

# ES75 - Homework Assignment #2 Part A

Spend some time researching on line for answers to the following.

1. What is Cogeneration? Draw a diagram showing the energy streams for a typical cogeneration system and for standard power plant. Discuss the difference.
2. What are the three dominant fuel sources used today in power plants in California, in New York, in Florida, in Texas? Site your source and we'll compare....
3. What is the dominant fuel used in back up generator systems? Can you estimate the amount each year in CA. What are the concerns/issues related to this application.
4. Do a quick survey of your major appliances (washer, dryer, refrigerator, AC) and estimate the POWER used by each and then the ENERGY per year. Compare to your bill. NOTE: This may require that you actually get behind the washer and find the nameplate data. If it gives you volts and amps instead of watts you should know what to do. You can also look up the model on the manufacturers web page to get info.
5. What is efficiency and why is it important? Use words, not formulas!
6. Research the cost of building a PV plant for your house. Use the estimate of the Power required in #4. (Ballpark cost only). Compare the cost of buying electricity from PG&E for the next 10 years to building a solar photovoltaic system. I'm not looking for exact numbers – educated estimates will be fine but you need to be able to back them up.

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## Homework Assignment #2 Part B

Assume Line 1 is a 3 phase circuit where the cable is 1200 ft of 800kcm uncoated copper cable. Estimate the conductor loss in kW?

NOTE: in the picture VII avg is the average, three phase, line to line voltage. I avg is the average three phase current.

