An Energy Dashboard in KReSIT

-Aditya Shrotri
-Swapnil Kasaliwal

Background & Motivation

- Residential Sector accounts for substantial power consumption
- Need to control wastage of power at the consumer level
- Inform consumers about their usage in comparison to their neighbors
- Few successful experiments where consumers reduced their power usage on receiving relevant messages

Problem Statement

- To measure the changes in power consumption of chosen rooms effected by social messaging which induces a competition among the occupants of the rooms.
- Ascertain whether social messaging is viable tool for controlling wasteful consumption of electricity.

Existing solutions & Drawbacks

- Motion detectors are used to automatically turn off devices when no occupants are present
  - Installation costs
  - No sense of social awareness
- Utilities provide primitive feedback to the customers
  - Fail to identify power wastage locations
  - No categorization according to actual load

Proposed Solution

Target: KReSIT Building

Aim:

- Monitor the power consumption of labs (DIL and Synerg lab).
- Compare the power consumption for past 3-4 days.
- Create appropriate social messages which will inform occupants about the results, and encourage them to lower their consumption.

Deliverables

- Analysis of power usage and requirements for each room.
- Collection of messages that were used.
- Results from the changes in power consumption after implementation of project
- Analysis of whether social messaging is indeed viable.

Timeline

- 20 March :- Sensor survey and gathering data about components required for wireless connectivity
- April 1:- Installation of sensors and start of data collection
- April 19:- Monitor the power usage and display appropriate messages
- May 2:- Analyze change in usage patterns

Challenges

- Determining type, number and location of sensors
- Creating messages that will have the maximum impact on the user
- If possible, develop a (simple) reward scheme
- Finding locations and media through which the messages will reach the masses

Conclusion

- This project may serve as a prototype for campus-wide projects
- Lessons learnt here will be useful in designing large scale customer feedback systems

References

- Bonneville Power Administration, “Residential Behaviour Based Energy Efficiency Program Profiles”, 2011
- http://www.uk.sagepub.com/upm-data/40893_6.pdf
- http://gridium.com/blog/658/new-york-city-releases-building-energy-analysis/

Thank You

Methodology

- Selection of power meters with wireless capability
- Set up sensors at appropriate locations
- Measure the consumption and gather the data wirelessly on a server.
- Decide the content of the messages that will be delivered to the occupants
- Deliver the messages through emails/flyers and study their impact.