Graphene field-effect transistors built with graphene-oxide gate dielectric BRIAN STANDLEY, ANTHONY MENDEZ, California Institute of Technology, EMMA SCHMIDGALL, Imperial College London, MARC BOCK-RATH, University of California Riverside — Graphene’s high mobility and two dimensional nature make it an attractive material for field-effect transistors. Previous efforts in this area have used bulk materials for the gate dielectric, such as SiO$_2$ or HfO$_2$. In contrast, we are investigating the use of an ultra-thin layered material - graphene’s insulating analog, graphene oxide. To this end, we have fabricated transistors composed of single or bilayer graphene channels, few-layer graphene oxide gate insulators, and metal top gates. The gates show relatively minimal leakage: less than 0.1 nS/µm$^2$ at 300K for a few nanometer thick insulator layer, improving with decreasing temperature. We will present our efforts to characterize these devices, including an estimation of graphene oxide’s dielectric constant.