**Power Systems in the USA, Evolution and Practicality**

1. Power Systems: Generation, Transmission, and Distribution
2. NFPA Fire Code and Building Codes, Fire Safety with Construction Sites
3. Power Systems, Efficiency and Effectiveness in Power Supplies
4. Electric Railway Networks: Coal, Diesel, and Electric for Locomotives
5. Deregulation and Liberalization of Transmission and Distribution Lines
6. Insulation Breakdown in Transmission Lines, Field Theory, Electromagnetism

When discussing power systems, and the generation, transmission, and distribution of electrical power, one of the first themes which comes to mind is that of cost effectiveness and efficiency. Are we generating the most power possible at the lowest possible cost per kilowatt hour? Is the type of power being used the most cost effective for the region, i.e., for the type of fuel supplied by the region? For example, if coal is abundant in one region, then coal power may still be more cost effective than nuclear power. Then we must factor costs such as transport costs for coal powered generators, and disposal costs for nuclear powered stations.

Evolution and practicality, we have come a long way in the history and development of our power supply systems in America, and around the world, and as this author is American, the focus of this doctoral thesis in electrical engineering is on power systems evolution and practicality in the USA, primarily, with limited scope review of global power systems technology as it relates to the general evolution and practicality of our one shared planet. In other words, there is usually only one best option at work, and one best way forward together, so whatever power systems technology is best suited for the United States of America should be of similar stature to that in other nations around the globe too.

Other topics of importance discussed in this paper include that of electric railway networks and electric locomotives and the differences and virtues between electric, diesel, or steam-driven locomotives. Second, the importance of stringent construction codes from the NFPA, National Fire Protection Association, when considering building codes at construction sites for power systems technology. Three, the deregulation and liberalization of transmission and lines that occurred in the 1990s, when governments around the world began liberalizing the regulation of the electricity market, leading to the separation of the electricity transmission business from the distribution business, as historically, transmission and distribution lines were often owned by the same company. Four, the study of insulation breakdown in transmission lines via field theory, or electromagnetism.

My research so far has included wikipedia, coursera (Georgia Tech classes, AC Analysis, DC Analysis, and Electronics), a book on electromagnetism, my courses at Durham Tech, and online PDF articles I have downloaded. I expect to do some more baseline work on the paper this semester, and be ready to conduct an experiment shortly after this semester.

Thank you, Kevin Sleem, Durham, NC USA