Insights on College's Energy Usage in 2018

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Introduction

The proper and efficient use of water and electricity is important for campus sustainability. This poster explores the Earlham College's water and electricity usage data in 2018. With the help of visualizations, this poster focuses on key findings related to electricity and water usage in college houses, residential halls and other campus buildings. The ultimate goal is encourage the campus community to use these resources in an efficient manner for campus sustainability.

To begin with, Earlham College's total water usage and costs in 2018 was 22,148,000 gallns and $150,000 respectively. Similarly, the total electricity usage and cost in 2018 was 12,466,500 kwh and $1,065,000 respectively as shown in the following table.

As we can see, Earlham College incurs a huge expense in the form of water and electricity charge. Since these costs depend on our behavior and actions, we have the power to drive down these costs with positive behavior changes and better awareness in the future.

Year: 2018	Total Usage	Total Cost (in $)
Water (in galloons)	22,148,000	150,000
Electricity (in KWH)	12,466,500	1,065,000

Fig 1: Total water and electricity usage and costs in 2018.

Major Insights

- Operational buildings which includes buildings like Earlham Hall (Cafeteria), Runyan and AWC consume nearly 2/3rd of the total water consumption.

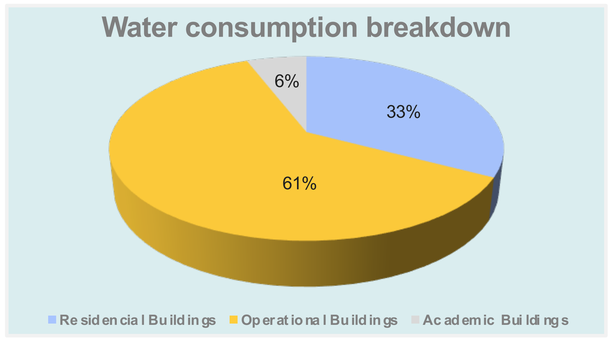

Fig 2: Water consumption breakdown by types of Buildings

- Electricity consumption are generally high during Fall months. As we can see, there is an expected drop in summer months due to low occupancy.

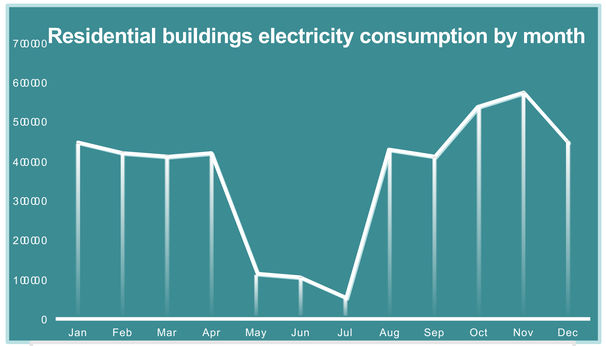

Fig 3: Residential buildings electricity consumption by month

- From an energy efficiency standpoint, College houses seem to be relatively less efficient than residence halls if we compare the electricity and water consumption numbers per person between these two . For instance, the residence halls statistics shows that the electric consumption averaged around 870 KWH per person whereas it averaged around 1940 KWH per person in case of college houses. Even within the college houses, the houses that use electric heating system instead of gas- Fry House for instance, have a particularly high per person electric use.

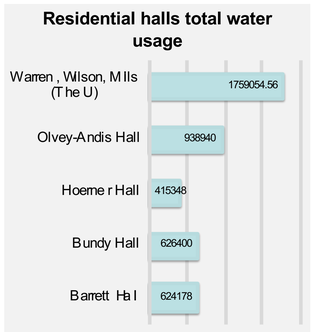

Fig 4: Residential halls total water usage.

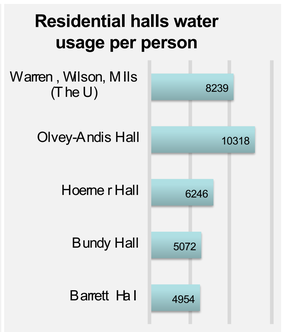

Fig 5: Residential halls water usage per person.

