



Appendix C

DOAS System Energy Analysis

Carrier's Hourly Analysis Program (HAP) output for the proposed DOAS system:

ANNUAL COST SUMMARY:

Table 1. Annual Costs

Component	Gallaudet University SLCC(DOAS) (\$)
Air System Fans	9,184
Cooling	73,820
Heating	494
Pumps	17,170
Cooling Tower Fans	0
HVAC Sub-Total	100,668
Lights	20,164
Electric Equipment	23,226
Misc. Electric	0
Misc. Fuel Use	0
Non-HVAC Sub-Total	43,390
Grand Total	144,057

Table 3. Component Cost as a Percentage of Total Cost

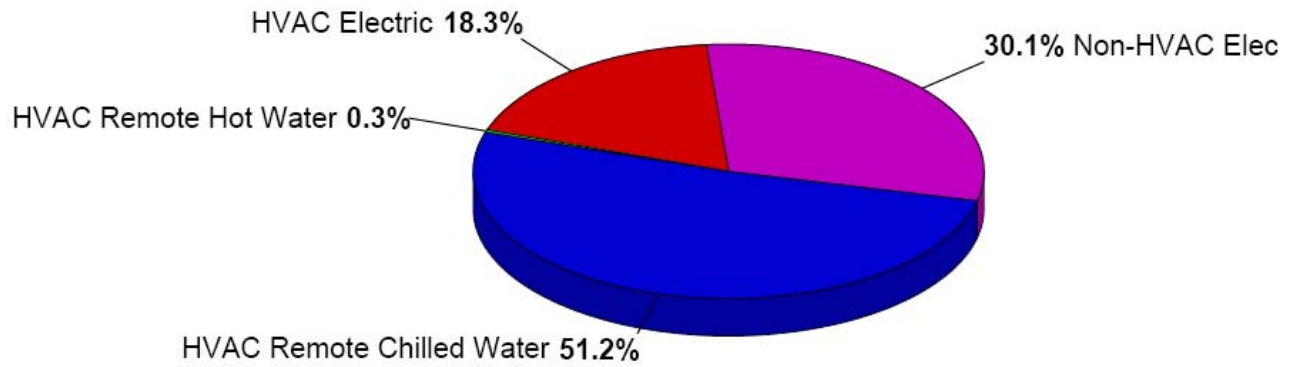
Component	Gallaudet University SLCC(DOAS) (%)
Air System Fans	6.4
Cooling	51.2
Heating	0.3
Pumps	11.9
Cooling Tower Fans	0.0
HVAC Sub-Total	69.9
Lights	14.0
Electric Equipment	16.1
Misc. Electric	0.0
Misc. Fuel Use	0.0
Non-HVAC Sub-Total	30.1
Grand Total	100.0

Table 2. Annual Cost per Unit Floor Area

Component	Gallaudet University SLCC(DOAS) (\$/ft²)
Air System Fans	0.048
Cooling	0.389
Heating	0.003
Pumps	0.090
Cooling Tower Fans	0.000
HVAC Sub-Total	0.530
Lights	0.106
Electric Equipment	0.122
Misc. Electric	0.000
Misc. Fuel Use	0.000
Non-HVAC Sub-Total	0.228
Grand Total	0.758
Gross Floor Area (ft²)	190014.0
Conditioned Floor Area (ft²)	190014.0

Note: Values in this table are calculated using the Gross Floor Area.

