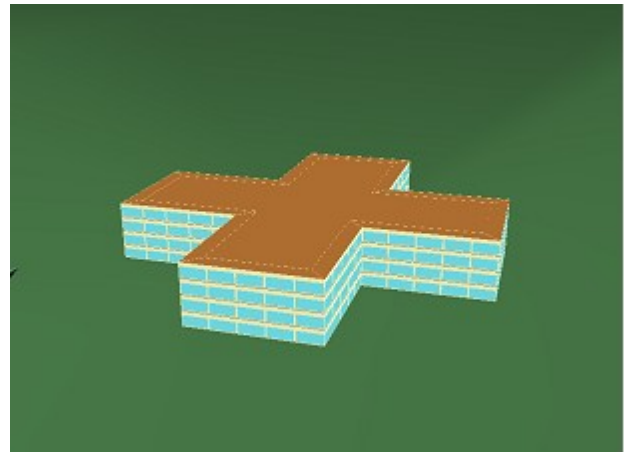
Name:  
Phone:  
Address:  
City/State/Zip:

## Architect

Name:  
Phone:  
Address:  
City/State/Zip:

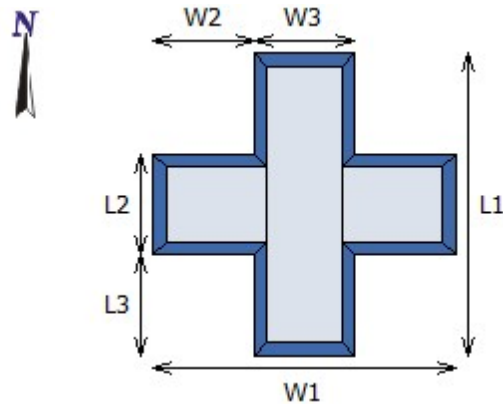
## Building Information

Building Type: Office Buildings - Medium  
Building Shape: Plus-shape  
Orientation: North  
Number of Floors: 4  
Floor-to-Floor Height: 13.28 ft  
Conditioned Area: 278,374 ft<sup>2</sup>  
Vintage: Pre-1978  
Category: Non-Residential



## Dimensions

W1: 353.93 ft    L1: 353.93 ft  
W2: 117.98 ft    L2: 117.98 ft  
W3: 117.98 ft    L3: 117.98 ft





Efilm computer program is based on EnergyPlus simulation engine, which is developed under the continuous funding of United States Department of Energy (U.S. DOE). EnergyPlus is considered the most detailed and accurate energy simulation program on the market. EnergyPlus incorporates the best features of DOE 2.1E and BLAST and is also enhanced with the use of latest programming techniques and latest generation of FORTRAN compilers. The program has been thoroughly tested and validated, and DOE is pledging full support only for the program developments in the future. For more details and features of EnergyPlus can be accessed from:

[http://apps1.eere.energy.gov/buildings/energyplus/energyplus\\_about.cfm](http://apps1.eere.energy.gov/buildings/energyplus/energyplus_about.cfm)

## IWFA *Efilm* Disclaimer

Please be advised that the figures generated by Efilm regarding energy costs and potential energy cost savings are only estimates. Actual results may vary, perhaps significantly, depending upon, among other things, changes in weather patterns, climate or topography, issues with a particular building's envelope, the efficiency of a building's heating and cooling systems, and the type and quality of film applied. The International Window Film Association and its members disclaim any responsibility or liability for any damages or injuries, financial or otherwise, that may be claimed to arise from the accuracy or inaccuracy of the estimates calculated by the Efilm software.

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## Results Summary

Option	Gas	Electricity	Total (Site)	Total (Source)	Savings
<i>Energy Totals</i>					
Base Case	8,187 MBTU	6,945,331 kWh	31,886 MBTU	83,898 MBTU	
Affinity 30	7,597 MBTU	6,569,847 kWh	30,014 MBTU	79,201 MBTU	4,697 MBTU
Amber 35 Low E	6,882 MBTU	6,280,433 kWh	28,312 MBTU	75,297 MBTU	8,601 MBTU
<i>Energy/Area</i>					
Base Case	29.43 kBtu/ft <sup>2</sup>	24.95 kWh/ft <sup>2</sup>	114.62 kBtu/ft <sup>2</sup>	301.59 kBtu/ft <sup>2</sup>	
Affinity 30	27.31 kBtu/ft <sup>2</sup>	23.6 kWh/ft <sup>2</sup>	107.89 kBtu/ft <sup>2</sup>	284.71 kBtu/ft <sup>2</sup>	16.88 kBtu/ft <sup>2</sup>
Amber 35 Low E	24.74 kBtu/ft <sup>2</sup>	22.56 kWh/ft <sup>2</sup>	101.77 kBtu/ft <sup>2</sup>	270.67 kBtu/ft <sup>2</sup>	30.92 kBtu/ft <sup>2</sup>
<i>Peak Demand</i>					
Base Case	4,467 kBtu/hr	1,712 kW			
Affinity 30	4,332 kBtu/hr	1,651 kW			
Amber 35 Low E	4,117 kBtu/hr	1,604 kW			
<i>Energy Cost</i>					
Base Case	\$94,544	\$808,501	\$903,045		
Affinity 30	\$87,728	\$764,792	\$852,519		\$50,526
Amber 35 Low E	\$79,473	\$731,101	\$810,574		\$92,472
<i>Energy and HVAC Equipment Cost</i>					
Base Case	\$114,453	\$896,731	\$1,011,184		
Affinity 30	\$107,635	\$844,301	\$951,936		\$59,248
Amber 35 Low E	\$98,798	\$803,835	\$902,633		\$108,551

## Simple Payback

Option	Project Cost	Simple Payback Period
Base Case	\$0	
Affinity 30	\$204,800	4.05 years
Amber 35 Low E	\$239,712	2.59 years

## Building Location

Address:	
City Name:	BETHESDA
State:	MD
Zip:	20817
Climatic Zone:	ASHRAE Climatic Zone 4
Weather Location:	Washington National, VA
Weather File Path:	\\North and Central America\USA\Virginia\USA_VA_Washington.National_TMYX.zip

## Internal Loads

	Office Perimeter zone	Office Core zone
Occupancy	199.99 ft <sup>2</sup> /person	199.99 ft <sup>2</sup> /person
Lighting	1.81 W/ft <sup>2</sup>	1.81 W/ft <sup>2</sup>
Electric Equipment	0.75 W/ft <sup>2</sup>	0.75 W/ft <sup>2</sup>

## Service Water Heating

Fuel Type:	Electricity
Hot Water Usage:	1 gal/person/day
Heater Thermal Efficiency:	1

## Building Constructions

Type	Name	R-Value
Walls	Light Exterior Wall	2.49 h·ft <sup>2</sup> ·F/Btu
Roof	Built up Roof	7.03 h·ft <sup>2</sup> ·F/Btu
Ground Floor	Light Floor	4.09 h·ft <sup>2</sup> ·F/Btu
Walls/Partitions	Light Partitions	3.17 h·ft <sup>2</sup> ·F/Btu
Floor/Ceiling	Light Floor/Ceiling	5.11 h·ft <sup>2</sup> ·F/Btu

## Infiltration

Zone	Value	Calculation Method
Core	0 CFM/ft <sup>2</sup>	Flow Per Area
Perimeter	0.84 CFM/ft <sup>2</sup>	Flow Per Exterior Wall Area

## HVAC Systems

Distribution System:	Standard VAV with reheat
Cooling System:	Chilled water coils
Cooling System Efficiency:	2.72 COP
Heating System:	Hot Water Coils
Heating System Efficiency:	0.8
Thermostat Heating Setpoint:	69.8 F
Thermostat Cooling Setpoint:	75.2 F
Thermostat Heating Setback:	N/A
Thermostat Cooling Setback:	N/A

## Utility Rates - Electric

### Uniform

Energy	0.1164 \$/kWh
Demand	0 \$/kW

## Utility Rates - Gas

### Uniform

Energy	1.1548 \$/Therm
Demand	0 \$/Therm/h

## Emissions

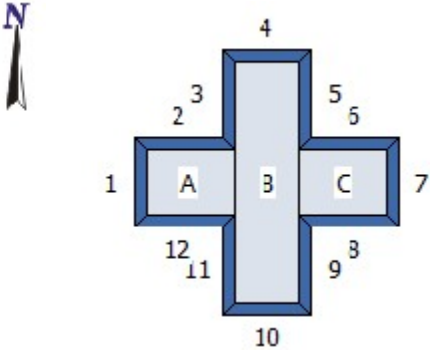
### Electricity

Source Energy Factor:	3.16
CO2 Emission Factor:	1,710 lb/MWh
NOx Emission Factor:	3.1 lb/MWh

### Gas

Source Energy Factor:	1.09
CO2 Emission Factor:	413.5 lb/MWh
NOx Emission Factor:	0.38 lb/MWh

# Detailed Fenestration Breakdown



## Base Case

### Detailed Windows Data

Floor	Wall	Wall Area [ft <sup>2</sup> ]	Window ID	Width [ft]	Height [ft]	Area [ft <sup>2</sup> ]	Num.	Total Windows Area [ft <sup>2</sup> ]	Infiltration [CFM/ft <sup>2</sup> ]	Ext. Shading
Top Floor	1	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	2	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	3	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	4	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	5	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	6	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	7	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	8	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	9	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	10	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	11	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	12	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
Mid Floor(s)	1	3,133.68	W1	22.33	9.26	206.85	10	2,068.5	0.3	-
	2	3,133.68	W1	22.33	9.26	206.85	10	2,068.5	0.3	-
	3	3,133.68	W1	22.33	9.26	206.85	10	2,068.5	0.3	-
	4	3,133.68	W1	22.33	9.26	206.85	10	2,068.5	0.3	-
	5	3,133.68	W1	22.33	9.26	206.85	10	2,068.5	0.3	-
	6	3,133.68	W1	22.33	9.26	206.85	10	2,068.5	0.3	-
	7	3,133.68	W1	22.33	9.26	206.85	10	2,068.5	0.3	-
	8	3,133.68	W1	22.33	9.26	206.85	10	2,068.5	0.3	-
	9	3,133.68	W1	22.33	9.26	206.85	10	2,068.5	0.3	-
	10	3,133.68	W1	22.33	9.26	206.85	10	2,068.5	0.3	-
	11	3,133.68	W1	22.33	9.26	206.85	10	2,068.5	0.3	-
	12	3,133.68	W1	22.33	9.26	206.85	10	2,068.5	0.3	-
Ground	1	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	2	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	3	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	4	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	5	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	6	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	7	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	8	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	9	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	10	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-

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	11	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
	12	1,566.84	W1	22.33	9.26	206.85	5	1,034.25	0.3	-
Total		75,208.36					240	49,644		

*Detailed Doors Data*

Wall	Wall Area	Door ID	Width	Height	Area	Num.	Total Doors Area	Infiltration
	[ft <sup>2</sup> ]		[ft]	[ft]	[ft <sup>2</sup> ]		[ft <sup>2</sup> ]	[CFM/ft <sup>2</sup> ]
Total	0					0	0	

