



Energy Efficiency

By Shadman Islam



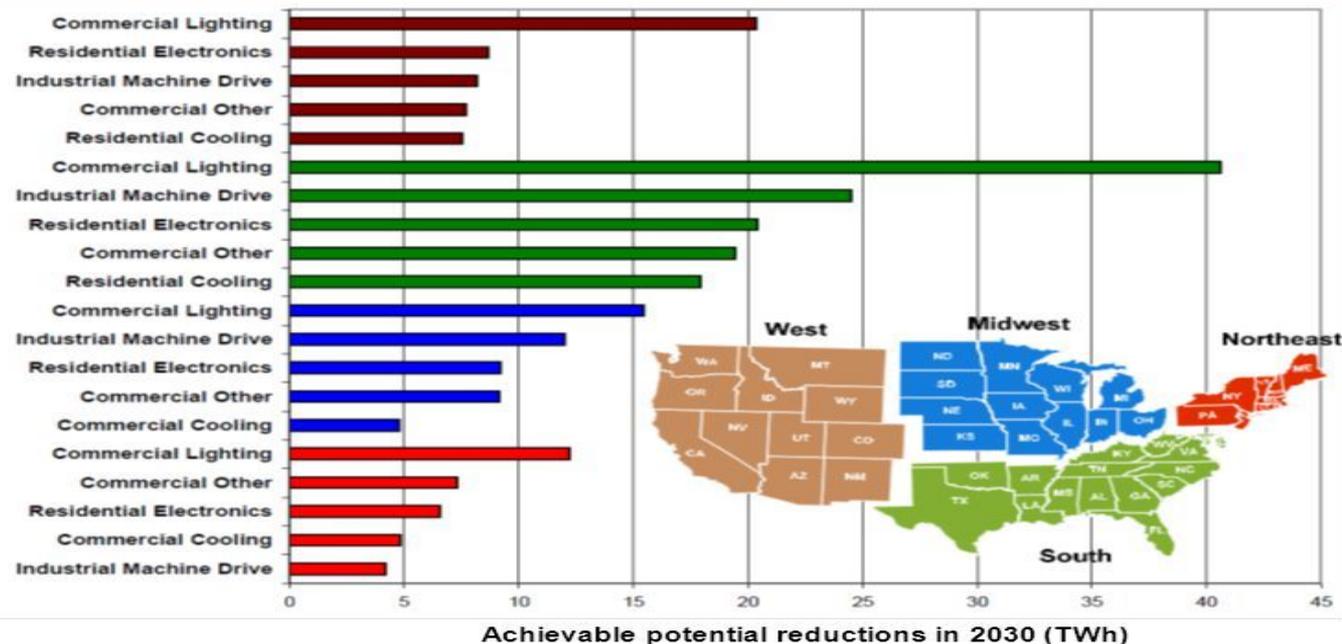
Energy Efficiency

- Is defined as using less energy to provide for the exact or better service.
- Energy is a finite resource and we need to pay attention to how we effectively use it.
- According to the EIA 81% of the electricity demand in the united states is met with fossil fuels.
- So the more energy we consume the faster we deplete our fossil fuels along with pollute the environment with the CO2 emissions.

Why is Energy Efficiency important?

- Lowers the overall power usage
- It saves MONEY in the long run
- Lowers the Carbon footprint
- Reduces GreenHouse gasses
- Creates Jobs

The measures driving Energy Efficiency in the U.S. vary by region



Source: EPRI Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S.

What are we using all this energy on?

- As we can see from the graph, most of the energy usage comes mainly from commercial lighting, residential electronics, Heating and Cooling.
- There are new innovations that is coming out every single day with for example Air conditioning devices that now cool twice the space with about half the electricity required when compared to a few years ago.

Let there Be light.

- My focus this semester was to focus on finding a more efficient way of keeping the Tennis bubble Lit.



The Queens College Tennis Bubble

- Working with B&G i was tasked with finding a more efficient lighting solution for the Tennis Bubble.
- As it stands the Tennis bubble is using 1738kWh just in lighting alone.
- There are 40 lighting fixtures and they are using 3 metal halide bulbs in each using around 1000 watts. With each fixture using around 3000 watts amounting to the whopping 1738kWh
- The metal halide bulbs are very wasteful in terms of energy usage and maintenance.

The Solution

- The solution to this problem is in LED Technology
- High efficacy LED lighting fixtures will be replacing the Metal halide fixtures.
- The project will incorporate LED Fixtures, Daylight sensors and smart monitoring systems that will give the college more control.
- The ENCELIUM system incorporated would be controllable from an offsite server where it would be monitored to provide the best area lighting onto each individual court instead of lighting up the entire building.

Is it worth investing?

- As it stands the cheapest cost for a project of this kind would cost Queen's College roughly \$100,000 which is a fairly high initial cost.
- But it would cut the energy cost of running the lights in the tennis center by 70%, that would be a substantial savings in the long run.
- The technology being provided is highly modular in the sense that the Encelium software could be expanded to all the other buildings allowing for remote access and a reduction of energy usage across the whole campus.