

Bumby, S., K. Druzhinina, R. Feraldi, and D. Werthmann. 2009. Life cycle assessment (LCA) of overhead versus underground primary power distribution systems in Southern California. Donald Bren School of Environmental Science and Management, University of California, Santa Barbara, CA.
<http://fiesta.bren.ucsb.edu/~cable/>

Project Abstract: High electrical power demand has spurred discussion on the trade-offs between overhead and underground power distribution systems. Many regions in the United States, European Union, and Australia are considering revising the protocol for new power distribution installations and/or conversion of existing infrastructure to underground mode. Studies generally concur that underground distribution is much more costly to install, but may improve reliability and decrease maintenance costs. Recently, a few comparative environmental assessments of overhead and underground cable production have been conducted. However, current literature lacks a full investigation of the life cycle environmental impacts of both distribution methods, including all infrastructure components. This project thus examines the difference between the potential environmental impacts of overhead and underground primary power distribution systems. It is based on a full Life Cycle Assessment (LCA), which has been conducted using LCA software GaBi 4.3, which draws from a wide range of data sources. The analysis incorporates detailed information on the use phase, including installation, maintenance, and decommissioning of cable and associated infrastructural components. The study is also specific to Southern California Edison, one of the largest electric utility suppliers in the United States. The results cover a wide range of environmental concerns, such as climate change, photochemical smog, acidification, and toxicity.