The formation energies of nanostructures play an important role in determining their properties, including their catalytic activity. For the case of 15 different rutile and 8 different perovskite metal oxides, we used density functional theory (DFT) to calculate the formation energies of (2,2) nanorods, (3,3) nanotubes, and the (110) and (100) surfaces. These formation energies can be described semiquantitatively (mean absolute error ≈ 0.12 eV) by the fraction of metal–oxygen bonds broken and the metal d-band and p-band centers in the bulk metal oxide.