



FINAL ENVIRONMENTAL IMPACT STATEMENT AND FINAL SECTION 4(f) EVALUATION

APPENDIX 19

Public Health and Electromagnetic Fields

19-1: ARC FEIS Chapter 4.16 Electric and Magnetic Fields



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A. INTRODUCTION

Electric and Magnetic Fields (EMF) near the NEC are generated by current in the catenary/rail structure. Additional fields may be generated by the electric locomotives that power trains and the electric multiple-unit trainsets that run on that line. With increased electric-powered service proposed for the NEC as a result of the Build Alternative, the incremental change in EMF levels between existing service and proposed service has been predicted.

B. EXISTING CONDITIONS

Existing EMF levels at selected distances along the NEC in the project area within New Jersey and New York were calculated based on review of existing literature and included peak and short-term average fields measured on and along the NEC. Federal health standards governing the appropriate levels of human exposure to EMF do not exist. However, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) identifies that the exposure limit for the general public should be established at 830 mG (*NJ TRANSIT – Montclair Extension: Post Construction Electric and Magnetic Measurements*, December 2002). Existing EMF levels along the NEC are significantly below (perhaps as much as 200 to 300 times less than) the guideline exposure levels sanctioned by ICNIRP. Therefore, no adverse conditions exist along the NEC within Build Alternative limits, relative to electric and magnetic fields.

C. FUTURE NO BUILD CONDITIONS

Minor increases in service levels are predicted under future No Build conditions relative to existing conditions, since some relatively minor track improvements would be implemented. EMF levels well below the ICNIRP guidelines would still be expected under future No Build conditions.

D. LONG-TERM IMPACTS OF THE BUILD ALTERNATIVE

Increased electric train service on the NEC in both New Jersey and New York, the new traction power and switching substations on the east side of Tonelle Avenue in North Bergen, and interior modifications to the existing Amtrak substations in Kearny and North Bergen have been evaluated as to effects on EMF levels at selected distances. A simple analytical model was crafted to assess these service changes, based on rail vehicle types and their magnetic field-generating characteristics, as appears in the separate technical report available upon request from NJ TRANSIT entitled *Environmental Impacts of Electric and Magnetic Fields (EMF)*.

Results of that modeling indicate that any increases in EMF would still be significantly below allowable exposure levels. Based on these calculations and comparison to other similar projects, no indication of significant EMF impact was found within 300 feet of the proposed NEC track centerline, the limits of the project area. This finding assumes the same characteristics of the NEC relative to the distance from and composition of persons living or working close to this rail line, and was calculated without additional field measurements.

With the existing fields 200 to 300 times less than recommended health maximum concerns, the additional fields with Build Alternative service increases would still exhibit exposure below recommended levels. Therefore, adding new track, catenaries, and rail along or near the existing NEC would create no additional health hazard to nearest populations at distances of 20, 70, and 120 feet from the NEC right-of-way. Levels would also be considerably below these acceptable levels at further distances from the right-of-way.

E. MITIGATION

EMF levels related to the Build Alternative service on the NEC and intersecting rail lines would be well below recognized guidelines; therefore, no mitigation will be required.