

## Todo List for Term Project of SH&EM Class

Following processes should be done in an algorithm coded in Matlab or another programming language

- Make a list of electric loads with rated power
- Divide those loads into the three or more priority groups
  - 1 ----> high priority
  - 2 ----> mean priority
  - 3 ----> low priority
  - 1 ----> highest priority
  - 2 ----> high priority
  - 3 ----> mean priority
  - 4 ----> low priority
  - 5 ----> lowest priority
- Determine the working hours of each load for typical winter day
- Obtain daily loading profile of home
- Choose a PV panel or Wind Turbine to generate electricity (specify the rated power)
- Get the meteorological data (solar or wind) for specified duration (one month or one year period)
- Calculate the electricity production
- Determine the threshold value (maximum power allowed) for peak time
- Use the load shifting method for intervals at which consumption excess the threshold (move some loads outside the peaks time) considering load priorities
- Integrate a battery whose capacity half of the maximum load of home. e.g. if the loading profile of home obtained has 6 kW max peak, then battery capacity should be 3 kWh. The charging and discharging rate of battery are 20% and 30% of capacity (for 3 kWh battery, 0.6 kW and 0.8 kW) respectively.
- At the beginning, State of Charge (SoC) of battery is 10%. Battery supplies home until SoC of battery reduces 30% and then it should be recharged up to 50% at least before supply home again. Maximum SoC is 80%. Battery supplies home only during peak time, namely 17:00-22:00.
- Plot graphics for daily base loading and shifted loading
- Calculate the energy prices using triple-time tariff for both with/without load shifting cases and compare them
- Do same analysis for summer day