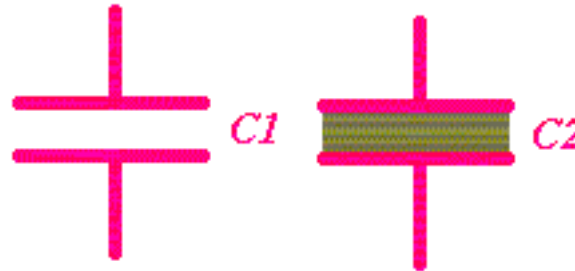Two identical parallel plate capacitors are given the same charge Q, after which they are disconnected from the battery. Then, a dielectric is placed between the plates of C_2

Compare the potential energy stored by the two capacitors.

A) $U_1 > U_2$ B) $U_1 = U_2$ C) $U_1 < U_2$

The potential energy is directly related to the electric field. The lower the field, the lower the potential energy.

The potential energy depends on the charge only

C=Q/V Q remains the same while V reduced, so C increase. since U=0.5CV^2, U is increased.