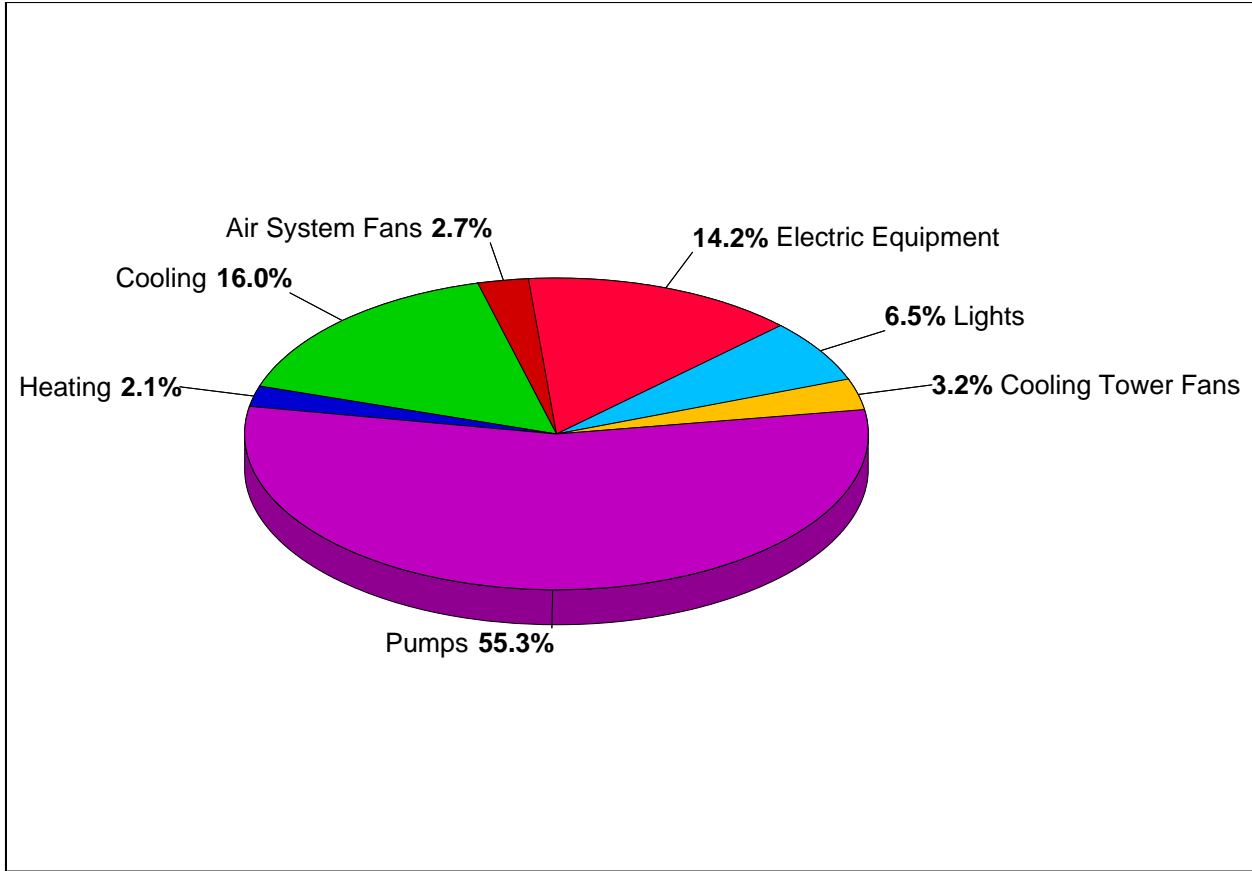


**Appendix M - HAP Report Files**

This appendix contains selected HAP report files design process. The files for the base case are listed first. The files for the new mechanical systems design are listed last.

Please see the all the HAP report files on the following pages.