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## Affinity 30

### Detailed Windows Data

Floor	Wall	Wall Area [ft <sup>2</sup> ]	Window ID	Width [ft]	Height [ft]	Area [ft <sup>2</sup> ]	Num.	Total Windows Area [ft <sup>2</sup> ]	Infiltration [CFM/ft <sup>2</sup> ]	Ext. Shading
Top Floor	1	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	2	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	3	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	4	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	5	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	6	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	7	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	8	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	9	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	10	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	11	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	12	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
Mid Floor(s)	1	3,133.68	W2	22.33	9.26	206.85	10	2,068.5	0.3	-
	2	3,133.68	W2	22.33	9.26	206.85	10	2,068.5	0.3	-
	3	3,133.68	W2	22.33	9.26	206.85	10	2,068.5	0.3	-
	4	3,133.68	W2	22.33	9.26	206.85	10	2,068.5	0.3	-
	5	3,133.68	W2	22.33	9.26	206.85	10	2,068.5	0.3	-
	6	3,133.68	W2	22.33	9.26	206.85	10	2,068.5	0.3	-
	7	3,133.68	W2	22.33	9.26	206.85	10	2,068.5	0.3	-
	8	3,133.68	W2	22.33	9.26	206.85	10	2,068.5	0.3	-
	9	3,133.68	W2	22.33	9.26	206.85	10	2,068.5	0.3	-
	10	3,133.68	W2	22.33	9.26	206.85	10	2,068.5	0.3	-
	11	3,133.68	W2	22.33	9.26	206.85	10	2,068.5	0.3	-
	12	3,133.68	W2	22.33	9.26	206.85	10	2,068.5	0.3	-
Ground	1	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	2	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	3	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	4	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	5	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	6	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	7	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	8	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	9	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	10	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-

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	11	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
	12	1,566.84	W2	22.33	9.26	206.85	5	1,034.25	0.3	-
Total		75,208.36					240	49,644		

*Detailed Doors Data*

Wall	Wall Area	Door ID	Width	Height	Area	Num.	Total Doors Area	Infiltration
	[ft <sup>2</sup> ]		[ft]	[ft]	[ft <sup>2</sup> ]		[ft <sup>2</sup> ]	[CFM/ft <sup>2</sup> ]
Total	0					0	0	

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## Amber 35 Low E

### Detailed Windows Data

Floor	Wall	Wall Area [ft <sup>2</sup> ]	Window ID	Width [ft]	Height [ft]	Area [ft <sup>2</sup> ]	Num.	Total Windows Area [ft <sup>2</sup> ]	Infiltration [CFM/ft <sup>2</sup> ]	Ext. Shading
Top Floor	1	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	2	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	3	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	4	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	5	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	6	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	7	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	8	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	9	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	10	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	11	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	12	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
Mid Floor(s)	1	3,133.68	W3	22.33	9.26	206.85	10	2,068.5	0.3	-
	2	3,133.68	W3	22.33	9.26	206.85	10	2,068.5	0.3	-
	3	3,133.68	W3	22.33	9.26	206.85	10	2,068.5	0.3	-
	4	3,133.68	W3	22.33	9.26	206.85	10	2,068.5	0.3	-
	5	3,133.68	W3	22.33	9.26	206.85	10	2,068.5	0.3	-
	6	3,133.68	W3	22.33	9.26	206.85	10	2,068.5	0.3	-
	7	3,133.68	W3	22.33	9.26	206.85	10	2,068.5	0.3	-
	8	3,133.68	W3	22.33	9.26	206.85	10	2,068.5	0.3	-
	9	3,133.68	W3	22.33	9.26	206.85	10	2,068.5	0.3	-
	10	3,133.68	W3	22.33	9.26	206.85	10	2,068.5	0.3	-
	11	3,133.68	W3	22.33	9.26	206.85	10	2,068.5	0.3	-
	12	3,133.68	W3	22.33	9.26	206.85	10	2,068.5	0.3	-
Ground	1	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	2	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	3	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	4	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	5	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	6	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	7	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	8	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	9	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	10	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-

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	11	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
	12	1,566.84	W3	22.33	9.26	206.85	5	1,034.25	0.3	-
Total		75,208.36					240	49,644		

*Detailed Doors Data*

Wall	Wall Area	Door ID	Width	Height	Area	Num.	Total Doors Area	Infiltration
	[ft <sup>2</sup> ]		[ft]	[ft]	[ft <sup>2</sup> ]		[ft <sup>2</sup> ]	[CFM/ft <sup>2</sup> ]
Total	0					0	0	

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*Fenestration Product Listing*

Window Code	Name	Size [in.]	U-Factor [Btu/h·ft <sup>2</sup> ·F]	SHGC	VT	Window Type	Infiltration [CFM/ft <sup>2</sup> ]
W1	1/4 Dual Tint	47.24 x 59.06	0.72	0.5	0.4	Fixed	0.3
W2	Affinity 30 1/4 Dual Tint	47.24 x 59.06	0.72	0.36	0.13	Fixed	0.3
W3	Amber 35 LE 1/4 Dual	47.24 x 59.06	0.65	0.29	0.14	Fixed	0.3

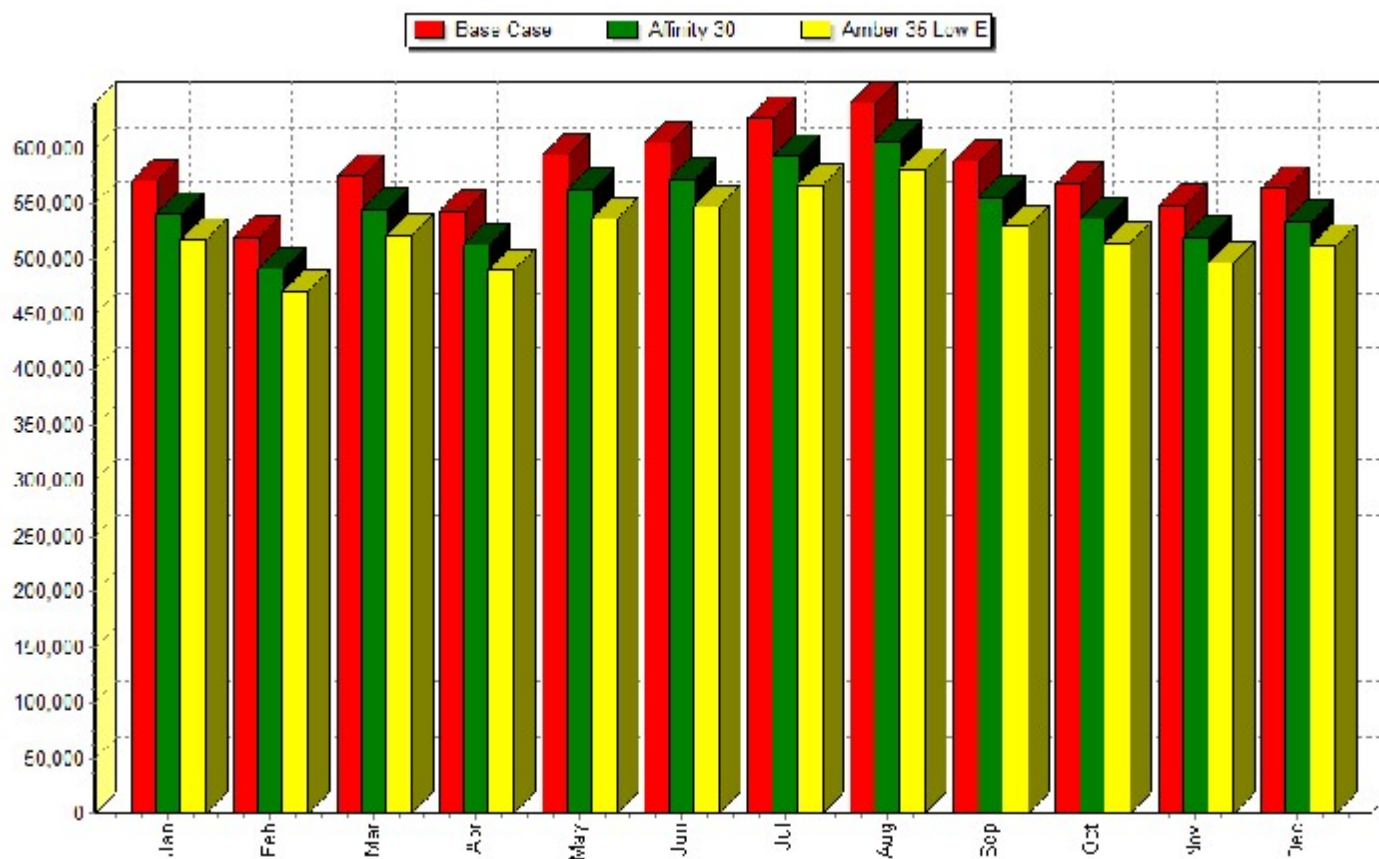
*Fenestration Product Listing - Resized Windows*

Window Code	Name	Size [in.]	U-Factor [Btu/h·ft <sup>2</sup> ·F]	SHGC	VT	Window Type	Infiltration [CFM/ft <sup>2</sup> ]
W1	1/4 Dual Tint	268 x 111.14	0.52	0.5	0.45	Fixed	0.3
W2	Affinity 30 1/4 Dual Tint	268 x 111.14	0.52	0.35	0.15	Fixed	0.3
W3	Amber 35 LE 1/4 Dual	268 x 111.14	0.45	0.26	0.15	Fixed	0.3

