Health risks of power lines

current as of 5 Dec 2009

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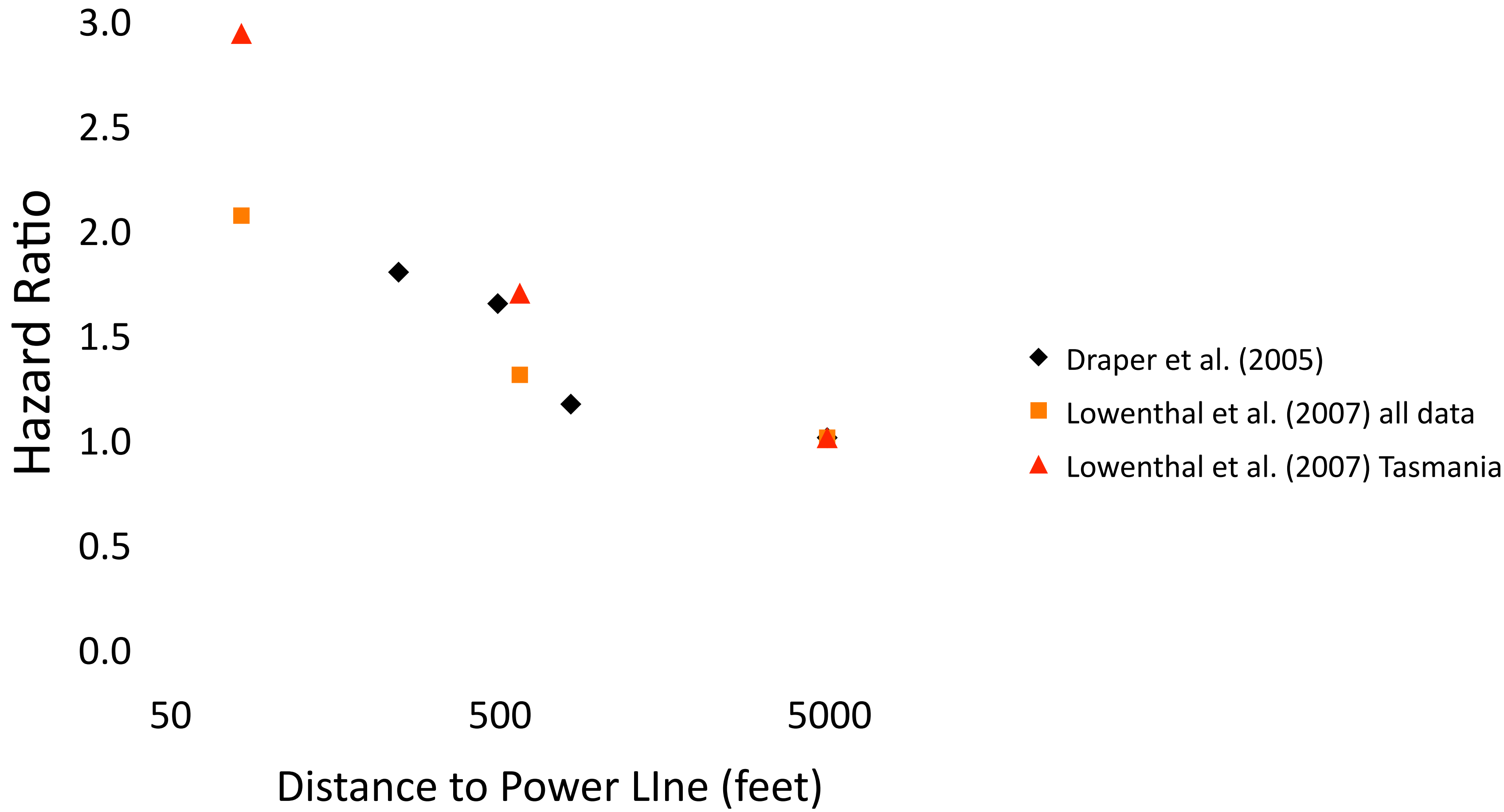
U.S. National Institutes of Health | www.cancer.gov

"Electric and magnetic fields (EMF) are areas of energy that surround any electrical device. EMFs are produced by power lines, electrical wiring, and appliances."

"Electric fields are easily shielded or weakened by walls and other objects, whereas magnetic fields are not. Since magnetic fields are more likely to penetrate the body, they are the component of EMFs that are usually studied in relation to cancer."

"Overall, there is limited evidence that magnetic fields cause childhood leukemia."