# Annual Component Costs - Hilton Hotel at BWI Airport



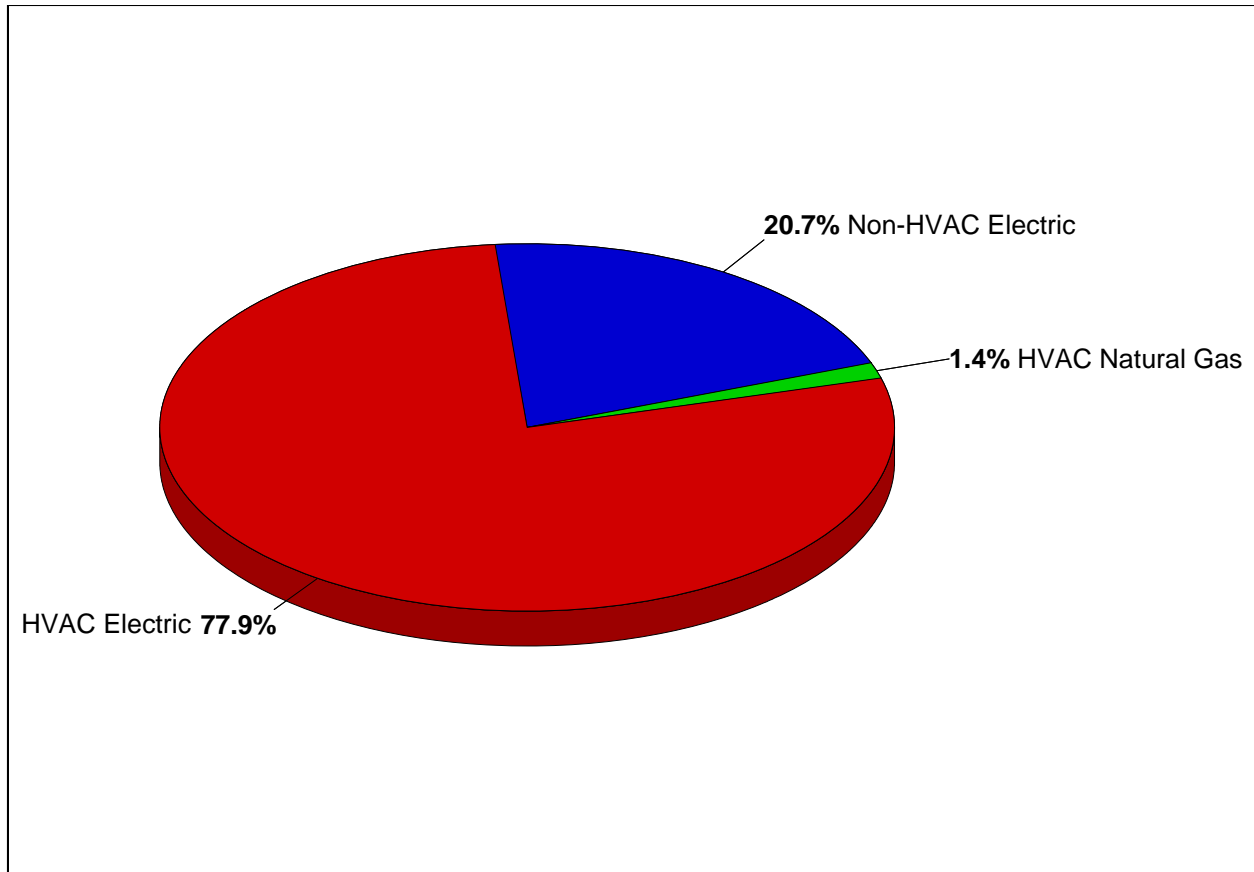
### 1. Annual Costs

| Component                 | Annual Cost (\$) | (\$/ft <sup>2</sup> ) | Percent of Total (%) |
|---------------------------|------------------|-----------------------|----------------------|
| Air System Fans           | 32,896           | 0.167                 | 2.7                  |
| Cooling                   | 196,737          | 1.001                 | 16.0                 |
| Heating                   | 26,399           | 0.134                 | 2.1                  |
| Pumps                     | 681,072          | 3.467                 | 55.3                 |
| Cooling Tower Fans        | 39,859           | 0.203                 | 3.2                  |
| <b>HVAC Sub-Total</b>     | <b>976,962</b>   | <b>4.973</b>          | <b>79.3</b>          |
| Lights                    | 80,260           | 0.409                 | 6.5                  |
| Electric Equipment        | 174,776          | 0.890                 | 14.2                 |
| Misc. Electric            | 0                | 0.000                 | 0.0                  |
| Misc. Fuel Use            | 0                | 0.000                 | 0.0                  |
| <b>Non-HVAC Sub-Total</b> | <b>255,036</b>   | <b>1.298</b>          | <b>20.7</b>          |
| <b>Grand Total</b>        | <b>1,231,999</b> | <b>6.271</b>          | <b>100.0</b>         |

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

Gross Floor Area ..... **196455.0** ft<sup>2</sup>  
 Conditioned Floor Area ..... **196455.0** ft<sup>2</sup>

# Annual Energy Costs - Hilton Hotel at BWI Airport



## 1. Annual Costs

| Component                  | Annual Cost (\$/yr) | (\$/ft <sup>2</sup> ) | Percent of Total (%) |
|----------------------------|---------------------|-----------------------|----------------------|
| <b>HVAC Components</b>     |                     |                       |                      |
| Electric                   | 959,905             | 4.886                 | 77.9                 |
| Natural Gas                | 17,113              | 0.087                 | 1.4                  |
| 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                  |
| Remote Chilled Water       | 0                   | 0.000                 | 0.0                  |
| <b>HVAC Sub-Total</b>      | <b>977,018</b>      | <b>4.973</b>          | <b>79.3</b>          |
| <b>Non-HVAC Components</b> |                     |                       |                      |
| Electric                   | 255,027             | 1.298                 | 20.7                 |
| 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                  |
| <b>Non-HVAC Sub-Total</b>  | <b>255,027</b>      | <b>1.298</b>          | <b>20.7</b>          |
| <b>Grand Total</b>         | <b>1,232,045</b>    | <b>6.271</b>          | <b>100.0</b>         |

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

Gross Floor Area ..... **196455.0** ft<sup>2</sup>  
 Conditioned Floor Area ..... **196455.0** ft<sup>2</sup>

## Energy Budget by System Component - Hilton Hotel at BWI Airport

BWI Hilton Base Case  
The Pennsylvania State University

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### 1. Annual Coil Loads

| Component          | Load (kBTU)       | (kBTU/ft <sup>2</sup> ) |
|--------------------|-------------------|-------------------------|
| Cooling Coil Loads | 24,961,130        | 127.058                 |
| Heating Coil Loads | 6,538,300         | 33.281                  |
| <b>Grand Total</b> | <b>31,499,434</b> | <b>160.339</b>          |

### 2. Energy Consumption by System Component

| Component                 | Site Energy (kBTU) | Site Energy (kBTU/ft <sup>2</sup> ) | Source Energy (kBTU) | Source Energy (kBTU/ft <sup>2</sup> ) |
|---------------------------|--------------------|-------------------------------------|----------------------|---------------------------------------|
| Air System Fans           | 1,611,165          | 8.201                               | 5,754,161            | 29.290                                |
| Cooling                   | 9,513,890          | 48.428                              | 33,978,184           | 172.957                               |
| Heating                   | 8,109,678          | 41.280                              | 9,323,703            | 47.460                                |
| Pumps                     | 33,560,676         | 170.831                             | 119,859,576          | 610.112                               |
| Cooling Towers            | 1,964,605          | 10.000                              | 7,016,446            | 35.715                                |
| <b>HVAC Sub-Total</b>     | <b>54,760,014</b>  | <b>278.741</b>                      | <b>175,932,070</b>   | <b>895.534</b>                        |
| Lights                    | 3,954,558          | 20.130                              | 14,123,420           | 71.891                                |
| Electric Equipment        | 8,611,752          | 43.836                              | 30,756,254           | 156.556                               |
| Misc. Electric            | 0                  | 0.000                               | 0                    | 0.000                                 |
| Misc. Fuel Use            | 0                  | 0.000                               | 0                    | 0.000                                 |
| <b>Non-HVAC Sub-Total</b> | <b>12,566,310</b>  | <b>63.965</b>                       | <b>44,879,674</b>    | <b>228.448</b>                        |
| <b>Grand Total</b>        | <b>67,326,323</b>  | <b>342.706</b>                      | <b>220,811,744</b>   | <b>1123.981</b>                       |

**Notes:**

1. 'Cooling Coil Loads' is the sum of all air system cooling coil loads.
2. 'Heating Coil Loads' is the sum of all air system heating coil loads.
3. Site Energy is the actual energy consumed.
4. Source Energy is the site energy divided by the electric generating efficiency (28.0%).
5. Source Energy for fuels equals the site energy value.
6. Energy per unit floor area is based on the gross building floor area.  
 Gross Floor Area ..... **196455.0** ft<sup>2</sup>  
 Conditioned Floor Area ..... **196455.0** ft<sup>2</sup>

## Energy Budget by Energy Source - Hilton Hotel at BWI Airport

BWI Hilton Base Case  
The Pennsylvania State University

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### 1. Annual Coil Loads

| Component          | Load<br>(kBTU)    | (kBTU/ft <sup>2</sup> ) |
|--------------------|-------------------|-------------------------|
| Cooling Coil Loads | 24,961,130        | 127.058                 |
| Heating Coil Loads | 6,538,300         | 33.281                  |
| <b>Grand Total</b> | <b>31,499,434</b> | <b>160.339</b>          |

