abstract We have calculated nonthermal bremsstrahlung (NTB) models for the hard X-ray (HXR) tails recently observed by BeppoSAX in clusters of galaxies. In these models, the HXR emission is due to suprathermal electrons with energies of $\sim 10–200$ keV. We consider models in which these transrelativistic suprathermal particles are the low energy end of a population of electrons which are being accelerated to high energies by shocks or turbulence (“accelerating electron” models). We also consider a model in which these electrons are the remnant of an older nonthermal population which is losing energy and rejoining the thermal distribution as a result of Coulomb interactions (“cooling electron” models). The suprathermal populations are assumed to start at an electron kinetic energy which is $3kT$, where $T$ is the temperature of the thermal intracluster medium (ICM). The nonthermal bremsstrahlung spectra flatten at low photon energies because of the lack of low energy nonthermal particles. The accelerating electron models have HXR spectra which are nearly power-laws from $\sim 20–100$ keV. However, the spectra are brighter and flatter than given by the nonrelativistic bremsstrahlung cross-section because of transrelativistic effects. The HXR spectrum of the cooling electron model is very flat, and most of the X-ray emission in the HXR energy range (10-100 keV) actually arises from electrons with much higher energies ($\sim 100$ MeV). Under the assumption that the suprathermal electrons form part of a continuous spectrum of electrons including highly relativistic particles, we have calculated the inverse Compton (IC) extreme ultraviolet (EUV), HXR, and radio synchrotron emission by the extensions of the same populations. For accelerating electron models with power-law momentum spectra ($N[p] \propto p^{-\mu}$) with $\mu2.7$, which are those expected from strong shock acceleration, the IC HXR emission exceeds that due to NTB. Thus, these models are only of interest if the electron population is cut-off at some upper energy 1 GeV. Similarly, flat spectrum accelerating electron models produce more radio synchrotron emission than is observed from clusters if the ICM magnetic field is $B1\mu$G. The cooling electron model produces vastly too much EUV emission as compared to the observations of clusters. We have compared these NTB models to the observed HXR tails in Coma and Abell 2199. The NTB models require a nonthermal electron population which contains about 3% of the number of electrons in the thermal ICM. If the suprathermal electron population is cut-off at some energy above 100 keV, then the models can easily fit the observed HXR fluxes and spectral indices in both clusters. For accelerating electron models without a cutoff, the electron spectrum must be rather steep 2.9 to avoid producing too much IC HXR emission. The model HXR spectra are then rather steep, but marginally consistent with observations of the HXR spectrum in Abell 2199 and Coma or the radio spectrum in Coma. These models can account for the HXR and radio properties of these two clusters, but do not produce enough EUV emission.