

8.7 Conclusion

Predicted EMI levels for the proposed 500-kV transmission line are comparable to, or lower, than those that already exist near 500-kV lines; no impacts of corona-generated interference on radio, television, or other reception are anticipated. Furthermore, if interference should occur, there are various methods for correcting it: BPA has a program to respond to legitimate complaints.

9.0 Other Corona Effects

Corona is visible as a bluish glow or as bluish plumes. On the proposed 500-kV line with 3-conductor bundles, corona levels would be very low, so that corona on the conductors would be observable only under the darkest conditions and only with the aid of binoculars, if at all. Without a period of adaptation for the eyes and without intentional looking for the corona, it would probably not be noticeable.

When corona is present, the air surrounding the conductors is ionized and many chemical reactions take place, producing small amounts of ozone and other oxidants. Ozone is approximately 90% of the oxidants, while the remaining 10% is composed principally of nitrogen oxides. The national primary ambient air quality standard for photochemical oxidants, of which ozone is the principal component, is a one-hour average not to exceed 235 micrograms/cubic meter or 120 parts per billion. The maximum incremental ozone levels at ground level produced by corona activity on the proposed transmission line during foul weather would be much less than 1 part per billion. This level is insignificant when compared with natural levels and fluctuations in natural levels.

10.0 Summary

Electric and magnetic fields from the proposed transmission line have been characterized using well-known techniques accepted within the scientific and engineering community. The expected electric-field levels from the proposed line at minimum design clearance would be comparable to those from existing 500-kV lines in Washington, and elsewhere. The expected magnetic-field levels from the proposed line would be comparable to, or less than, those from other 500-kV lines in Washington, and elsewhere.

The peak electric field expected under the proposed line would be less than 9.0 kV/m; the maximum value at the edge of the right-of-way would be about 2.5 kV/m. Clearances at road crossings would be increased to reduce the peak electric-field value to 4.4 kV/m or less. Along the multi-line Grand Coulee – Bell corridor, electric fields at the edges of the right-of-way would remain very comparable with existing levels and would range from 0.1 to 1.4 kV/m.

Under maximum current conditions, the maximum magnetic fields under the proposed line would be 333 mG; at the edge of the right-of-way of the proposed line the maximum magnetic field would be 83 mG. However, along the multi-line Grand Coulee – Bell corridor, the magnetic field at the edges of the right-of-way would be comparable with, or less than, existing levels and would range from 3 to 41 mG.

The electric fields from the proposed line would meet regulatory limits for public exposure in most other states that have limits, but could exceed the regulatory limits or guidelines for peak fields established in one other state and by ICNIRP. The magnetic fields from the proposed line would be within the regulatory limits of the two states that have established them and within guidelines for public exposure

established by ICNIRP. The state of Washington does not have limits for electric fields or magnetic fields from transmission lines.

Short-term effects from transmission-line fields are well understood and can be mitigated. Nuisance shocks arising from electric-field induced currents and voltages could be perceivable on the right-of-way of the proposed line. It is common practice to ground permanent conducting objects during and after construction to mitigate against such occurrences.

Corona-generated audible noise from the proposed line would be perceivable during foul weather. In Configuration 2 (where there are no parallel lines), the proposed line would increase levels above ambient but would still meet the BPA noise criterion at the edge of the right-of-way. In Configuration 1 (with a parallel 500-kV line), the increase at the edge of the right-of-way would be barely perceptible. For most configurations in the multiple-line corridor (Configurations 3 to 9), the increase in audible noise during foul weather caused by the proposed line would be perceived as a doubling of existing levels, or less. For Configuration 10 in a commercial area, the increase at the edge of the right-of-way would be more substantial (+24 dBA), but the levels would still not exceed the BPA noise criterion. The levels would be comparable with, or less than, those near existing 500-kV transmission lines in Washington, would be in compliance with noise regulations in Washington, and would be below levels specified in EPA guidelines.

Corona-generated electromagnetic interference from the proposed line would be comparable to or less than that from existing 500-kV lines in Washington. Radio interference levels would be below limits identified as acceptable. Television interference, a foul-weather phenomenon, is anticipated to be comparable to or less than that from existing 500-kV lines in Washington; if legitimate complaints arise, BPA has a mitigation program.