### 2. Energy Consumption by Energy Source

| Component                  | Site Energy<br>(kBTU) | Site Energy<br>(kBTU/ft <sup>2</sup> ) | Source Energy<br>(kBTU) | Source Energy<br>(kBTU/ft <sup>2</sup> ) |
|----------------------------|-----------------------|--|-------------------------|--|
| <b>HVAC Components</b>     |                       |  |                         |  |
| Electric                   | 47,125,188            | 239.878                                | 168,304,240             | 856.706                                  |
| Natural Gas                | 7,637,556             | 38.877                                 | 7,637,556               | 38.877                                   |
| 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                                    |
| Remote Chilled Water       | 0                     | 0.000                                  | 0                       | 0.000                                    |
| <b>HVAC Sub-Total</b>      | <b>54,762,744</b>     | <b>278.755</b>                         | <b>175,941,796</b>      | <b>895.583</b>                           |
| <b>Non-HVAC Components</b> |                       |  |                         |  |
| Electric                   | 12,565,848            | 63.963                                 | 44,878,028              | 228.439                                  |
| 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                                    |
| <b>Non-HVAC Sub-Total</b>  | <b>12,565,848</b>     | <b>63.963</b>                          | <b>44,878,028</b>       | <b>228.439</b>                           |
| <b>Grand Total</b>         | <b>67,328,592</b>     | <b>342.718</b>                         | <b>220,819,824</b>      | <b>1124.022</b>                          |

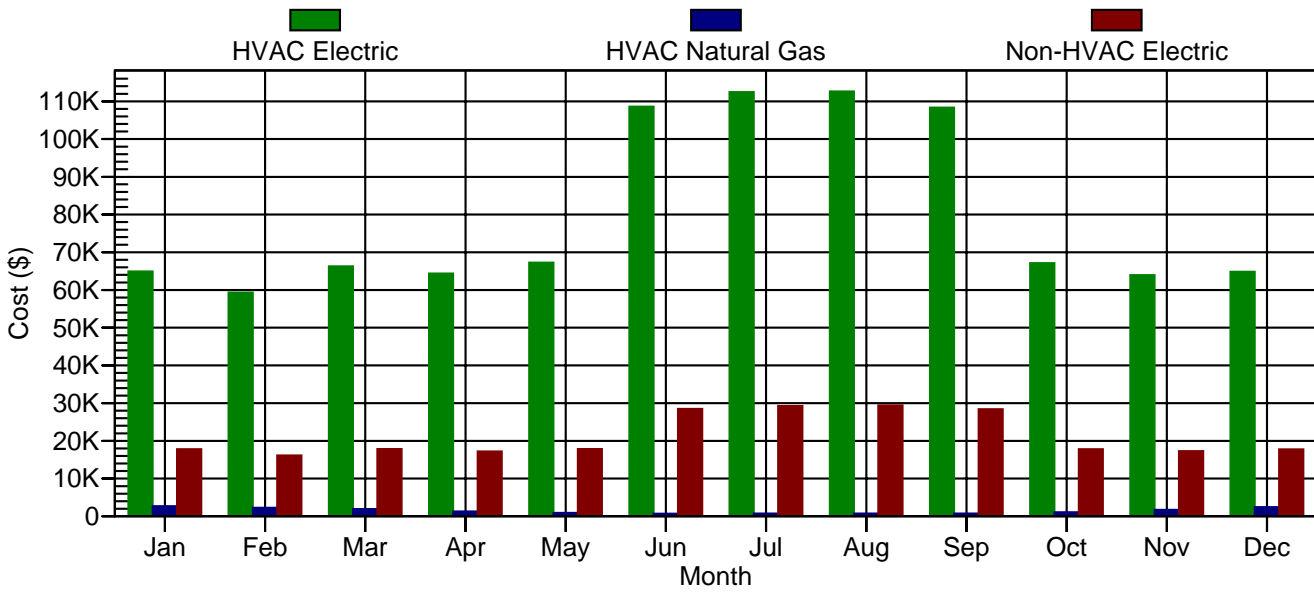
**Notes:**

1. 'Cooling Coil Loads' is the sum of all air system cooling coil loads.
2. 'Heating Coil Loads' is the sum of all air system heating coil loads.
3. Site Energy is the actual energy consumed.
4. Source Energy is the site energy divided by the electric generating efficiency (28.0%).
5. Source Energy for fuels equals the site energy value.
6. Energy per unit floor area is based on the gross building floor area.  
 Gross Floor Area ..... **196455.0** ft<sup>2</sup>  
 Conditioned Floor Area ..... **196455.0** ft<sup>2</sup>

# Monthly Energy Costs - Hilton Hotel at BWI Airport

BWI Hilton Base Case  
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## 1. HVAC Costs

| Month        | Electric (\$)  | Natural Gas (\$) | Fuel Oil (\$) | Propane (\$) | Remote Hot Water (\$) | Remote Steam (\$) | Remote Chilled Water (\$) |
|--------------|----------------|------------------|---------------|--------------|-----------------------|-------------------|---------------------------|
| January      | 64,899         | 2,697            | 0             | 0            | 0                     | 0                 | 0                         |
| February     | 59,320         | 2,236            | 0             | 0            | 0                     | 0                 | 0                         |
| March        | 66,263         | 1,893            | 0             | 0            | 0                     | 0                 | 0                         |
| April        | 64,337         | 1,295            | 0             | 0            | 0                     | 0                 | 0                         |
| May          | 67,209         | 911              | 0             | 0            | 0                     | 0                 | 0                         |
| June         | 108,612        | 706              | 0             | 0            | 0                     | 0                 | 0                         |
| July         | 112,470        | 719              | 0             | 0            | 0                     | 0                 | 0                         |
| August       | 112,627        | 731              | 0             | 0            | 0                     | 0                 | 0                         |
| September    | 108,324        | 750              | 0             | 0            | 0                     | 0                 | 0                         |
| October      | 67,112         | 1,076            | 0             | 0            | 0                     | 0                 | 0                         |
| November     | 63,926         | 1,692            | 0             | 0            | 0                     | 0                 | 0                         |
| December     | 64,806         | 2,407            | 0             | 0            | 0                     | 0                 | 0                         |
| <b>Total</b> | <b>959,905</b> | <b>17,113</b>    | <b>0</b>      | <b>0</b>     | <b>0</b>              | <b>0</b>          | <b>0</b>                  |