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# Comparison Report

## Monthly Electric Use [kWh]



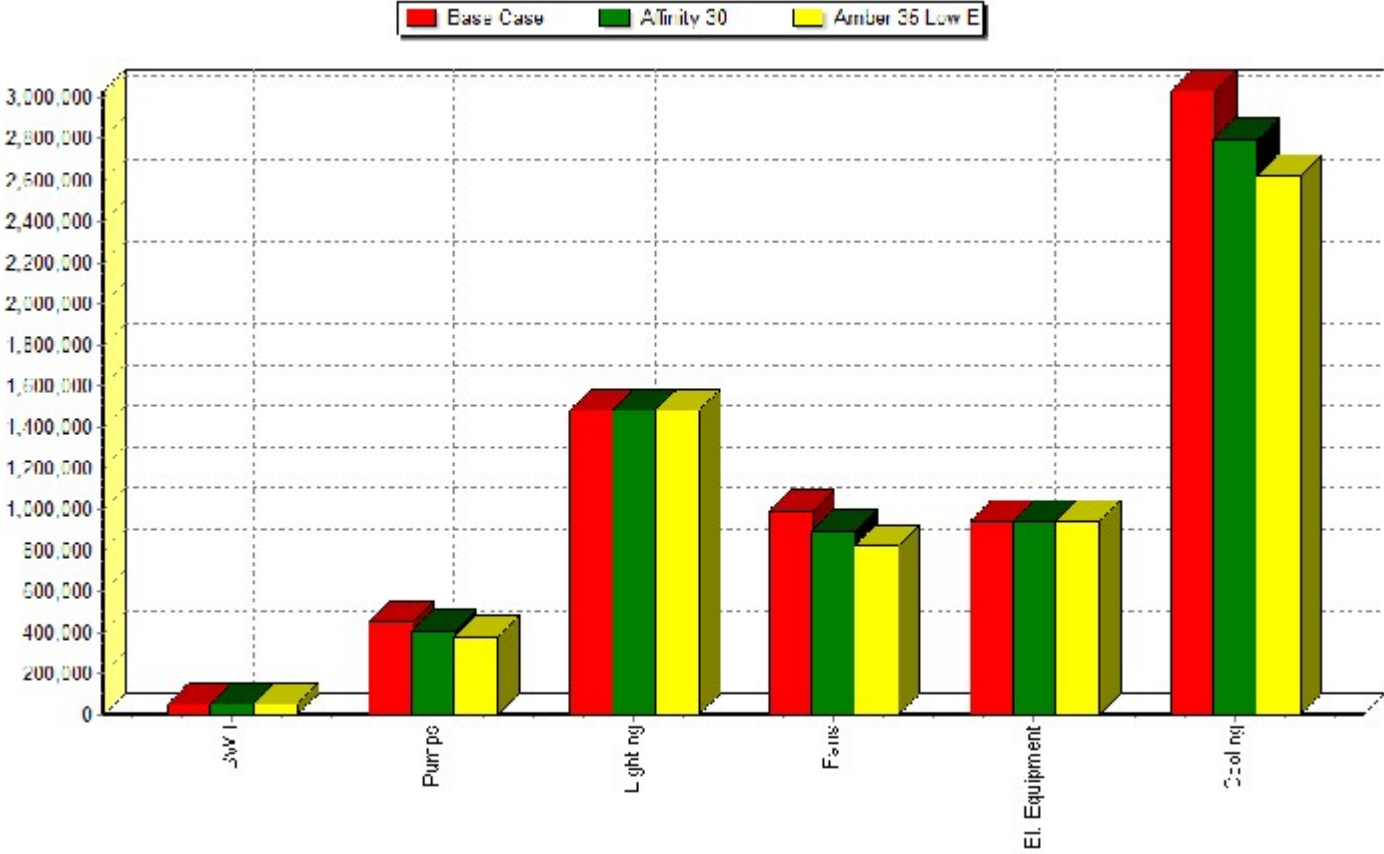
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Base Case	570,987	519,517	574,770	543,135	594,148	605,154	627,250	640,638	588,147	568,010
Affinity 30	540,822	491,392	544,753	513,278	561,759	572,518	593,048	606,201	554,903	536,824
Affinity 30 - Savings	30,165	28,125	30,016	29,856	32,389	32,636	34,203	34,437	33,243	31,187
Amber 35 Low E	516,528	470,109	521,018	490,348	536,601	547,394	566,758	579,845	529,848	514,118
Amber 35 Low E - Savings	54,459	49,408	53,752	52,787	57,546	57,760	60,493	60,793	58,299	53,892

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	Nov	Dec	Total
Base Case	549,110	564,467	6,945,331
Affinity 30	520,085	534,265	6,569,847
Affinity 30 - Savings	29,024	30,202	375,484
Amber 35 Low E	496,723	511,144	6,280,433
Amber 35 Low E - Savings	52,387	53,323	664,898

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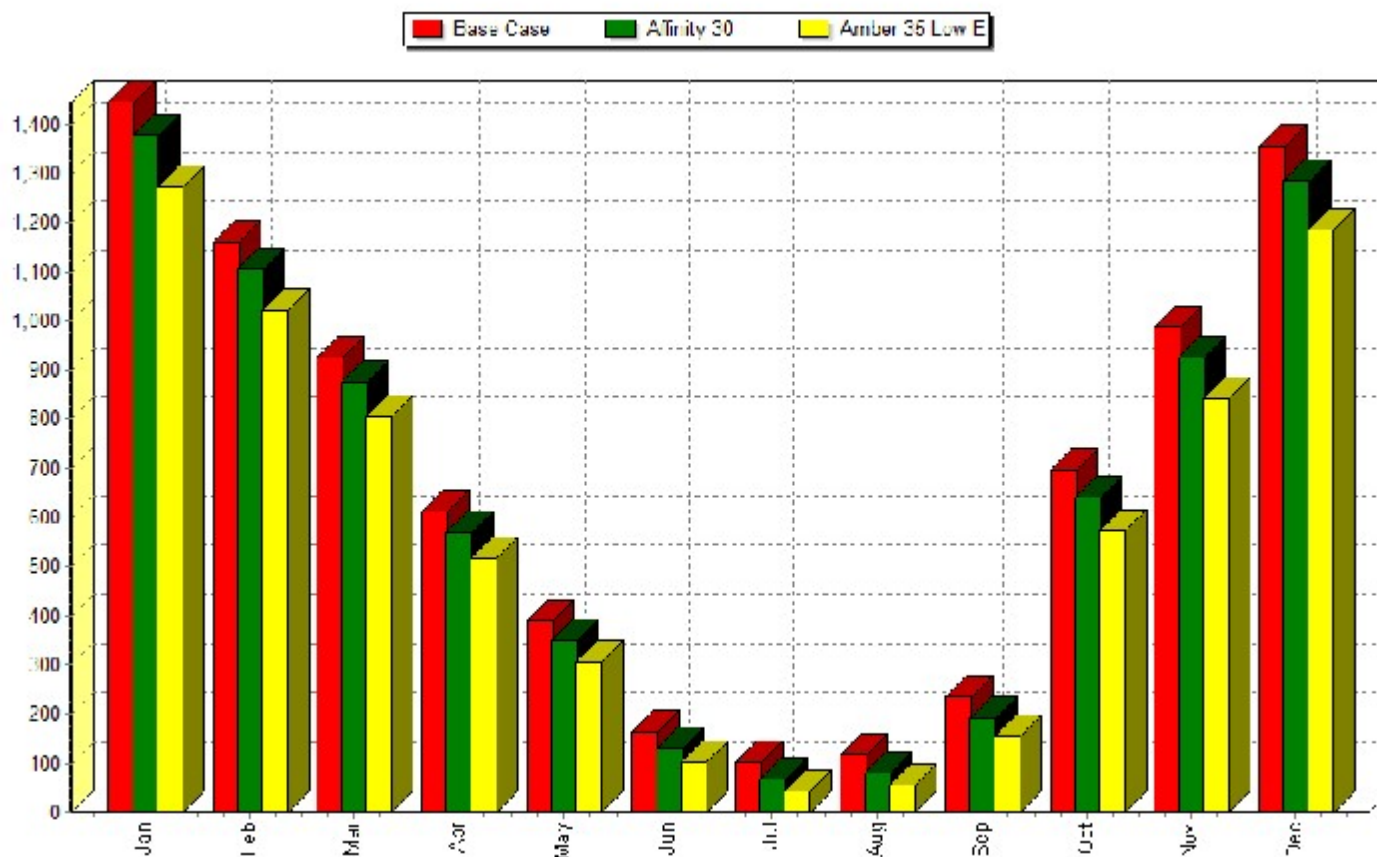
Annual Electric Use [kWh]



	Cooling	El. Equipment	Fans	Pumps	Lighting	SWH	Total
Base Case	3,032,956	939,939	991,298	451,986	1,480,732	48,419	6,945,331
Affinity 30	2,798,209	939,939	894,051	408,497	1,480,732	48,419	6,569,847
Affinity 30 - Savings	234,748		97,247	43,490			375,484
Amber 35 Low E	2,617,579	939,939	819,566	374,197	1,480,732	48,419	6,280,433
Amber 35 Low E - Savings	415,377		171,732	77,789			664,898