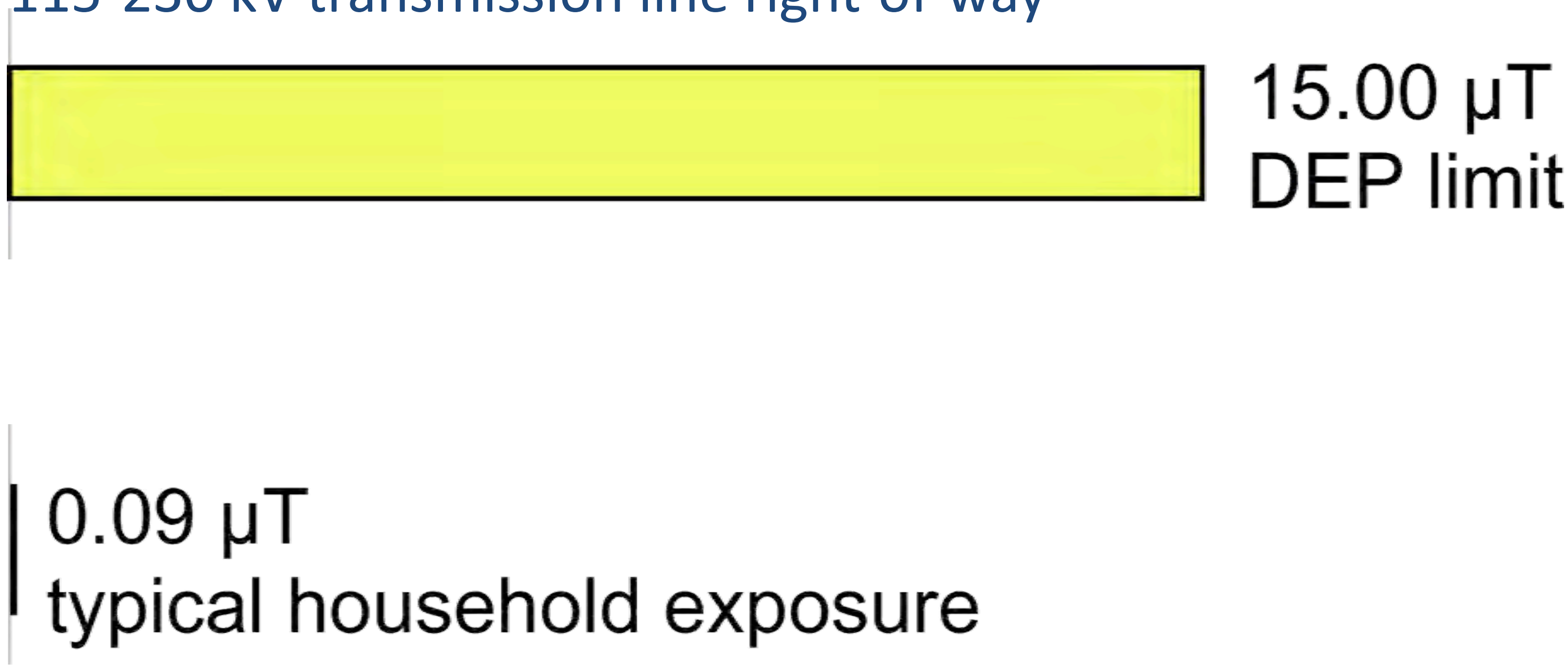
Note: *The most recent data on childhood leukemia at this site was from 2000.* NIH-NCI public outreach is not staying current literature.



Recent studies of leukemia in children living near power lines

Florida Dept. Environmental Protection (DEP) 2008

limits magnetic field intensity at edge of
115-230 kV transmission line right-of-way



