Equilibrium:

$\vec{E} = 0$ inside conductor. Mobile charge carriers undergo random motion.

Nonequilibrium:

$\vec{E} \neq 0$ inside conductor. Mobile charge carriers undergo random motion and drift. Positive charge carriers drift from high toward low electric potential and negative charge carriers from low toward high electric potential.

Electric current:

- Net charge flowing through given cross-sectional area per unit time.

- $I = \dfrac{dQ}{dt}$.

- SI unit: 1C/s = 1A   (one Ampère)