



Sustainability Written Report

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A written report on the measures and findings of our energy conservation plans in SRTAFE. As well as further potential ideas to increase sustainability throughout the college campus.

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Introduction

With this project we (group 1 comprised of Jonathan, Zac and Jordan) of SRTAFE's I.T Cert 3 class, devised to improve sustainability in the D block of SRTAFE campus through the measurement of power consumption through common, high energy use devices (Water fountains and Computer Banks) in D Block.

By recording the varying measurements of these devices, we can observe energy consumption patterns, times and days of high usage and exactly how much power these devices use on a daily basis.

Expanding upon these findings, we plan to implement, simple yet effective energy conservation and sustainability measures on these devices. We will then measure these devices again for a period of two weeks to gather more findings on the effects the conservation methods have on the energy consumption of these devices.

By using the findings of the first control group of research (power consumption measured without any interference), we expect to initiate changes to reduce the amount of energy these devices use on a daily basis.

In conclusion,

Through our documented research we can expect to see a noticeable drop in power usage in the devices we measure, which can be implemented college wide to exponentially increase the sustainability of the college as a whole. Thus saving the college resources and funds, this can be better spent elsewhere, for the betterment of the campus staff and students.

Expected Results

The changes we can expect to see in energy consumption and sustainability are based on the methods we implement.

Our group (Group 2 of Group1) was tasked with the mission to reduce power consumption to Computer Bank B, thus as a group we discussed the most cost effective, simple and yet highly effective ways to conserve energy on Computer Bank B.

The main method we devised was to turn off the screens of Computers currently occupied by a person, but not currently in active use by the person.

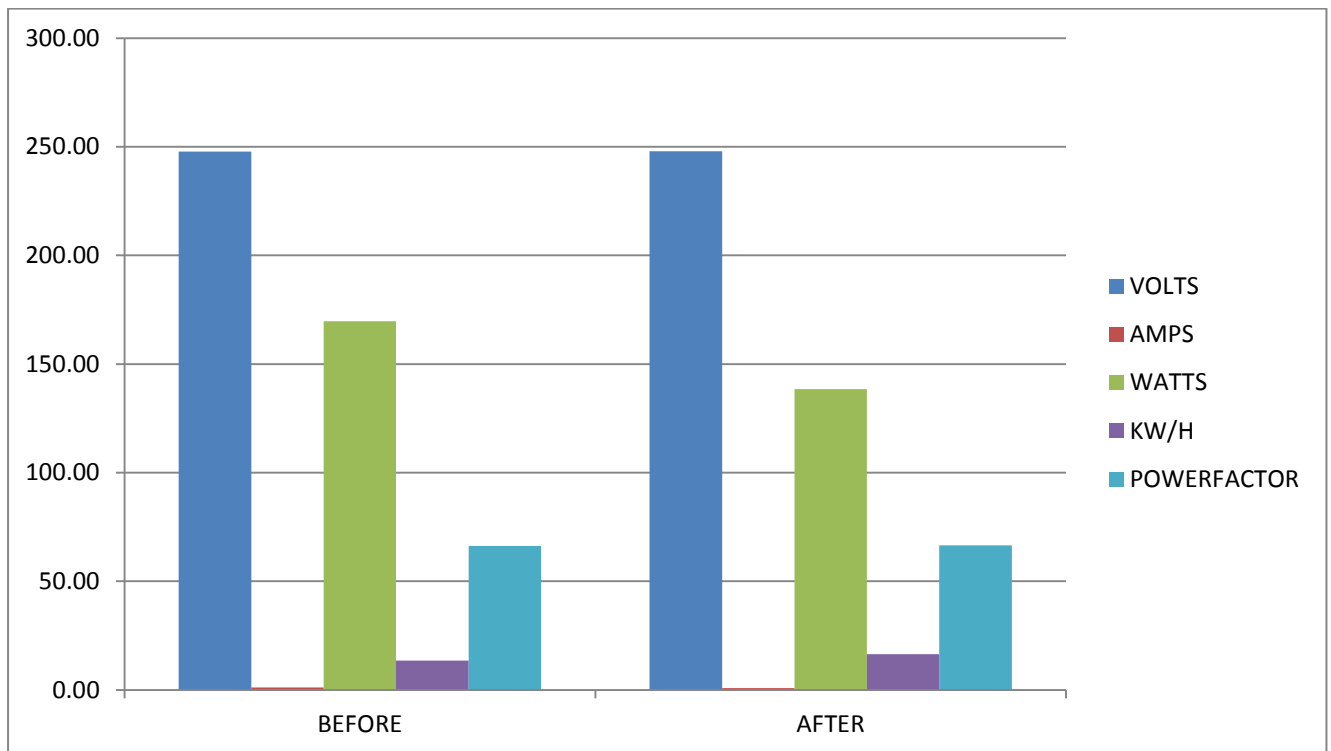
As display devices draw a lot of power in active use and as many screens were brightly illuminated, even when no one was currently in the room using them, this seemed the most effective way to initiate a large scale change with limited ability to implement changes.