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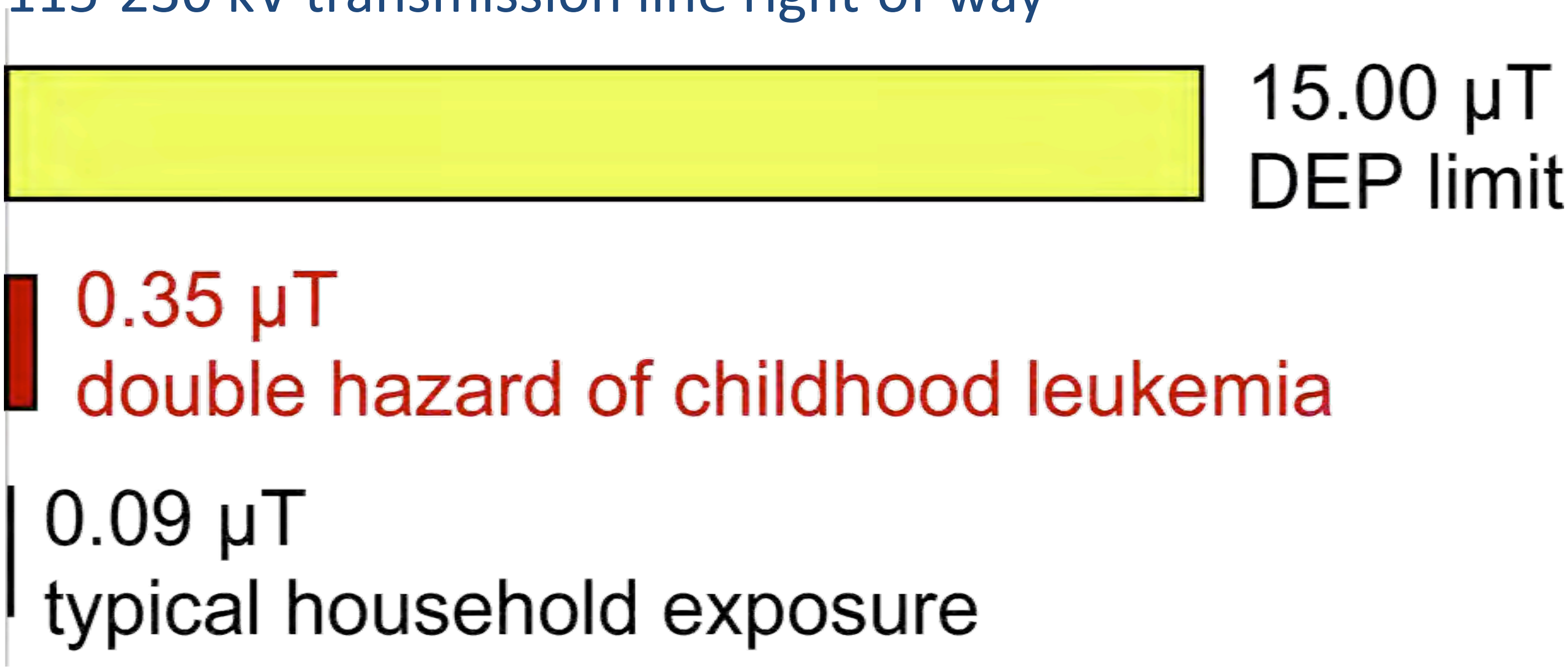
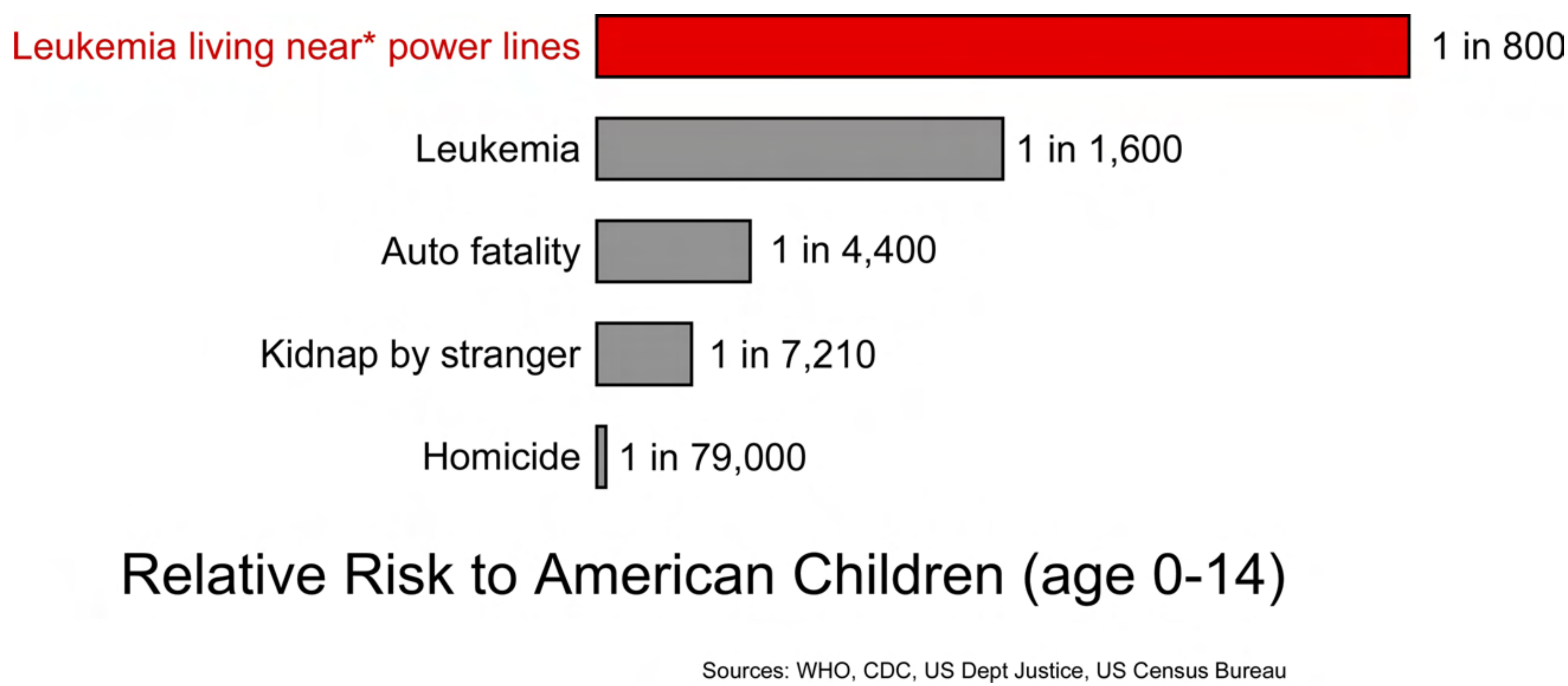


