**6.  Think about an academic subject that inspires you. Describe how you have furthered this interest inside and/or outside of the classroom. (350 words)**

300 OMR. Our electricity bill had never reached that high; even in the 110F degree summer heat with all our air conditioners blasting at 65 degrees, the bill was usually 80 OMR at most. While my attempt to find out why the bill was so high that month was unsuccessful, I was wallowed in something fascinating: the smart grid. While trying to find ways to prevent unexpected increases in electricity usage in the future, I stumbled upon a branch of the smart grid- the smart meter.

I was intrigued by smart meters’ potential to record near real-time data about the amount of electricity being used in homes, while also being able to send this information directly to energy suppliers. To widen my knowledge on smart meters, I interviewed an innovation engineer at the UK’s National Grid, who introduced me to a challenge that currently hinders the smart meter rollout in the UK: the constraints of the legacy network. As a system built for the use of fossil fuels, the current electrical grid can only flow in one direction, whereas the smart meter requires back and forth communication from suppliers to consumers. The bidirectional flow of the smart grid enables effective communication between suppliers and consumers, which not only creates a more reliable grid, but also opens up the field to the widespread use of variable renewables to create a sustainable grid.

I continued my smart grid endeavour by pursuing an internship at a local Indonesian electrical consulting company. After completing a model of smart grid arrangements in rural Indonesian islands and analysing the cost and efficiency of each paradigm, I found that more often than not, the levelized cost of electricity is lower when renewables are being penetrated into the grid. To me, this was not only beneficial to reduce electricity bills, but it was also an optimistic indicator of the efficacy of renewable penetration on the sustainability of the smart grid.

While the value of my electricity bill that month still remains a mystery, it brought me something of greater value to me: how I can prevent unusually high electricity bills for others in the future. My initial shock of receiving that bill has brought me to pursue the ‘smart grid’ field in the future, which starts from studying electrical engineering.