

TO: Swarthmore College Department of Engineering
FROM: Omer M. Corluhan
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SUBJECT: Engineering 90 Topic Selection Memo – The Campus Energy Analysis Project

Electricity has become a commodity that is traded much like oil in markets. A competitive market for electricity will end the regulation of electricity prices. Current electricity prices at Pennsylvania are subject to change by 2010, when electricity prices will adjust every fifteen minutes based on the market price determined by supply and demand.

Swarthmore College, “the Client”, is concerned to be charged by a triple amount of electricity bill¹ as a result of deregulated electricity prices. The Client’s endowment has returned outstanding results while beating the market’s return in past years. However, tripling the current electricity bill of approximately \$1.4 million will squeeze the College budget in a significant way leading to cut in other spendings. In order to excel as the best undergraduate institution in the world, the Client is responsible to understand its electricity demand to avoid any potentially high electricity prices in 2010.

The Campus Energy Analysis Project, “the Project”, at Swarthmore College, is in response to Client’s challenge of becoming a low cost and environmental friendly energy consumer. An energy model will be designed to optimize the electricity consumption in terms of cost and environmental impact and will be implemented at Swarthmore College. The model will predict the Client’s future electricity demand based on factors such as outside temperature, humidity, solar radiance by taking daily inputs through a Windows based program. The Client plans to use the model to estimate its future demand and take precautions to avoid potentially high electricity prices. The academic goal is to use knowledge from a broad range subjects such as optimization research, linear physical systems analysis, systems engineering, thermo-fluid mechanics and economics.

I plan to work with Professor Everbach. I will also need help from Professor McGarity in some parts of the Project.

¹ Current price for electricity is at constant dollars similar to 1991’s electricity prices. Today, the College is charged for its electricity demand by local contractors, PECO/Exelon at approximaqtely \$0.08 per KWh, which cost in total \$1,387,010.56 from August 2005 to July 2006 to College.