Sources:

Florida DEP 2008. Chapter 62-814
Greenland et al. 2000. *Epidemiology, 11, 624-34*
Hafenmeister 1996. *Am J Physics* 64, 974-981
Kabuto et al. 2006. *International Journal of Cancer*, 119**,** 643-50

Relative Risk to American Children (age 0-14)

Sources: WHO, CDC, US Dept Justice, US Census Bureau

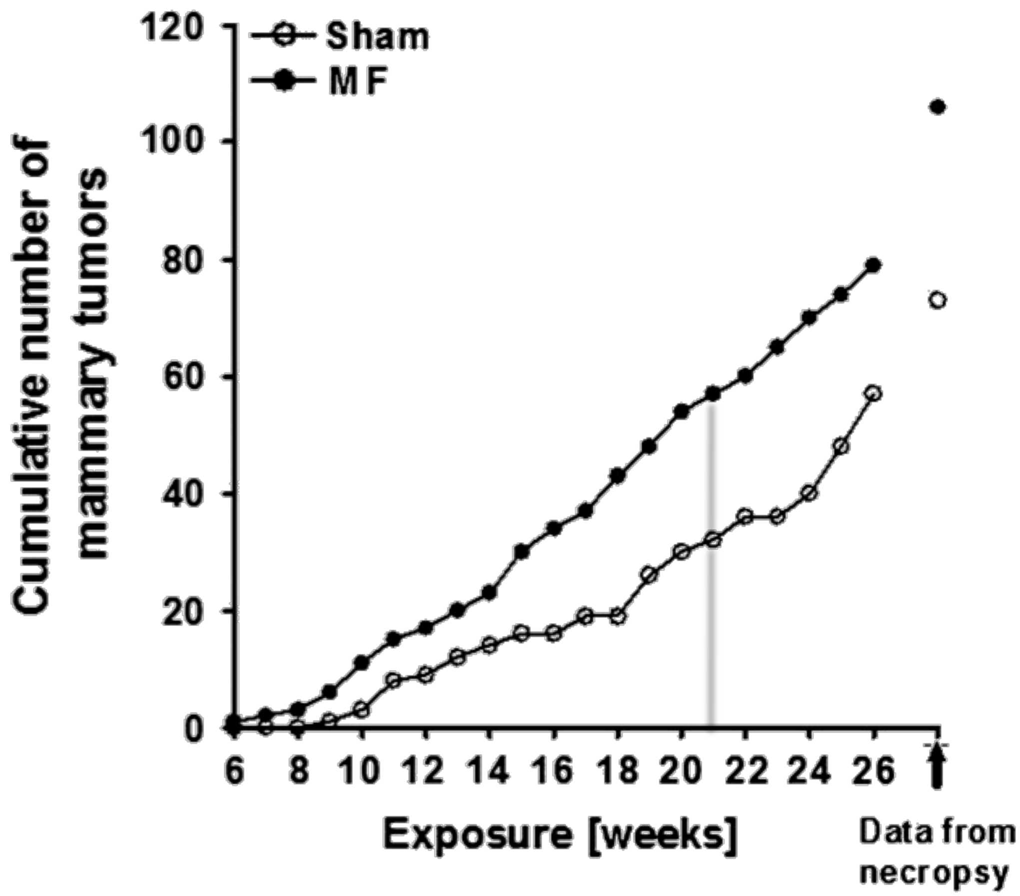


* "near" = 0-50m (0-164 ft) *or* > 0.3 μT to 0.4 μT

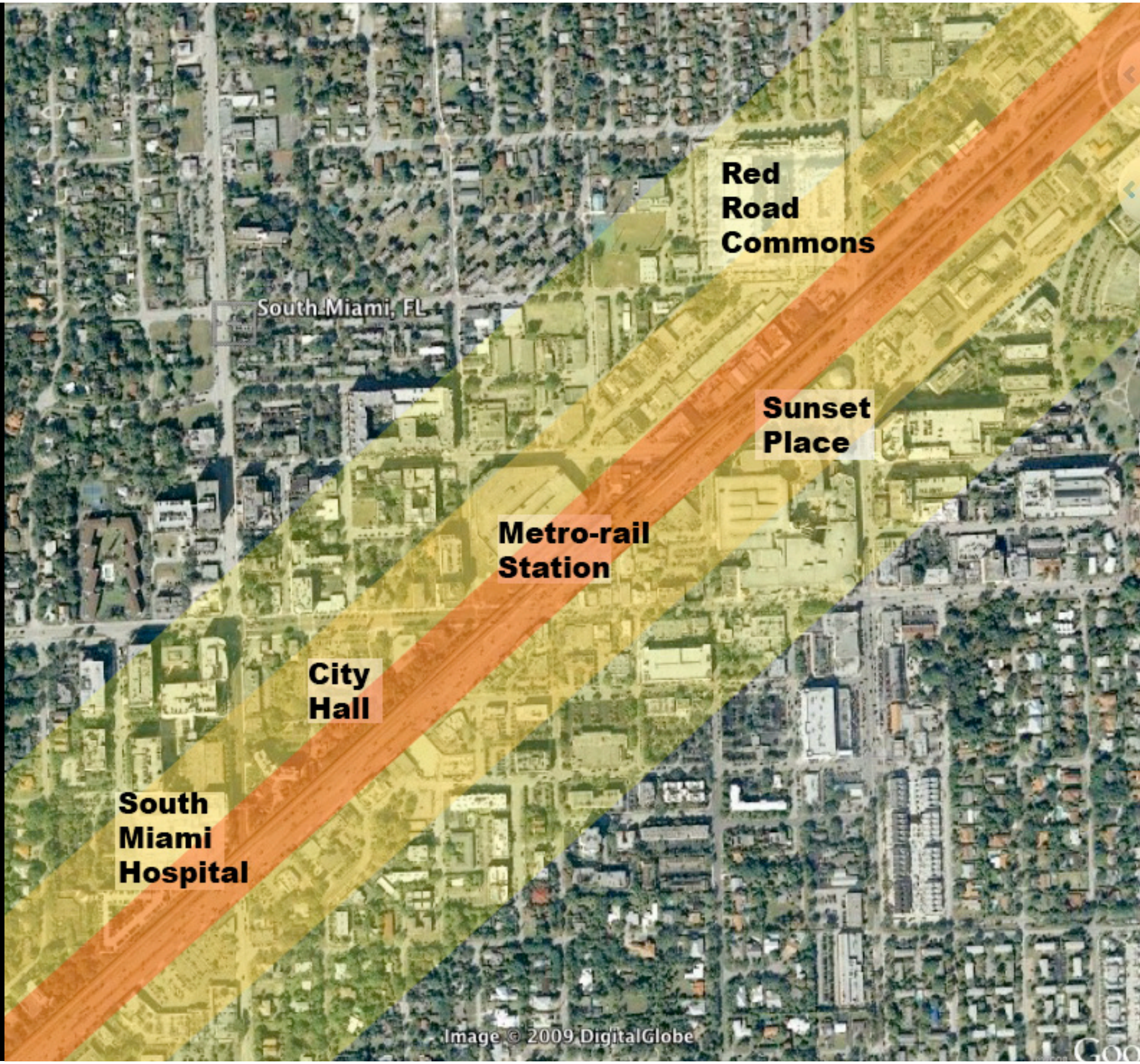
DEP says “No animal models support EMF exposure risk”

