Underground vs. Overhead Power Lines

Debates about the merits of overhead vs. underground power lines generally focus on two key issues: reliability and cost. With that in mind, consider the following facts:

Reliability

Most measures of electric reliability focus on two metrics: the **frequency** with which a customer sustains a power outage (# of power outages/year) and the **duration** of power outages (minutes/year a customer is without power). Five years of underground and overhead reliability comparisons for North Carolina's investor-owned electric utilities – Duke Energy, Progress Energy and Dominion – found that the frequency of outages on underground systems was 50% less than for overhead systems, but the average duration of an underground outage was 58% longer. Because those repair times are typically much longer, customers served by underground lines are usually among the last to have power restored.

Long term reliability is also an issue. As underground lines get older, they become less reliable. In fact, a Maryland utility found that customers served by 40-year-old overhead lines had better reliability than those served by 20-year-old underground lines.

Cost

Before discussing the cost of placing lines underground, it's important to understand the difference between distribution and transmission lines. Transmission lines are high-voltage lines carrying power from generation plants to substations. From the substations, the voltage is reduced and sent out into neighborhoods through lower voltage distribution lines.

The cost to place new **transmission** lines underground is about 8 to 10 times the cost to build overhead lines. The cost to build underground **distribution** lines is typically four to six times the cost of underground distribution lines.

Placing existing overhead lines underground is also an expensive proposition. Preliminary estimates compiled by SCE&G suggest that it would cost more than $24 billion to place its existing overhead distribution lines underground. The North Carolina Utilities Commission studied the cost of placing Duke Power's distribution facilities underground and found it would cost more than $41 billion, resulting in a 125 percent increase in customer rates.

Currently, about 77 percent of SCE&G's distribution system is overhead. However, most new distribution lines serving developments and communities are being placed underground. The cost to do this is usually paid by developers, who prefer underground lines for aesthetic reasons.

A mechanism does exist for municipalities wanting to place existing power lines underground. This mechanism, called a non-standard service fund, takes a percentage of the franchise fees SCE&G collects on behalf of the city/town and places those funds in a special account. SCE&G matches that amount, and then the municipality decides which projects to undertake.