From: HJR153
Sent: Wednesday, September 15, 2004 2:57 PM
To: HJR153
Subject: HJR153 - Richard H. Ball

Name: Richard H. Ball
Street: 4022 Downing Street
City, State, Zip: Annandale, VA 22003
Phone Number:
Email: acericardo@mindspring.com
Utility Type: electric
Company Name: ALL
Comments: Preface: The attached comments represent the personal views of the Energy Issues Chair, Virginia Chapter Sierra Club. Although an earlier version of these comments have reviewed and approved by several Chapter officers, time has not permitted formal consideration by the Chapter Executive Committee.

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September 15, 2004

Comments of the Virginia Chapter of the Sierra Club on the Underground Placement of Utility Distribution Lines

The Sierra Club appreciates the opportunity to provide comments on this issue. If demand for electricity continues to increase we can expect that there will be increasing conflicts between utility electricity distribution activities and the desire of people for environmental and aesthetic quality in their communities and neighborhoods. Underground placement of distribution lines is an important approach to reducing those conflicts, but should not be viewed as the sole solution. General Views on Underground vs. Overhead Distribution Lines Overhead electric distribution lines are a major eyesore in urban and rural areas and come into conflict with trees. Trees represent an important contribution to environmental quality in terms of their aesthetic effect, their natural cooling effect due to evapo-transpiration and shading, and their absorption of air pollutants. Trees are viewed as a threat to overhead lines, especially during storms, so trimming and control of tree growth is deemed necessary to protect lines. Placing distribution lines underground would permit greater tree use and would make the distribution system more resilient against storm damage. Hence, there are many direct and indirect benefits to placing lines underground. While the costs of placing distribution lines underground (“undergrounding”) appears to be substantially greater than overhead lines, it seems likely that many citizens would be willing to pay the extra costs if they understood the tradeoffs, if those costs were equitably distributed and spread over the lifetime of the lines, and if they were given a choice. Unfortunately, the choice of undergrounding often is not available to the citizens who must live with results. The cost of placing lines underground in a built environment, especially after overhead lines already are in place (“retrofitting”), evidently is greater than undergrounding prior to development. In the built environment decisions were made a long time ago. In new developments those decisions typically are made by developers or by cash-strapped municipalities responding to pressing needs for infrastructure development. We believe it is vitally important to create procedures that provide the public with a bett er opportunity to choose undergrounding in both new and retrofit situations. Decision Criteria and Cost Allocation If undergrounding is significantly more expensive than overhead lines, then criteria for deciding when distribution lines should be placed underground should be considered in conjunction with the issue of who should pay the extra costs. General principles of economics and fairness suggest that both economic efficiency and equity may be important. Electricity generally is a benefit to customers while the aesthetic and other impacts of overhead power lines are a negative impact that amounts to an environmental externality.