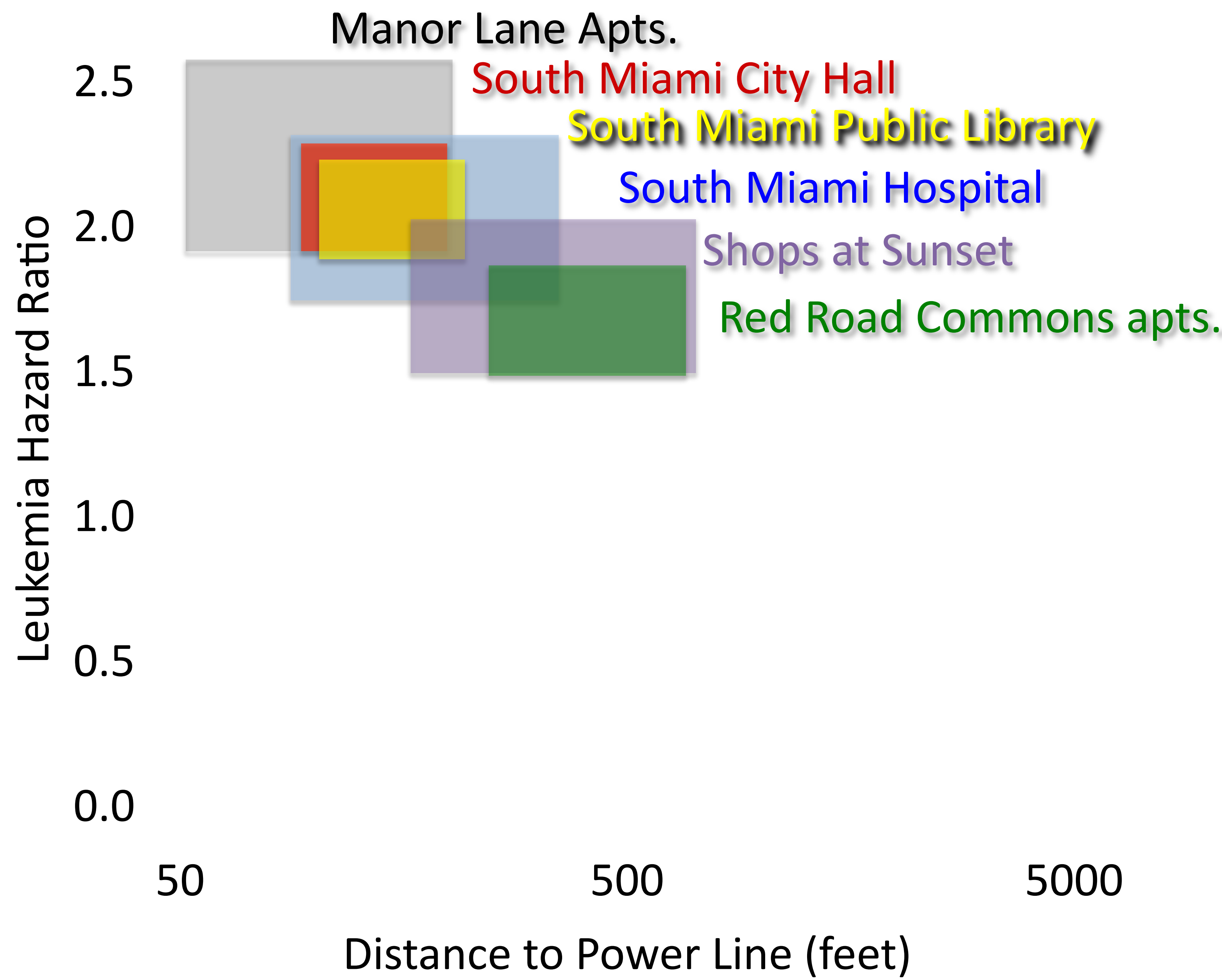
Lab rats with induced mammary tumors:

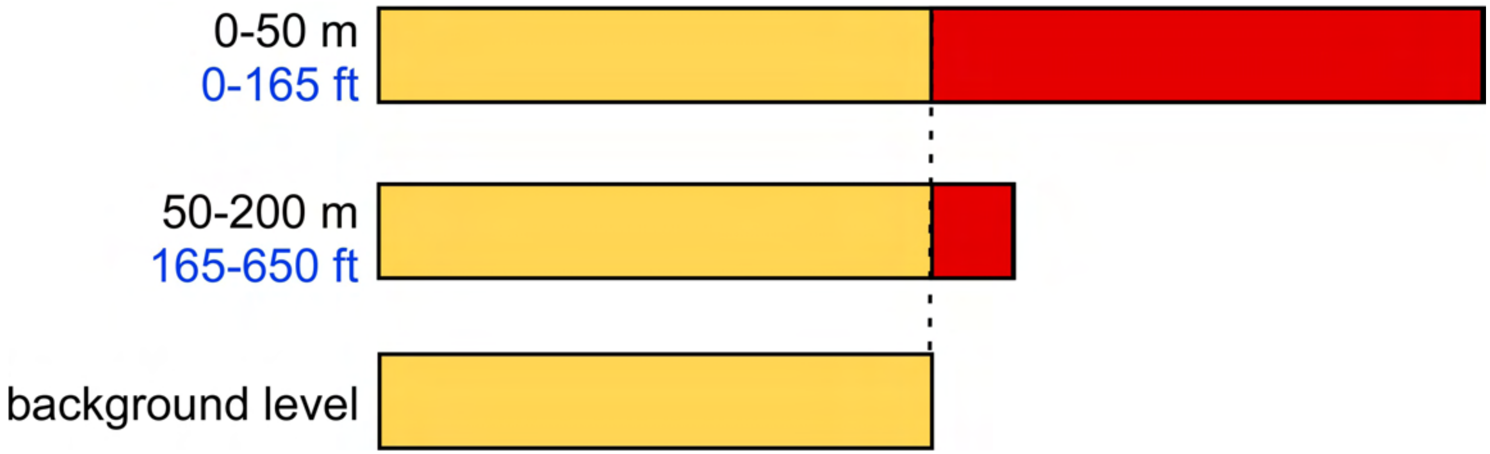
45% higher with magnetic field (MF) exposure