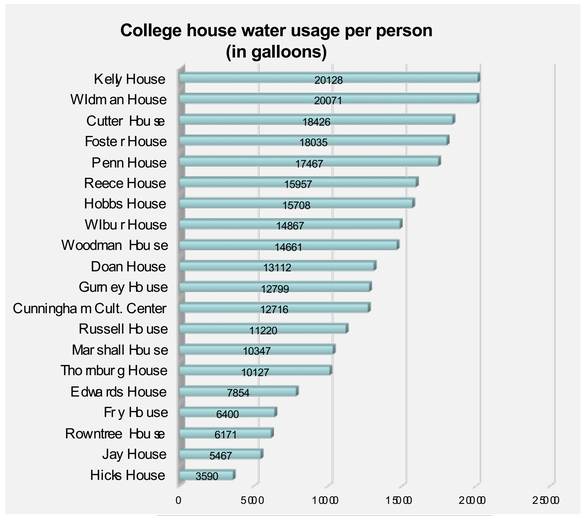

Fig 6: College houses water usage per person.

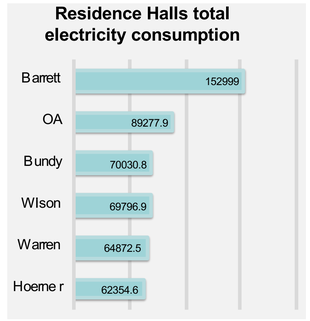

Fig 7: Residential halls total electricity consumption.

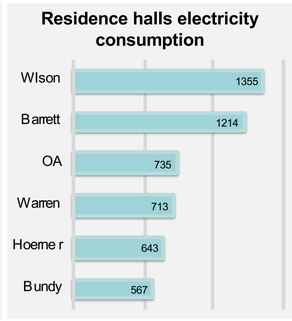

Fig 8: Residential halls electricity consumption per person.

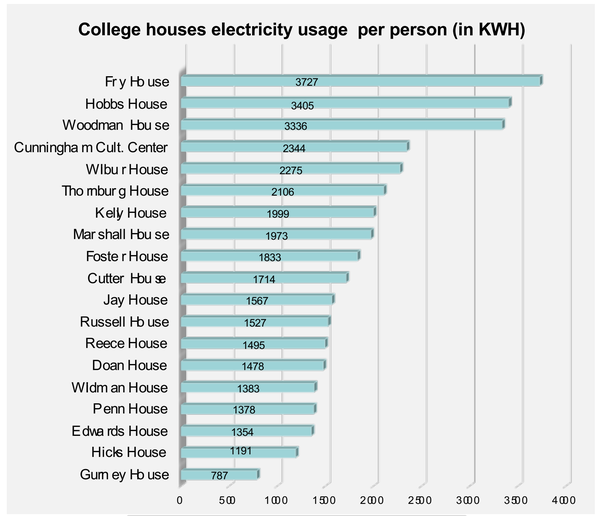

Fig 9: College houses electricity usage per person.

Recommendations

Earlham College's electricity based GHG emissions for 2018 totaled 8320 metric tons CO2 equivalent. Making it more relatable, it is nearly equal to the emissions made by around 1800 typical passenger vehicles per year . It is very important that we start caring about these resources and use them in as efficient way as we can. How could we do that?

- Adopting a more concentrated living in college houses and residence halls is an effective way to reduce water/utility costs and use,
- Upgrading/constructing houses and buildings and making it more energy friendly will help drive down energy use significantly in the long run,
- There is still a lots of room for behavior change inside campus, which could play a big part in reducing the use and impacts of inefficient energy consumption.

Acknowledgements

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Data Sources

- Richmond Power & Light, Municipal Utility, Indiana, www.rp-l.com/
- Indiana American Water, www.amwater.com/inaw/.
- Earlham Residence Life, www.earlham.edu/residence-life/