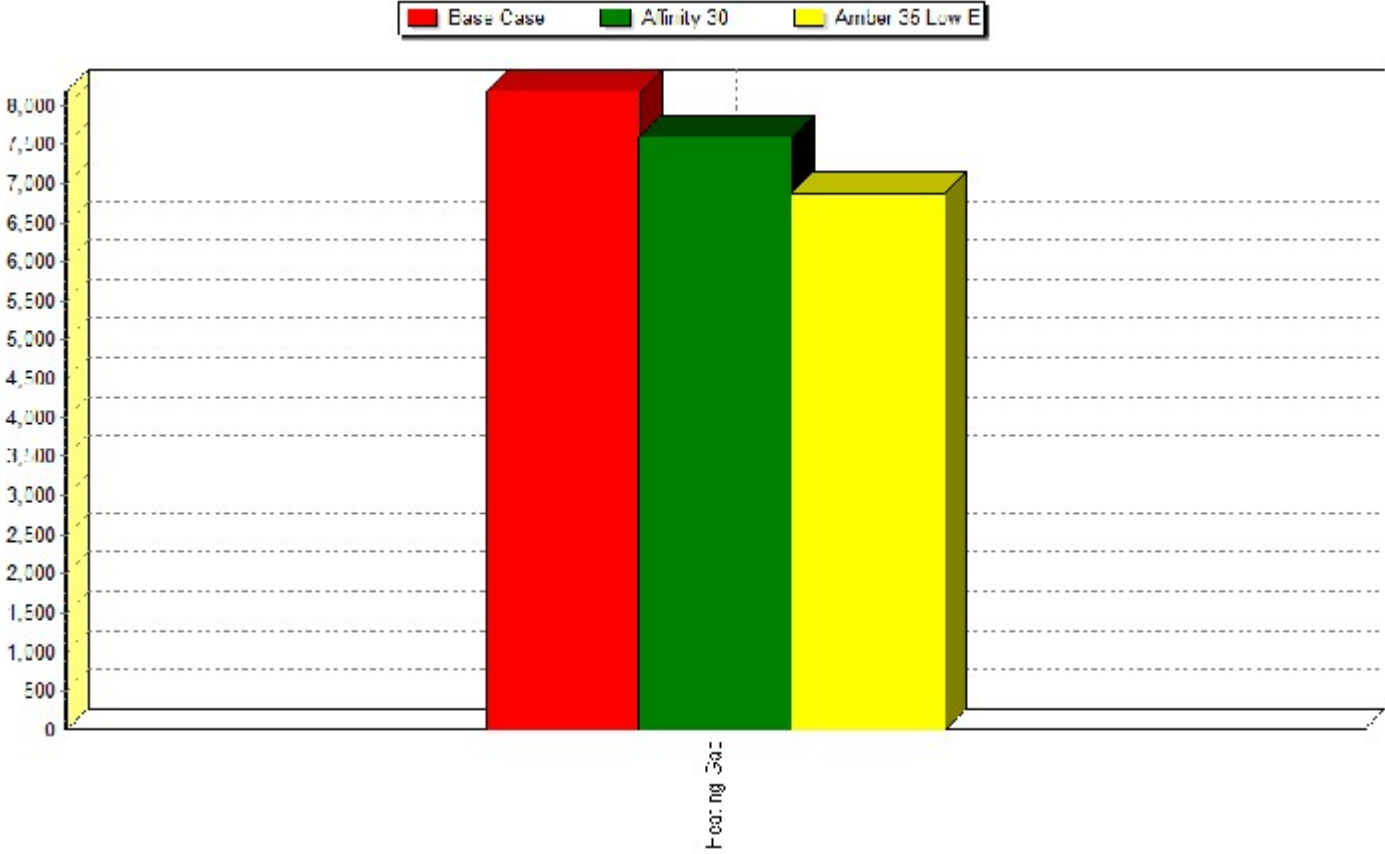


## Monthly Gas Use [MBTU]



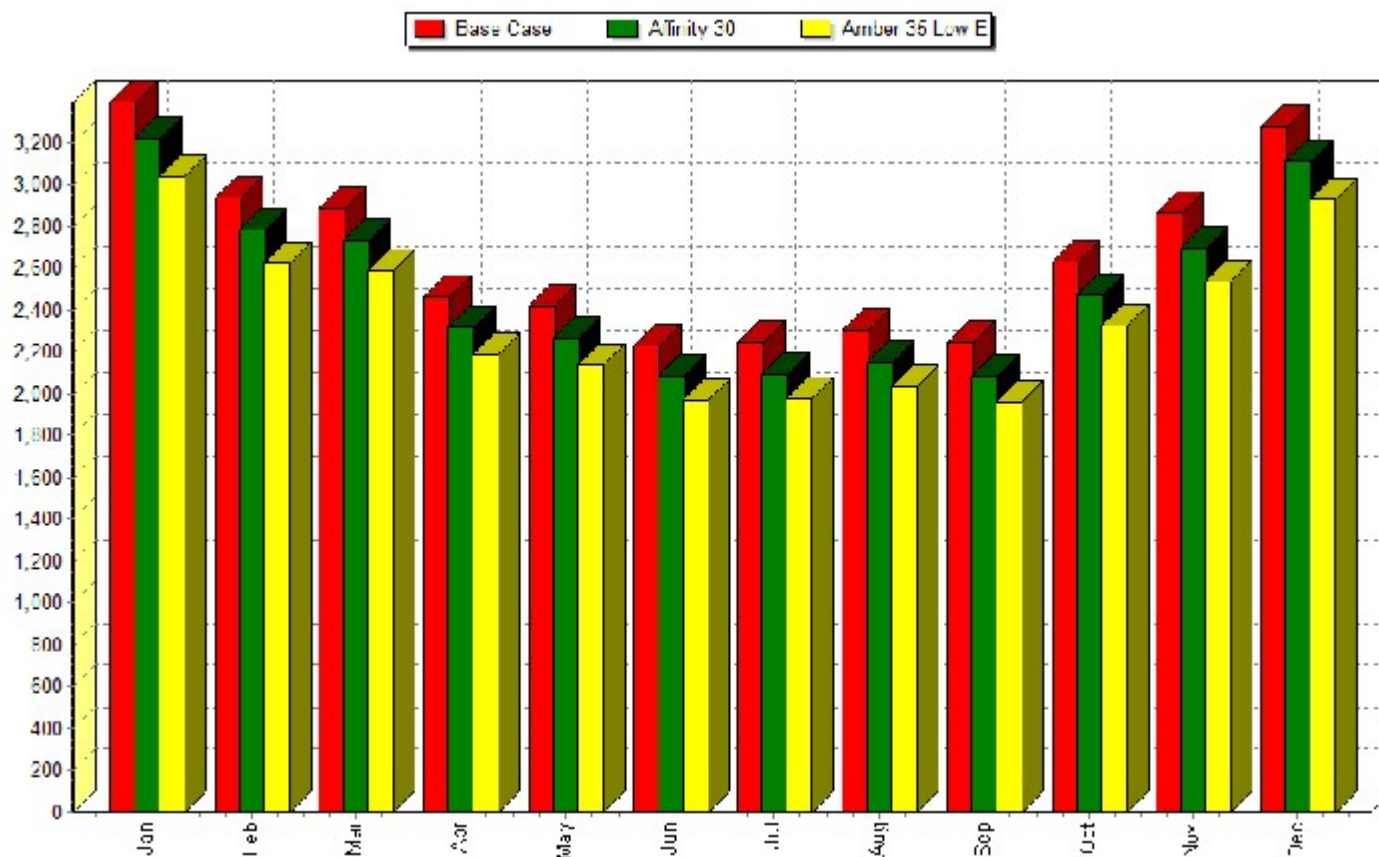
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Base Case	1,445	1,159	925	612	389	164	103	117	236	696	987	1,354	8,187
Affinity 30	1,376	1,104	877	570	349	131	67	81	193	640	924	1,285	7,597
Affinity 30 - Savings	69	55	48	42	40	34	35	36	43	56	63	69	590
Amber 35 Low E	1,273	1,021	805	517	306	104	43	56	154	574	842	1,186	6,882
Amber 35 Low E - Savings	172	138	119	94	83	61	60	61	83	122	145	168	1,305

Annual Gas Use [MBTU]



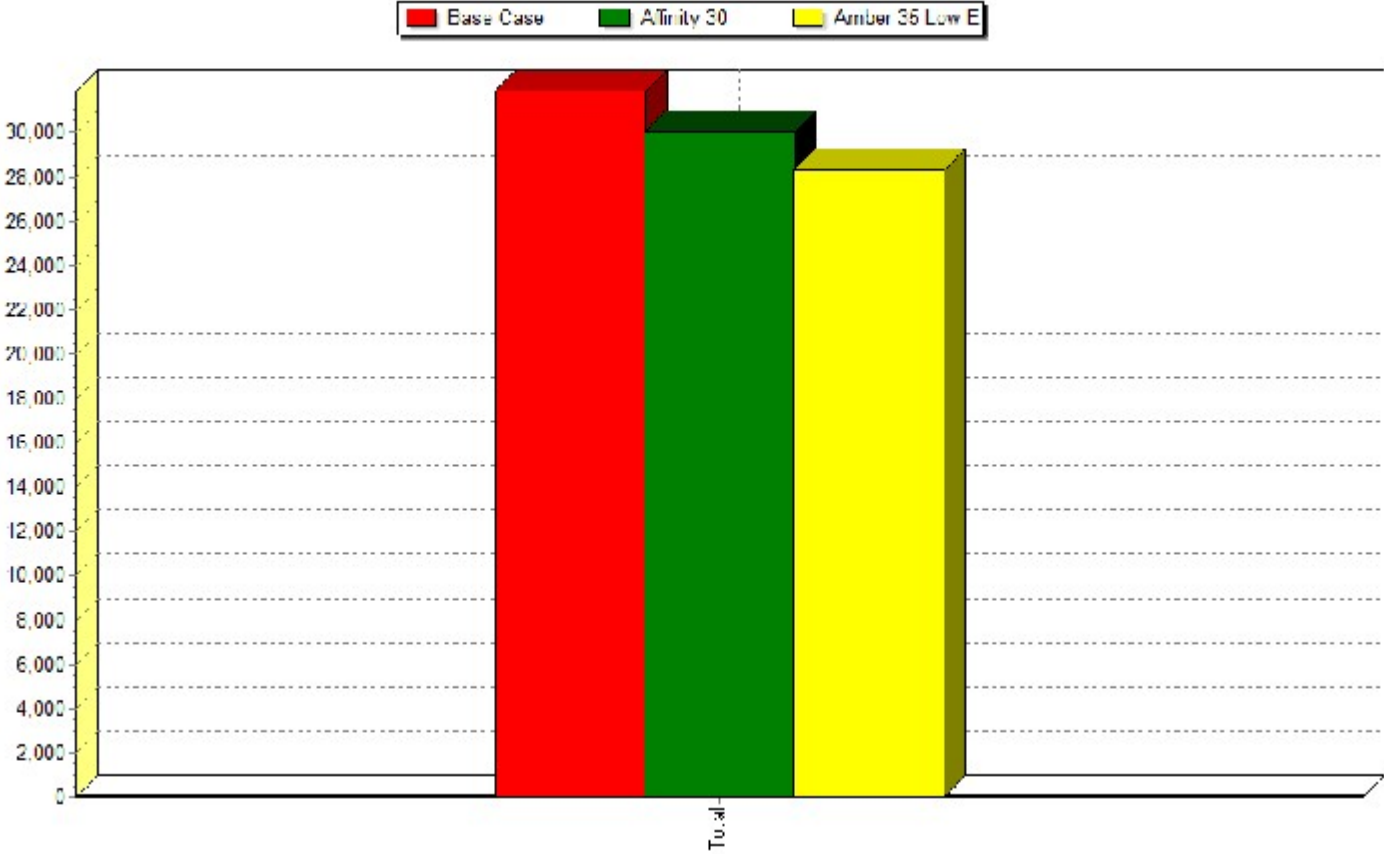
	Heating Gas	Total
Base Case	8,187	8,187
Affinity 30	7,597	7,597
Affinity 30 - Savings	590	590
Amber 35 Low E	6,882	6,882
Amber 35 Low E - Savings	1,305	1,305