Fedrowitz, M. & Loscher, W. 2008. Exposure of Fischer 344 rats to a weak power frequency magnetic field facilitates mammary tumorigenesis in the DMBA model of breast cancer. *Carcinogenesis, 29, 186-193.*


Red Road Commons
South Miami, FL
Sunset Place
Metro-rail Station
City Hall
South Miami Hospital
Image © 2009 DigitalGlobe


Manor Lane Apts.
South Miami City Hall
South Miami Public Library
South Miami Hospital
Shops at Sunset
Red Road Commons apts.
Leukemia Hazard Ratio
2.5
2.0
1.5
1.0
0.5
0.0
50
500
5000
Distance to Power Line (feet)



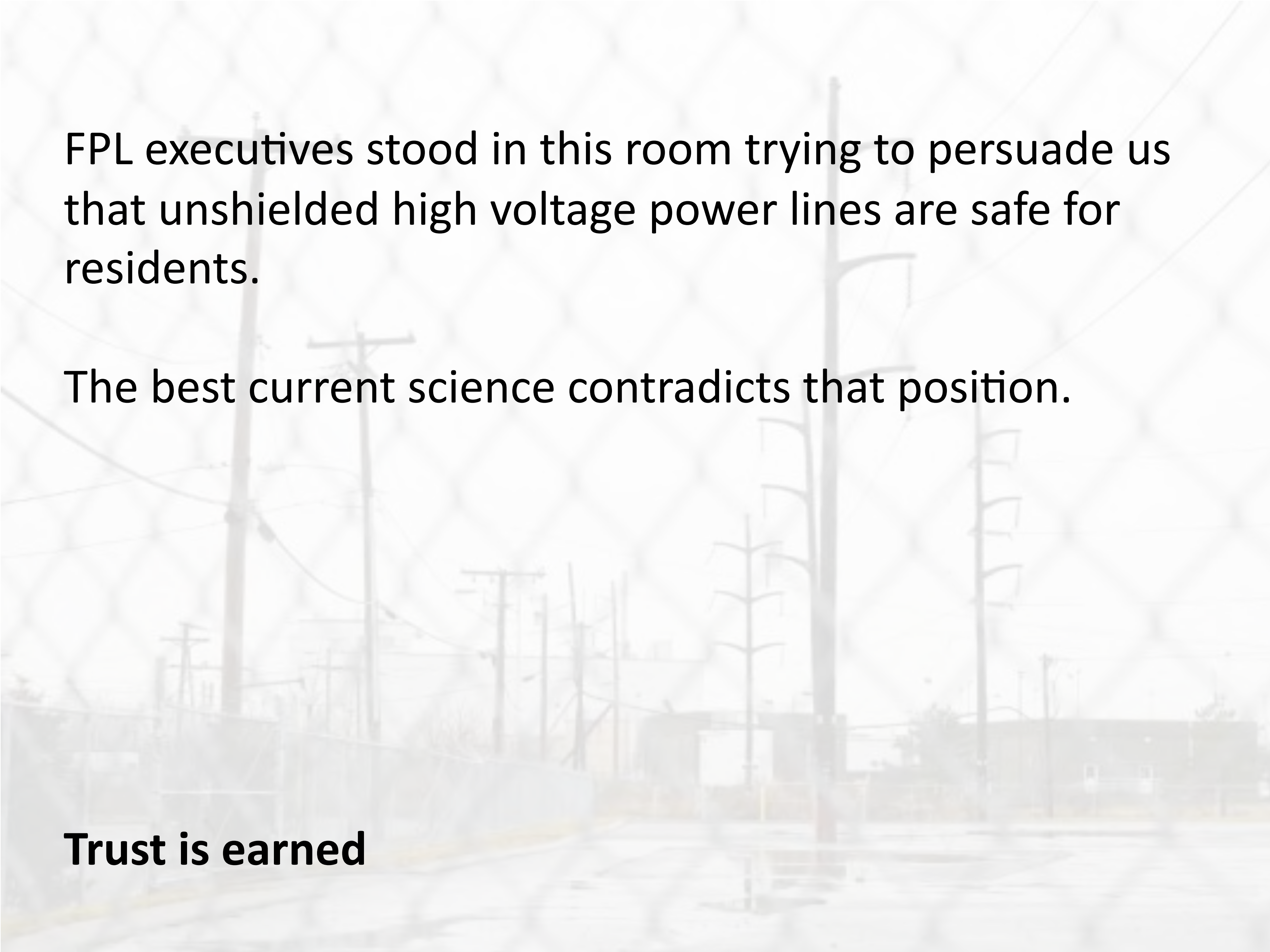
Incidence of Alzheimer's Disease higher in those living near power lines