If those negative impacts were distributed evenly according to the benefits of the electricity, they would not be considered an externality; however, that is not necessarily the case. Placing lines underground reduces the negative impact or externality but at a cost. Current Virginia policy, as we understand it, is to distribute the extra costs of undergrounding among all customers, which clearly is unfair to those who do not enjoy the benefits. The central costing problem is how to make the distribution of costs and benefits more equitable. If the costs could be distributed fairly (that is, precisely to those who enjoy the benefits), then the decision of when to underground could and should be left up to the affected electricity customers. This is an example of the beneficiary pays or user pays principle. Questions of economic efficiency would be irrelevant because the customers would be assumed to assure that the benefits to them were worth at least as much as the extra costs. One problem with a user pays approach is that not all customers in a decision unit would necessarily agree on the same valuation of the benefits of underground placement, in part because not all will be affected equally by overhead lines. Another issue is: how to assess the costs, given that not all customers use the same amount of electricity nor have the same amount and type of land affected by overhead lines. In some cases, distribution lines serving one area may track across areas that do not receive the power from those lines. Also, the benefits of electricity use and reduced impacts extend over time while the costs of undergrounding presumably are primarily a one-time capital cost. While no formula for cost allocation may be perfectly fair, it appears to us that the fairest system would be an additional unit charge for electricity use for all customers within the area affected by underground placement. The amount and duration of that charge should, of course, be adjusted to recover the incremental cost of undergrounding, net of any savings from reduced maintenance costs. The justification for allocating the cost according to electricity use is that the electricity use is the primary cause of the avoided negative impact, so allocation in this way serves to internalize the externality of the impact. We do not recommend a special tax assessment instrument because it would not relate to electricity use and therefore would not be as fair or economically efficient as charging according to electricity use. An additional problem of fairness is the fact that established areas already have distribution lines, whether overhead or underground. Those with underground lines enjoy the benefit without necessarily having paid the full extra costs. Those who have overhead lines already have paid higher electricity costs without the benefits and may now face the question of whether to pay the costs to retrofit their area with underground lines at substantially greater cost and disruption of the built environment than would be the case with pre-construction undergrounding. If a new user-pays policy were to be established, there is a question about how fairly to treat the cost of applications for retrofit undergrounding of existing areas with overhead distribution lines. Decision Processes for Undergrounding Communities (i.e., counties and cities) may wish to have all new distribution lines and possibly existing lines placed underground. They should be afforded the right to do this, if necessary through new state legislation. The cost of undergrounding should be allocated according to electricity use in all affected areas. However, if underground lines are retrofitted in areas that presently have overhead lines, customers in that area should not pay more than those in areas that were already underground unless the latter already had paid extra for their own underground lines. For communities, subdivisions, or other service areas within a County or city that does not choose a general underground policy, electricity customers should be allowed to decide when to underground, assuming they will pay the cost as recommended above.1 In the case of a newly-developing subdivision or community, the decision presumably must be made by those controlling the development, usually prior to direct involvement of the ultimate customers such as residential owners or renters, commercial renters, etc. In principle, the cost of undergrounding might either by charged to the developers as a capital charge or added to the future cost of electricity paid by the eventual consumers. Developers probably would object to paying the charge because it would raise the price they must charge to buyers or renters, tending to make the development appear less attractive although the undergrounding would tend to make the development more attractive to buyers. Furthermore, the higher price charged would not necessarily reflect future electricity use of each buyer or renter. Hence, it appears preferable for the cost to be passed on to eventual owners and renters in the form of an incremental charge for electricity use as recommended above. In cases where buildings in the area already are owned by individuals, there must be a collective process for owners and electricity customers in such an area to make this decision for each area or sub-area in which underground placement is feasible as a discrete unit. It is recommended that state law prescribe appropriate, democratic procedures for reaching such a decision that assure that the views of all owners are considered and weighed in the process. For example, formal home owners associations might be used as a vehicle, but the city or county should provide supervision for the process. Consideration of Transmission Lines While the current study pertains to underground

placement of distribution lines, the Sierra Club urges the Commission to consider the related but broader issues regarding policies for siting of transmission lines, including both above ground and underground lines. Demands for new transmission lines are likely to grow even faster than electricity demand due to restructuring of the electric industry, national pressures to improve reliability of the grid, and a purported national shortage of transmission capacity. The trend toward independent power producers and wheeling of power to distant customers especially poses serious concerns about excessive transmission construction. Virginia already has a large number of new and pending power plants that exceed Virginia power needs and thus require transmission capacity to serve out of state customers. Current and future demands for transmission lines that cross Virginia to wheel power from out-of-state sources to out-of state cust omers also are of great concern. In both those cases the negative environmental impacts of transmission lines will fall on Virginians without concomitant benefits. Conflicts between transmission line siting and environmental quality are likely to increase dramatically, especially if Virginia or the Federal Government does not address the issue and establish policies to protect the environment and encourage a more rational transmission grid. Transmission policy should be considered from a broad policy perspective that includes consideration of related issues such as power plant siting policy, encouragement of energy conservation, potential new technological options for generation and transmission, encouragement of renewable and distributed power generation, and optimization of the total power grid through better advance planning, state land-use planning, technological upgrades of the transmission capacity of existing transmission corridors, co-location of transmission lines with other infra-structure (e.g., highways and pipelines), and other means to reduce impacts of the electric energy supply system on the natural and human environment. The Virginia Chapter of the Sierra Club would be pleased to engage in further discussion with the SCC on those issues. Richard H. Ball

Energy Issues Chair
Sierra Club Virginia Chapter

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1 The service area subject to undergrounding decisions presumably is determined by technical considerations of distribution circuits, but we are not able to address that question at this time.