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E&M In The Public Sphere: Electrical Power Generation

Identification of Context: Our presentation will focus on the generation of electric current and the distribution of that current from place to place, with particular emphasis on how the two processes can, and are, being advanced to promote efficiency. In regards to the generation of electrical power, we will talk about the current prevalence of different methods of generation and their effectiveness. We will discuss the current methods of transmitting power from power plants to households and advocate the need for modernization and advancement in order to maximize the efficiency of distribution. Lastly, we will talk about the ways in which recent transformations in public policy and electrical markets have impacted the efficiency of the provision and distribution of electrical power.

Identification of Audience: One portion of our audience will be the government officials that regulate research and development, as allocation of resources toward maximizing the efficiency of power distribution through the use of superconductors and other materials that can carry current with minimal resistance is important. Our audience will also be the public, for who our presentation will serve to educate as to how electrical power is generated and supplied to their households, and raise public and government awareness about the need for the modernization of our current methods of electrical generation and distribution.

Annotated Bibliography

Abel, Amy, and Larry Parker. United States. *Electricity: The Road Toward*

*Restructuring*. Washington, D.C.: Policy Papers, 2001. Print.

This source is a congressional research article that discusses the markets and public policies related to the generation and transmission of electrical power. Specifically, the evolution of utility markets from natural monopolies to a more competitive landscape and the consequences of this transition on the supply of electrical power are described in detail. The article also touches on the electrical power supply issues in California in 2001 as a case study of the challenges involved in the provision of electrical power in the changing economic landscape. Though the article is not that recent, it provides a thorough background on the issues involved in the generation and transport of electric power from an economic and public policy standpoint.

Wisconsin. *Electric Transmission Lines*. Public Service Commission of Wisconsin. Madison: 2011. Print.

This source gives a thorough breakdown of the path of electrical power as it is transmitted from power plants to, ultimately, communities and households. It discusses high-voltage transmission lines, as well as other technologically advanced methods for minimizing wire resistance and carrying current efficiently, such as superconductors and composite material conductors. The article also talks about the distribution of electric power as it is carried out in Wisconsin, which will lend perspective to the logistics of such a complex operation. The source is a publication released by the organization that regulates Wisconsin’s utilities and is affiliated with the Wisconsin State government, so its credibility is clearly not in question.

"Electricity Explained." *U.S. Energy Information Administration*. U.S.

Department of Energy, 18 Oct 2010. Web. 5 May 2011. <http://www.eia.doe.gov/energyexplained/index.cfm?page=electricity\_in\_the\_united\_states>.

This source describes how electricity is generated and provides an overview of the different ways electricity is currently being generated in the United States. The source discusses in detail the different methods for generating electricity, their prevalence, and the advantages and disadvantages to each from efficiency, monetary, and environmental perspectives. The site contains many potentially useful articles, but the main relevance of this source pertains to the electrical power generation aspect of our topic, which we had not previously addressed to this point.

Hokin, Samuel. "The Physics of Everyday Stuff." *Transmission Lines*. Bsharp,

01 Feb 2011. Web. 5 May 2011. <http://www.bsharp.org/physics/transmission>.

This source discusses high-voltage transmission lines and the integral role they play in carrying electrical current efficiently over long distances. The physics theory relevant to the transmission lines is described, as well as the logistics of transporting electrical power from power plants to local substations to households. This source is not an official web page or organization, so the accuracy of the information cannot be taken for granted; however, the information’s validity is confirmed by its compatibility with that of other sources. It’s simplification of the physics theory involved in high-voltage power lines make it preferable to more technical sources, though those sources will not be neglected as more sources are gathered.

Relevant Parties and Issues: Creating abundant, easily distributable and wasteless power generation techniques is in the interest of all citizens and organizations.

We are taking as given that being able to generate more electrical power is beneficial to all parties. We also see that current generation techniques suffer from inefficiencies, waste and in most cases, a short future due to waning resources. We will be identifying and promoting power production techniques that will simultaneously satisfy parties invested in ‘keeping the planet green’ and those interested in making electricity more prevalent and abundant. The most glaring issue that needs to be tackled in our research is how we are going to transition from power production techniques that require fossil fuels. As we build new power production infrastructure, we need to take into account that decades of research and development has been invested into fossil fuel power production techniques. We also, however, must address the fact that the resources for any new plants to be built may actually expire before the plants themselves would break down. We intend to present a set of forward-looking proposals that will bring energy production techniques into the future.