Huss, A., Spoerri, A., Egger, M. & Roosli, M. 2009. Residence near power lines and mortality from neurodegenerative diseases: longitudinal study of the Swiss population. American Journal of Epidemiology, 169, 167-75.

Powerlines needed for new Turkey Point 6 & 7

OPTIONS?
Burying power lines –
115 kV already under US 1.
No protection.

Burying & shielding –
more expensive,
but much safer.



FPL executives stood in this room trying to persuade us that unshielded high voltage power lines are safe for residents.

The best current science contradicts that position.

Trust is earned

Recent Biomedical Literature on Magnetic Fields and Health

Belson, M., Kingsley, B. & Holmes, A. 2007. Risk factors for acute leukemia in children: a review. *Environ Health Perspect, 115, 138-45*

Draper, G., Vincent, T., Kroll, M. E. & Swanson, J. 2005. Childhood cancer in relation to distance from high voltage power lines in England and Wales: a case-control study. *Br Med J*, 330**,** 1290

Fedrowitz, M. & Loscher, W. 2008. Exposure of Fischer 344 rats to a weak power frequency magnetic field facilitates mammary tumorigenesis in the DMBA model of breast cancer. *Carcinogenesis*, 29**,** 186-193

Foliart, D. E., Pollock, B. H., Mezei, G., Iriye, R., Silva, J. M., Ebi, K. L., Kheifets, L., Link, M. P. & Kavet, R. 2006. Magnetic field exposure and long-term survival among children with leukaemia. *Br J Cancer*, 94**,** 161-4

Greenland, S., Sheppard, A. R., Kaune, W. T., Poole, C. & Kelsh, M. A. 2000. A pooled analysis of magnetic fields, wire codes, and childhood leukemia. Childhood Leukemia-EMF Study Group. *Epidemiology, 11, 624-34*

Huss, A., Spoerri, A., Egger, M. & Roosli, M. 2009. Residence near power lines and mortality from neurodegenerative diseases: longitudinal study of the Swiss population. *Am J Epidemiol*, 169**,** 167-75

Kabuto, M., Nitta, H., Yamamoto, S., Yamaguchi, N., Akiba, S., Honda, Y., Hagihara, J., Isaka, K., Saito, T., Ojima, T., Nakamura, Y., Mizoue, T., Ito, S., Eboshida, A., Yamazaki, S., Sokejima, S., Kurokawa, Y. & Kubo, O. 2006. Childhood leukemia and magnetic fields in Japan: a case-control study of childhood leukemia and residential power-frequency magnetic fields in Japan. *Int J Cancer*, 119**,** 643-50

Lowenthal, R. M., Tuck, D. M. & Bray, I. C. 2007. Residential exposure to electric power transmission lines and risk of lymphoproliferative and myeloproliferative disorders: a case control study. *Internal Medicine Journal*, 37**,** 614-619

Marcilio, I., Habermann, M. & Gouveia, N. 2009. Extremely low-frequency magnetic fields and health effects: literature review. *Revista Brasileira de Epidemiologia*, 12**,** 105-123

Svendsen, A. L., Weihkopf, T., Kaatsch, P. & Schuz, J. 2007. Exposure to magnetic fields and survival after diagnosis of childhood leukemia: a German cohort study. *Cancer Epidemiol Biomarkers Prev, 16, 1167-71*

Yang, Y., Jin, X., Yan, C., Tian, Y., Tang, J. & Shen, X. 2008. Case-only study of interactions between DNA repair genes (hMLH1, APEX1, MGMT, XRCC1 and XPD) and low-frequency electromagnetic fields in childhood acute leukemia. *Leukemia & Lymphoma, 49, 2344-50*