



District of Columbia

Public Service Commission

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Fact Sheet: Undergrounding Pepco's Overhead Lines

The Public Service Commission of the District of Columbia (Commission) directed Pepco to conduct an undergrounding feasibility and cost study in 2006. Pepco's study indicated that it would cost approximately \$4 billion to underground all of its overhead lines. With continued concern over the reliability of the electric distribution system, the Commission decided to engage an engineering consultant to conduct an independent feasibility study. Shaw Consultants, International won the competitive bid and its study was released in September of 2010. The consultants reviewed 16 reports from 8 states, along with their own independent research and study, and four main issues were addressed: estimating the cost of undergrounding; identifying the benefits and drawbacks of undergrounding; assessing reliability implications; and identifying potential sources of funding.

Estimating the Costs of Undergrounding: In 2006, Pepco estimated that it would cost approximately \$3.5 million per circuit mile to underground the overhead primary mainlines in the District. A circuit mile is used to represent the geographic distance of a feeder regardless of the number of conductors involved. The Pepco estimate compares favorably to the Shaw estimate of \$3 million per circuit mile. Shaw calculated the total estimated costs of undergrounding all existing overhead assets in the District to be \$5.8 billion. The Shaw study outlined two possible cost recovery mechanisms: (1) conventional rate-based methodology; (2) a rate surcharge for all customers for a fixed number of years.

Identifying the Benefits and Drawbacks of Undergrounding: The main benefit of undergrounding is a reduction of the frequency of outages. It is difficult to quantify other potential benefits of undergrounding such as improved aesthetics and environmental benefits because there have not been studies done on the subject matter. Drawbacks of undergrounding are the inconvenience of the construction impacts, i.e. noise, traffic and access issues.

Assessing Reliability Implications: Shaw Consultants developed a methodology of analyzing 10 feeders to assess reliability concerns. The 10 feeders included a combination of underground and overhead and were picked based on performance. Five were chosen based on the SAIFI, which is the total number of customer interruptions divided by the total number of customers served. The other five were picked based on the Composite Performance Index (CPI) which takes into account factors such as number of interruptions on a feeder, outage hours, system average interruption frequency and duration.

The Shaw study finds that undergrounding will reduce the frequency of outages. However, the study also shows that the duration of outages will increase because of the greater length of time required to locate and repair problems when they occur. While short term reliability issues may be improved, over time the reliability of the system may decrease because underground cables have a shorter life span than overhead lines. One way to mitigate costs but retain a significant portion of the reliability and aesthetic benefits is a targeted approach where overhead assets are placed underground on a limited basis based on frequency and duration or outage events. The greatest overall benefit comes from undergrounding primary lines rather than secondary lines.

A copy of the study is available on the Commission's website, at www.dcpsc.org.

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*The District of Columbia Public Service Commission an independent agency established by Congress in 1913
to regulate electric, natural gas, and local telephone companies in the District of Columbia.*

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