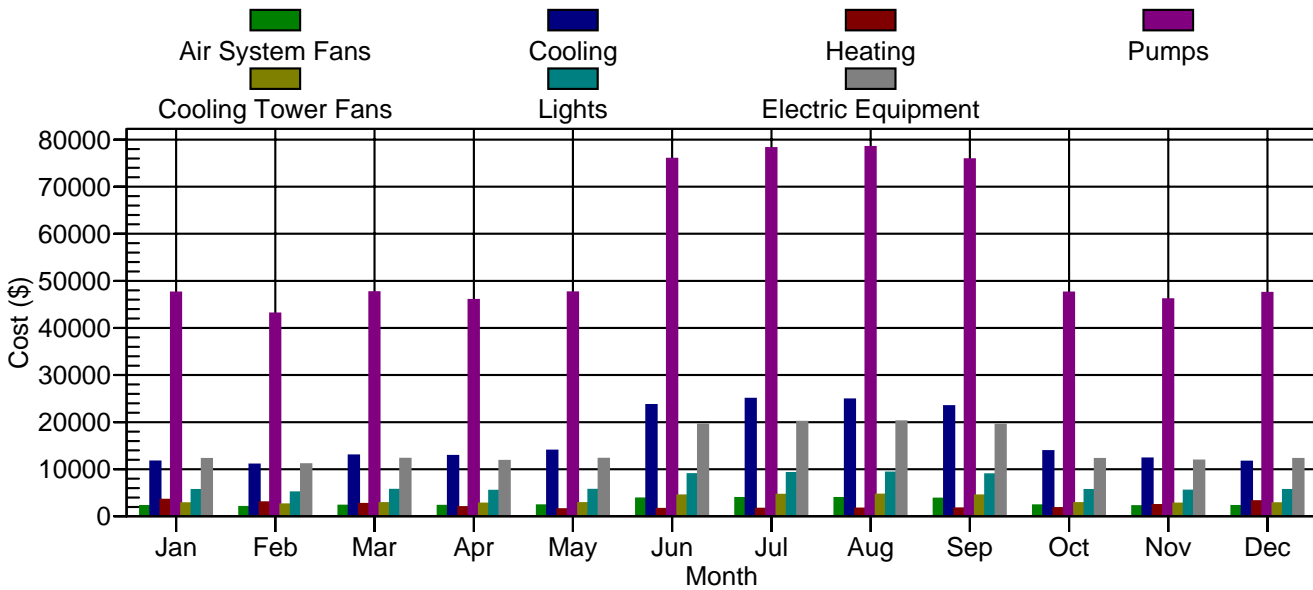
## 2. Non-HVAC Costs

| Month        | Electric (\$)  | Natural Gas (\$) | Fuel Oil (\$) | Propane (\$) | Remote Hot Water (\$) | Remote Steam (\$) |
|--------------|----------------|------------------|---------------|--------------|-----------------------|-------------------|
| January      | 17,771         | 0                | 0             | 0            | 0                     | 0                 |
| February     | 16,131         | 0                | 0             | 0            | 0                     | 0                 |
| March        | 17,838         | 0                | 0             | 0            | 0                     | 0                 |
| April        | 17,173         | 0                | 0             | 0            | 0                     | 0                 |
| May          | 17,832         | 0                | 0             | 0            | 0                     | 0                 |
| June         | 28,458         | 0                | 0             | 0            | 0                     | 0                 |
| July         | 29,230         | 0                | 0             | 0            | 0                     | 0                 |
| August       | 29,413         | 0                | 0             | 0            | 0                     | 0                 |
| September    | 28,400         | 0                | 0             | 0            | 0                     | 0                 |
| October      | 17,770         | 0                | 0             | 0            | 0                     | 0                 |
| November     | 17,269         | 0                | 0             | 0            | 0                     | 0                 |
| December     | 17,741         | 0                | 0             | 0            | 0                     | 0                 |
| <b>Total</b> | <b>255,027</b> | <b>0</b>         | <b>0</b>      | <b>0</b>     | <b>0</b>              | <b>0</b>          |

# Monthly Component Costs - Hilton Hotel at BWI Airport

BWI Hilton Base Case  
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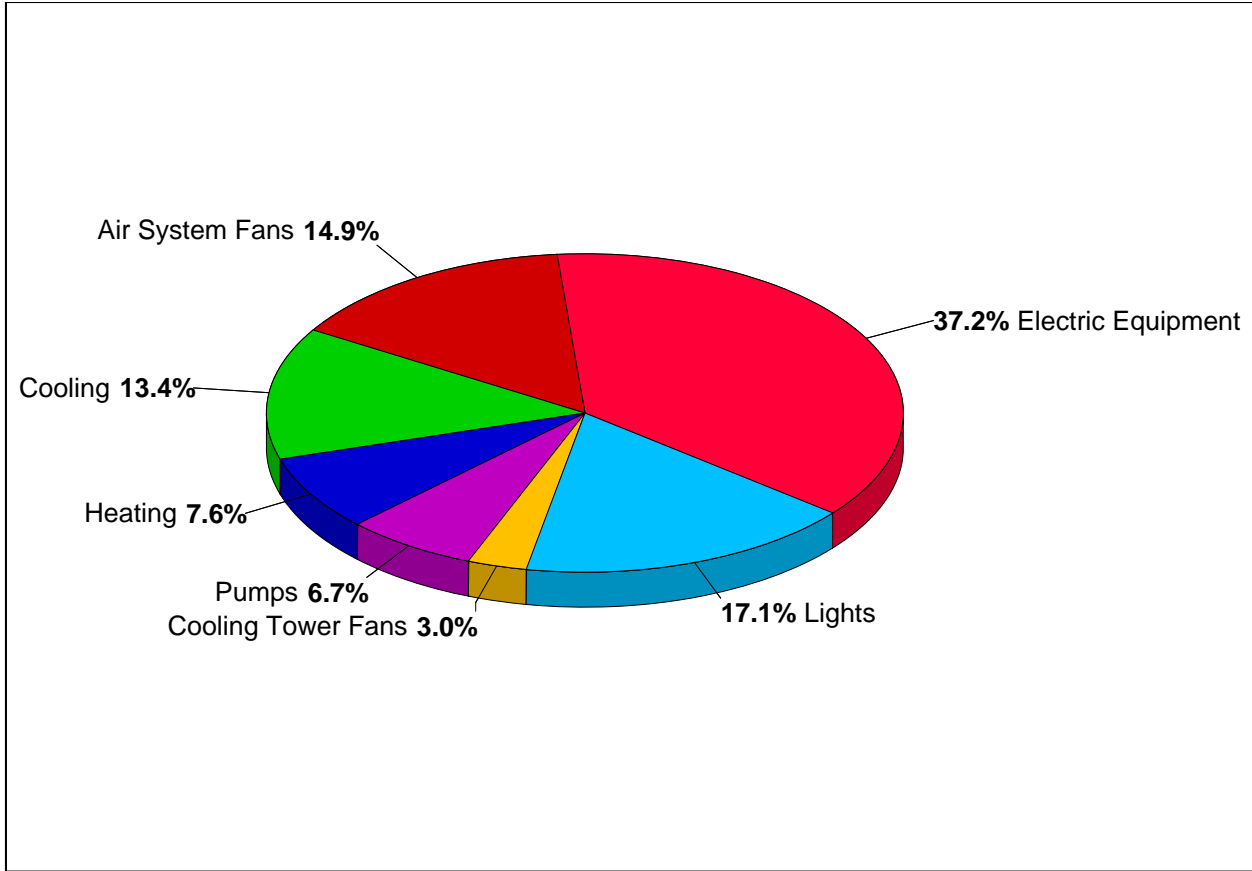
## 1. HVAC Component Costs

