RC Circuit: Energy Transfer While Charging

Loop rule: $IR + \dfrac{Q}{C} = \mathcal{E}$ (I is positive)

- $I\mathcal{E}$: rate at which emf source delivers energy
- $IV_R = I^2R$: rate at which energy is dissipated in resistor
- $IV_C = \dfrac{IQ}{C}$: rate at which energy is stored in capacitor

Balance of energy transfer: $I^2R + \dfrac{IQ}{C} = I\mathcal{E}$