

An Electric and Magnetic Fields (EMF) study was conducted as part of the NYES Article VII permitting process. A summary of that study, as well as other information on EMF, is found below. More detailed information on EMF can be found in Appendix E of the Article VII application (PSC Case # 19-T-0684).

NYES EMF Study Findings

The EMF study calculated levels from the existing and proposed transmission lines operating at the maximum capacity of the conductors along 16 representative portions of the project. The results are summarized in **Table 1**.

For the NYES route, the EMF study showed:

- the maximum EMF levels at the edge of rights-of-way after the NYES line is installed will be below the NYSPSC standards in all route sections;
- NYES will bring two sections of the corridor into EMF compliance; currently these two sections exceed the state electric and magnetic field standard. This compliance will be achieved through increased mutual cancellation of the fields by the phasing of the new NYES line and modest adjustments to the location and height of structures; and
- typical magnetic-field levels of all lines during normal operation are expected to be considerably lower than those calculated at the maximum capacity.

Transmission Line EMF Standards

There are no federal standards for either electric fields or magnetic fields from transmission lines. In the State of New York, new transmission lines must comply with the standards established by the New York State Public Service Commission (NYSPSC), which were set to maintain EMF at existing levels associated with existing transmission lines in 1978 (electric fields) and 1990 (magnetic fields). The NYSPSC standards for new transmission lines are evaluated at the highest power level a transmission line can carry continuously at the edges of the rights-of-way:

- Magnetic-field levels cannot exceed 200 milligauss (mG); and
- Electric-field levels cannot exceed 1.6 kV per meter (kV/m).

What is the New York Energy Solution?

The NYES project is a transmission upgrade that will remove aging infrastructure and construct new monopole structures for a new 345 kV line and an existing 115 kV line. The project runs in existing utility-owned rights-of-way through 11 towns and 3 counties in the Hudson Valley. www.NY-ES.com

Who is Exponent?

Exponent, the author of the NYES EMF study and this fact sheet, is a multidisciplinary organization of scientists, physicians, engineers, and regulatory consultants that brings together more than 90 technical disciplines. The organization is well-versed in EMF issues in the northeast, having consulted specifically on EMF issues for electric utility projects across New York and New England.

Table 1. Calculated EMF Levels*

	Electric-Field Levels (kV/m)	Magnetic-Field Levels (mG)
NYSPSC Standard	1.6	200
Existing Lines	≤2.5	≤204
Proposed NYES + Existing Lines	≤1.1	≤184

**All calculations at maximum line capacity measured at the edge of rights-of-way. Field levels at typical operational loading are expected to be far lower.*

Table 2. Magnetic-field levels of household appliances in typical use, approximately 6 inches away*

Appliance	mG	Appliance	mG
1/4" Drill	200	Box Fan	50
Flourescent Desk Lamp	60	Upright Vacuum Cleaner	700
Electric Shaver	400	Microwave Oven	300
Hair Dryer	8		

**Gauger Jr. Household appliance magnetic field survey, IEEE Trans Power App Syst 104:2436-2444, 1985.*

What is EMF?

Electric and magnetic fields (EMF) are produced by any source that generates, transmits, or uses electricity. All things connected to our electrical system—including power lines that carry electricity, the electric wiring in our homes and offices, and the appliances that use electricity—are sources of EMF.

EMF Sources and Exposure Levels

The primary indoor sources of residential EMF for most homes are wiring in buildings and electrical appliances—such as vacuum cleaners and hair dryers. The highest magnetic-field levels are typically found next to appliances and can range from a few milligauss (mG)—a unit of measure for magnetic fields—to several hundred mG, as shown in Table 2. Other residential EMF sources include nearby transmission and distribution lines and currents on water pipes. EMF levels from all of these sources diminish quickly with distance so that just a few inches from an appliance or a few yards from an outdoor source the levels decrease dramatically.

EMF Health Research

Research on the possible health effects of EMF exposure has been conducted since the late 1970s. Thousands of studies have looked for relationships between EMF in our homes and workplaces and cancer or other adverse health effects, as well as biological effects in animals and in cells. This large body of research has been evaluated by numerous health and scientific agencies, including the World Health Organization (WHO). To date, none have concluded that EMF from transmission lines or other EMF sources is a cause of any adverse effects on health in humans or animals.

An association between magnetic fields at high average exposure and childhood leukemia has been reported in some studies. However, the association is not supported by laboratory studies and has not been considered by any scientific agency to be a causal relationship.

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Impacts of EMF on Agriculture

Similar to research on human health, studies have been conducted that evaluated the effects of EMF exposure on livestock and crops. Overall, the research on livestock—including cattle, sheep, swine, and poultry—has reported no differences between the health of livestock exposed to EMF from transmission lines and livestock not exposed. Additionally, the results of studies conducted on crops exposed to EMF do not provide any reliable evidence that EMF is harmful to crop yield or production.

More Information

- **World Health Organization (WHO):**

<https://www.who.int/peh-emf/about/WhatisEMF/en/>

- **U.S. National Institute for Environmental and Health Sciences (NIEHS):**

https://www.niehs.nih.gov/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf

- **Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR):**

https://ec.europa.eu/health/scientific_committees/merging/docs/scenih_r_o_041.pdf



Proposed view of NYES project upgrade