## Monthly Total Use [MBTU]



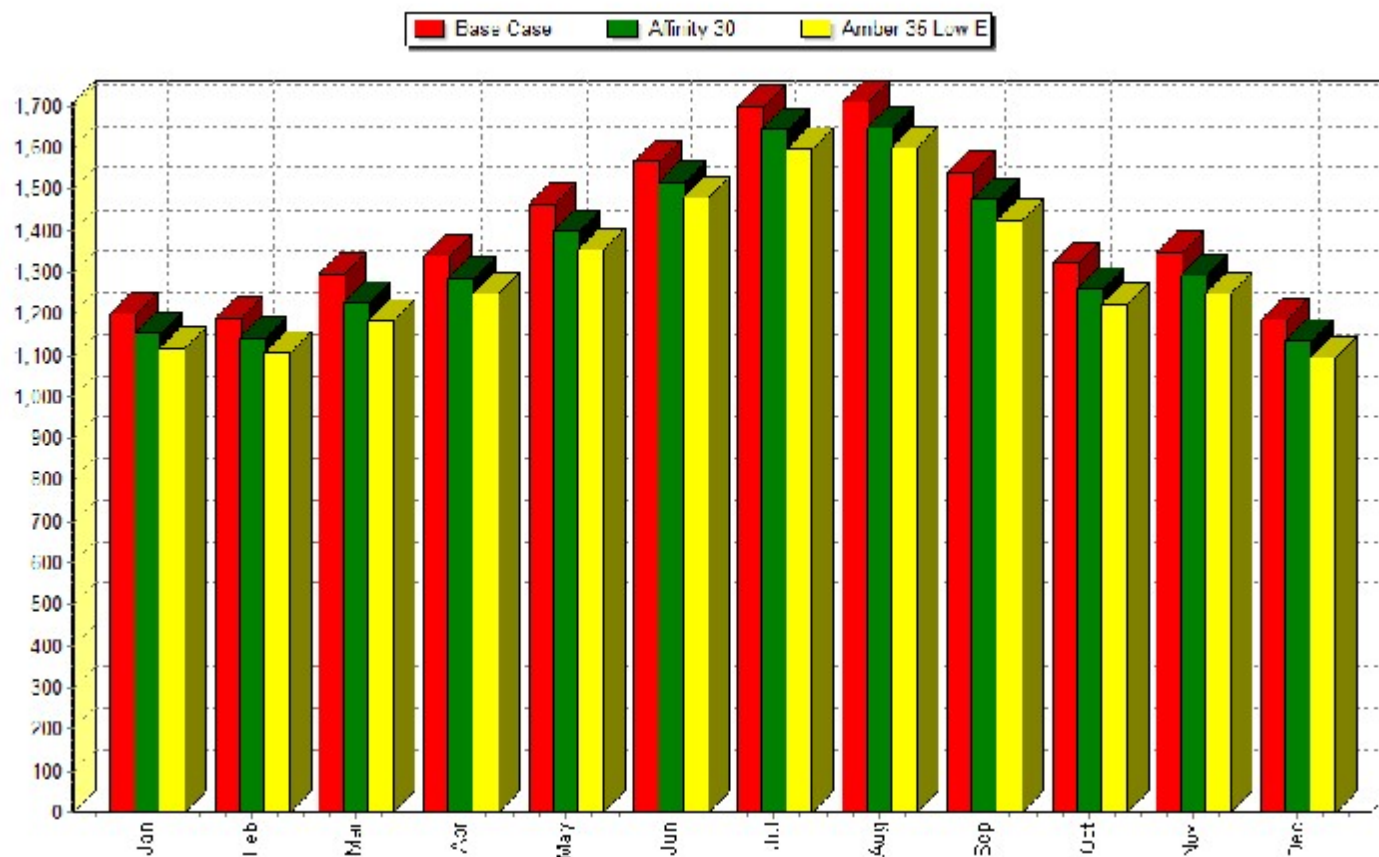
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Base Case	3,393	2,932	2,886	2,465	2,416	2,229	2,243	2,303	2,243	2,634	2,860	3,280	31,886
Affinity 30	3,221	2,781	2,735	2,322	2,265	2,084	2,091	2,150	2,087	2,472	2,698	3,108	30,014
Affinity 30 - Savings	172	151	150	144	151	145	152	153	157	162	162	172	1,872
Amber 35 Low E	3,035	2,625	2,583	2,191	2,137	1,971	1,977	2,035	1,962	2,328	2,537	2,931	28,312
Amber 35 Low E - Savings	358	307	303	275	279	258	266	268	281	306	323	350	3,574

Annual Total Use [MBTU]



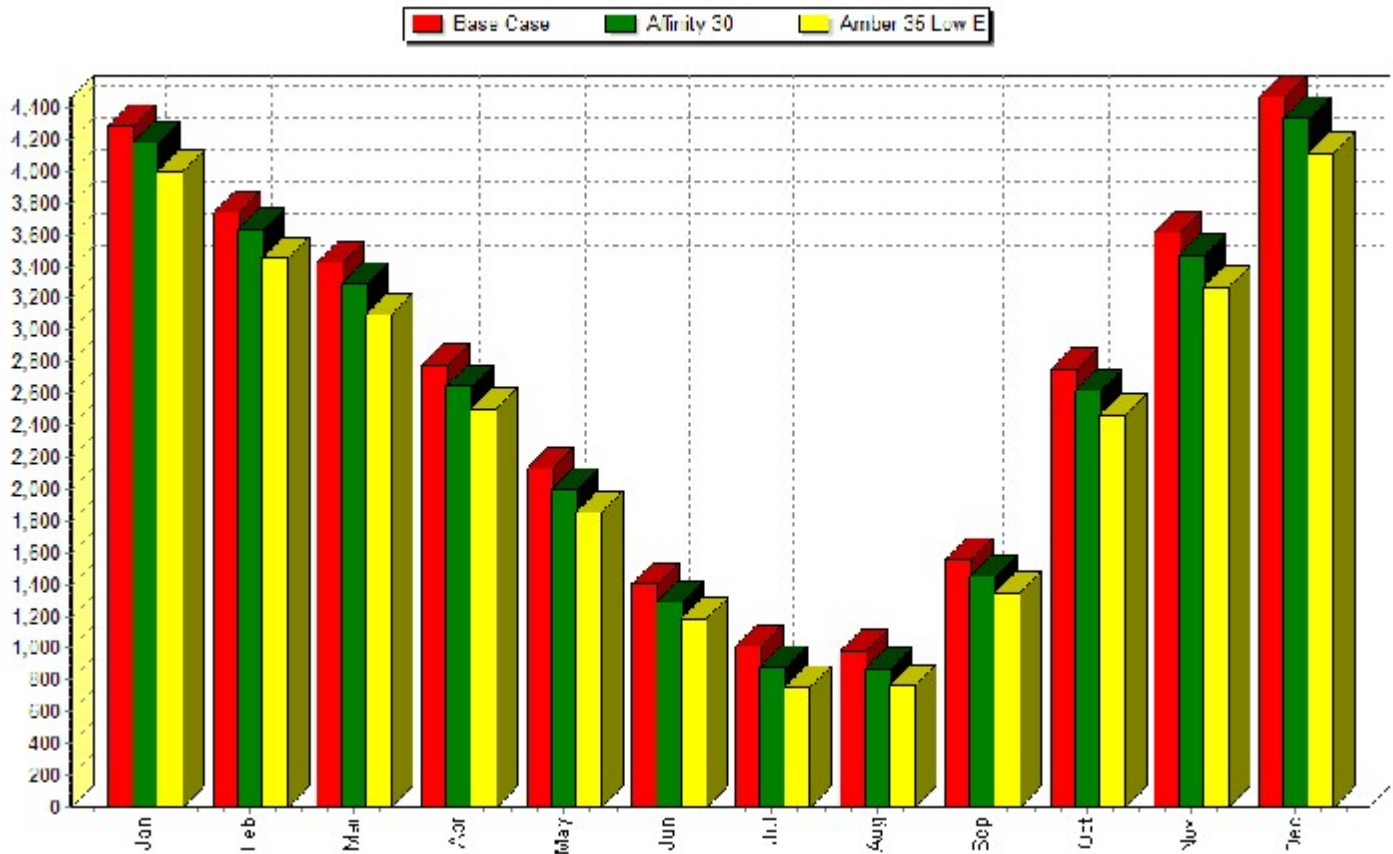
	Total
Base Case	31,886
Affinity 30	30,014
Affinity 30 - Savings	1,872
Amber 35 Low E	28,312
Amber 35 Low E - Savings	3,574

## Monthly Electric Energy Demand [kW]



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Maximum
Base Case	1,200	1,191	1,295	1,341	1,463	1,568	1,699	1,710	1,540	1,320	1,349	1,186	1,712
Affinity 30	1,152	1,141	1,228	1,286	1,399	1,517	1,642	1,648	1,474	1,260	1,291	1,134	1,651
Affinity 30 - Savings	48	50	67	55	64	52	57	62	65	60	58	52	61
Amber 35 Low E	1,117	1,106	1,182	1,247	1,355	1,479	1,596	1,600	1,422	1,221	1,248	1,094	1,604
Amber 35 Low E - Savings	83	85	113	94	109	90	104	109	117	99	101	93	108

## Monthly Gas Demand [kBtu/hr]



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Maximum
Base Case	4,288	3,739	3,423	2,780	2,129	1,404	1,013	990	1,563	2,759	3,611	4,467	4,467
Affinity 30	4,183	3,633	3,289	2,648	2,003	1,293	879	866	1,451	2,624	3,467	4,332	4,332
Affinity 30 - Savings	105	106	135	131	126	111	133	123	112	134	143	134	134
Amber 35 Low E	3,997	3,454	3,095	2,501	1,855	1,189	759	763	1,346	2,468	3,273	4,117	4,117
Amber 35 Low E - Savings	291	285	329	278	273	216	254	227	217	290	338	350	350

## Monthly Electric Cost [\$]



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Base Case	66,468	60,477	66,909	63,226	69,164	70,445	73,018	74,576	68,466	66,122	63,921	65,709
Affinity 30	62,957	57,203	63,414	59,750	65,394	66,646	69,036	70,567	64,596	62,491	60,543	62,193
Affinity 30 - Savings	3,511	3,274	3,494	3,476	3,770	3,799	3,981	4,009	3,870	3,630	3,379	3,516
Amber 35 Low E	60,129	54,725	60,651	57,081	62,465	63,722	65,976	67,499	61,679	59,848	57,823	59,502
Amber 35 Low E - Savings	6,339	5,752	6,257	6,145	6,699	6,724	7,042	7,077	6,787	6,274	6,098	6,207

	Total
Base Case	808,501
Affinity 30	764,792
Affinity 30 - Savings	43,709
Amber 35 Low E	731,101
Amber 35 Low E - Savings	77,400

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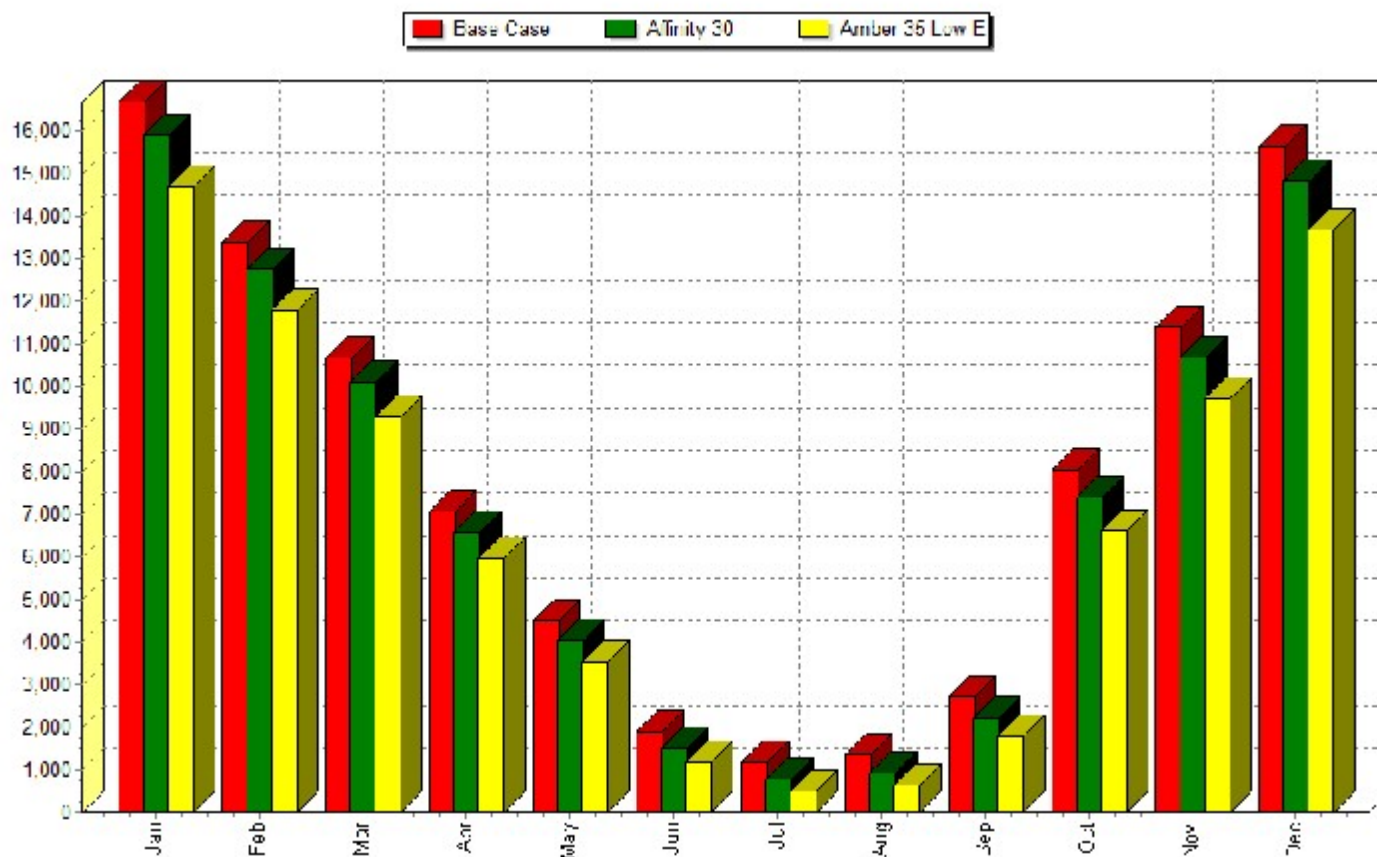


