Example: Compare the energy required to set up in a cube 10 cm on edge

      (a)   a uniform electric field 10^5 v/m
      (b)   a uniform magnetic field   1 wb/m^2 = 10^4 gauss

Both these are LARGE fields but doable.

$$v_E = \frac{1}{2}e_o E^2 vn = (0 \cdot 5)(8 \cdot 9 \times 10^{-12})(10^5)(0 \cdot 1)^3$$

$$= 4 \cdot 5 \times 10^{-5} \text{ J}$$

$$v_B = \frac{B^2}{2\mu_o} vn = \frac{1 \cdot (0 \cdot 10^3)^3}{2(4\pi \times 10^{-7})} = 400 \text{ J}$$

∴   It appears that it is better to store energy in a magnetic field in more compact space.

− but coils loose energy to Joule heating
− Capacitors − does also but can be better controlled
− In fact pulsed magnets use "capacitor" storage banks.