

NORTHERN VIRGINIA ELECTRIC COOPERATIVE

ARCOLA SUBSTATION

EXTENDED PROJECT JUSTIFICATION

Arcola Substation is an existing substation located along Light Ridge Farm Road (VA Route 705) approximately 2 miles south of Braddock Road. These special exception, minor special exception and commission permits propose the addition of six (6) new distribution circuits to maintain the capacity of the substation in the rapidly growing area of southern Loudoun County. The Commission Permit is requested because the existing substation does not currently have one. The Special Exception is requested for expansion of the existing substation. The Minor Special Exception is for a modification of the usual wall and deciduous canopy tree buffer with an eight-foot chain link fence and evergreen tree buffer.

Chapter 3 of the County's Comprehensive Plan calls for an emphasis on growth in the Dulles South Planning Area. In order to meet the Plan's goals of more residential development, additional transformers will be required to meet the new power loadings. The proposed substation expansion complies with the environmental, cultural, land use, economic and fiscal policies of the Comprehensive Plan by facilitating residential growth where the Comprehensive Plan envisions it. By increasing the availability of power to meet development envisioned by the Comprehensive Plan, the proposed substation expansion also will contribute to the welfare and convenience of the public and will facilitate enlargement of the tax base.

This expansion of the Arcola Substation is also consistent with the applicable issues raised by Section 6-1300 of the Zoning Ordinance. The proposal provides adequate safety from fire hazards and will have effective measures of fire control. There will be an automatic relay designed to isolate the equipment affected by any fire. Further, NOVEC has developed a standard protocol in the event of the automatic relays are not sufficient to contain the fire. This protocol is also set forth in the Brambleton Substation Commission Permit. The protocol is as follows:

In the event there is a fire in the substation, NOVEC would notify Loudoun County Fire and Rescue (via 911 or other direct means) of the situation and advise them not to enter the station until a NOVEC substation crew has arrived on site and assessed the situation. Fire personnel would also be advised to stay clear of the fence and all power lines entering or exiting the substation. NOVEC would advise that all lines shall be considered energized until a NOVEC representative advises them otherwise. With the exception of the mineral oil in the transformers, the substation contains little in the way of combustible fuel. However, because of the small amount of mineral oil in the transformers, water is not the best option for putting out the fire. In most cases, the fire is allowed to burn until the fuel is exhausted. NOVEC would not consider there to be any salvage value to equipment and its efforts would be concentrated on containing the fire through contained burn-out, as opposed to fire suppression. Likewise, NOVEC would advise Loudoun County Fire and Rescue that it should be most concerned with

containment and preventing any fire from spreading. NOVEC suggests a condition to the permits requested that would reflect a commitment to the automatic fire-containment relays and the above fire-fighting protocol, subject to approval of Loudoun County Fire and Rescue.

Other applicable issues set for the in Section 6-1300 are addressed by the application. There will be no noise, light or glare emanating from the site. Further, the proposed use, being an expansion of an existing substation, is compatible with the existing substation use and the farm that the substation adjoins. The expansion will add buffers from the adjoining farm where none exist for the existing substation. The proposed substation expansion will not have any adverse impact on animal habitat, vegetation, water quality or air quality. Furthermore, there are no known topographic, physical, natural, scenic, archeological or scenic features of significant importance with which the proposed substation expansion will interfere. As the expansion area is but a small component of a nearly 400-acre cattle farm of open pasture, and the use does not result in any human activity on site, the expansion will not damage existing animal habitat, vegetation, water quality or air quality. The proposed expansion will contribute to and promote the welfare of the public by providing additional electric distribution capacity in the area. The proposed expansion will not have any adverse impact on the surrounding road network because no additional vehicle trips will be generated from the site. The traffic generated from the site will remain at one vehicle per month. Therefore, item “J” in Section 6-1310—whether the traffic expected to be generated by the proposed use will be adequately and safely served by roads, pedestrian connections and other transportation services—does not apply. There are no existing structures that will be converted to a use requiring a special exception. Therefore, item “K” of in Section 6-1310 does not apply. Item “L” in Section 1310 does not apply because the use will not require public facilities and services other than the existing Lightridge Farm Road. The proposed substation expansion will not have any impact on groundwater supply. Nor will it affect the structural capacity of the soils. The proposed substation expansion will not negatively impact orderly and safe road development because no additional roadway infrastructure is needed for the expansion. The expanded area will continue to be served by existing Lightridge Farm Road. The expansion will assist in providing desirable employment and enlarging the tax base by providing additional electric distribution capacity for any economic development activities consistent with the Comprehensive Plan. Similarly, the additional electric distribution capacity that would be provided considers the needs of agriculture, industry and businesses in future growth. The proposed expansion will not require any additional on or off-site infrastructure. Therefore, Item “R” of Section 6-1310 does not apply. No odors will be generated from the site. Construction of the substation expansion will not impact existing neighborhoods or school areas because the existing substation is located in a rural area away from such areas.

Arcola Substation is located in the central part of the Cooperative’s service area in southern Loudoun County, just north of the Prince William County boundary line. The substation is served by Dominion Virginia Power’s 115 kV transmission line Circuit 49 from their adjacent Loudoun Substation. Presently, Arcola Substation is equipped with one 30 MVA, 115-13.2 kV transformer with four distribution circuits serving the fast growing area along Braddock Road and Gum Springs Road.

Arcola Substation is the primary source for all current and future residential and commercial developments along Lightridge Road including: South Riding, Marbury, Seven Hills, Treburg, The

Estates at Elk Run, Kirkpatrick, Stone Ridge, Westport, Stratshire Crossing and Marrwood At Stone Ridge. It is anticipated that the final load of these developments will be in the range of 80 to 100 MW.

The anticipated final load in this area will be shared by NOVEC's Pleasant Valley Substation with three circuits (20 MW), Cub Run Substation with two circuits (12 MW), Brambleton Substation with two circuits (12 MW), and Arcola Substation with ten circuits (60 MW).

The load projected for the next three years to be served by Arcola Substation exceeds the capacity of the station, hence the need for expansion. This project will provide 30 MVA of additional capacity with 6 new distribution circuits needed to serve this fast growing area as well as improving reliability through the addition of adding a second transformer.

The impact of the project other surrounding areas will be minimal, due to the fact that this is not a new construction of a substation, but an expansion of an existing substation. The new construction will improve the screening of the existing site. No buffers or storm water management was required for the site when the current substation was built; however, with this special exception, buffers will be provided. A modification to the buffer requirement in Section 5-616(D) of the Revised 1993 Zoning Ordinance will substitute evergreen trees for canopy trees to ensure a year round screening for the site. Storm water management and best management practices will also be used in the design to minimize any impact on the surrounding properties. Therefore, the proposal provides sufficient screening and buffering on the site to adequately screen surrounding uses.