Annual Electric Cost [\$]



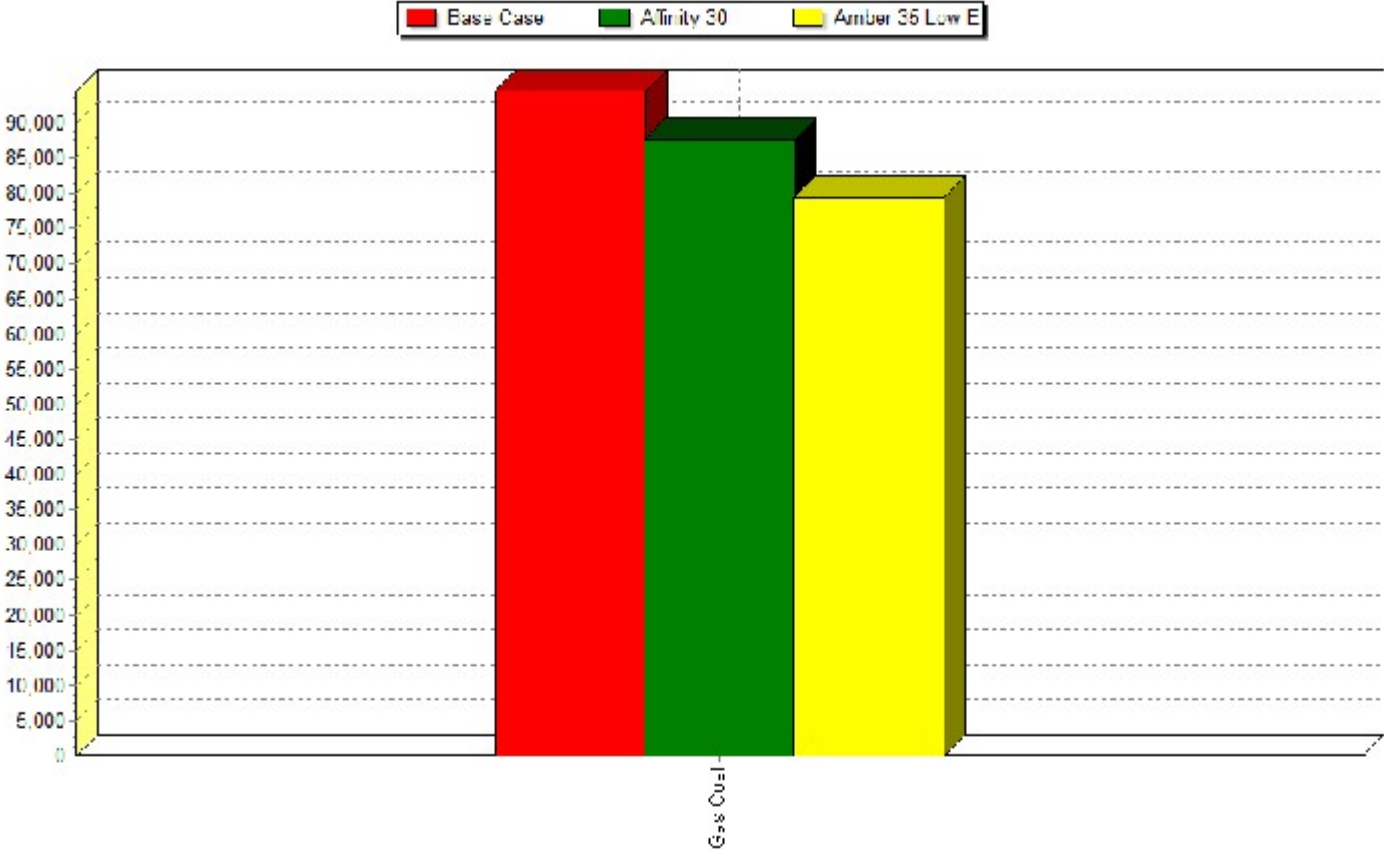
	El. Cost	Total
Base Case	808,501	808,501
Affinity 30	764,792	764,792
Affinity 30 - Savings	43,709	43,709
Amber 35 Low E	731,101	731,101
Amber 35 Low E - Savings	77,400	77,400

## Monthly Gas Cost [\$]



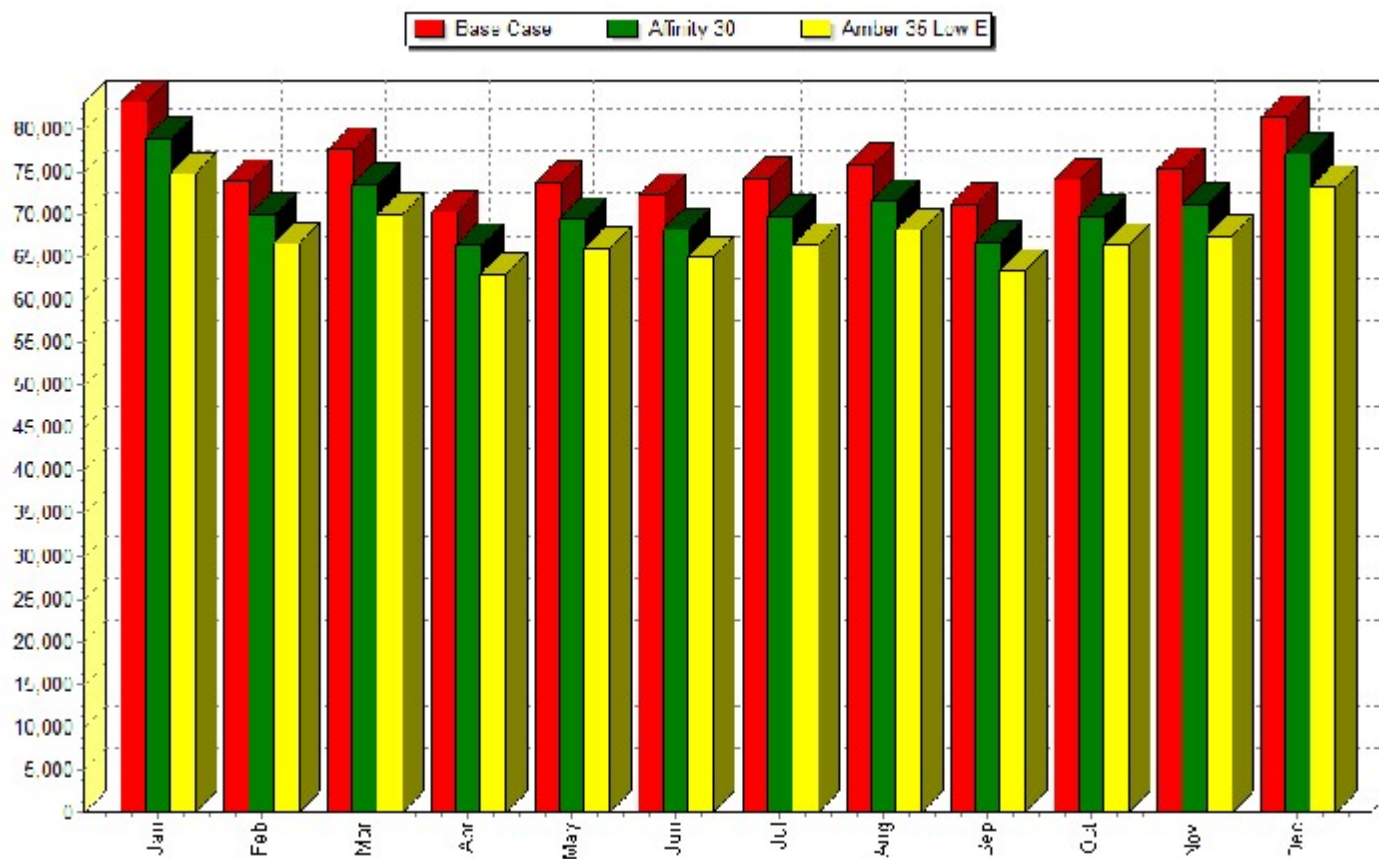
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Base Case	16,687	13,389	10,678	7,067	4,490	1,898	1,187	1,353	2,731	8,034	11,392	15,638	94,544
Affinity 30	15,887	12,751	10,124	6,584	4,025	1,510	777	941	2,230	7,390	10,668	14,839	87,728
Affinity 30 - Savings	800	638	554	482	465	388	410	412	501	644	724	799	6,817
Amber 35 Low E	14,701	11,790	9,302	5,976	3,536	1,196	497	648	1,777	6,627	9,721	13,701	79,473
Amber 35 Low E - Savings	1,987	1,599	1,376	1,091	954	702	690	704	954	1,407	1,671	1,937	15,071

Annual Gas Cost [\$]



	Gas Cost	Total
Base Case	94,544	94,544
Affinity 30	87,728	87,728
Affinity 30 - Savings	6,817	6,817
Amber 35 Low E	79,473	79,473
Amber 35 Low E - Savings	15,071	15,071

