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Encouraging Green Data Centers: Social Construction and Economic Policy

This research addresses the issue of data centers' impact on the environment through high energy usage, and how encouraging renewable energy production can help green data centers make cloud computing more sustainable. The technology I have created to address this issue is a set of improvements to the website of a green cloud provider, Lancium. This project helped make Lancium more accessible, which had potential environmental and societal impacts. Environmentally, when people use sustainability-focused cloud providers to learn and work, they are voting with their dollar to reduce the amount of fossil fuels used in the cloud computing industry and encourage further innovation and infrastructure in green computing. Socially, expanding access to Lancium's environmentally- and budget-friendly services bring computing within reach for more people and businesses of various technical experience levels. Expansions like these have the potential to spur innovation in academic subjects and industries in which computing may not be fully utilized, which may result in a positive economic effect. Additionally, more people can gain valuable experience in cloud computing, which can help them make academic progress or improve their job prospects. I applied the SCOT framework to the issue to understand the various social groups that contribute to the development of renewable energy, which is used to power green data centers. I analyzed case studies in prior literature to evaluate the effectiveness of different renewable energy policies. The primary finding of this research was that feed-in tariff systems are effective in promoting renewable energy generation while minimizing excess profits for companies and the burden on taxpayers and consumers. When considering the research and technology together, green data centers are not only within reach, but a necessary aspect of addressing climate change, as the demand for cloud computing

grows quickly. Using economic policy to encourage the transition from carbon-based to renewable energy will help data centers easily become more “green.”