

State study examines feasibility of

BURYING power lines

The North Carolina Utilities Commission (NCUC) issued a report in November that recommends against burying utility lines throughout existing utility distribution systems, because the financial and environmental costs would be too great. The commission did suggest, however, that electric utilities continue their practice of burying lines when feasible, including in newly developed areas as well as when the cost to do so can be paid or shared by the party requesting burial or by a third party.

Responding to public requests, the NCUC's Public Staff conducted an investigation into burying power and other utility lines after the December 2002 ice storm wreaked havoc throughout central North Carolina, especially in urban areas. The investigation studied the systems owned by the state's investor-owned electric utilities (Duke Power, Progress Energy Carolinas and Dominion North Carolina Power), but the findings pertain to consumer-owned electric cooperatives and municipal systems as well.

The study concludes that consumers would end up paying considerably higher utility bills, plus the cost of connecting electric service to their residences or places of business. Referring to the investor-owned utilities alone, the NCUC said "Such an undertaking would cost approximately \$41 billion, nearly six times the net book value of the utilities' current distribution assets, and would require approximately 25 years to complete. The ultimate impact of the capital costs alone on an average residential customer's monthly electric bill would be an increase of more than 125 percent."

Maintaining underground lines, when required, is more expensive than maintaining overhead lines, the report says.

It calculated that the average residential customer would see a monthly increase of about \$2.34 for using 1,000 kilowatt-hours for each \$1 billion spent on the conversion.

"Customer service drops would have to be buried," the report says, "which requires trenching in residential yards and commercial properties that can cause disruption of existing landscapes. Burying power lines requires digging large ditches that could harm existing landscapes. If trenching were to take place near existing trees, there is the possibility that root systems of nearby trees would be damaged and this could eventually weaken or kill the trees in or near the right-of-way."

Regarding the additional cost to connect underground service to individual buildings, the report says, "Customers would be required to hire licensed electricians to modify their service entrances. The cost of this service would depend on the specifics of each property, but a rough estimate would be around \$400 per residential and small commercial customer. In addition, there may be additional costs if

dwellings do not meet current electrical codes, as is often the case with older dwellings. The local municipality may require the property owner to make modifications to bring the dwelling to current code before underground electric service would be permitted."

Each individual service drop would have to be buried as well. These are lines that typically run from the pole to the building. The NCUC estimates the cost to convert overhead to underground service drop would be \$2,350 for a 250-foot rural drop.

The study concluded that underground lines deliver power more reliably in normal weather conditions and perform better during storms. Overall, underground service experiences about half the interruptions as overhead service. But the report notes that "This gain in reliability, however, is offset by a 58 percent increase in repair time, as underground faults require specialized repair crews to locate the faults, dig up the area around the fault, and repair the cable. In most cases, such an effort requires different crews and scheduling. During severe weather events, such as hurricanes and ice storms, customers with underground facilities are less likely to be interrupted but will be among the last to have power restored when there is an underground fault."

Electric utilities, including cooperatives, follow plans to bury lines when conditions warrant it, such as in newly developed housing projects where the disruption and cost are minimal compared to wholesale conversion of overhead systems. In addition, utilities will bury lines when the requesting party pays the additional cost, or when a government agency contributes to the cost. For example, Brunswick Electric, the cooperative serving Brunswick and Columbus counties, is participating in a federal government cost-sharing program to bury service cable. The co-op qualified for the program because of the extent of damage caused by two seasons of hurricanes slamming that area of the coast. At present, 40 percent of Brunswick EMC's distribution are underground (about 2,000 miles). The Brunswick project continues at about 150 to 200 miles of line per year.

The NCUC's Public Staff concluded by recommending that utilities carry on the following programs: "1) identify the overhead facilities in each region it serves that repeatedly experience reliability problems based on measures such as the number of outages or number of customer-hours out of service, 2) determine whether conversion to underground is a cost-effective option for improving reliability of those facilities, and, if so, 3) develop a plan for converting those facilities to underground in an orderly and efficient manner, taking into account the outage histories and the impact on service reliability."

The full report can be seen on the Web at www.ncuc.commerce.state.nc.us