## Monthly Total Cost [\$]

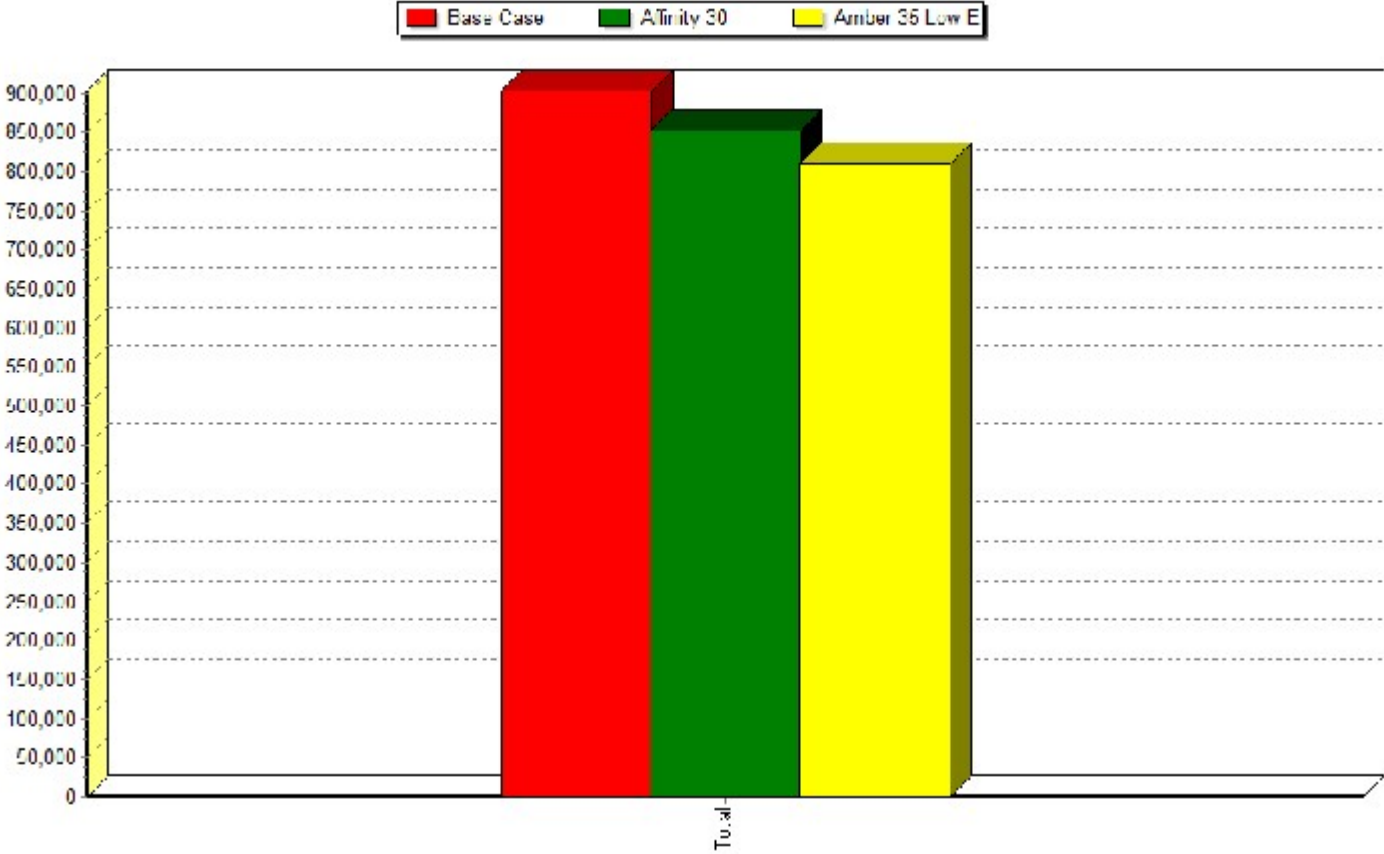


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Base Case	83,155	73,865	77,587	70,293	73,655	72,343	74,205	75,929	71,197	74,156	75,314	81,347
Affinity 30	78,844	69,954	73,538	66,335	69,419	68,157	69,814	71,509	66,826	69,881	71,211	77,033
Affinity 30 - Savings	4,311	3,912	4,048	3,958	4,235	4,187	4,391	4,421	4,371	4,275	4,103	4,315
Amber 35 Low E	74,829	66,515	69,953	63,057	66,001	64,918	66,473	68,148	63,457	66,476	67,545	73,203
Amber 35 Low E - Savings	8,326	7,351	7,633	7,236	7,653	7,426	7,732	7,781	7,740	7,680	7,769	8,144

	Total
Base Case	903,045
Affinity 30	852,519
Affinity 30 - Savings	50,526
Amber 35 Low E	810,574
Amber 35 Low E - Savings	92,471

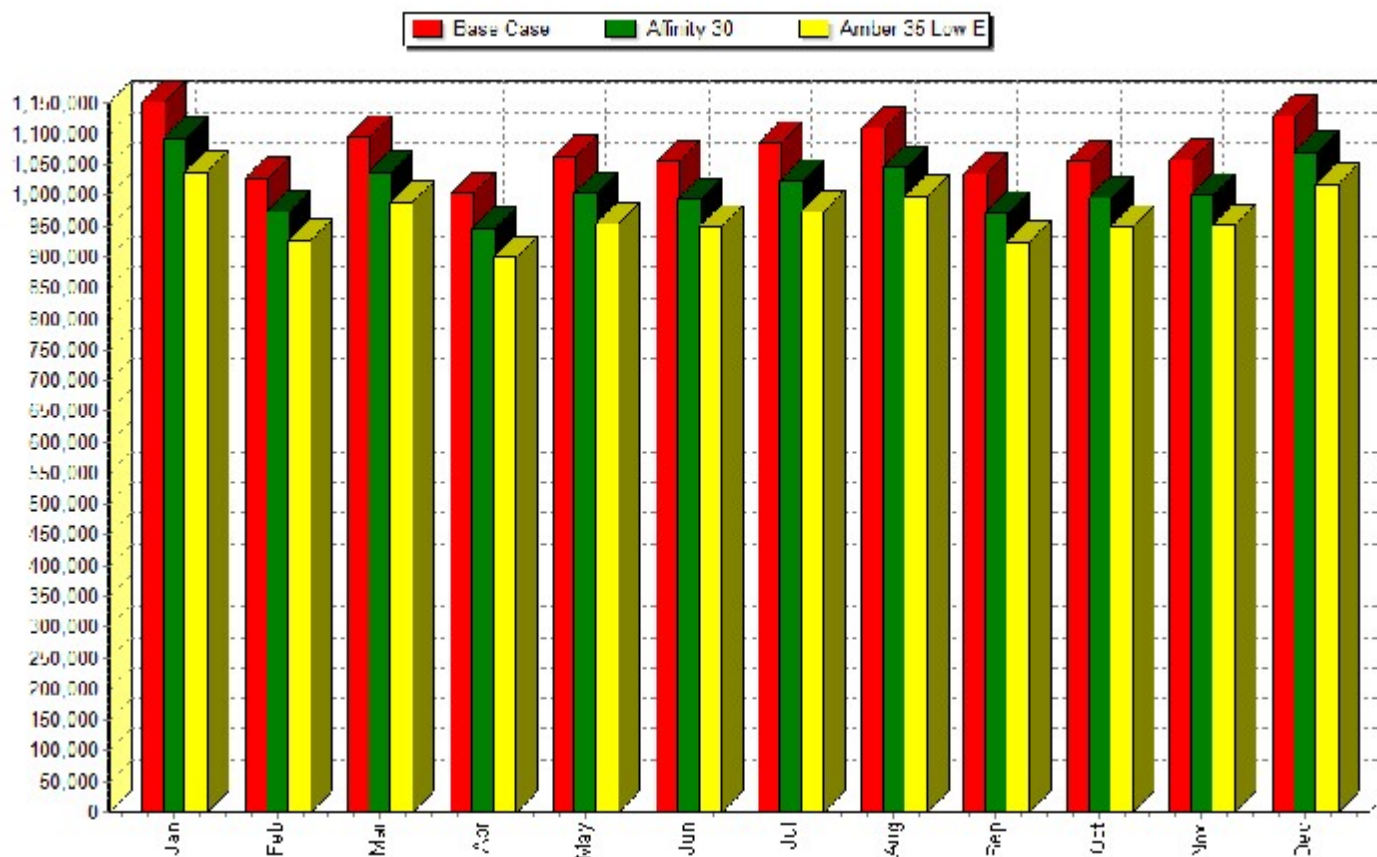
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Annual Total Cost [\$]



	Total
Base Case	903,045
Affinity 30	852,519
Affinity 30 - Savings	50,526
Amber 35 Low E	810,574
Amber 35 Low E - Savings	92,471

## Monthly CO2 [lb]



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Base Case	1,151,503	1,028,876	1,094,912	1,002,918	1,063,113	1,054,729	1,085,053	1,109,687
Affinity 30	1,091,528	974,089	1,037,769	946,801	1,002,849	994,854	1,022,270	1,046,479
Affinity 30 - Savings	59,975	54,787	57,143	56,117	60,264	59,875	62,783	63,208
Amber 35 Low E	1,037,531	927,608	988,554	901,203	954,695	948,595	974,373	998,339
Amber 35 Low E - Savings	113,972	101,268	106,358	101,715	108,418	106,134	110,679	111,348

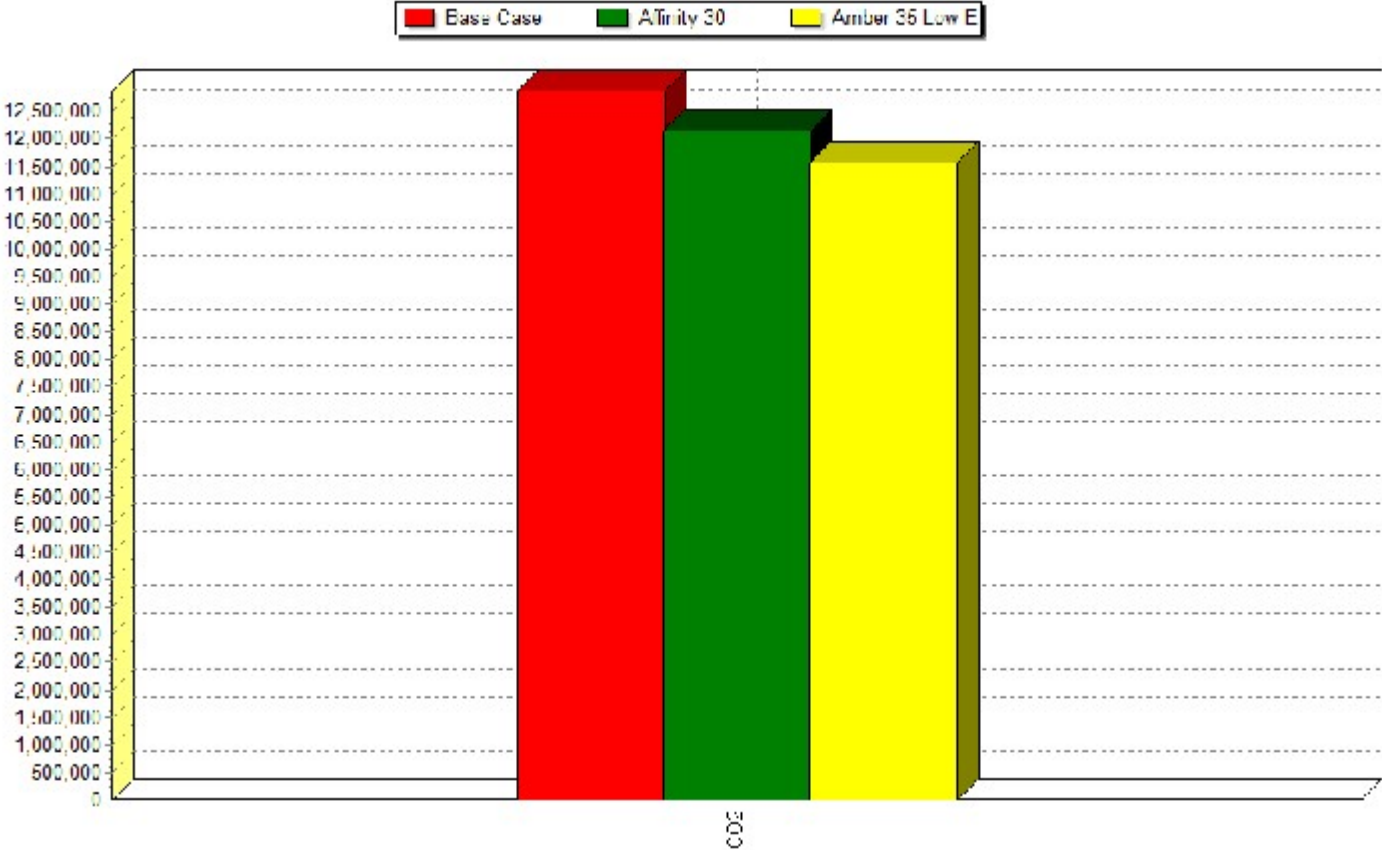
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	Sep	Oct	Nov	Dec	Total
Base Case	1,034,388	1,055,607	1,058,530	1,129,343	12,868,660
Affinity 30	972,285	995,515	1,001,297	1,069,315	12,155,052
Affinity 30 - Savings	62,103	60,092	57,233	60,028	713,607
Amber 35 Low E	924,691	948,691	951,413	1,017,836	11,573,528
Amber 35 Low E - Savings	109,698	106,916	107,117	111,507	1,295,131

