A dipole of $\pm Q$, with a separation $d$ is placed in a uniform constant electric field $\vec{E}$.

\[\begin{array}{c}
\begin{array}{c}
\text{I} \\
+ \quad - \\
\longleftrightarrow d
\end{array}
\end{array}\]

Determine the potential energy released in flipping the dipole from I to II, while pivoting about its center.

A) $|\Delta U| = Q E d$.

B) $|\Delta U| = 2 Q E d$.

C) $|\Delta U| = 3 Q E d$.

D) $|\Delta U| = 4 Q E d$. 
For $+Q$, the potential energy released $\Delta U = Q (V_I - V_{II}) = Q E d$.

Thus the total potential energy released is $\Delta U = 2QEd$.

Answer B.

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