The electric field induced $e^{31,f}$ piezoelectric response and tunability of Ba$_{0.7}$Sr$_{0.3}$TiO$_3$ (70:30) and Ba$_{0.6}$Sr$_{0.4}$TiO$_3$ (60:40) thin films on MgO and silicon was measured. The relative dielectric tunabilities for the 70:30 and 60:40 compositions on MgO were 83% and 70%, respectively, with a dielectric loss of less than 0.011 and 0.004 at 100 kHz. A linear increase in induced piezoelectricity to $-3.0 \, \text{C/m}^2$ and $-1.5 \, \text{C/m}^2$ at 110 kV/cm was observed in Ba$_{0.6}$Sr$_{0.4}$TiO$_3$ on MgO and Ba$_{0.7}$Sr$_{0.3}$TiO$_3$ on Si. Hysteresis in the piezoelectric and dielectric response of the 70:30 composition films was consistent with the positive irreversible dielectric Rayleigh coefficient. Both indicate a ferroelectric contribution to the piezoelectric and dielectric response over 40-80 degrees C above the global paraelectric transition temperature.