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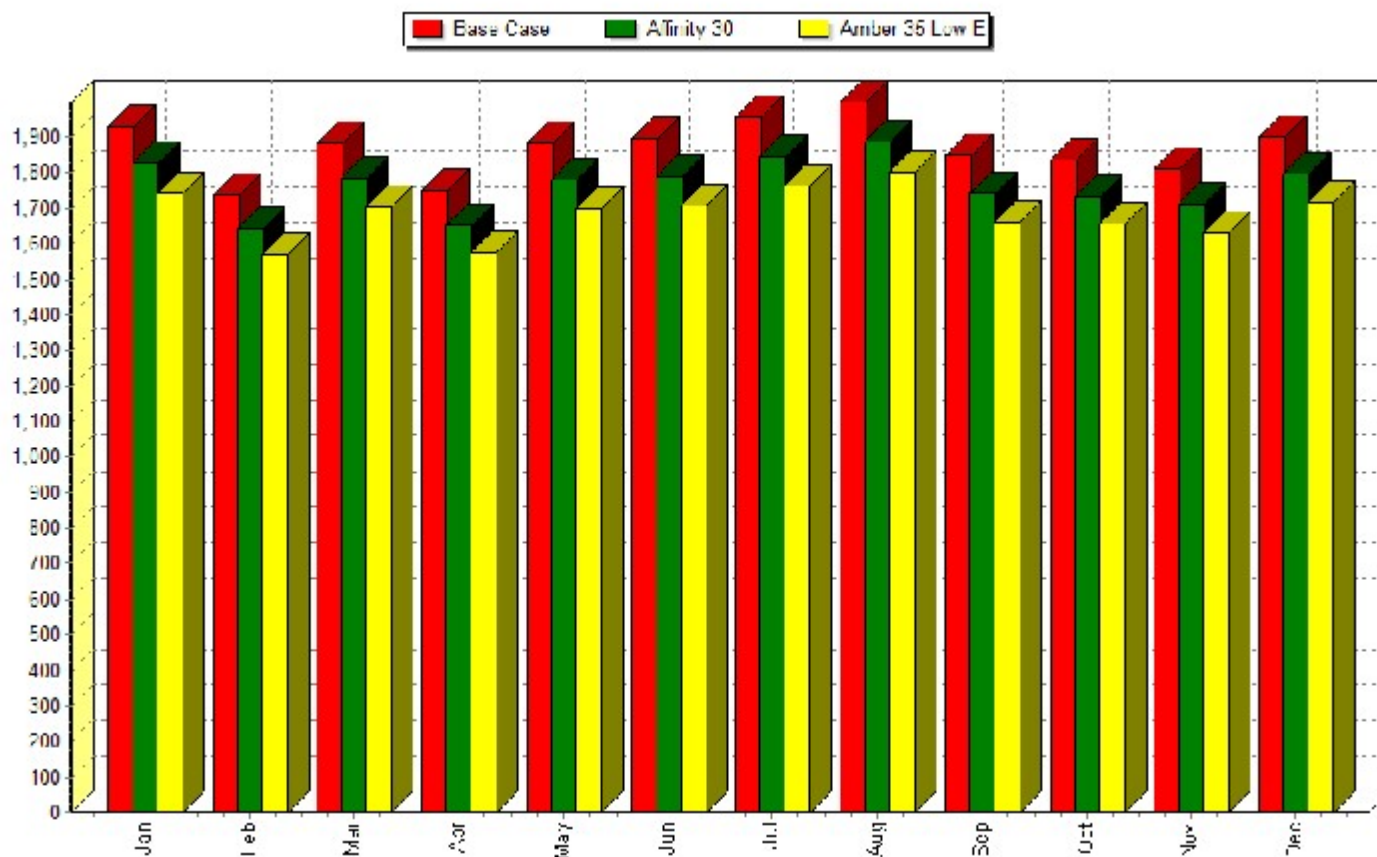


Annual CO2 [lb]

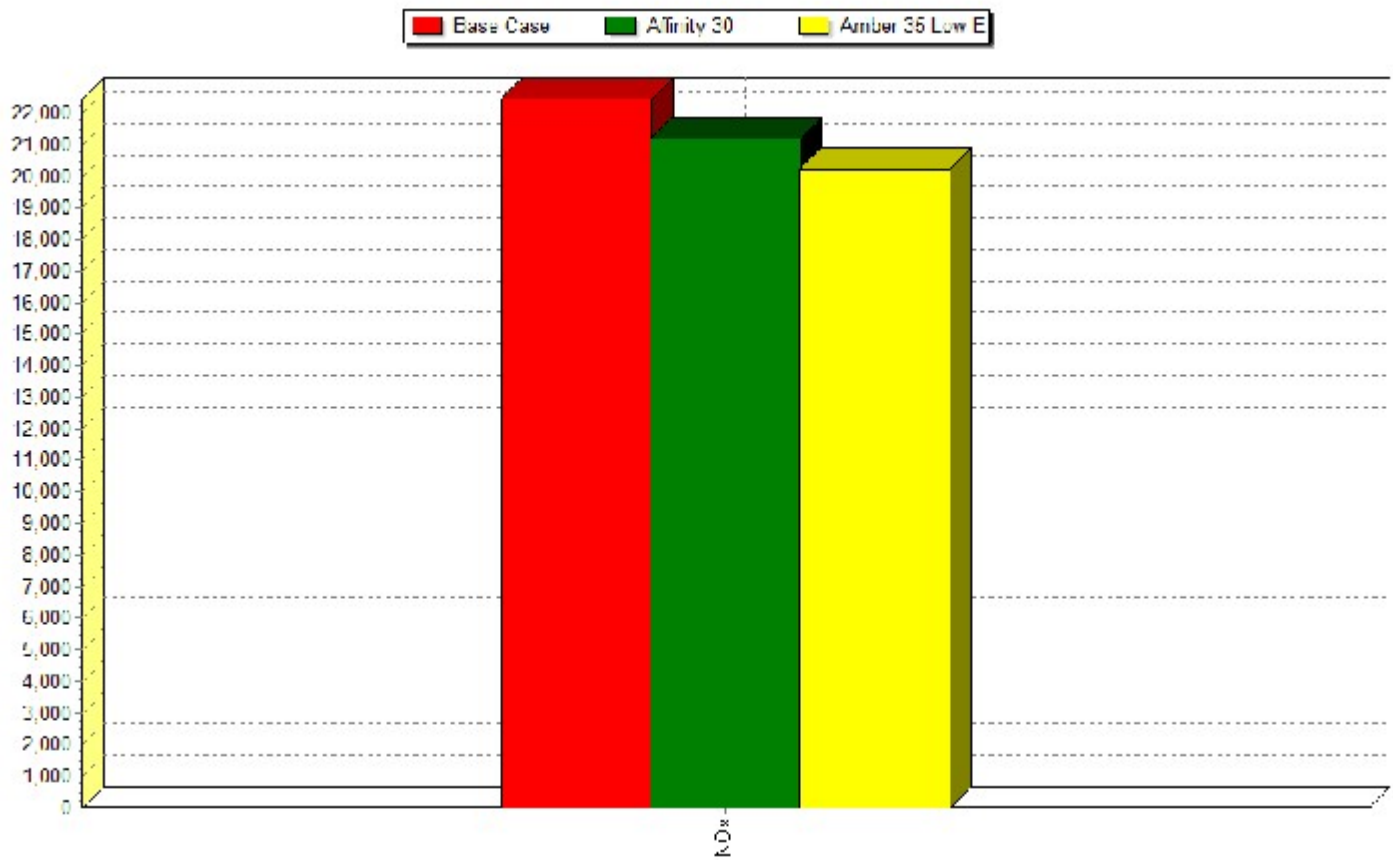


	CO2	Total
Base Case	12,868,660	12,868,660
Affinity 30	12,155,052	12,155,052
Affinity 30 - Savings	713,607	713,607
Amber 35 Low E	11,573,528	11,573,528
Amber 35 Low E - Savings	1,295,131	1,295,131

## Monthly NOx [lb]



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Base Case	1,929	1,738	1,884	1,751	1,885	1,894	1,956	1,999	1,849	1,837	1,811	1,899	22,431
Affinity 30	1,828	1,645	1,785	1,654	1,780	1,789	1,846	1,888	1,741	1,735	1,714	1,798	21,202
Affinity 30 - Savings	101	93	98	97	105	105	110	111	108	103	97	101	1,229
Amber 35 Low E	1,741	1,570	1,704	1,577	1,697	1,708	1,762	1,804	1,659	1,657	1,632	1,715	20,226
Amber 35 Low E - Savings	188	168	180	174	187	186	194	195	190	180	178	184	2,205

*Annual NOx [lb]*

	NOx	Total
Base Case	22,431	22,431
Affinity 30	21,202	21,202
Affinity 30 - Savings	1,229	1,229
Amber 35 Low E	20,226	20,226
Amber 35 Low E - Savings	2,205	2,205