**Weatherization Report, by Tom Ferrarell**

This report includes an analysis of the energy consumption data from campus buildings located at 1203 W. Oregon, 1204 W. Nevada, 1205 W. Nevada, 1206 W. Nevada, 1210 W. Nevada, and 205 S. Goodwin. Utility usage data from the months of January 2010, 2011, and 2012 were averaged and compared to usage data from January 2013. This report will break down the data by utility overall, and by utility per building. Following the analysis will be efficiency tips for occupants of these buildings, and recommendation for future iterations of this project.

Here is the breakdown by Utility:

For each utility, all six buildings January usage were totaled for each year. Years 2010, 2011, and 2012 were averaged, and compared to 2013:

Electricity average = 1,257.42
2013 electricity use = 1,124.23

Gas average = 2,148.55

2013 gas use = 2,279.45

Water/sanitary average = 194.03

2013 water/sanitary use = 206.76

Meter readings for steam utility were estimates for years 2010, 2011, and 2012, and were replaced by actual readings in 2013. Therefore, steam analysis is inconclusive and omitted from this report as there is no base for comparison. 1205 W. Nevada was the only building on steam.

Breakdown by building:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 1203 W. Oregon

|  |  |  |
| --- | --- | --- |
|  | 2013 |  Average |
| Water | 65.56 | 42.97 |
| Sanitary | 23.68 | 9.79 |
| Electric | 453.16 | 488.02 |
| Gas | 1064 | 978.57 |

 | 1204 W. Nevada

|  |  |  |
| --- | --- | --- |
|  | 2013 |  Average |
| Water | 25.18 | 39.76 |
| Sanitary | 2.15 | 5.24 |
| Electric | 179.79 | 205.4 |
| Gas | 680.5 | 650.97 |

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| 1205 W. Nevada

|  |  |  |
| --- | --- | --- |
|  | 2013 |  Average |
| Water | 5.34 | 16.58 |
| Sanitary | 4.32 | 16.6 |

 | 1206 W. Nevada

|  |  |  |
| --- | --- | --- |
|  | 2013 |  Average |
| Water | 33.25 | 25.4 |
| Sanitary | 6.46 | 1.83 |
| Electric | 116.66 | 114.69 |
| Gas | 225.33 | 215.32 |

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| 1210 W. Nevada

|  |  |  |
| --- | --- | --- |
|  | 2013 |  Average |
| Water | 10.88 | 6.78 |
| Sanitary | 8.804 | 6.75 |
| Electric | 313.32 | 376.52 |

 | 205 S. Goodwin

|  |  |  |
| --- | --- | --- |
|  | 2013 |  Average |
| Water | 21.14 | 23.04 |
| Sanitary | 0 | 0 |
| Electric | 61.29 | 72.79 |
| Gas | 309.62 | 303.7 |

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The data shows that overall, only electricity use has decreased as compared to the 3-year average. All others have increased, but remained close to the average. 1203 W. Oregon has improved only on electrical conservation. 1204 W. Nevada improved on only water, and electric conservation. 1205 W. Nevada improved on both water and sanitary, but the steam readings were inconclusive. 1206 W. Nevada improved in no categories, but remained close to their average. 1210 W. Nevada improved on electrical conservation. 205 S. Goodwin improved on water, and electrical, and remained close to the average for gas.

As far as gauging the efficacy of this program from this data, there are extra variables to consider that make it difficult. January 2012’s data was lower than the average, as well as all other years involved (’10, ’11, and ’13). 2012 pulled the yearly average down significantly. This was largely due to the warm winter that year.

If we exclude 2012 from the average:

Electricity average = 1,466.80
2013 electricity use = 1,124.23

Gas average = 2,311.80

2013 gas use = 2,279.45

Water/sanitary average = 192.73

2013 water/sanitary use = 206.76

2013 electrical efficiency improves further, and 2013 gas efficiency improves over the average. However, water/sanitary efficiency remains below the average.

Another unmeasured variable is building occupancy changes, changes in use for programs and events or regular student use.

The cost summaries that have been released to me show totals on a yearly amount. In order to analyze the cost effectiveness of the weatherization project, either the monthly costs for the past 4 Januarys need to be released, or the yearly total for the following fiscal year will have to be used as a comparison to the past 3 years (omitting the current fiscal year as fixes were completed halfway through).

F&S provided power strips and CFL light bulbs to each participating building. Strips should be used for all computers and electronics, but also help cut back on phantom energy loss. Phantom energy is the energy that is used by electronics in “sleep” mode or standby mode, even when they’ve been turned off from their main consoles. By plugging devices into a power strip, occupants can easily switch off multiple devices to cut phantom energy losses, without having to manually unplug each device. CFL’s should be used as replacements for any incandescent bulbs still in use in the building. Furniture placement should avoid obstructing vents as much as possible. Blocking vents can trap heating and disrupt heating efficiency.

The total cost of the fixes was $8,700 of an allotted $50,000. Other campus buildings rated lower in efficiency than some of the buildings in this report, so the potential exists for the program to continue making fixes and efficiency improvements.

Ideas for future iterations of this project include:

1. Designing and marketing an energy efficiency campaign for the campus in order to disseminate tips and strategies for saving energy that anyone can do in their own spaces. For example, using a power strips and cutting phantom energy.
2. Working closer with CITES to find out when computers can be turned off, and when they need to be left on for updating.
3. A questionnaire should be made mandatory for participating student teams to better assess their experiences, suggestions, and what they’ve learned.