| Month        | Air System Fans (\$) | Cooling (\$)   | Heating (\$)  | Pumps (\$)     | Cooling Towers (\$) | HVAC Total (\$) |
|--------------|----------------------|----------------|---------------|----------------|---------------------|-----------------|
| January      | 2,171                | 11,608         | 3,526         | 47,517         | 2,770               | 67,592          |
| February     | 1,990                | 10,996         | 2,969         | 43,074         | 2,523               | 61,552          |
| March        | 2,252                | 12,920         | 2,621         | 47,568         | 2,790               | 68,151          |
| April        | 2,205                | 12,826         | 1,938         | 45,964         | 2,696               | 65,629          |
| May          | 2,317                | 13,946         | 1,512         | 47,553         | 2,789               | 68,117          |
| June         | 3,761                | 23,606         | 1,583         | 75,919         | 4,442               | 109,311         |
| July         | 3,888                | 24,941         | 1,598         | 78,194         | 4,562               | 113,183         |
| August       | 3,904                | 24,790         | 1,640         | 78,434         | 4,582               | 113,350         |
| September    | 3,757                | 23,397         | 1,671         | 75,806         | 4,438               | 109,069         |
| October      | 2,317                | 13,844         | 1,725         | 47,511         | 2,787               | 68,184          |
| November     | 2,163                | 12,283         | 2,395         | 46,071         | 2,702               | 65,614          |
| December     | 2,171                | 11,579         | 3,220         | 47,461         | 2,778               | 67,209          |
| <b>Total</b> | <b>32,896</b>        | <b>196,737</b> | <b>26,399</b> | <b>681,072</b> | <b>39,859</b>       | <b>976,962</b>  |

## 2. Non-HVAC Component Costs

| Month        | Lights (\$)   | Electric Equipment (\$) | Misc. Electric (\$) | Misc. Fuel Use (\$) | Non-HVAC Total (\$) | Grand Total (\$) |
|--------------|---------------|-------------------------|---------------------|---------------------|---------------------|------------------|
| January      | 5,592         | 12,181                  | 0                   | 0                   | 17,772              | 85,364           |
| February     | 5,077         | 11,055                  | 0                   | 0                   | 16,132              | 77,684           |
| March        | 5,619         | 12,220                  | 0                   | 0                   | 17,839              | 85,990           |
| April        | 5,397         | 11,777                  | 0                   | 0                   | 17,174              | 82,803           |
| May          | 5,617         | 12,216                  | 0                   | 0                   | 17,833              | 85,950           |
| June         | 8,962         | 19,497                  | 0                   | 0                   | 28,459              | 137,770          |
| July         | 9,189         | 20,042                  | 0                   | 0                   | 29,231              | 142,414          |
| August       | 9,265         | 20,149                  | 0                   | 0                   | 29,414              | 142,764          |
| September    | 8,936         | 19,465                  | 0                   | 0                   | 28,401              | 137,470          |
| October      | 5,591         | 12,179                  | 0                   | 0                   | 17,770              | 85,954           |
| November     | 5,438         | 11,832                  | 0                   | 0                   | 17,270              | 82,884           |
| December     | 5,577         | 12,165                  | 0                   | 0                   | 17,742              | 84,951           |
| <b>Total</b> | <b>80,260</b> | <b>174,776</b>          | <b>0</b>            | <b>0</b>            | <b>255,036</b>      | <b>1,231,998</b> |

# Annual Component Costs - Hilton Hotel at BWI Airport



### 1. Annual Costs

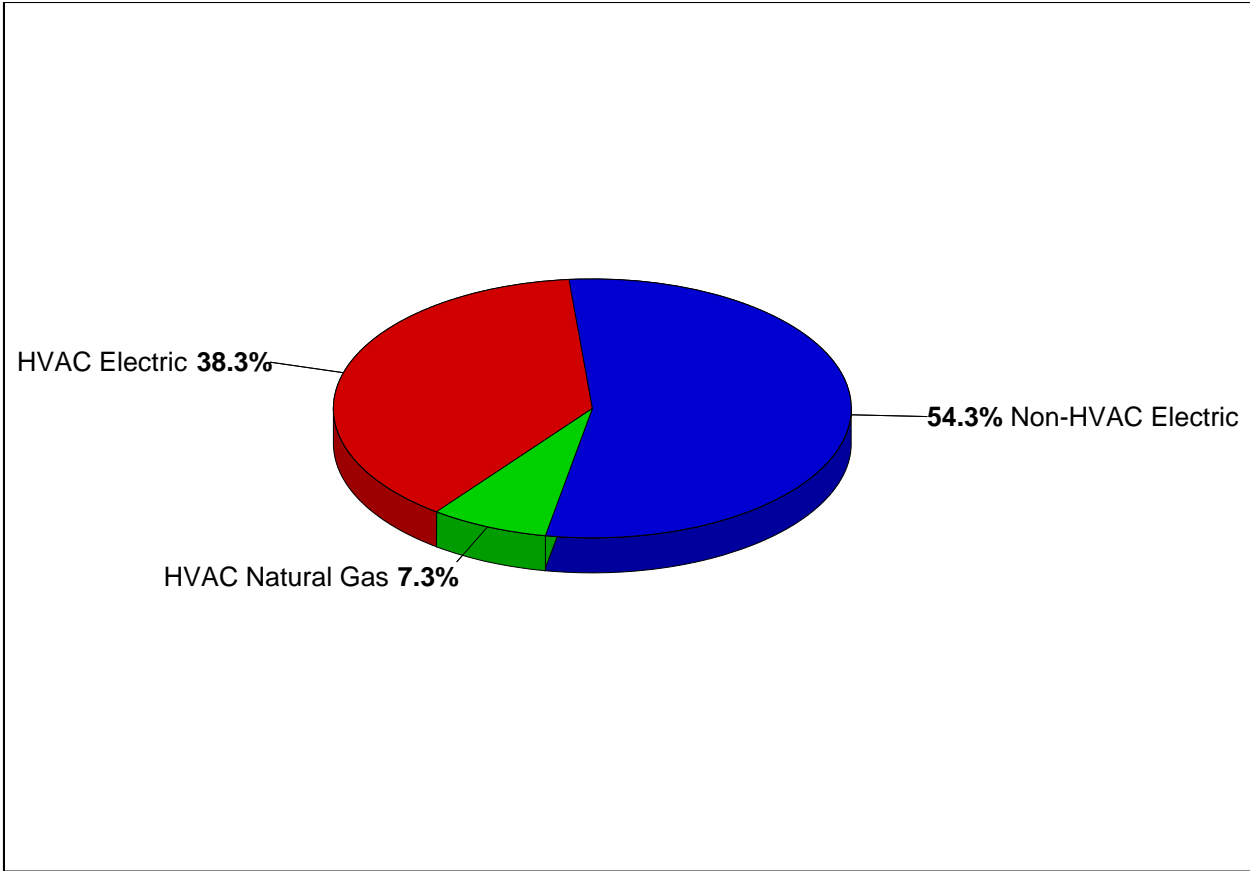
| Component                 | Annual Cost (\$) | (\$/ft <sup>2</sup> ) | Percent of Total (%) |
|---------------------------|------------------|-----------------------|----------------------|
| Air System Fans           | 70,277           | 0.245                 | 14.9                 |
| Cooling                   | 63,402           | 0.221                 | 13.4                 |
| Heating                   | 36,124           | 0.126                 | 7.6                  |
| Pumps                     | 31,683           | 0.110                 | 6.7                  |
| Cooling Tower Fans        | 14,213           | 0.050                 | 3.0                  |
| <b>HVAC Sub-Total</b>     | <b>215,698</b>   | <b>0.751</b>          | <b>45.7</b>          |
| Lights                    | 80,812           | 0.282                 | 17.1                 |
| Electric Equipment        | 175,979          | 0.613                 | 37.2                 |
| Misc. Electric            | 0                | 0.000                 | 0.0                  |
| Misc. Fuel Use            | 0                | 0.000                 | 0.0                  |
| <b>Non-HVAC Sub-Total</b> | <b>256,791</b>   | <b>0.895</b>          | <b>54.3</b>          |
| <b>Grand Total</b>        | <b>472,490</b>   | <b>1.646</b>          | <b>100.0</b>         |

