We introduce a new class of jump operators on Borel equivalence relations, associated to countable groups. For each countable group $\Gamma$ we define the $\Gamma$-jump of an equivalence relation $E$ and produce an analysis of these jumps analogous to the situation of the Friedman–Stanley jump with respect to actions of $S_\infty$. In particular we show that for many groups the $\Gamma$-jump of $E$ is strictly above $E$ and iterates of the $\Gamma$-jump produce a hierarchy of equivalence relations cofinal in terms of potential Borel complexity. We also produce new examples of equivalence relations strictly between $E_0^{\omega}$ and $F_2$, and give an application to the complexity of the isomorphism problem for countable scattered linear orders. (Received July 12, 2019)