

Electromagnetic Fields (EMF) / Electromagnetic Interference (EMI) Effects & Mitigation

February 2020

As per Health Canada:

On a daily basis, we are exposed to electric and magnetic fields (EMFs) generated by household wiring, lighting, and electrical appliances.

EMFs are invisible forces that surround electrical equipment, power cords and power lines. You cannot see or feel EMFs.

Every time you use electricity and electrical appliances, you are exposed to EMFs at extremely low frequencies. The term "extremely low" is described as any frequency below 300 hertz. EMFs produced by the transmission and use of electricity belong to this category.

EMFs are strongest when closest to the source. As you move away from the source, the strength of the fields fade rapidly.

Based on the preliminary Electromagnetic Interference / Electromagnetic Fields assessment completed as part of the GO Rail Network Electrification Transit Project Assessment Process (TPAP) (June 14, 2017), no adverse EMI effects are anticipated due to the installation/operation of the electrified GO Transit system. This will be confirmed during design and construction.



Mitigation measures to be considered:

- Further testing and verification will be carried out during the detailed design phase once the rolling stock is established;
- Confirm background EMF/EMI measurements during detailed design;
- Implement an Electromagnetic Compatibility (EMC) Control Plan; and
- Grounding and shielding measures.

See the graphic on the back of this page for typical magnetic field levels of household appliances.

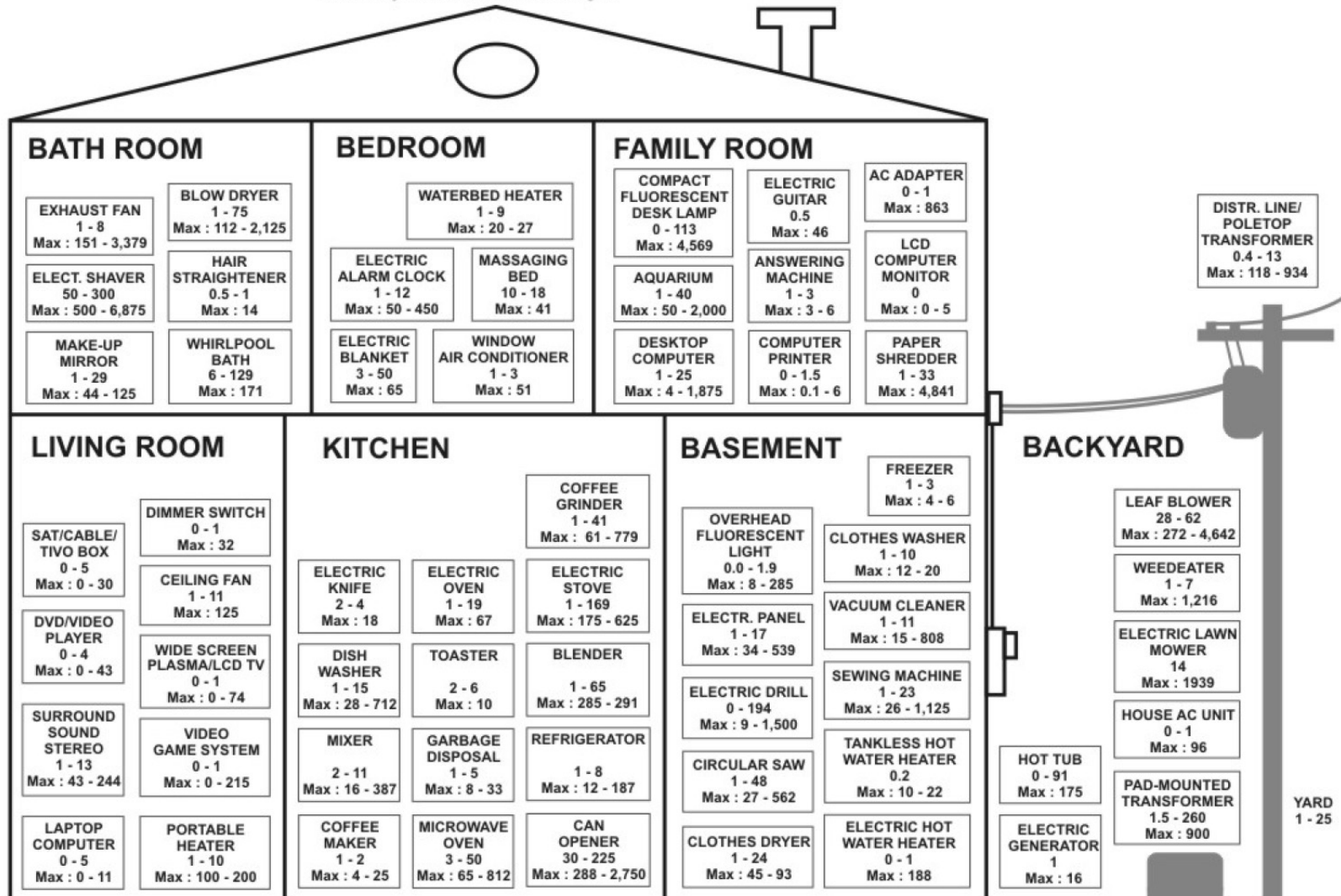
	North America (Example A)		North America (Example B)		Europe	
	Avg.	Max.	Avg.	Max.	Avg.	Max.
Magnetic Field Strength - measured approximately 18 metres from rail Right-of-Way	3.4mG	21.7mG	1.9 - 4.5mG	11.4mG	1.7 - 7.2mG	8.7 - 24mG

From the GO Rail Network Electrification TPAP 2017

MAGNETIC FIELD ENVIRONMENT

Units: milliGauss (mG)*

* Top Range = Magnetic Field at Normal Operating Distances.
Bottom Range = Maximum mG Directly Adjacent to Unit.
Values Vary Due to Manufacturer Designs.



April 2010 update of data published in IEEE Paper "Power Frequency Magnetic Fields in the Home", Silva, J.M., et. al, Energetech Consultants; IEEE Transactions on Power Delivery, Vol. PWRD-4, No. 1, pp. 465-478, 1989; EPRI Report: "Characterization of Magnetic Fields from Power Distribution Transformers", TR-1019010, 2009; EPRI Appliance Measurement Study Report, TR-1020862, 2010; and from actual measurements.

Typical and maximum magnetic field levels of household appliances

This Info Sheet is part of a package of Info Sheets and a Discussion Guide provided by Metrolinx to share updates on system-wide studies and policies. The current set of Info Sheets cover a number of different topics, including: GO Expansion benefits, heritage conservation, vegetation removal and compensation program, grade separations, and new approach to construction management.

For More Information

For more information about GO Expansion and to download other materials, check out our website: MetrolinxEngage.com