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

Gross Floor Area ..... **287071.0** ft<sup>2</sup>  
 Conditioned Floor Area ..... **287071.0** ft<sup>2</sup>



# Annual Energy Costs - Hilton Hotel at BWI Airport



## 1. Annual Costs

| Component                  | Annual Cost (\$/yr) | (\$/ft <sup>2</sup> ) | Percent of Total (%) |
|----------------------------|---------------------|-----------------------|----------------------|
| <b>HVAC Components</b>     |                     |                       |                      |
| Electric                   | 181,074             | 0.631                 | 38.3                 |
| Natural Gas                | 34,616              | 0.121                 | 7.3                  |
| 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                  |
| Remote Chilled Water       | 0                   | 0.000                 | 0.0                  |
| <b>HVAC Sub-Total</b>      | <b>215,690</b>      | <b>0.751</b>          | <b>45.7</b>          |
| <b>Non-HVAC Components</b> |                     |                       |                      |
| Electric                   | 256,782             | 0.895                 | 54.3                 |
| 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                  |
| <b>Non-HVAC Sub-Total</b>  | <b>256,782</b>      | <b>0.895</b>          | <b>54.3</b>          |
| <b>Grand Total</b>         | <b>472,472</b>      | <b>1.646</b>          | <b>100.0</b>         |

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

Gross Floor Area ..... **287071.0** ft<sup>2</sup>  
 Conditioned Floor Area ..... **287071.0** ft<sup>2</sup>

## Energy Budget by System Component - Hilton Hotel at BWI Airport

BWI Hilton - New Mechanical System Design  
The Pennsylvania State University

04/05/2006  
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### 1. Annual Coil Loads

| Component          | Load (kBTU)       | (kBTU/ft <sup>2</sup> ) |
|--------------------|-------------------|-------------------------|
| Cooling Coil Loads | 33,247,980        | 115.818                 |
| Heating Coil Loads | 13,632,590        | 47.489                  |
| <b>Grand Total</b> | <b>46,880,564</b> | <b>163.307</b>          |

### 2. Energy Consumption by System Component

| Component                 | Site Energy (kBTU) | Site Energy (kBTU/ft <sup>2</sup> ) | Source Energy (kBTU) | Source Energy (kBTU/ft <sup>2</sup> ) |
|---------------------------|--------------------|-------------------------------------|----------------------|---------------------------------------|
| Air System Fans           | 3,423,614          | 11.926                              | 12,227,194           | 42.593                                |
| Cooling                   | 2,735,189          | 9.528                               | 9,768,529            | 34.028                                |
| Heating                   | 17,442,574         | 60.761                              | 17,649,220           | 61.480                                |
| Pumps                     | 1,527,502          | 5.321                               | 5,455,364            | 19.004                                |
| Cooling Towers            | 618,064            | 2.153                               | 2,207,370            | 7.689                                 |
| <b>HVAC Sub-Total</b>     | <b>25,746,942</b>  | <b>89.688</b>                       | <b>47,307,677</b>    | <b>164.794</b>                        |
| Lights                    | 3,954,558          | 13.776                              | 14,123,420           | 49.198                                |
| Electric Equipment        | 8,611,752          | 29.999                              | 30,756,254           | 107.138                               |
| Misc. Electric            | 0                  | 0.000                               | 0                    | 0.000                                 |
| Misc. Fuel Use            | 0                  | 0.000                               | 0                    | 0.000                                 |
| <b>Non-HVAC Sub-Total</b> | <b>12,566,310</b>  | <b>43.774</b>                       | <b>44,879,674</b>    | <b>156.337</b>                        |
| <b>Grand Total</b>        | <b>38,313,252</b>  | <b>133.463</b>                      | <b>92,187,351</b>    | <b>321.131</b>                        |

**Notes:**

1. 'Cooling Coil Loads' is the sum of all air system cooling coil loads.
2. 'Heating Coil Loads' is the sum of all air system heating coil loads.
3. Site Energy is the actual energy consumed.
4. Source Energy is the site energy divided by the electric generating efficiency (28.0%).
5. Source Energy for fuels equals the site energy value.
6. Energy per unit floor area is based on the gross building floor area.  
 Gross Floor Area ..... **287071.0** ft<sup>2</sup>  
 Conditioned Floor Area ..... **287071.0** ft<sup>2</sup>

## Energy Budget by Energy Source - Hilton Hotel at BWI Airport

BWI Hilton - New Mechanical System Design  
The Pennsylvania State University

04/05/2006  
08:00PM

### 1. Annual Coil Loads

| Component          | Load<br>(kBTU)    | (kBTU/ft <sup>2</sup> ) |
|--------------------|-------------------|-------------------------|
| Cooling Coil Loads | 33,247,980        | 115.818                 |
| Heating Coil Loads | 13,632,590        | 47.489                  |
| <b>Grand Total</b> | <b>46,880,564</b> | <b>163.307</b>          |

