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The history regarding the development of electricity is fascinating. People have relied on electrical power to power lights, computers, phones, as well as other household appliances for centuries. Nevertheless, people often took electricity for granted. The origin of Electricity and Magnetism, a branch of study in Physics that focuses on electric phenomenal, could be traced back to the Greeks discovering static electricity while rubbing amber to animal fur, to Michael Faraday's discovery of Electromagnetic Induction and eventually to Tesla's creation of Alternating Current motor. Faraday's Electromagnetic Induction has revolutionized how energy is generated, and it is certainly an exciting area to research. However, the rigorous curriculum on this topic in science led to many students hesitating to commit to this discipline. Fortunately, from reviewing the interview with Katie Pfeiffer, an electrical engineering student who received the SMART scholarship, on the Naval Horizon website, I became eager to engage in more academic studies regarding her field of engineering. With the studies of circuit theory, programming, and understanding of electrical engineering principles. Students like myself can engage in research on providing sufficient energy to military vessels or vehicles, and develop control systems to better aid Marines and Sailors during their mission. In addition to that, with the advance in nuclear technology, we could utilize this source of energy more efficiently and safer with the dedication to unravel the secrets of the atomic world. The future of the U.S. Navy and Marine Corps will be revolutionized by incorporating nuclear reactors in transportation systems to provide troops with long-term energy even in a distant situation.

Electrical engineering is one of those engineering disciplines that challenge students to make electronics into smarter and more advanced machines. In our modern world, computers and other electrical devices are only capable of understanding ones and zeros. With a combination of software and hardware, humans were able to take advantage of the electrical world and enable us to operate machines efficiently. Prior to further research, my understanding is that electrical engineers create circuit diagrams for electricians to execute. After all, I was not factually correct. According to Katie Pfeiffer, an electrical engineer could still have the opportunity to work on hands-on projects. As an aspiring engineering student, having the chance to work on a project physically through soldering pieces together makes the career seem infinitely more satisfying. Strategically, the diversity of this demanding career could be advantageous to our nation, because other countries are slowly catching up with the technology. The future of cyber warfare and electronic warfare will be determined by the new generation of engineers who will dedicate their career for the interest of national security.

In the early 1950s, we sailed the first-ever built nuclear-powered submarine, the USS Nautilus, under the supervision of Admiral Rickover. This powerful vessel has a nuclear reactor that goes under numerous processes to produce electricity for the entire ship. Admiral Rickover, known as the father of the "Nuclear Navy", is one of the historic figures that inspired me to pursue a career in engineering. My interests happen to intersect between electrical and nuclear engineering. From learning about Nuclear Physics at the beginner level as a student, I was amazed by our advancement in the atomic age. Admiral Rickover dedicated his entire life serving in the U.S. Navy to develop a nuclear program where no nuclear accidents have been reported ever since. His dedication to naval research and our country is astonishing and inspiring. Essentially, nuclear reactors are the heat source that provides high-pressure steam to feed into our turbine to generate energy. Our turbine will then spin a set of wires around

strong magnets to produce an electric motive force to make electrons flow. Nowadays, this is also known as a power generator. Dams, power plants, solar panels, and windmills are being constructed to supply industries and families across the nation with electricity. The way these infrastructures could work is all by-product of the discovery of Faraday's Law of Electromagnetic Induction, a process at which you vary the magnetic field within a parameter to induce an electromotive force that can create a current. This physical law is what allows us to have nuclear vessels such as a nuclear submarine and supercarriers that use a nuclear reactor on board to supply itself with all the energy it needs. I envision the future of warfare will be solely reliant on the unit commanders who are actively in the front line, because as technologies of our potential enemies have become increasingly lethal and advanced. If we deploy troops in an area where all our information could get intercepted and decode quickly, or they deploy electrical devices that prevent our information from reaching the right destination. The possibility of our troops being isolated and lack communication methods could be a possible outcome. Therefore, by providing a way to generate the fundamental forces that drive the technological age, an emf will surely help isolated troops to execute missions under tough circumstances. As long as each mission is carried out by highly trained experts who are versatile in technology and combat, special operating forces would have the option to secure its parameter and maintain stealth with the almost forever-lasting nuclear power.

In conclusion, energy is the fundamental resource that has the potential to accomplish things. If we can ensure troops with sufficient energy in nearly all circumstances, our Marines and Sailors can have a better chance in an era where technologies are capable of preventing them from receiving aid from ally forces through communication and other methods. As our nation’s engineers developed better and more stable technology to support our military forces, other nations and organizations are also simultaneously developing methods to counter our progression. Therefore, it is very important for us to take a step into the new era of technology.