Turning off computers not in use at all was also a goal of the project as computers draw huge amounts of power for basic start up and operational tasks.

By implementing these changes on a daily basis we hoped to see a sizable reduction in power drawn from Computer Bank B. We expected to see a drop of maybe ten to twenty percent in power consumption on Computer Bank B, due to the changes we implemented over this two week period of documentation and measurement.

Test Results

Below is a graph of our measurements over the control testing period and the measurements of the same devices after our group implemented our changes.



Before Results Volts Amps Watts KW/H Powerfactor

AVERAGE	247.83	1.14	169.74	7.14	66.22
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After Results Volts Amps Watts KW/H Powerfactor

AVERAGE	247.90	0.78	138.44	9.34	66.60
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Benefits

After viewing the results and comparing the before and after measurements, I will conclude that for how easy this change is to implement, the savings in cost and sustainability to the environment are substantial enough to warrant implementation throughout the college.

Simply posting a wallpaper on each computer to remind users to turn off their screen when leaving for a small period of time, or, turning the entire computer off when finished using it, will increase the savings for SRTAFE with no monetary investment at all and very little manpower and time required.

Further Ideas And Implementation

This section will further expand upon other ideas and how to implement them for increased sustainability on campus.

1. Allowing computer users to modify (or setting standard settings on the computer) computer settings for lower power consumption, for example screen brightness, contrast and automatic turn off time. Would require very little effort but would have an impact beyond the effort required to implement.
2. Turning off lights during daytime in rooms and hallways, lighting is one of the biggest consumers of power in our everyday lives, simply due to how we turn them on and leave them on all day. Turning off lighting during brightly lit daytime, saves power easily.
3. Allowing drainpipes to flow into uncover garden areas would eliminate the need for costly water solutions for plants and such implementation plans such as automatic sprinklers.
4. Cutting down on paper used by modifying any physical paperwork into a digital medium saves costs in a lot of areas such as paper and electricity from photocopying to a more sustainable and renewable source like email, word documents etc.
5. When buying or building new computers for TAFE, we should be aware of more energy conscious choices available in parts, such as choosing gold or platinum certified power supplies that are built to consume less electricity than other more cheap and not as well built options. This option may appear more expensive, but it is a small to moderate investment in a device that sees hundreds of thousands of hours of continual use throughout the campus, all those hours of power consumption add up to a very costly bill, that can be reduced by a sizeable amount.

Conclusion

While the changes we implemented did show a noticeable result, they did not meet the expectations I had made at the beginning of the project. It was a noticeable but small difference in power consumption (as you can see from the earlier graph and statistics presented).

However, the implementation cost is near zero in all ways, so any improvement is a win for the TAFE.

We could have made more noticeable changes, however due to the way the computers are setup for protection and security by the I.T staff on campus, changes to any systems power consumption settings will not last past a reboot.

If we had more control over what we could change, such as screen brightness and sleep settings, which also need next to no implementation costs, the savings and sustainability of the campus as a whole would increase dramatically if implemented to the campus as a whole.

Links for Sustainability

<https://www.albany.wa.gov.au/residents/community/sustainable-communities/>

http://www.ccwa.org.au/albany_community_environment_centre