### 2. Energy Consumption by Energy Source

| Component                  | Site Energy<br>(kBTU) | Site Energy<br>(kBTU/ft <sup>2</sup> ) | Source Energy<br>(kBTU) | Source Energy<br>(kBTU/ft <sup>2</sup> ) |
|----------------------------|-----------------------|--|-------------------------|--|
| <b>HVAC Components</b>     |                       |  |                         |  |
| Electric                   | 8,384,262             | 29.206                                 | 29,943,796              | 104.308                                  |
| Natural Gas                | 17,362,210            | 60.481                                 | 17,362,210              | 60.481                                   |
| 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                                    |
| Remote Chilled Water       | 0                     | 0.000                                  | 0                       | 0.000                                    |
| <b>HVAC Sub-Total</b>      | <b>25,746,472</b>     | <b>89.687</b>                          | <b>47,306,006</b>       | <b>164.789</b>                           |
| <b>Non-HVAC Components</b> |                       |  |                         |  |
| Electric                   | 12,565,848            | 43.773                                 | 44,878,028              | 156.331                                  |
| 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                                    |
| <b>Non-HVAC Sub-Total</b>  | <b>12,565,848</b>     | <b>43.773</b>                          | <b>44,878,028</b>       | <b>156.331</b>                           |
| <b>Grand Total</b>         | <b>38,312,320</b>     | <b>133.459</b>                         | <b>92,184,034</b>       | <b>321.119</b>                           |

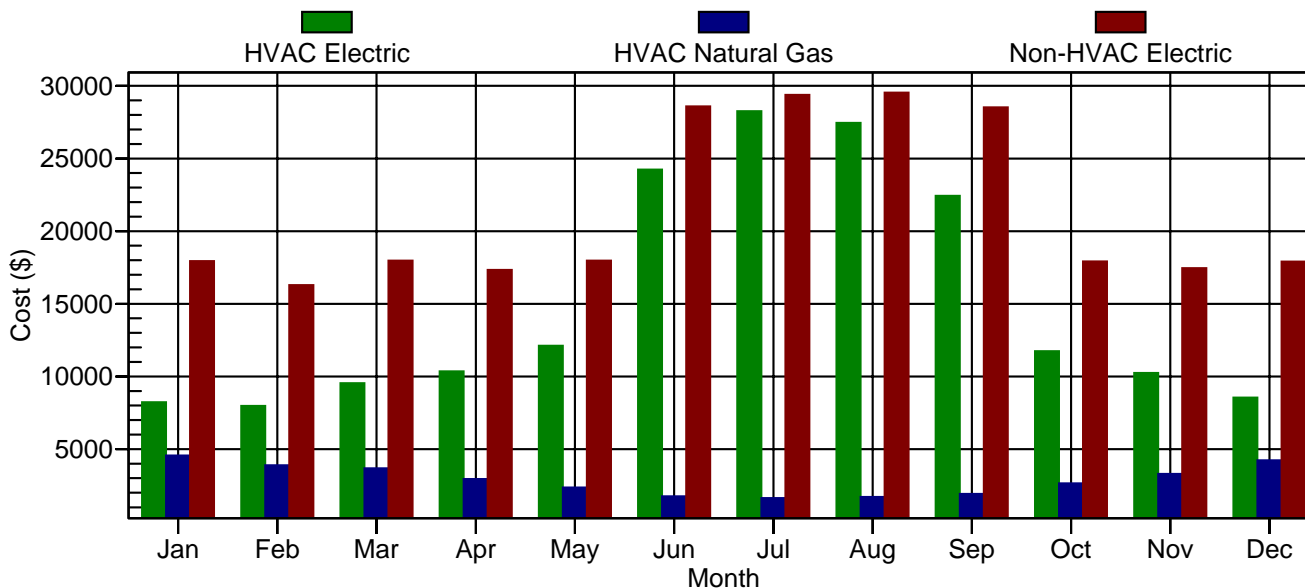
**Notes:**

1. 'Cooling Coil Loads' is the sum of all air system cooling coil loads.
2. 'Heating Coil Loads' is the sum of all air system heating coil loads.
3. Site Energy is the actual energy consumed.
4. Source Energy is the site energy divided by the electric generating efficiency (28.0%).
5. Source Energy for fuels equals the site energy value.
6. Energy per unit floor area is based on the gross building floor area.  
 Gross Floor Area ..... **287071.0** ft<sup>2</sup>  
 Conditioned Floor Area ..... **287071.0** ft<sup>2</sup>

## Monthly Energy Costs - Hilton Hotel at BWI Airport

BWI Hilton - New Mechanical System Design  
The Pennsylvania State University

04/05/2006  
08:00PM



### 1. HVAC Costs

| Month        | Electric (\$)  | Natural Gas (\$) | Fuel Oil (\$) | Propane (\$) | Remote Hot Water (\$) | Remote Steam (\$) | Remote Chilled Water (\$) |
|--------------|----------------|------------------|---------------|--------------|-----------------------|-------------------|---------------------------|
| January      | 8,226          | 4,561            | 0             | 0            | 0                     | 0                 | 0                         |
| February     | 7,972          | 3,886            | 0             | 0            | 0                     | 0                 | 0                         |
| March        | 9,533          | 3,684            | 0             | 0            | 0                     | 0                 | 0                         |
| April        | 10,354         | 2,946            | 0             | 0            | 0                     | 0                 | 0                         |
| May          | 12,107         | 2,359            | 0             | 0            | 0                     | 0                 | 0                         |
| June         | 24,236         | 1,749            | 0             | 0            | 0                     | 0                 | 0                         |
| July         | 28,258         | 1,636            | 0             | 0            | 0                     | 0                 | 0                         |
| August       | 27,452         | 1,709            | 0             | 0            | 0                     | 0                 | 0                         |
| September    | 22,425         | 1,917            | 0             | 0            | 0                     | 0                 | 0                         |
| October      | 11,734         | 2,643            | 0             | 0            | 0                     | 0                 | 0                         |
| November     | 10,235         | 3,296            | 0             | 0            | 0                     | 0                 | 0                         |
| December     | 8,543          | 4,231            | 0             | 0            | 0                     | 0                 | 0                         |
| <b>Total</b> | <b>181,074</b> | <b>34,616</b>    | <b>0</b>      | <b>0</b>     | <b>0</b>              | <b>0</b>          | <b>0</b>                  |

