EDSGN-100
Siemens Sustainability Project-Team 1

By Tarek Almunthari, Jay Joneja, and Ziyan Yao
Why Sustainability is Necessary?

• Sustainability is necessary so that we can protect our future.
• It will allow for our future generations to live as good of a life we do, if not better.
• For example, if you continue wasting water and polluting the dwindling supply of freshwater that we have today, we leave future generations with no other choice than to desalinate saltwater or treat contaminated water for their consumption and daily use. We can also be assured that, if that happens, all life that depends on clean freshwater will become extinct.
Our Sustainability Definition

• A way for the University Park Campus to keep its natural resources without affecting the lives of the people that live here.
Constraints

• People cannot be able to see any differences in our environment
• Has to be relatively cheap and easy to maintain and install
• Has to be able to work most if not all the time
Our Idea

- Low flow showerheads in the bathrooms
- There are two basic types of low-flow showerheads: aerating and laminar-flow. Aerating showerheads mix air with water, forming a misty spray. Laminar-flow showerheads form individual streams of water. If you live in a humid climate, you might want to use a laminar-flow showerhead because it won't create as much steam and moisture as an aerating one.
- A low flow shower head does not necessarily indicate that a shower will be of lower quality. Low flow shower heads are tested for coverage of water on the body and for intensity of spray. Water pressure is influenced by several factors, regardless of shower head type, including gravity and elevation in relation to the water source or tower.
- They are usually relatively low cost to maintain and are easy to install
Our Idea
How would we implement it?

• We would test it in the bathrooms of Mckee Hall
• We would test it on one floor
• We would compare the results of how much energy was used and how much water was used to see if it made any difference
• We would also take into consideration the fact of student opinion to see what they thought about it after trying it
Flow Process Diagram

Go to a store
Buy showerhead we chose before
Install the showerhead in the Mckee hall restroom
Make sure the showerhead can be installed properly
Have waterflow to showerhead

Determine whether it should be spread to other residence halls or not.
Measure the amount of water and money saved when compared.
Make sure students take shower with low flow showerhead and compare it with a no-low showerhead.

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Comparison

• 30 inefficient 2.35gpm shower heads in Dascomb were replaced with 1.5gpm shower heads, saving in the conservative scenarios approximately 56,355 gallons of water annually, 34 ccf natural gas, and $866 per year. The entire retrofit was estimated to cost $900, meaning that the project will payback in less than two years in the conservative scenarios.

• With a 10-year life-span and a 10% discount rate, the net present value of this project is roughly $4421. For the less conservative estimates of three 10 min showers per week and six 10 minute showers per week, the net present value is $9749 and $20,400 respectively. (Oberlin.edu)
How it is Sustainable

• Currently, McKeel Hall uses about 200,000 gallons of water per month.
• It reduces the amount of energy used to heat water.
• A typical shower uses up to 25 gallons of the water, while each American uses an average of 100 gallons of water a day total.
• Low-flow showerheads slash bathing water consumption 50 to 70%. You’ll also use less energy.
• heating up the water.
• Can eliminate up to 32.5 gallons of water per 5 minute shower.
Conclusion

• This would be worth it for Penn State in the long run
• It would save the school money that it could put towards other things
• It would also help make Penn State a better sustainable campus and leader in creating sustainable campuses across the world