ANNUAL ENERGY COSTS

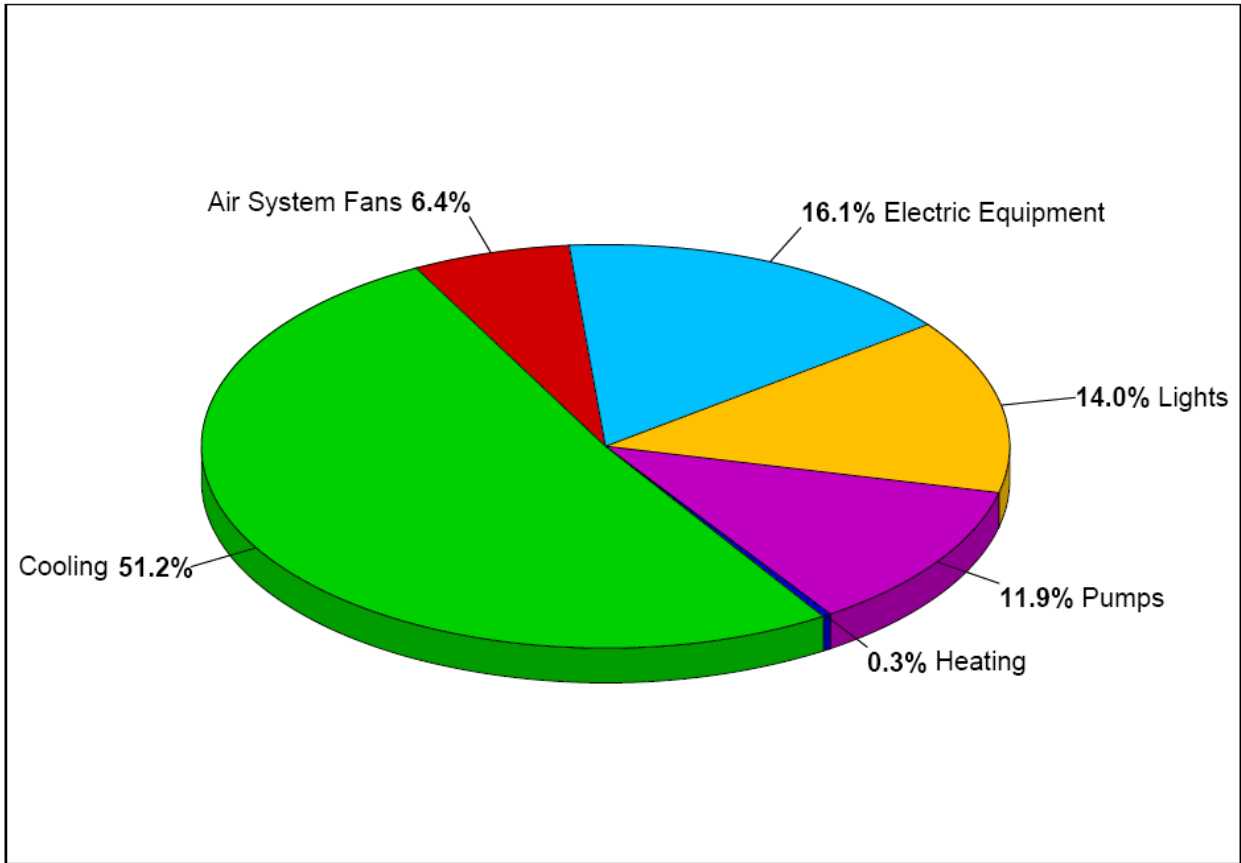


Component	Annual Cost (\$/yr)	(\$/ft ²)	Percent of Total (%)
HVAC Components			
Electric	26,352	0.139	18.3
Natural Gas	0	0.000	0.0
Fuel Oil	0	0.000	0.0
Propane	0	0.000	0.0
Remote Hot Water	494	0.003	0.3
Remote Steam	0	0.000	0.0
Remote Chilled Water	73,820	0.389	51.2
HVAC Sub-Total	100,666	0.530	69.9
Non-HVAC Components			
Electric	43,388	0.228	30.1
Natural Gas	0	0.000	0.0
Fuel Oil	0	0.000	0.0
Propane	0	0.000	0.0
Remote Hot Water	0	0.000	0.0
Remote Steam	0	0.000	0.0
Non-HVAC Sub-Total	43,388	0.228	30.1
Grand Total	144,054	0.758	100.0

Note: Cost per unit floor area is based on the gross building floor area.

Gross Floor Area **190014.0** ft²
 Conditioned Floor Area **190014.0** ft²

ANNUAL COMPONENT COSTS



1. Annual Costs

Component	Annual Cost (\$)	(\$/ft ²)	Percent of Total (%)
Air System Fans	9,184	0.048	6.4
Cooling	73,820	0.389	51.2
Heating	494	0.003	0.3
Pumps	17,170	0.090	11.9
Cooling Tower Fans	0	0.000	0.0
HVAC Sub-Total	100,668	0.530	69.9
Lights	20,164	0.106	14.0
Electric Equipment	23,226	0.122	16.1
Misc. Electric	0	0.000	0.0
Misc. Fuel Use	0	0.000	0.0
Non-HVAC Sub-Total	43,390	0.228	30.1

ENERGY BUDGET BY SOURCE

1. Annual Coil Loads

Component	Load (kBTU)	(kBTU/ft ²)
Cooling Coil Loads	2,224,520	11.707
Heating Coil Loads	525,583	2.766
Grand Total	2,750,102	14.473

2. Energy Consumption by Energy Source

Component	Site Energy (kBTU)	Site Energy (kBTU/ft ²)	Source Energy (kBTU)	Source Energy (kBTU/ft ²)
HVAC Components				
Electric	994,613	5.234	3,552,190	18.694
Natural Gas	0	0.000	0	0.000
Fuel Oil	0	0.000	0	0.000
Propane	0	0.000	0	0.000
Remote Hot Water	499,672	2.630	499,672	2.630
Remote Steam	0	0.000	0	0.000
Remote Chilled Water	2,785,649	14.660	2,785,649	14.660
HVAC Sub-Total	4,279,934	22.524	6,837,511	35.984
Non-HVAC Components				
Electric	1,637,618	8.618	5,848,634	30.780
Natural Gas	0	0.000	0	0.000
Fuel Oil	0	0.000	0	0.000
Propane	0	0.000	0	0.000
Remote Hot Water	0	0.000	0	0.000
Remote Steam	0	0.000	0	0.000
Non-HVAC Sub-Total	1,637,618	8.618	5,848,634	30.780
Grand Total	5,917,551	31.143	12,686,145	66.764

Notes:

- 'Cooling Coil Loads' is the sum of all air system cooling coil loads.
- 'Heating Coil Loads' is the sum of all air system heating coil loads.
- Site Energy is the actual energy consumed.
- Source Energy is the site energy divided by the electric generating efficiency (28.0%).
- Source Energy for fuels equals the site energy value.
- Energy per unit floor area is based on the gross building floor area.
 Gross Floor Area **190014.0** ft²
 Conditioned Floor Area **190014.0** ft²