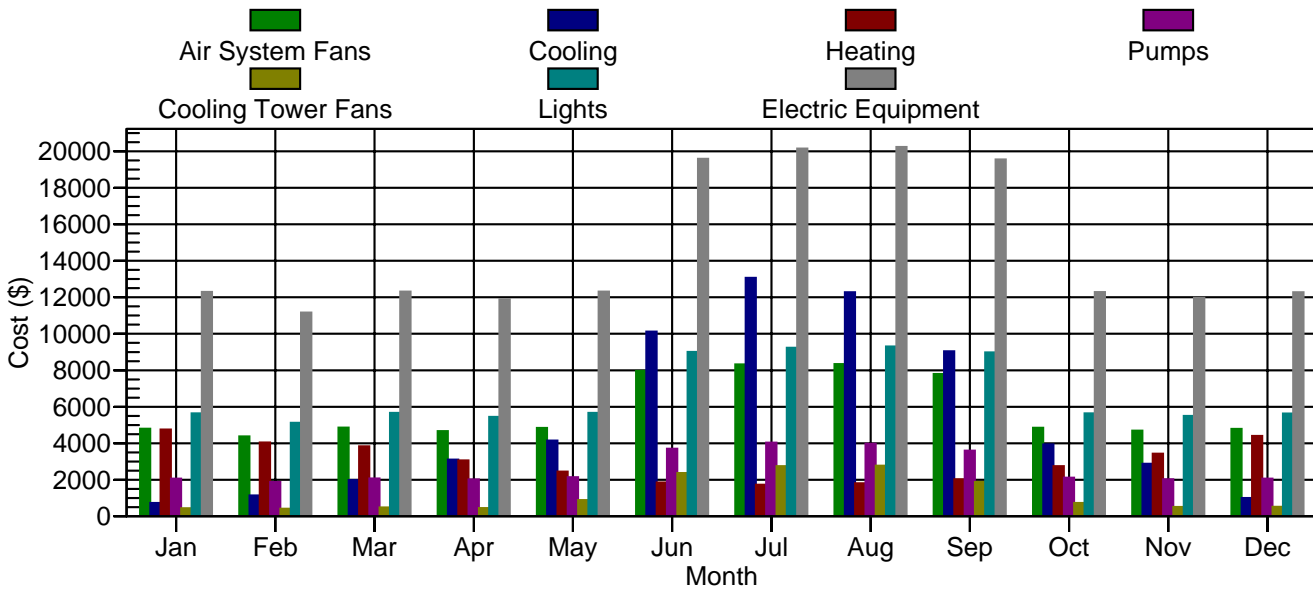
### 2. Non-HVAC Costs

| Month        | Electric (\$)  | Natural Gas (\$) | Fuel Oil (\$) | Propane (\$) | Remote Hot Water (\$) | Remote Steam (\$) |
|--------------|----------------|------------------|---------------|--------------|-----------------------|-------------------|
| January      | 17,929         | 0                | 0             | 0            | 0                     | 0                 |
| February     | 16,285         | 0                | 0             | 0            | 0                     | 0                 |
| March        | 17,971         | 0                | 0             | 0            | 0                     | 0                 |
| April        | 17,336         | 0                | 0             | 0            | 0                     | 0                 |
| May          | 17,972         | 0                | 0             | 0            | 0                     | 0                 |
| June         | 28,585         | 0                | 0             | 0            | 0                     | 0                 |
| July         | 29,379         | 0                | 0             | 0            | 0                     | 0                 |
| August       | 29,534         | 0                | 0             | 0            | 0                     | 0                 |
| September    | 28,518         | 0                | 0             | 0            | 0                     | 0                 |
| October      | 17,914         | 0                | 0             | 0            | 0                     | 0                 |
| November     | 17,459         | 0                | 0             | 0            | 0                     | 0                 |
| December     | 17,900         | 0                | 0             | 0            | 0                     | 0                 |
| <b>Total</b> | <b>256,782</b> | <b>0</b>         | <b>0</b>      | <b>0</b>     | <b>0</b>              | <b>0</b>          |

## Monthly Component Costs - Hilton Hotel at BWI Airport

BWI Hilton - New Mechanical System Design  
The Pennsylvania State University

04/05/2006  
08:00PM



### 1. HVAC Component Costs

| Month        | Air System Fans (\$) | Cooling (\$)  | Heating (\$)  | Pumps (\$)    | Cooling Towers (\$) | HVAC Total (\$) |
|--------------|----------------------|---------------|---------------|---------------|---------------------|-----------------|
| January      | 4,794                | 734           | 4,751         | 2,065         | 445                 | 12,789          |
| February     | 4,377                | 1,143         | 4,045         | 1,876         | 417                 | 11,858          |
| March        | 4,856                | 1,979         | 3,832         | 2,071         | 480                 | 13,218          |
| April        | 4,668                | 3,102         | 3,060         | 2,017         | 453                 | 13,300          |
| May          | 4,841                | 4,150         | 2,447         | 2,140         | 889                 | 14,467          |
| June         | 7,960                | 10,114        | 1,849         | 3,698         | 2,365               | 25,986          |
| July         | 8,323                | 13,059        | 1,726         | 4,035         | 2,750               | 29,893          |
| August       | 8,339                | 12,275        | 1,805         | 3,974         | 2,767               | 29,160          |
| September    | 7,795                | 9,043         | 2,029         | 3,596         | 1,880               | 24,343          |
| October      | 4,846                | 3,935         | 2,745         | 2,118         | 733                 | 14,377          |
| November     | 4,690                | 2,872         | 3,429         | 2,031         | 511                 | 13,533          |
| December     | 4,789                | 996           | 4,406         | 2,060         | 524                 | 12,775          |
| <b>Total</b> | <b>70,277</b>        | <b>63,402</b> | <b>36,124</b> | <b>31,683</b> | <b>14,213</b>       | <b>215,698</b>  |

### 2. Non-HVAC Component Costs

| Month        | Lights (\$)   | Electric Equipment (\$) | Misc. Electric (\$) | Misc. Fuel Use (\$) | Non-HVAC Total (\$) | Grand Total (\$) |
|--------------|---------------|-------------------------|---------------------|---------------------|---------------------|------------------|
| January      | 5,641         | 12,289                  | 0                   | 0                   | 17,930              | 30,719           |
| February     | 5,126         | 11,160                  | 0                   | 0                   | 16,286              | 28,144           |
| March        | 5,661         | 12,311                  | 0                   | 0                   | 17,972              | 31,190           |
| April        | 5,448         | 11,889                  | 0                   | 0                   | 17,337              | 30,637           |
| May          | 5,661         | 12,311                  | 0                   | 0                   | 17,972              | 32,439           |
| June         | 9,002         | 19,584                  | 0                   | 0                   | 28,586              | 54,572           |
| July         | 9,236         | 20,144                  | 0                   | 0                   | 29,380              | 59,273           |
| August       | 9,303         | 20,232                  | 0                   | 0                   | 29,535              | 58,695           |
| September    | 8,973         | 19,546                  | 0                   | 0                   | 28,519              | 52,862           |
| October      | 5,636         | 12,278                  | 0                   | 0                   | 17,914              | 32,291           |
| November     | 5,498         | 11,962                  | 0                   | 0                   | 17,460              | 30,993           |
| December     | 5,627         | 12,274                  | 0                   | 0                   | 17,901              | 30,676           |
| <b>Total</b> | <b>80,812</b> | <b>175,979</b>          | <b>0</b>            | <b>0</b>            | <b>256,791</b>      | <b>472,490</b>   |